RFP 2022

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19èmes rencontres du Réseau Français de Phonologie
19th Meeting of the French Phonology Network
19° Encontro da Rede Francesa de Fonologia

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Porto, Portugal

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Session générale

Opacity, resyllabification and Portuguese rhotic allophony

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Overview. In this paper, I present an analysis of Portuguese rhotic allophony that is couched in Stratal Optimality Theory (Bermúdez-Otero 2011, 2018; Kiparsky 2000). I argue that opacity arises in rhotic patterns owing to the stratum-specific operation of /ɾ/-frication and /ɾ/-deletion, both of which in turn are dependent on resyllabification and sonority-sequencing constraints.

Data. The data in (1) illustrate the main patterns of interest assuming typical realisations for urban central-costal varieties of European Portuguese (henceforth, EP). The rhotic tap, [ɾ], occurs in word-final (pre-pausal) environments, as in (1a) and (1e). It can also appear word-internally in pre-consonantal (1b, g) and pre-vocalic (1d) positions, and across word boundaries, both pre-consonantally (1h) and pre-vocalically (1c). Interestingly, [ɾ] may not occur in enclitic contexts like (1f) where the final /ɾ/ in /amaɾ/ deletes and [l] intervenes between the clitic and its verbal host on the surface.

The rhotic fricative, represented here with [ʁ], occurs word-initially in examples like (1i), and after proclitics, as in (1j). Whilst only taps are observed pre-consonantally, [ʁ] appears post-consonantally in cases like (1k). The fricative may also occur in word-medial intervocalic contexts, as in (1l).

(1) EP rhotic consonants

a.	[ma**ɾ**]	'sea'	e.	[ɐma**ɾ**]	'to love'	i.	[**ʁ**iu]	'river'
b.	[mɐ**ɾ**tɛlu]	'hammer'	f.	[ɐmalu]	'to love it/him'	j.	[u**ʁ**iu]	'the river'
c.	[ma**ɾ**ałtu]	'high sea'	g.	[ɔ**ɾ**lɐ]	'shore'	k.	[pał**ʁ**ɐ]	's/he chatters'
d.	[ɛ**ɾ**ɐ]	'era'	h.	[ma**ɾ**lĩpu]	'clean sea'	l.	[e**ʁ**u]	'error'

Previous work. Existing scholarship has highlighted that these data present analytical challenges, particularly with regard to representation. Mateus & d'Andrade (2000) assume that EP possesses a single rhotic phoneme, /ɾ/, from which forms like those listed in (1) all derive. Thus, a phonological rule enforces the frication of /ɾ/ in contexts like (1i–k) and [ʁ] in examples like (1l) is argued to be a surface reflex of an underlying geminate, i.e. /eɾɾo/, here. By contrast, Bonet & Mascaró (1997) take a pan-Iberian approach and query whether contrast between forms like (1d) and (1l) might reflect an underlying distinction: i.e. an underlying trill in (1l). Cristófaro Silva (1998) takes this one step further and assumes that all forms in (1i–l) contain a rhotic consonant that is phonemically distinct from /ɾ/.

Current approach. Rather than issues of phonological representation, the focus of this paper is instead given to derivational questions. The main question I aim to address is how morpho-syntactically conditioned opacity in rhotic forms can best be accounted for. As Mateus & d'Andrade propose, an allophonic process mapping initial /ɾ/ to [ʁ] applies transparently in examples like (2a). However, this process appears to overapply in cases like (2b) where a proclitic (or prefix) displaces the /ɾ/ from initial position (here, within the P-word). Furthermore, whereas /ɾ/ deletes under enclisis in (2c), deletion is not observed elsewhere, cf. (2d). Examples like (2e) constitute a case of underapplication of /ɾ/-frication if it is assumed that final consonants resyllabify across a word boundary pre-vocalically. Assuming, alternatively, that word-final /ɾ/ remains in coda position in /Vɾ#V/ sequences avoids this issue. However, this approach entails the inevitable condition that word-medial /Vɾ-V/ must somehow be treated differently by the grammar: cf. /amaɾ-eN/ → [ɐ.ma.ɾẽj̃], *[ɐ.maɾ.ẽj̃] 'to love' (3PL).

(2) Opacity in rhotic forms

a.	/ɾio/	→	[$_\omega$ʁi.u]
b.	/o=ɾio/	→	[$_\omega$u.ʁi.u]
c.	/amaɾ=lo/	→	[$_\omega$ɐ.ma.lu], *[ɐ.ma.ɾu], *[ɐ.maɾ.u]
d.	/maɾ#liNpo/	→	[$_\omega$maɾ][$_\omega$lĩ.pu], *[$_\omega$ma][$_\omega$lĩ.pu]
e.	/maɾ#alto/	→	$^?$[$_\omega$ma][$_\omega$ɾał.tu], $^?$[$_\omega$maɾ][$_\omega$ał.tu], *[$_\omega$ma][$_\omega$ʁał.tu]

Analysis. In aiming to resolve these issues, I propose an analysis of the EP rhotic patterns that is couched in a stratal model of phonology. A key component is the domain-specific application of /ɾ/-frication. As shown in (3a–b), I propose that this applies at the stem level (SL). Mappings like (3a) are driven by a constraint militating against domain-initial [ɾ]. Instances of /ɾ/ that do not occupy domain-initial position in the stem stratum are therefore not targets for frication: e.g. /maɾ/→[maɾ] in (3e). This is with the exception of cases like (3b) which I assume reflect a separate, sonority-driven optimisation pattern. Here, a syllable-contact constraint enforces the frication of /ɾ/ post-consonantally to minimise, where possible, the generation of heterosyllabic sequences of equal or near-equal sonority, i.e. *[-ł.ɾ-].

(3) Stratal derivation of EP rhotic patterns

	a. /o=ɾi-o/	b. /palɾ-a/	c. /am-a-ɾ={o, lo}/	d. /am-a-ɾ-eN/	e. /maɾ#alt-o/	
SL	↓	↓	↓	↓	↙	↘
	[ʁi.u]	[pał.ʁɐ]	[a.mɐ]	[a.mɐ]	[maɾ]	[ał.tu]
	↓	↓	↓	↓	↓	↓
	/ʁi.u/	/pał.ʁɐ/	/a.mɐ-ɾ/	/a.mɐ-ɾ-eN/	/maɾ/	/ał.tu/
WL	↓	↓	↓	↓	↓	↓
	[ʁi.u]	[pał.ʁɐ]	[ɐ.maɾ]	[ɐ.ma.ɾɐ̃j̃]	[maɾ]	[ał.tu]
	↓	↓	↓	↓	↘	↙
	/o=ʁi.u/	/pał.ʁɐ/	/ɐ.maɾ=lo/	/ɐ.ma.ɾɐ̃j̃/	/maɾ#ał.tu/	
PL	↓	↓	↓	↓	↓	
	[u.ʁi.u]	[pał.ʁɐ]	[ɐ.ma.lu]	[ɐ.ma.ɾɐ̃j̃]	[ma.ɾał.tu]	

Following from the assumption that /ɾ/-frication is a strictly stem-level process, any /ɾ/ that is supplied by morphological operations at the word level (WL)—e.g. concatenation of the verbal infinitive suffix in (3c–d)—evades frication. In the presence of additional morphological material, I assume that /ɾ/ syllabifies as an onset at the word level wherever possible, as in (3d): cf. Mateus & d'Andrade (2000: 61). Stratum-specific faithfulness operations ensure that instances of [ʁ] generated at the stem level also map faithfully to [ʁ] in the word-level grammar, as in (3a–b).

The phrase level (PL) is the locus of other operations of interest. For example, clitics become available for phonological computation within the phrasal stratum in this model. This leads, firstly, to the appearance of [ʁ] outside of domain-initial position in (3a). Secondly, encliticisation triggers /ɾ/-deletion in (3c) where the /lo/ clitic allomorph is selected. Similar to post-consonantal /ɾ/-frication in examples like (3b), I propose that this is sonority-driven: in agreement with the universal hierarchy for onset sonority (Gouskova 2004), a form with syllable-initial [l] is optimal relative to other candidates with [ɾ]: i.e. *[ɐ.ma.ɾu], *[ɐ.maɾ.lu]. This contrasts with examples like (3d) and (3e). Here, the non-availability of a lexical allomorph with initial /l/ means that outputs in which /ɾ/ maps faithfully to onset [ɾ] win out. Thus, although resyllabification relocates /ɾ/ to a ω-initial position, restriction of /ɾ/-frication to the stem level correctly predicts that [ʁ] can never occur in examples like [$_{\omega}$ma][$_{\omega}$ɾał.tu].

Discussion. The analysis sketched above supports Mateus & d'Andrade's approach of deriving the allophonic patterns from a single rhotic consonant, i.e. /ɾ/. Additionally, the analysis I propose builds on Mateus & d'Andrade's fundamental observation that syllabification regulates the allophony. Taking this further, incorporating stratum-specific application of /ɾ/-frication and /ɾ/-deletion into the analysis leads to a unified account of the principal phonological facts.

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A simple account of chain shifts and saltations in Optimality Theory

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It has been universally accepted (e.g., Kager, 1999; Hayes and White, 2015) that "classical OT" (without, e.g., local constraint conjunction) can generate neither chain shift patterns (e.g., /b/ ∼ [β] and /p/ ∼ [b] in the same contexts) nor saltations (/p/ ∼ [β] but /b/ stays [b]). We provide existence proofs for classic OT grammars (inputs and ranked constraints) that, in fact, generate both patterns, as long as **reconceptualization of the problems** is granted: e.g., for chainshifts, instead of considering derivations between fully specified segments (/b/ →[β] and /p/ →[b]), we select an underlyingly underspecified segment that surfaces, depending on context, as [b] or [β], and another that surfaces as [p] or [b]. Our solutions are thus **weakly equivalent** to the versions of the chain shift and saltation problems as traditionally considered, because, although they involve the same surface alternations, they do not involve the exact same input-output mappings. Our point is not to compare our solutions with others (involving, e.g., local constraint conjunction, applied to chain shifts most famously by Kirchner (1996)) but rather to show that failure to generate surface chain shift and saltation patterns can no longer be invoked against models using only "classical OT" machinery.

A key aspect of our analysis is the use of **underspecified inputs** that are fully specified in output, and we follow Inkelas' (1994) defense of underspecification, that "virtually all objections to underspecification have actually been objections to various principles designed to regulate [its] distribution", adding that "such criticisms sometimes fail to clearly decouple the situation of underspecification from the tainted principles intended to govern it, leading to the implicit, sometimes explicit, conclusion that underspecification is equally untenable". Inkelas shows that "**underspecification is necessary**, even in Optimality Theory" but takes an attractively restrictive view that the "only motivation for underspecification is to **capture alternations** in the optimal way". We add to Inkelas's arguments Keating's 1988 demonstration of *phonetic* underspecification as well as conceptual arguments by Reiss (2021) that underspecification simplifies UG, and Magri's (2018) discussion of "partial phonological features" to justify the exploration pursued here, in spite of murmurs to the contrary such as Tesar (2014, p.387, fn. 2) stating that "[i]t has been suggested that Optimality Theory reduces or eliminates the need for such underspecification".

Kager (1999, p. 394) explains the chain shift problem along these lines: if /b/ surfaces as [β], then faithfulness to −CONT must not outrank whatever markedness constraint is violated by underlying /b/ in the relevant context; but then a [b] derived from /p/ should also not be constrained by faithfulness to remain [b], and it should surface as [β], too. The problem is to somehow encode **distance faithfulness**, so that the output of /p/ can be a bit unfaithful (surfacing as [b]) but not so unfaithful as to change all the way to [β]. In derivational frameworks, chain shifts are generated with **counterfeeding ordering**; in OT, mechanisms beyond "classical" OT, were proposed, like local conjunction and scalar faithfulness (Gnanadesikan, 1997). The problem for saltations is in a sense the inverse: How can the output of /p/ be so unfaithful as to surface as [β], while /b/'s output remains faithful to its underlying −CONT value? Here, being *extra* unfaithful is *required* of /p/, but /b/ must not surface as [β]. As White (2017) puts it "saltations cannot be derived in 'classical OT"' because of "the excessive nature of the change involved in such alternations". Like chain shifts, saltations have driven OT practitioners to propose enhancements to the framework, most prominently the version proposed by White (White, 2017; Hayes and White, 2015) involving the P-Map (Steriade, 2008, 2001) and *MAP constraints (Zuraw, 2007).

Accepting underspecification, our approach to chain shift patterns can change. Instead of modeling input-ouput relations among segments *p,b,β*, we can think about the possibility of positing two segments to "capture alternations", call them *P* and *B*, such that *P* maps to *p* and *b* in environments X and Y, respectively; and *B* maps to *b* and *β* in environments X and Y, respectively. We use **underspecification to mimic distance faithfulness** without extending "classical OT". In this vein, we can derive the surface chain shift pattern, not from underlying /p/ and /b/, but by defining /P/ as a bilabial stop unspecified for VOICE, but specified −CONTINUANT and /B/ as a +VOICED bilabial obstruent, unspecified for CONTINUANT. Once we accept underspecification we can adopt the MAX and DEP constraints that treat insertion and deletion of feature values as separate violations of faithfulness (see Lombardi 2001/1995 and McCarthy 2011, sec. 4.6). With this machinery, a feature-filling mapping can violate a single DEP constraint, whereas a feature-changing mapping will violate at least a MAX constraint and a DEP constraint. Constraints assumed are given in (1) and (2):

(1) Faithfulness constraints: (i) MAX-F constraints penalize deletion of +F or −F. (ii) DEP-F constraints penalize insertion of +F or −F. (We make no use of IDENT-F).

(2) Markedness constraints: (i)SURFACE-SPEC: This (here) undominated constraint is violated by output segments that manifest surface underspecification. (ii)*VTV: no stops between vowels. (iii)*VSV: no voiceless obstruent between vowels. (iv)*FRIC: Obstruents should be stops; e.g., /β/ is more marked than /b/ (A typologically justified constraint.) (v)STOP-VLESS: Stops should be voiceless; e.g., /b/ is more marked than /p/.

These *are* analogous to constraints in the literature, but we are primarily concerned with the **logical structure** of the patterns, as in McCarthy (2002, 17): "OT is a general framework for constraint interaction, and . . . does not entail a particular set of constraints in CON"; and Moreton (1999, 142): "Optimality Theory is a theory of constraint interaction, not of representations. We want our deductions about OT to hold even if the theory of representations changes"—so even when underspecification is allowed.

In the talk we present tableaux (3-6) deriving [pa, aba] from input /Pa, aPa/, and [ba, aβa] from /Ba, aBa/. Crucially, this is an existence proof—it is not weakened, but is rather strengthened, by the fact that there are other ways to derive these results. We derive saltations with similar reasoning. We also present outcomes for fully specified inputs involving /p/, /b/, etc.

(3) /P/ surfaces as [p] when not intervocalic

/Pa/	SURFACE-SPEC	MAX-CONT	DEP-VOICE	*VTV	DEP-CONT	*VSV	*FRIC	STOP-VLESS
☞ a. pa			*					
b. ba			*					*!
c. βa		*!	*		*		*	
d. Pa	*!							*
e. Ba	*!							

(4) /P/ surfaces as [b] between vowels

/aPa/	SURFACE-SPEC	MAX-CONT	DEP-VOICE	*VTV	DEP-CONT	*VSV	*FRIC	STOP-VLESS
a. apa			*	*		*!		
☞ b. aba			*	*				*
c. aβa		*!	*		*		*	
d. aPa	*!			*				*
e. aBa	*!							

(5) /B/ surfaces as [b] when not intervocalic

/Ba/	SURFACE-SPEC	MAX-CONT	DEP-VOICE	*VTV	DEP-CONT	*VSV	*FRIC	STOP-VLESS
a. pa			*!		*			
☞ b. ba					*			*
c. βa					*		*!	
d. Pa	*!							*
e. Ba	*!							

(6) /B/ surfaces as [β] between vowels

/aBa/	SURFACE-SPEC	MAX-CONT	DEP-VOICE	*VTV	DEP-CONT	*VSV	*FRIC	STOP-VLESS
a. apa			*!	*	*	*		*
b. aba				*!	*			*
☞ c. aβa					*		*	
d. aPa	*!			*				*
e. aBa	*!							

With binary features, underspecification, and MAX-F and DEP-F constraints, there is a lexicon and a constraint ranking that a learner can posit to generate surface chain shift and saltation patterns, without the use of local conjunction or scalar faithfulness. OT has been criticized for a lack of concern with representational issues. This paper demonstrates how computational and representational issues (like underspecification) can interact, and thus contributes to understanding of OT as a theory of grammar.

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French H aspiré, glottal stop and production planning domains
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That French h aspiré (H) sets itself off from the preceding word is a basic observation that appears in the literature in various guises. Morin (1974: 87f) and Schane (1978) propose that H words are vowel-initial and bear a syllable boundary to the left of H in the lexicon. This syllable boundary is cannot be altered during phonological computation, so that the initial vowel of H words will always be syllable-initial (also Tranel 1979). Cornulier (1978) argues that h aspiré induces a "separation" and is marked for this property in the lexicon. In the same way, Côté (2008: 92) discusses "the basic intuition that h-*aspiré* words maintain a stronger separation between them and the preceding word" (italics in original).

The talk is about two things: a better understanding of the empirical situation regarding H-induced glottal stop insertion on the one hand, and the characterization of the domain that is at work on the other.

It is well-known that H words generate a glottal stop when occurring after a consonant (Dell 1973: 186, 262 note 85, Tranel 1981: 310f, Encrevé 1988: 198ff). Hence C+H *quel [...lʔɛ...] hêtre* "which beech" occurs with, but V+H (*un joli [...iɛ...] hêtre* "a pretty beech" without glottal stop. It is also well known that glottal stop insertion is optional: not all instances of *quel hêtre* will have it. As far as I can see, there is no empirical study regarding this optionality, or one that tries to assess the intuitions of speakers that it is more frequent or probable after consonants than after vowels. Or indeed, whether it occurs after vowels at all: is *un joli [...iʔɛ...] hêtre* with glottal stop ill-formed?

The talk reports results from a production experiment where French natives were asked to pronounce a sequence of words that was shown on a screen. The audio was then manually evaluated by a trained linguist for the presence or absence of a glottal stop. A first experiment involved H nouns (n=12), a second one H verbs (n=12). In both cases, relevant contrasts included the following. 1) X+H (various items followed by H): C+H (*sept hêtres*, *il hache*), LC+H (LC = liaison consonant, unpronounced, *un grand hêtre, nous hachons*), V+H (*un joli hêtre*, *tu haches*). 2) X+V: C+V (*sept êtres vivants*, *il arrive*), LC+V (*un grand évier*, *nous arrivons*), V+V (*un joli évier, tu arrives*), 3) X+C: CL+C (*un petit beignet*, *nous partons*).

Since it is notorious that H words (which appear as such in the dictionary) may or may not have an actual H in the lexicon of individual speakers (*le haricot* > *l'haricot* with many speakers), a pretest evaluated the status of H words involved in the experiment in the personal lexicon of participants by asking them whether they are preceded by the full or elided article (would you say *le hêtre*, *l'hêtre*, or are both ok?) or 1sg pronoun (*je hache*, *j'hache*, or both ok). Participants were 25 French natives (11 below, 14 above age 40) for the noun experiment, 32 natives (all below age 30) for the verb experiment.

A first result evidences the high lexical, inter- and intra-person variability of H. In the pretest, for *harceler* 2 out of 32 participants responded *je harcèle*, while for *haïr* 29 out of 32 said *je hais*, the 10 other H verbs coming in anywhere between these extremes. *Je* was chosen for 2 verbs out of 12 by P17, against 11 out of 12 by P14, other participants coming in anywhere in between. A second result is that these pretest judgements are not reliable: in actual production, P13 for example pronounced *vous [z] hissez la voile* with liaison, while they chose *je hisse* in the pretest. The reverse is just as frequently observed (pretest *j'*, but no liaison in production). The representational interpretation is to say that H is variable in the lexicon, where an H-initial form competes with an H-less form. But as will be argued below, a computational interpretation is more convincing: based on a stable H in the lexicon, what is variable is the domain created by the H which may (no liaison) or may not (liaison) set its word off in a computational domain of its own.

The next observation concerns liaison, which is supposed to be obligatory within DPs, such as Adj+Noun or DET+Noun. In the experiment, liaison rate was 100% in the latter configuration (250 out of 250 with indef. pl. art. des : *des examens*), but only 55% in the former pattern (136 out of 246: *un grand évier*) (difference of course significant). The Adj+Noun pattern also shows variation: lexical (*petit* produced 100% liaison, *faux* only 24%, the other LC words coming in between these scores) and inter-speaker (P5 produced liaison for 10 out of the 12 LC words, P25 only for 1 out of 12, the others ranging in between) (intra-speaker cannot be measured since there was only one pass for each token).

Note that in the verb experiment, personal pronouns with a liaison consonant (*nous*, *vous*) behave like DET in the noun experiment: they show 100% liaison (*nous [z] arrivons*). The generalization thus seems to be that function words (DET, PRO) do justice to the reputation of making liaison obligatory, while content words (Adj) do not have this status (anymore).

Again, a lexical analysis (speakers have lost the liaison consonant, or are currently losing it) is not convincing since the categorical split is about major category: Adj vs. DET, PRO. Rather, the contrast indicates that DET+Noun / PRO+Verb form a single domain no matter what [DET+N] / [PRO+V] (thus phonological computation always produces liaison), while the syntactic relationship of Adj+Noun is more distant, allowing for a phonological computation of both items in the same [Adj+N] (liaison present) or in different [Adj]+[N] (liaison absent) domains.

Results regarding H-induced glottal stop insertion. The glottal stop occurs in *all* environments, but more often when word 2 is H-initial, and within these still more often when word 1 is C-final: V+V (*tu attends*) produces a glottal stop rate of 7,6%, which grows to 32,3% in V+H (*tu hais*) and reaches 47% in case of C+H (*il hait*). The same goes for the 2% rate of C+V (*il aime*) compared with 47% of C+H (*il hait*). All differences mentioned are statistically significant. Also note that all data at hand are based on verbs (PRO+V), i.e. with no interference from domain separation due to morpho-syntax.

The intuition-based literature on H and glottal stop is thus confirmed: 1) yes H generates glottal stops; 2) yes the phenomenon is sensitive to the strong position, i.e. more glottal stops occur after consonants (C+H) than after vowels (V+H). The experiment also quantifies the optionality mentioned in the literature: it is not the case that glottal stops never occur, or are agrammatical, in V+H; or that they are always present, or obligatory, in C+H. Glottal stop insertion in French is a gradient, not a categorical phenomenon.

New evidence that is not mentioned in the literature is the presence of glottal stops in absence of H, though (V+V). What may be their origin? I submit that they are the trace of production planning domains in the sense of Wagner (2012), Tamminga (2018), Kilbourn-Ceron (2017) and Wagner et al. (2020). Production planning windows define the stretch of the linear string for which production is prepared in one go. They are variable (across speakers, individual speech acts etc.) and defined by a number of factors that include morpho-syntactic information, semantics (Selkirk's 1984 sense unit), surprise (incongruent meaning causes a boundary), word length and word frequency.

That is, a glottal stop occurs in V+V (*tu attends*) if production planning has segmented both words in two distinct domains [tu] [attends…], but does not in case both belong to the same domain [*tu attends*]. Glottal stops are thus inserted domain-initially (into the empty onset of V-initial words). Clear evidence that glottal stop insertion indeed occurs domain-initially comes from the verb experiment: a glottal stop precedes stimuli beginning with *il* and *elle* (*ʔil arrive*), i.e. in utterance-initial position, in 75% of trials.

Recall that the classical literature mentioned at the outset of the abstract has identified the virtue of H to separate its word from the preceding. Production planning domains and the experimental evidence reported are a close match of this intuition. Note that H-created domains of course cannot be morpho-syntactic in kind (phases, cycles) since morpho-syntax has no clue what an H is.

This means, in sum, that the glottal stop in French occurs in two contexts: domain-initially and in post-consonantal position – that is, in the Strong Position (Coda Mirror, Ségéral & Scheer 2008). In post-consonantal position, we are sure that there is no domain boundary preceding H since the preceding C is visible to the phonological computation but would not if there were a boundary.

Finally, the experiments conducted also confirm Encrevé & Scheer's (2005) observation that H-induced glottal stop insertion not only occurs after pronounced (C+H, *il hache*), but also after unpronounced (CL+H, *nous hachons*) consonants. While the glottal stop rate of both C+H (47%) and CL+H (45%) is significantly higher than the one of V+H (*tu haches*, 32%), the difference between a preceding pronounced (C+H, 47%) and unpronounced (CL+H, 45%) consonant is not statistically significant. In other words, H-induced glottal stop insertion is sensitive to any preceding consonant, pronounced or not. This is evidence for the presence of liaison consonants at the right edge of words (where they are spelt), even when they are not pronounced (floating consonants in the regular autosegmental analysis), against analyses such as Côté's (2005).

The phenomena involved (liaison, glottal stop insertion) are phonological in kind since they are sensitive to syllable structure. Data and analysis presented involve domains of two distinct origins: morpho-syntactic (cycles, phases) and production planning. But phonological computation of course cannot make the difference: it is bound by any domain. The relationship between the two kinds of domains appears to be of the Russian doll type: production planning may further subdivide phases (V+V with glottal stop, H setting its word off), but in some cases has no word to say (PRO+V produces 100% liaison). As is well known, computational domains are alternation-specific (in English, l darkening is bound by the word, but t-flapping is not), and this is also the case here: within the same domain PRO+V, production planning may create domains relevant for glottal stop insertion, but not for liaison.

Session parallèle A

Stochastic phonological knowledge in diminutive formation

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Truncative diminutive/hypocoristic forms (DIMs) may be monosyllabic (cf. English *Jess⟨ica⟩, Cam⟨eron⟩, prof⟨essor⟩*). Such forms rarely preserve a consonant cluster at their end (*doc⟨tor⟩, Geoff⟨rey⟩*), when they do it is the clusters that are the least marked in this position that remain (*Clint⟨on⟩, Walt⟨er⟩*). These cases of truncation are governed by well-formedness constraints (Lappe 2003, Alber & Arndt-Lappe 2012).

The formation of Hungarian DIMs is different in at least two respects. On the one hand, these forms are generally bisyllabic with a suffix containing a vowel, hence the truncation of polysyllabic bases is compulsory. If the DIM suffix is vowel initial, and the base contains a consonant cluster, the second (and third) C may be deleted.

Deletion is noncategorical: it involves significant unpredictability. We group the relevant data by cluster types in (1).

(1) Truncation of C_oVCCV… bases in DIMs (N=nasal, R=approximant, S=fricative, P/T=plosive)

a. both consonants are preserved

NT na:**nd**⟨or⟩-i ‘name’, bu**ŋg**⟨ɑlo:⟩-i ‘hideout’, … (7 clusters)
RT mɑ**rʦ**⟨ɛl:⟩-i ‘name’, ko**lb**⟨a:s⟩-i ‘sausage’, … (5 clusters)
ST ɛ**st**⟨ɛr⟩-i ‘name’, gɑ**zd**⟨ɑ⟩-i ‘owner’, … (4 clusters)
PT —
RN bɑ**rn**⟨ɑ⟩-i ‘name’, kø**rɲ**⟨ɛzɛtiʃmɛrɛt⟩-i ‘environment studies’, ... (4 clusters)
RS lu**jz**⟨ɑ⟩-i, ‘name’, bo**lʃ**⟨ɛvik⟩-i ‘bolshevik’, ... (4 clusters)
TR bo**dr**⟨oʃ⟩-i (1 cluster)

b. only the first consonant is preserved

NT —
RT ko**r**⟨ʧojɑ⟩-i ‘ice skate’ (1 cluster)
ST i**ʃ**⟨kolɑ⟩-i ‘school’, lu**f**⟨(t)bɑlon⟩-i ‘balloon’ (2 clusters)
PT ʃɑ**p**⟨kɑ⟩-i ‘cap’, zɑ**ʧ**⟨ko:⟩-i ‘pouch’, … (5 clusters)
RS, RN —
TR mi**k**⟨lo:ʃ⟩-i ‘name’, dɛ**p**⟨rɛssijo:⟩-i ‘apathy’, ... (7 clusters)
other C+R i**m**⟨rɛ⟩-i ‘name’, tɛ**ʃ**⟨(t)ʋe:r⟩-o: ‘sibling’ (4 clusters)
other C+N gi**m**⟨na:zijum⟩-i ‘secondary school’, ʒi**g**⟨mond⟩-ɑ ‘name’ (4 cls)

c. unpredictable

NT —
RT ma:**rt**⟨ɑ⟩-i ‘name’ vs. tø**r**⟨te:nɛlɛm⟩-i ‘history’, ... (7 clusters)
ST i**zg**⟨ɑlmɑs⟩-i ‘exciting’ vs. mo**z**⟨go:⟩-i ‘movie’ (1 cluster)
PT mɑ**gd**⟨ɑ⟩-i ‘name’ vs. ru**g**⟨dɑlo:zo:⟩-i ‘rompers’, … (2 clusters)
RN a:**lm**⟨oʃ⟩-i ‘sleepy’ vs. ʋi**l**⟨moʃ⟩-i ‘name’ (1 cluster)
RS o**rʃ**⟨ojɑ⟩-i ‘name’ vs. ko**r**⟨ʃo:⟩-i ‘jug’, … (2 clusters)

We see that clusters of the NT type, for example, are always retained, while some RT clusters are truncated. On the other end of the scale, NN, SN, or TN clusters are never retained in the DIMs under investigation. We summarize the relevant figures in (2). In the last line of (2) we give the ratio of clusters that are always preserved and half of those that exhibit both strategies to all clusters in the given type.

(2) Ratios of preserved CCs by cluster types

CC-type	NT	RT	ST	PT	RN	RS	TR	{N/S}R	{N/S/T}N
a. **(1a)**	7	5	4	0	4	4	1	0	0
b. **(1b)**	0	1	3	5	0	0	7	4	4
c. **(1c)**	0	7	1	2	1	2	0	0	0
d. **total**	7	13	8	7	5	6	8	4	4
e. **ratio (a+c/2)/(a+b+c)**	**100%**	**65%**	**56%**	**14%**	**90%**	**83%**	**13%**	**0%**	**0%**

The ratios give the following hierarchy of plosive-final cluster types: NT, RT, ST, PT. This coincides with the typologically based markedness hierarchy of these cluster types. That is, the less marked a given cluster is, the more likely it is retained in a truncated DIM form. Markedness is related to frequency: unmarked clusters are generally more frequent than marked ones. (2) shows that an unmarked cluster has greater chances of surviving in a DIM form, likening DIMs to monomorphemic words with respect to consonant clusters. The retention of consonant clusters is probabilistic, depending on a large set of factors, including the perceptibility of the form, homonymy avoidance, etc. The stochastic behaviour of phonotactic patterns is also documented by Hayes & Londe (2006) and Hayes & Wilson (2008).

The connection between truncative DIMs and monomorphemic words is further strengthened by the observation that (i) DIM suffixes are harmonically invariant, so a DIM form is often disharmonic and (ii) a DIM form may behave harmonically differently from its base contra Harmonic Uniformity (Rebrus & Szigetvári 2016). The frequency of consonant clusters in monomorphemic forms is statistically mirrored by DIMs. That is, it is not only the well-formedness of a cluster that decides if it is retained in DIMs, but also the markedness/frequency differences within the set of well-formed clusters.

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The diacritic weight scale in lexical accent systems: accent assignment in Nxa'amxcin

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Introduction. Linguistic theory must allow for a uniform account of regularities and exceptions. In this talk, I present a novel integrated approach to morpheme-specific exceptions and regular accentuation in lexical accent systems, on the example of Nxa'amxcin (Interior Salish, Washington), henceforth N.

Background. The lexical accent system of N. displays a complex array of accentual patterns.

- In a classic study, Czaykowska-Higgins (1993) identifies 2 root classes: strong (S) and weak (W), and 2 classes of suffixes: recessive (R) and dominant (D). S win accent over R (1d), by contrast, according to my observation, W lose accent to those R that have an underlying vowel (1e), but win over R that lack it (1f).
- Further, Czaykowska-Higgins (1993) identifies 5 *exceptional* morpheme classes in N., mainly D affixes that win over S roots (1a), D* affixes that win over D, and exceptional roots (SE, WE) that win over D, but lose to D* (1b,c); also, R* exceptionally wins over regular R. (Prefixes in N. never get the accent.)

(1) a. **S-ˈD**
/k-√ʔim’x = ikn/
[k̓im’ˈxikn]
LOC-√move=back
"camp up high"

b. **ˈSE-D**
/na-√maʕ’ʷ = ikn/
[naˈmaʕ’ʷkn]
LOC-√break=back
"he broke his back"

c. **SE-ˈD***
/kɬ-√xar = lwas-tn/
[kɬxarləˈwasn]
LOC-√cover=chest
"bib"

d. **ˈS-R**VOWEL
/sac-√im’x-mix/
[sac’ˈʔim’xəxʷ]
IMPF-√move-IMPF
"he's moving"

e. **W-ˈR**VOWEL
/s-√q̓y’ = mix/
[sq̓iy’ˈmix]
NOM-√write=people
"school children"

f. **ˈW-R**VOWELLESS
/√ty' = lqs/
[ˈtiy'əlqs]
√roll=nose
"wheelbarrow"

Goal. To provide a simple, uniform account of accent assignment for both regular patterns and morpheme-specific exceptions in N.

The approach. Since accent-attracting capacities of individual morphemes in *lexical* accent systems are parallel to those of syllables in *weight-sensitive phonological systems*, these capacities are viewed here as *diacritic weight*.

- Diacritic weights of morphemes stand in a “heavier-than” relation. It is well known that, in certain phonological accent systems, accent is assigned with reference to a phonological weight scale, rather than a binary “heavy/light” distinction (Gordon 2006). Diacritic weight displays a hallmark of weight in general: it is ordinal. Like phonological weight, diacritic weight allows for weight scales.
- The Scales-and-Parameters (S&P) theory (which I proposed elsewhere), by augmenting the parameter system of the Primary Accent First theory, or PAF (van der Hulst 2010) with *diacritic weight scales*, accounts for word accent in lexical accent systems with morpheme-specific exceptions, in particular for accentual dominance. According to S&P, accent in a given language can be assigned mainly with reference to the weight scale of the language and two binary parameters due to PAF: Select (resolving accentual conflicts) and Default (supplying a default accent).

Results. I have established that the 9 non-intersecting morpheme classes of N. may be ordered on a 4-level diacritic weight scale. Two of these classes trigger a local *weight-decreasing* ("Lightening") rule that reduces the weight of the following morpheme by 1 degree. In N., word accent is assigned using, mainly, Select (Right) and Default (Left), in combination with that scale.

TABLE 1. *The regular and exceptional diacritic weight classes, listed in (1), as function of their relative diacritic weight and lightening capacity.*

Weight degree	Lightening	Non-lightening
1 ↓		W, $R_{VOWELLESS}$
2 ↓	R*	R_{VOWEL}
3 ↓	SE, WE	S, D
4 ↓		D*

Select (Right) and Default (Left) are set in N. based on (1a) and (1f), respectively.

Sample derivations. Weight of each morpheme is encoded on the Weight Grid according to the scale. The Weight Grid is a formal prosodic representation that carries weight degrees as integers. Then, the Lightening rule, triggered by lightening morphemes (superscripted with an "^{L}"), decreases the weight of the morpheme to its right (2b); in absence of lightening morphemes, the rule fails to apply (2a). The greatest weights in the form are projected onto the Accent Grid and the rightmost heaviest morpheme is assigned word accent by Select (R), as in (2).

(2) a. **S-ˈD**	b. **SE-ˈD***	c. **ˈSE-D**		
n-√ptix̣^{w} = atk^{w}-n-t-ø-n	ciq + q-nun-t-ø-n	na-√maʕ'^{w} = ikn		
3 3	3 4^{L}	3^{L} 3		*Weight Grid*
N/A	3 3	3 2	Lightening	
* *	* *	*	Weight Projection	*Accent Grid*
*	*	*	Select (Right)	
[nptiˈx̣^{w}atk^{w}n]	[ciqqˈnunn]	[naˈmaʕ'^{w}kn]		

Conclusion. The proposed approach treats lexical accent systems as weight-sensitive, dispensing with lexical accent altogether. Since weight is ordinal, it allows for diacritic weight scales. The accentual grammar supplies a particular diacritic weight scale and a set of parameter settings that, in combination, assign accent to *both* regular and exceptional words of N. in a uniform way.

By contrast, lexical accent approaches to N. accent treat regularities and exceptions dissimilarly. Moreover, they make complex assumptions, unnecessary here, such as cyclicity, Stress Erasure, internal morphemic EM (Czaykowska-Higgins 1993), or gradient surface representations in Harmonic Grammar (Zimmermann 2017). This comparison indicates, then, that the proposed approach is superior to lexical accent analyses because it is unified, parsimonious and straightforward.

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The Unbearable Lightness of Being High: Openness as Structure and the Consequences for Prosody

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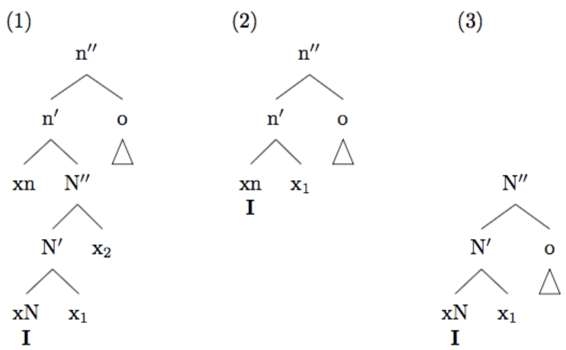
Problem. In unstressed position, English allows schwa (*bitter*, *sofa*), the high vowels [ɪ/iː] (*attic*, *pony*), [ʊ/uː] (*album*, *issue*; often in variation with [ə]), and (in some varieties) [ɨ] (*roses*). But whether the final syllable of words like *rabbi* bears (secondary) stress (Giegerich 1992) or is unstressed but unreduced (poorly defined in Ladefoged & Johnson 2010) is unresolved. Recent papers by Szigetvári (2017, 2020) investigate the distribution of English vowels with respect to prosody, but are restricted to description. Similarly, Burzio (1994) stipulates that syllables with high vowels/schwa/syllabic rhotic are extra-prosodic in peripheral position (hence pre-antepenultimate stress in *áccuracy*, *présidency*). *How* vowel quality relates to prosody or *why* remains unaddressed. Here I argue that many aspects of that link are derivable from the structure of vowels assumed in Government Phonology (GP) 2.0 (Pöchtrager 2006, 2018, 2020, Kaye & Pöchtrager 2013, Živanovič & Pöchtrager 2010), a further development of (classic) GP (Kaye, Lowenstamm & Vergnaud 1985, 1990).

Background. GP 2.0 reinterprets as structural some phonological properties commonly taken as melodic. This includes the element **A**, encoding aperture in vowels and coronality in consonants (Broadbent 1991, Cyran 1997, Goh 1997). One quirk of **A** is its interaction with (constituent) structure, in that it allows for bigger structures than otherwise possible. Some scholars (Fudge 1969, Selkirk 1982, Vaux & Wolfe 2009) assume syllabic positions reserved for coronals to capture why the upper size limit of English monosyllables (VVC/VCC; *seek*, *late*/*sink*, *left*) can be exceeded (VVCC) if both final consonants are coronal: *fiend* (**fiemp*, **fienk*), *count* (**coump*, **counk*), *feast* (**feasp*, **feask*) etc. But special syllabic positions for coronals do not explain why coronals are privileged. Similar "excesses" occur with vowels: Southern British English has long *a* (**A**) in *draft*, *task*, *clasp* with only one coronal following; the vowel makes up for a second coronal. Hungarian allows long vowels before clusters with vowels containing **A** (Polgárdi 2003) etc. — GP 2.0 builds on this and reinterprets **A** as structural (Pöchtrager 2006, 2010, 2012, 2018, 2020, 2021a, b), with part of the structure "unused" and available to adjacent segments. (In *fiend* the vowel can "borrow" unused space from the final coronals to be long.) Coronality (old **A** in consonants) and aperture (old **A** in vowels) *are* structure; objects which used to contain **A** are bigger than those without.

Proposal. Nuclei have a bipartite structure (Pöchtrager 2018, 2020, 2021a) involving up to two heads (xn and xN), with xn on top of xN (if both are present). Each head can project maximally twice (xN–N'–N", xn–n'–n"). The more open a vowel, the bigger it is in size (more precisely: the more empty positions it has). Thus: *Being unstressed implies being small in size.* The converse does not hold; small vowels (like *i*) are not necessarily unstressed (*litter*).



This can be captured: While unstressed high vowels (plus schwa) involve a full projection of the lower head xN (unstressed [ɪ/iː] in 3), their stressed (primary/secondary stress following Giegerich) or "unreduced" (Ladefoged & Johnson) counterparts are fully contained in the projection of the higher head xn (2, stressed/unreduced [ɪ/iː]). For vowels bigger than that, there is no choice: they extend across the projections of xN *and* xn (1, stressed [æ/ɛː]) and are therefore barred from truly unstressed position. Thus: **1.** We establish the desired link between prosody and quality while **2.** maintaining a distinction between size (aperture) and stress/"unreducedness". **3.** Prosodic prominence can be formally identified as as the head xn, which for high vowels (plus schwa) can (but does not have to) be involved. (Schwa has a structure like [ɪ/iː] without the element **I**; the additional empty position makes it mid.)

Generalisability. 1. High vowels (plus schwa) often display various signs of (prosodic) weakness: They are uneasy with secondary stress in Finnish (Anttila 2008). They are typical reduction outcomes in languages like Brazilian Portuguese (Cristófaro Alves da Silva 1992) or Eastern Catalan (Wheeler 2005), analysable as loss of structure (Pöchtrager 2018). They can undergo devoicing in Japanese (Fujimoto 2015), explained by reference to conditions under which empty positions can be silenced (Youngberg & Pöchtrager 2020), only possible for vowels with few empty positions (i.e. high vowels). **2.** More importantly, stress is also linked to another property more patently structural: Length. Languages like Italian or Estonian (Pöchtrager 2006) bar long (and overlong) unstressed vowels. Like in English, this involves a cap on structure in the absence of stress. What is different is what kind of structure is limited; that expressing length (Italian, Estonian) or that involved in aperture (English).

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Hypocoristics in Chilean Spanish: a Stratal OT Analysis

This talk presents an analysis of hypocoristic formation (HF) in Chilean Spanish. A key argument is that, within an optimality-theoretic framework, a stratal architecture is necessary to capture the core patterns adequately. I further present a critique of the recent work that has approached the question of hypocoristics through a classic OT architecture Piñeros, 2000a,b, 2016; Alber, 2009; Alber & Arndt-Lappe, 2012; Martínez Paricio & Torres-Tamarit 2019).

(1)	Rightmost elision (apocope)						Leftmost elision (aphaeresis)				
a.	Ceci~~lia~~	[se.sí.lja]	→	Chechi	[(t͡ʃé.t͡ʃi)]	f.	~~Ig~~nacio	[ig.ná.sjo]	→	Nacho	[(ná.t͡ʃo)]
b.	Anto~~nia~~	[an.tó.nja]	→	Anto	[(án.to)]	g.	~~Gon~~zalo	[gon.sá.lo]	→	Chalo	[(t͡ʃá.lo)]
c.	Agu~~stín~~	[a.ɣus.tín]	→	Agu	[(á.ɣu)]	h.	~~Mar~~celo	[maɾ.sé.lo]	→	Chelo	[(t͡ʃé.lo)]
d.	Edu~~ardo~~	[e.ðwáɾ.ðo]	→	Edu	[(é.ðu)]	i.	~~Gus~~tavo	[gus.tá.βo]	→	Tavo	[(tá.βo)]
e.	Joaqu~~ín~~	[xwa.kín]	→	Juaco	[(xwá.ko)]	j.	~~Ale~~jan~~dro~~	[a.le.xán.dɾo]	→	Jano	[(xá.no)]

In (1) we can distinguish two patterns that, in relatively theory-neutral terms, can be considered left- and rightmost elision of the proper noun. We see that the template for HF is a disyllabic trochee with non-branching margins. A segmental process repairing obstruent-yod sequences via palatalisation is also observable in examples like (1f), and the alveolar fricative /s/ palatalises through the same mechanism in (1g-h). Both of these processes are subject to socio-linguistic variation, and the forms listed here are standardised ones. Finally, we can observe a prohibition against branching rhymes in the second syllable, demonstrated by the division of the diphthong [wá] in (1d) whose glide /w/ is realised as [u] in the hypocoristic. This prohibition is further evidenced by (1c) where a coda /s/ is deleted. Thus, we may con1clude that the first syllable may optionally close, as exemplified by (1b), but the second must remain open.

A stratal architecture incorporates the phonological cycle (Kiparsky 2000; Bermúdez Otero 2011; Ramsammy 2017), and as such, it has recourse to stratification effects for the analysis of the data that are not available in classic OT. The version of Stratal OT I adopt is limited to three strata: the stem, the word and the post-lexical. The output of each stratum serves as the input to the next. Stratal OT loses none of Classic OT's explanatory power of the global constraint as parallel evaluation is retained but becomes localised to each stratum. Rules which cannot see beyond their inputs and outputs do not have an equivalent to a global (or stratum-specific) prohibition of a certain phenomenon in the grammar.

Nevertheless, many recent analyses of hypocoristics prefer to use a classic OT architecture with additional machinery such as Output-Output constraints (Martínez Paricio & Torres-Tamarit, 2019) to account for the various patterns of hypocoristic data. I argue that such approaches are either incomplete or tacitly admit the necessity of derivation in OT.

Consequently, then, for a stratal approach, each process in (1) can be accommodated within a single phonological grammar but is localised to distinct strata. I argue, therefore, that rightmost elision (or apocope) is a stem-level process of HF in Chilean Spanish. During the computation, the optimal stem-level candidate is aligned with the leftmost segment of the input, and contains a disyllabic foot which constitutes the hypocoristic. Any remaining input material is discarded, while the segmental processes described above, e.g., palatalisation, also apply. The tableau for the stem-level computation of HF is shown in (2). The constraints active at this level either freely apply to the entire stratum, e.g., CONTIGUITY(IO) and MAX(IO), or are indexed to hypocoristics: *CJ$_{HC}$ militates against obstruent-glide sequences in unstressed syllables while #_S$_{HC}$ does so against hypocoristic-final [s]'s. TROCH$_{HC}$ ensures that the template for a hypocoristic is disyllabic.

2)

edward-o	*CJ$_{HC[-STRESS]}$	*#_S$_{HC}$	ANCHOR-L	TROCH$_{HC}$	CONT(IO)	MAX(IO)
a. (wár.do)			*!			**
b. (é.dwa)	*!					***
c. → (é.du)						****
d. (é.da)					*!	****
e. (wá.do)			*!		*	***

In (2), the input to GEN at the stem-level is a string of segments including gender desinences, from which a series of candidates are outputted: these include prosodification up to the level of the foot. Candidates (a) and (e) are both misaligned, as the leftmost segment in the foot is not the leftmost segment in the input, and as such they incur fatal violations of ANCHOR-L. Candidate (b) has an obstruent-glide sequence in an unstressed syllable, incurring a fatal violation of superordinate *CJ$_{HC}$, while candidate (d) violates CONTIGUITY for the medial deletion of the glide /w/. Therefore, candidate (c) is found optimal.

I further show that leftmost elision (or aphaeresis) is best considered a word-level process of HF. Here the full proper noun is syllabified and prosodified at the stem level, and so the input to GEN at the word level already contains foot structure and has undergone primary stress assignment. The computation at the word level can then reference this prosodic structure. The word-level grammar therefore requires that a well-formed output has its left edge aligned with the left foot boundary present in the input, resulting in a disyllabic hypocoristic, in addition to the segmental repairs specified for the stem-level.

3)

ig(ná.sjo)	*CJ$_{HC[-STRESS]}$	*#_S$_{HC}$	ANCHOR-Σ	TROCH$_{HC}$	CONT(IO)	MAX(IO)
a. (íg.na)			*!			**
b. (ná.sjo)	*!					**
c. (nás)				*!		****
d. (ná.so)					*!	***
e. → (ná.t͡ʃo)						**

In (3), the input has therefore been prosodified up to the foot level. The ANCHORING constraint active at the word-level aligns the feet in the candidates with the left foot boundary in the input. Accordingly, candidate (a) is eliminated for failing to undergo this alignment. Candidate (b) is a fully-faithful candidate, but violates the markedness constraint *CJ$_{HC}$ as it contains an obstruent-glide in its unstressed syllable. Candidate (c) violates the trochaic foot template and so incurs a violation of TROCH$_{HC}$; and finally, candidate (d) shows medial deletion, thus violating CONTIGUITY. This leaves candidate (e), which repairs the obstruent-glide sequence through palatalisation, as the optimal candidate.

In summary, this analysis unifies two distinct patterns of HF in one phonological grammar through the inclusion of the derivation in a constraint-based architecture.

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Laurentian French *j's*-assimilation

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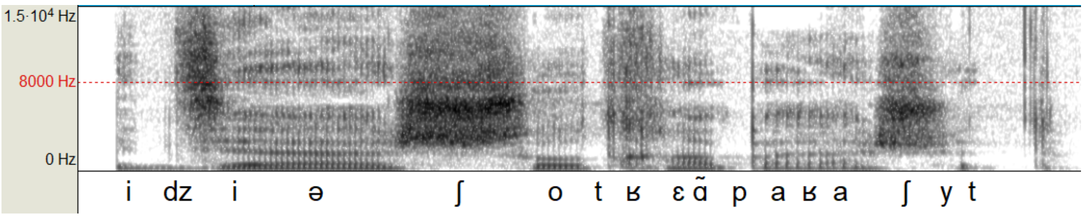
Goal. In this presentation I document and analyse a phonological alternation in Laurentian French, the variety of French spoken along the St-Lawrence in Canada in the provinces of Quebec and Ontario. This alternation consists in the productive assimilation of /ʒs/ into [ʃʃ], in the sequence orthographically represented *j's*.

Background. In standard French, the first person pronoun *je* [ʒə] surfaces as *j'* [ʒ] before vowels. In many varieties including Laurentian French this elision of schwa can also happen before most consonantal contexts (in line with the fact that most schwas of Standard French can be ellided, see Dell 1973). When this schwa is absent, *j'* obligatorily assimilates in voicing to the following consonant and will therefore surface as [ʃ] before voiceless segments (Walker, 1984, p.36-37), in line with the general pattern of regressive voicing assimilation in obstruent clusters (Côté, 2012, p.254). This is also true before fricatives, producing tautosyllabic sequences of fricatives, including a tautosyllabic geminate in the case of *je* + /ʃ/ > [ʃʃ] (Fortin, 2007, p.61). Additionally, with the verbs *être* 'to be' and *savoir* 'to know' there is frequent but not obligatory assimilation of the verb-initial /s/ to [ʃ]. This is common enough both in Quebec and in Europe that there exist informal conventional spellings for these forms: *chu(i)* < *je suis* 'I am' and *(j')ché* < *je sais* 'I know' (Wachs & Weber, 2011).

Novel contribution All previous discussions of Laurentian French only mention [ʃʃ]</ʒs/ forms derived from *être* and *savoir* (e.g. Walker 1984, p.37; Lappin 1982, p.100; Léard 1990, p.287). In reality this assimilation is productive and can be found in naturalistic contexts with a variety of verbs (1). The spectrogram in (2) illustrates the pattern with the passage "il dit, euh, j'sauterais en parachute" (he says, uh, I would jump with a parachute) taken from a podcast interview with artist and politician Catherine Dorion (`https://www.youtube.com/watch?v=WGXHlXEHTpA&t=3558`). The first goal of this presentation will be to document this broader assimilation with naturalistic examples found in interviews and stand-up comedy.

(1) a. [ʃʃɔʁ] < *je sors* 'I exit'   c. [ʃʃuʁi] < *je souris* 'I smile'
    b. [ʃʃɑ̃] < *je sens* 'I feel'   d. [ʃʃɛɲ] < *je saigne* 'I bleed'

(2)


(3) a. [ʃʃɔʁti] < *je suis sorti* 'I have exited, come out'
    b. [ʃʃyʁ] < *je suis sûr* 'I am certain'
    c. [ʃʃypɛʁ] < *je suis super* 'I am super/very'

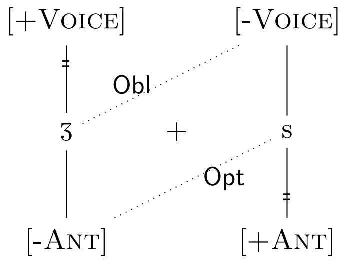
This phenomenon is highly non-standard and thus, as observed by Labov (1969) it is difficult to ellicit clear judgements as speakers invariably report acceptability biased toward the more standard version. It is also rare, in part because it is optional, but also largely because of the rarity of its environment. I was unable to find a single example of this phenomenon —nor its non-application— with any other verb than *être* and *savoir* in the Quebec interviews of the PFC public database (`https://public.projet-pfc.net/`). It is therefore very difficult to quantify. This is reminiscent of Lappin (1982) who was unable to report statistics on 'surface reductions', the term under which she classifies *chui* and *ché*, for lack of examples found in her corpus (p.101 fn. 2).

Niebuhr et al. (2011)

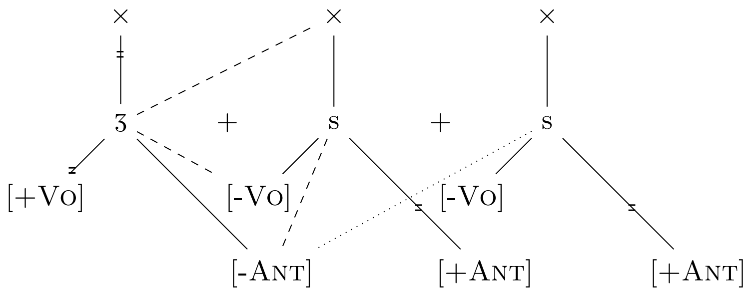
Importance as a change in progress This process is interesting as a change in progress. Although multiple examples of lexical diffusion have been described in the literature, they have mostly consisted of diffusion of changes to lexical forms. *J's*-assimilation in contrast is the unambiguous diffusion of a productive phonological alternation, as the verbs involved variably surface with [ʃ] after *j'*, but alternate with [s] in all other contexts. It is also interesting for being a confirmatory instance of the 'snowball' effect in the sense of Wang (1969) and Ogura & Wang (1996). The pattern has affected very frequent verbs for a long time and is in the process of 'snowballing' to all /s/-initial verbs.

Formal analysis. This process is also formally interesting, first due to its two-way assimilation which requires something like (4). But also because the examples in (3) involving coalescence and assimilation in /ʒss/ sequences prove more challenging. I will argue for an analysis which corroborates the proposal of de Haas (1987) in which coalescence involves attachment both subsegmentally with features and suprasegmentally (5), needed to account for the ability of the posteriority of /ʒ/ to get all the way to the final /s/ without having the anteriority of the intermediate /s/ in the way.

(4)



(5)



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Session parallèle B

A constraint-based modelling for developmental paths in the acquisition of European Portuguese /l/-final plural forms

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Background: The interwoven relationship between morphology and phonology has been long addressed in formal linguistic analysis, while still little is known on how this interaction is acquired in childhood (Fikkert & Freitas 2006; Kerkhoff 2007). In an attempt to tackle this issue, Freitas and Afonso (2017) observed that the acquisition of irregular plural morphology by Portuguese children is constrained by the quality of the stem-final vowel. In particular, the plurals of words ending with /il/ is produced less accurately than the plurals of words with other final vowels (/al/, /ɛl/, /ɔl/ and /ul/). Freitas and Afonso speculated that the attested acquisition order is an instantiation of phonological complexity: the formation of plurals of /il/-final words activates two phonological rules, namely /l/-glidization and merger between [j] and [i] driven by OCP (e.g. e.g. /funi**l** + s/ → /funi**j** + s/ → [funiʃ]), while the pluralization of other /l/-final words only requires /l/-glidization (e.g. /anima**l** + s/ → [ɐ.ni.ˈma**j**ʃ]). However, there is still an on-going debate on the concept of phonological complexity and it is even less clear whether it can be measured by the number of rules involved in computation.

Current study: We present a constraint-based modelling of how Portuguese children acquire the irregular plurals of /l/-final words and thereby argue that the stem-final vowel effect emerges in the course of phonological development, without resorting to phonological complexity. The simulation was performed with ranked constraints of Stochastic OT (Boersma 1998) using their associated error-driven Gradual Learning Algorithm (GLA; Boersma & Hayes 2001). We first built the initial grammar (tableau 1 and 2) which yields the most prevalent repair form employed by Portuguese children before target-like production, i.e. retaining the singular form as a whole and inserting a schwa between t the final lateral and the plural suffix /s/ (e.g. /anima**l** + **s**/ → [ɐ.ni.ˈma**liʃ**]). The initial grammar was then translated into a format that is suitable for simulation in Praat (Boersma & Weenink 2022), namely, by assigning values and plasticity to the constraints, shown in (3). The virtual learner was fed with target surface forms produced by adults (e.g. [ɐ.ni.ˈmaiʃ]), and also with the same amount of underlying forms /animal+s/ for her own grammar to generate some learner's forms. In total the learner received 2800 pairs of underlying and adult surface forms (560 pairs for each vowel × 5 stem-final vowel). Each time when the adult surface form and the learner's own production differ, the GLA will be triggered, raising the values of constraints that disfavour the learner's own output (incorrect form) and, at the same time, lowering the values of constraints that penalise the adult form (correct form).

Results & Discussion: The stimulated course of learning is depicted in Figure 1. As pointed by the upward arrow, the faithfulness constraint DEP outranks IDENT, after the learner have received approximately 400 data. At this moment, a crucial change occurs, as the learner begins to produce /l/ ~ [j] alternation, which suffices for target realisation of all plurals of /l/-final words, except those ending with /il/ (tableau 4 and 5). The pluralisation of /il/-final words only becomes target-like after approximately 2000 data, when OCP outranks MAX (tableau 6 and 7). The results of our simulation show that the attested acquisition order as a function of stem-final vowel in Portuguese morpho-phonological acquisition (Freitas & Afonso 2017) may stem from the development of phonological grammar.

(1)

/animal + s/	*Coda cluster	MAX	IDENT	DEP	OCP
anima[ɫʃ]	*!				
anima[Øʃ]		*!			
anima[jʃ]			*!		
☞ anima[lɨʃ]				*	

(2)

/funil + s/	*Coda cluster	MAX	IDENT	DEP	OCP
funi[ɫʃ]	*!				
funi[Øʃ]		*!			
funi[jʃ]			*!		*
☞ funi[lɨʃ]				*	

(3)

Constraint	*ranking value*	*plasticity*
SYLL	100	0.1
MAX	100	0.1
IDENT	100	0.1
DEP	50	0.1
***[ij]**	50	0.1

(4)

	100	91.42	80.82	77.76	52.51
/animal + s/	*Coda cluster	MAX	DEP	IDENT	OCP
anima[ɫ]s	*!				
anima[Ø]s		*!			
anima[lɨ]s			*!		
☞ anima[j]s				*	

(5)

	100	91.42	80.82	77.76	52.51
/funil + s/	*Coda cluster	MAX	DEP	IDENT	OCP
funi[ɫ]s	*!				
funi[Ø]s		*!			
funi[lɨ]s			*!		
☞ funi[j]s				*	*

(6)

	100	87.73	86.17	83.42	78.85
/animal + s/	*Coda cluster	DEP	OCP	MAX	IDENT
anima[ɫ]s	*!				
anima[lɨ]s		*!			
anima[Ø]s				*!	
☞ anima[j]s					*

(7)

	100	87.73	86.17	83.42	78.85
/funil + s/	*Coda cluster	DEP	OCP	MAX	IDENT
funi[ɫ]s	*!				
funi[lɨ]s		*!			
funi[j]s			*!		*
☞ funi[Ø]s				*	

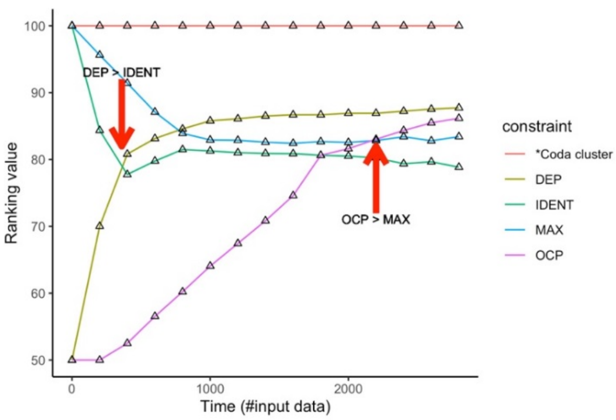

Figure 1 - The stimulated course of learning

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Adaptation au portugais européen du test de répétition de non-mots LITMUS-QU-NWR

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L'utilisation d'épreuves de répétition de non-mots est de plus en plus fréquente en clinique car elles permettent non seulement d'identifier un trouble du développement du langage (TDL) mais également, pour certaines d'entre elles, de neutraliser la variable bilinguisme (Schwob et al., 2021 ; Almeida et al., 2019). Parmi les épreuves de répétition de non-mots prenant en compte, lors de leur création, les contextes bilingues, la tâche dénommée LITMUS-QU-NWR (*Language Impairment Testing in a Multilingual Society - NonWord Repetition*) a pour objectif principal de cibler la phonologie de l'enfant. Cette tâche, qui bénéficie d'adaptations dans plusieurs langues, a montré son efficacité à distinguer des enfants à développement typique d'enfants ayant un TDL, qu'ils soient monolingues ou bilingues, et ce, en français, allemand ou dans le contexte libanais par exemple (Tuller et al., 2018 ; Abi-Aad et Atallah, 2020).

De manière générale, les tâches LITMUS-QU-NWR sont constituées de deux types d'items. Le premier type d'items est dit indépendant de la langue (LI). Ces items possèdent des phonèmes présents dans la majorité des langues du monde et respectent les contraintes phonotactiques de la plupart d'entre elles (Maddieson et al., 2011). Au niveau segmental, quatre consonnes sont présentes : [p], [k], [s] et [l]. Celles-ci permettent de contraster mode et lieu d'articulation. Seulement trois voyelles ont été retenues : [a], [i], [u]. Quant aux structures syllabiques possibles, il s'agit de structures de type CV, CVC# et CCV. Le deuxième type d'items est dit dépendant de la langue (LD). Ces items possèdent des caractéristiques phonotactiques qui sont spécifiques à certaines langues.

Dans cette étude, nous présentons le questionnement et les choix de certains paramètres phonologiques effectués lors d'une adaptation de l'outil LITMUS-QU-NWR au portugais européen (LITMUS-QU-NWR-PE) et de l'ajustement de cet outil à la suite d'une première étude pilote (Catarino et al., 2021). Pour cette adaptation, la fricative alvéolaire [s] a dû être remplacée par la fricative post-alvéolaire [ʃ], seule fricative à pouvoir occuper la position de coda en portugais (Mateus & Andrade, 2000). Pour la partie LD, trois caractéristiques phonotactiques du portugais européen ont été sélectionnées et incorporées :le [ʃ] en début de mot en position initiale de groupement consonantique (p.ex. [ʃkla]), le noyau complexe présent après un groupement consonantique et une attaque simple (p.ex. [klaw] ou [kiw]), et la coda interne (p.ex. [ˈfiʃkɐ] ou [ˈpiɫfu]). Comme le portugais possède un accent lexical, cette variable a également été prise en compte. Dans cette première adaptation, les items alternent ainsi un patron accentuel trochaïque et iambique selon les conditions suivantes : les items ayant le même format syllabique ont le même patron accentuel (p. ex. [piklɐˈflu] et [kuflɐˈpi] *vs* [fiˈkuplɐ] et [kuˈpiflɐ]). Afin de respecter les propriétés phonotactiques du portugais, seuls les items qui se terminent en [ɐ] et [u] peuvent être des trochées. Au total, 40% des items multisyllabiques ont reçu le patron accentuel trochaïque.

Lors de l'étude pilote, les données de 21 enfants monolingues portugais au développement typique, âgés entre cinq ans et huit mois et huit ans et trois mois ont été collectées. Les enfants ont été divisés en deux groupes. Le groupe 1, constitué de 9 enfants, regroupe ceux en âge préscolaire sans contact préalable avec ce type de tâche. Le groupe 2 regroupe 12 enfants scolarisés en deuxième année de primaire. Ces derniers sont familiarisés avec les tâches de répétition de non-mots. Leur taux de répétition correct a été de 53,4% et 75,1% respectivement (Catarino et al., 2021).

À partir des résultats observés chez les enfants portugais, une réflexion sur un ajustement de la tâche a été nécessaire avant un futur processus de réduction. Sur la base des résultats obtenus pour les structures sC, pour lesquelles le taux de répétition de notre échantillon est de 100%, ces structures ont été supprimées puisque non informatives. Afin de privilégier une complexité au niveau de l'attaque et de la coda et conserver une longueur de test raisonnable, nous avons supprimé la structure « noyau complexe ». Nous avons inclus la vibrante en position d'attaque branchante et en position de coda. Cet ajout est motivé par trois facteurs: (i) la plus grande représentativité de la vibrante dans ces structures par rapport à la latérale dans la langue cible; (ii) l'asymétrie attestée durant l'acquisition des deux liquides en portugais (les structures complexes avec vibrante étant acquises plus précocement que celles avec latérale; Ramalho & Freitas, 2018) et (iii) la possibilité que les enfants lusophones aient une interprétation phonologique différente de la séquence obstruante+laterale en début de syllabe (Veloso, 2006). Finalement, afin de nous rapprocher de la distribution accentuelle de la langue cible dans laquelle les trochées sont les formes les plus fréquentes (Mateus & Andrade, 2000), la proportion de trochées présents dans le test a été augmentée à 70%.

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A first approach on the phonology of Mirandese language: the neutral declaratives and interrogatives

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Introduction Mirandese is a minority and Romance language that belongs to the Asturleonese language family, which is the result of the evolution of vulgar Latin in Miranda do Douro [1]. With close to 5000 speakers [2], this asturleonese enclave in Portugal is currently spoken by a fraction of the population in Miranda do Douro, despite a centuries-old history. Mirandese is currently spoken by a relatively small and old community, which difficult the data collection. This paper describes nuclear contours in the neutral declaratives and interrogatives of two Mirandese varieties: the *Central* (central region of Miranda do Douro), and the *Raiano* (the frontier region). Our major goal aims to provide a phonological analysis of the Mirandese intonation. Our project is motivated for the inexistence phonologic description of the phonological grammar, despite the traditional phonetic approach [3]. This analysis presents a tonal inventory of the nuclear contours of neutral declaratives and interrogatives and its distribution across varieties.

Methods The analytical framework followed here is the Autosegmental Metrical approach [4]. The tones associated with the stressed syllable of words bearing prominence were annotated following the latest version of the P_ToBI [5]. For the transcription and annotation, we used the Praat software [6], that provides an acoustic display of *f*0, with time-aligned labelling fields. The data is a selection of 32 neutral declarative broad focus and information-seeking yes-no-questions (4 sentences x 2 randomizations x 2 speakers x 2 varieties). The utterances were elicited via Discourse Completion Task [7] once it is cross-linguistically compared in terms of methodology and theoretical approach. All the materials were collected in *loco*, and the audio files were segmented by utterance and labelled. Our participants are female native speakers, aged above 65 years old.

Results Drawing up a tonal inventory of nuclear contours, a cross-dialect variation is apparent. The exact distribution of nuclear contours is presented in Table 1. Considering the declaratives broad focus, we can notice that both dialects evidence a different nuclear pitch accent (NPA) and a cross-varietal difference in the intonational structure: a L* L% and a H+L* L% for the Central variety and a H+L* L% for the Frontier variety.

Nuclear contour / Variety	Declaratives		Interrogatives			
	L* L%	H+L* L%	H+L* L%	H+L* HL%	L*+H L%	L* HL%
Central	43%	57%	50%	-	50%	-
Raiano	-	100%	-	29%	-	71%

Table 1 Distribution of nuclear contours in declaratives and interrogatives of both Mirandese

In Bal de Mira (central variety), the NPA is composed by a low pitch accent associated to the nuclear syllable (L*; fig. 2). In Cérceno (Central variety), and Cicuiro and San Martino (Frontier varieties), neutral declaratives are produced with a falling pitch accent (H+L*; fig. 2). Whether a monotonal or a bitonal NPA, neutral declaratives end with a low boundary tone (L%).

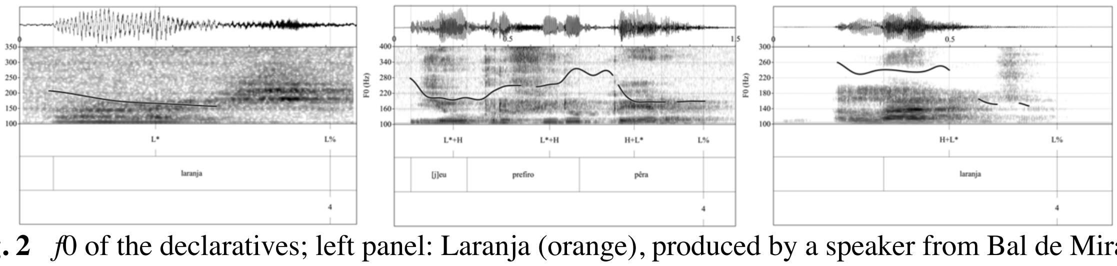

Fig. 2 *f*0 of the declaratives; left panel: Laranja (orange), produced by a speaker from Bal de Mira; middle panel: *Eu prefiro pêra* (I prefer pear), produced by a speaker from Cérceno; right panel: *Laranja* (orange), produced by a speaker from Cicuiro

Considering the yes-no question (y-n-q), both dialects evidence a different alignment the nuclear contours. A falling and a rising-falling contour in the Central varieties and a rising-falling and a falling-rising-falling contour in Frontier varieties (Fig. 3).

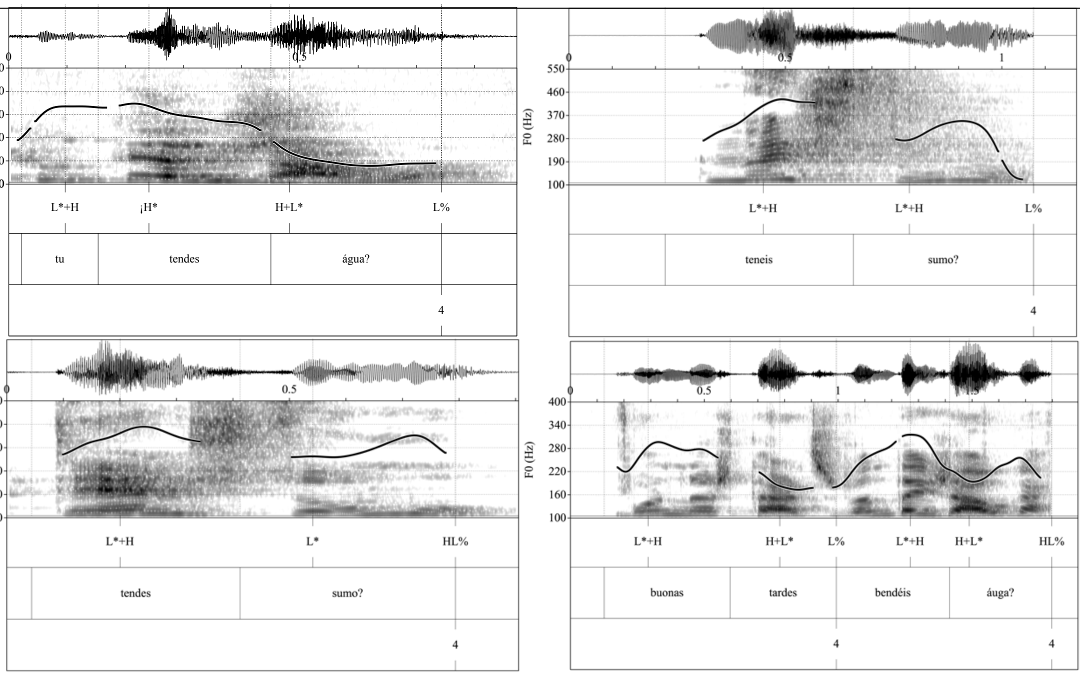

Fig. 3 *f*0 of the yes-no questions; upper left panel: *Tu tendes água?* (Do you have water?), produced by a speaker from Bal de Mira; upper right panel: *Teneis sumo?* (Do you have juice?), produced by a speaker from Cérceno; bottom left panel: *Tendes sumo?* (Do you have juice?), produced by a speaker from Cicuiro; bottom right panel: *Buonas tardes, bendéis áuga?* (Good afternoon, do you sell water?), produced by a speaker from San Martino

Conclusion Considering the nuclear contour, we observed that there are some differences across varieties. The analysis of declaratives shows a preference of falling contour (H+L*) and a low boundary tone (L%), but L* L% is also possible. For the yes-no questions, we can notice that there is a preference of a low boundary tone in the central varieties and a falling boundary tone in the frontier varieties. In the central varieties, we can notice a H+L* and a L*+H NPA, and in the frontier varieties L* and a H+L* NPA.

Final remarks Our phonological interpretation suggest a falling nuclear contour for the neutral declarative, which is denoted as unmarked in languages [8]. The yes-no questions show a great variability, which is also noted in languages [9,10]: (i) a preference of a rising-falling contour on frontier variety; (ii) in central variety, there is more variability: a falling contour, also found in asturleonese [11] and a rising-falling contour, which may be being influenced by the frontier variety. However, yet there is not still enough evidence to extract a solid conclusion. We need to collect more data to ensure our phonological interpretation of Mirandese, including the variety spoken in Sendim and the Portuguese variety spoken in Miranda do Douro to measure the influence of Portuguese in Mirandese varieties.

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Ejectivity in Omani Mehri: A gradual shift to dorsopharyngealization?

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Ejective stops exhibit acoustic characteristics that considerably vary both cross-linguistically and within a given language (e.g., Lindau, 1984; Kingston, 1985; Warner, 1996). This variability is often considered a consequence of the complex articulatory strategies involved in the production of ejective consonants (i.e., double glottal and oral closure with simultaneous larynx raising). In this study we consider language contact as yet another possible source of variability. We provide acoustic data from Mehri, a minority language in Oman, showing that ejectives are susceptible to cross-language influence. Omani Mehri belongs to the Modern South Arabian languages, a subgroup of the Semitic branch of the Afroasiatic family. Spoken by an estimated 50.800 speakers, it is considered by the UNESCO as *definitely endangered*, particularly threatened by the prestigious status of Arabic, the only official and national language of Oman. The variety of Mehri investigated in this study is spoken in Salalah, in the province of Dhofar. It is claimed to have plain [t, k] and their ejective counterparts [t', k'], alongside with a series of plain and ejective fricatives not considered here.

A large amount of variability has been reported in the realization of Mehri ejectives (Johnstone, 1975; Lonnet and Simeone-Senelle, 1997; Watson, 2012). This variability inevitably raised some debate as to whether the description of these segments as ejectives was, in fact, correct, and led some researchers to argue for a gradual sound change which switches from a contrast of ejectivity to a contrast of dorsopharyngealization (Lonnet, 1993; Watson and Bellem, 2010). Most of the reports on Mehri ejectives were limited to dialects spoken in Yemen. They also relied mostly on perception-based segmental transcription to capture the native speakers' productions.

For our study we recorded 7 male native Omani Mehri speakers. All the speakers were bilingual in Mehri and dialectal Arabic, as is common for native Mehri speakers; and they all learnt Standard Arabic at school. The data recorded consisted of 12 items contrasting ejective and pulmonic alveolar and velar stops in word-initial (/#—/), word-medial (V—V) and word-final (V—#) positions, yielding a total of 420 tokens (12 items×7 speakers×5 repetitions). Different durational and non-durational measurements that signal either ejectivity or dorsopharyngealization (or both) were examined. Non-durational measurements included relative intensity of the stop release, F0 of the following vowel, center of gravity of the burst, formant structure of the adjacent vowels, and the rise time of the following vowel. Temporal measurements included closure duration, VOT, and adjacent vowel duration. In addition, we also looked at phonation differences and measured H1-H2 (relative amplitude of the first two harmonics). The cues for the ejective/pulmonic distinction were defined as the set of parameters that showed a significant difference between the two categories. The relative importance of these cues was quantified by the calculation of D-prime values for each cue (Clayards, 2008), normalized to percent.

We find differences for some parameters when comparing Mehri plain and ejective consonants. These differences vary depending on place of articulation (alveolar vs velar) as well as on word position. Table 1 shows the acoustic parameters relevant for the t/t' distinction in intervocalic position, their means, the overall variance (sigma) and the cue weighting results with d-prime values and the relative weights (w_{rel}) in percent. The most prominent difference is reflected in formant structure of the following vowels: a substantial lowering of F2 and raising of F1 were observed in the context of ejectives. This is typical of the effect induced by dorsopharyngealizations in Arabic dialects (Yeou, 2001). Interestingly, while the effects on F1 and F2 of the following vowels were systematic and significant for alveolars in all word positions, they vary for velars (e.g., no significant difference in F2 for velars in word-medial position) (Fig. 1). Temporal parameters also allowed to distinguish the two series of stops, for example release duration was significantly shorter for ejectives. But again, this difference was observed for alveolars only (Fig. 2). Regarding the non-temporal cues, results show longer rise time (for velar ejectives in /—#/), higher center of gravity (for alveolar ejectives in /V—V/) and higher preceding vowel intensity (for velar ejectives in V—#). Significant differences in phonation were also found, with vowels following ejectives displaying lower H1-H2 value, suggesting a more creaky phonation. This difference was significant for velars but only in word final position. None of the cues measured displayed differences between plain and ejective alveolars in word-final position. The poor acoustic cues to ejectivity are a diagnostic either of the sound change that is currently in progress (unlike velars, alveolars are becoming dorsopharyngealized in word-initial and -medial positions), or of the ongoing neutralization of this laryngeal contrast (loss of the contrast for alveolars in word-final position).

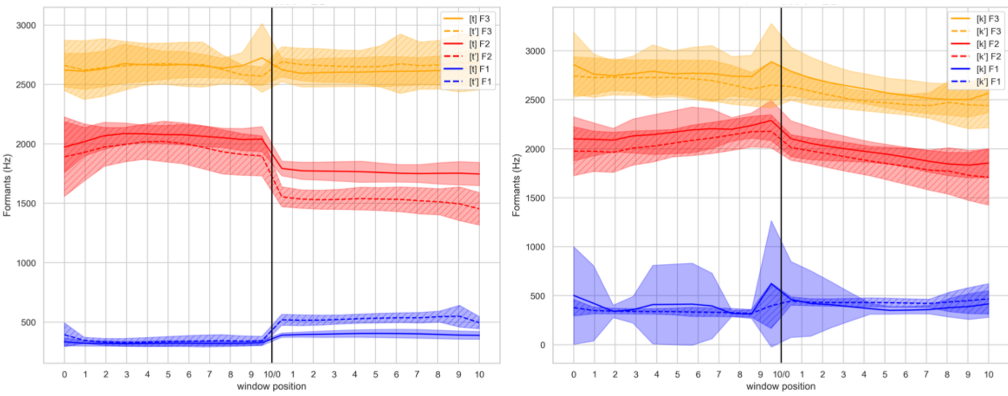

Figure 1. Formant structure of t/t' (left) and k/k' (right) in intervocalic position.

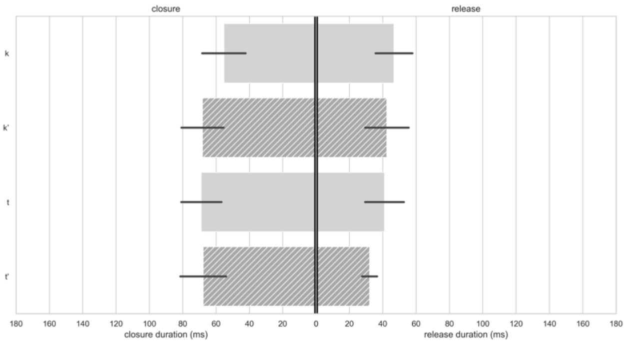

Figure 2. Closure and release duration differences between plain and ejective alveolar and velar stops.

Table 1. Cue weighting for t/t' contrast in /V_V/ context.

parameter	mean (plain)	mean (ejective)	sigma	d'	w_{rel}
release duration	41	32	10	0.87	13
COG release offset	478	871.0	333	1.18	18
F2 preceding vowel offset	2040	1899	154.0	0.92	14
F1 following vowel onset	390	519	72.0	1.78	27
F2 following vowel onset	1794	1555	139.0	1.72	27

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The rhythm in Catalan hexasyllables: personal style and grammar limitations

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A poet's choice of rhythmic patterns is affected by three factors: a universal set of metrical constraints, common to all languages; the metrical grammar and lexical structure of the poet's language; and the poet's style. To analyze how these three factors influence the frequency of different stress patterns in Catalan poetry, this paper focuses on the rhythmic structure of the hexasyllable verse in a corpus of Catalan ancient poetry (built on A. March's poems) and Catalan contemporary poetry (built on V. A. Estellés' poems). The former, containing 2,464 hexasyllables, is extracted from the second part of A. March decasyllables, which are structured as a line with a stress on the 4th and the 10th syllables; hence, as a sequence of 4 plus 6 syllables. The latter, containing 2,522 hexasyllables, is extracted from the two hemistichs of V. A. Estellés alexandrines in *Llibre de meravelles*, which are structured as 6 plus 6 syllables, with a stress on the last syllable of each hemistich. Our first goal is to show that the attested patterns are indeed grounded on general rhythmic constraints thoroughly attested in the literature, and that in both corpora the patterns that better satisfy these requirements are preferred and thus are more frequent (on this issue, see, e. g., Golston 1998). A second goal is to demonstrate that, beyond minor surface variations in the distribution of stress patterns due to the authors' particular style, there are similarities attributable to the structure of the language and the universal grammar.

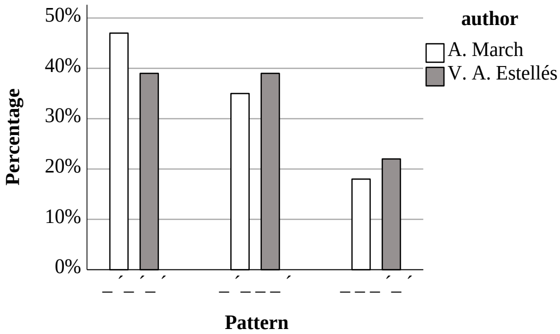
Hexasyllables in general, as well as those forming part of a decasyllable or an alexandrine verse, consist of six metrical syllables: the sixth syllable must be stressed and unstressed posttonic syllables after the sixth are considered to be extrametrical, as in the alexandrine "fé-ta - de - llúms - mo-dés-<tos> / i - de - mo-dés-tes - mú-<si-ques>". There are no special requirements regarding the accentual pattern of the syllables preceding the stressed sixth syllable: any combination of stressed and unstressed syllables would be in principle possible (32 combinations in all).

Results show, though, that there is a much more limited number of patterns, whose frequency mostly relates to the extent to which they satisfy the requirements of a set of metrical constraints; especially, *CLASH: 'No sequences of stressed syllables (´ ´)', and *LAPSE: 'No sequences of stressless syllables (– – –)'. Patterns without clashes and lapses and with a purely binary (– ´ – ´ – ´) or ternary (– – ´ – – ´) rhythm are the most frequent in both authors. While generally coinciding in the rank order of the different schemes, though, March displays a preference for having a binary structure at the level of the foot, with a sequence of three iambs: (– ´ – ´ – ´), whereas Estellés shows a preference for having a binary structure at the level of the hemistich, with two anapestic feet containing three syllables: (– – ´ – – ´). This is the only remarkable difference between both authors, and relates to a predominantly narrative style in Estellés. The selection of a looser metrical pattern enables him to use a larger portion of the vocabulary of the language, as promoted by the FIT principle ('Languages select meters in which their entire vocabularies are usable in the greatest variety of ways', Hanson & Kiparsky 1996: 294)

Patterns with unavoidable stress clashes, instead, are very rare in both corpora, especially at the edges of the line, because they give rise to the most ametrical structures. Sequences of more than two unstressed syllables (i.e., lapses) are instead more usual, because, since Catalan shows a vast array of polysyllable words, these patterns allow a larger portion of the vocabulary to fit in the line (following again the constraint FIT).

Finally, among patterns with the same number of clashes and lapses, those satisfying general eurhythmic constraints are preferred. For instance, besides the purely binary pattern (– ´ – ´ – ´), there are two binary-like patterns more: (– ´ – – – ´) and (– – – ´ – ´). These two models are considered binary because they can be repaired by adding a rhythmic stress in the middle of the sequence of three stressless syllables: (– – –) → (– ´ –). In terms of complexity, these two structures seem equivalent, since both contain a sequence of three unstressed syllables. However, the first one, with a longer unstressed span at the end, is favored by the LONGLAST principle (‘In a sequence of groups of unequal length, the longest member should go last’, Hayes/MacEachern 1998, 489) and is by far more common.

As said, the whole distribution of the patterns varies in an author-specific way, displaying a tendency to balance the two basic patterns, binary-like and ternary-like, in V. A. Estellés (1,137 vs 947) and a preference for binary-like patterns in A. March (1,507 vs 735). Within these two basic patterns, the frequency of the subpatterns is similar in the two examined corpora, as shown in the table with the three most common binary-like sequences (1,507 sequences in March and 1,137 in Estellés). Note, on the other hand, that the frequency ordering of the subpatterns in the Table is roughly the same for both authors, as defined by the universal constraints assessing their well-formedness (*LAPSE, violated by the last two patterns, and LONGLAST, violated just by the least common one). In our view, this double agreement stems from the fact that the two authors use the same language and must grapple with a lexicon that is more or less identical. As a result, similar percentages emerge out of the delicate balance struck between the expression of ideas and the search for the ideal binary or pure ternary rhythm. All told, therefore, the two poets reach similar solutions with equivalent frequencies, because their poetry exhibits the same metrical grammar.



In conclusion, since the formal suitability of the patterns is governed by universal constraints on metrical well-formedness that are shared by both authors, the rank order of the schemes by frequency practically always coincides in the two examined corpora. While there are many concurrences, we have also found that the proportion of binary and ternary patterns is determined by the authors’ style, with March exhibiting a slight inclination toward the iambic rhythm. That said, especially in the family of binary patterns, we find quite a similar distribution among the various schemes, even to the point that they are often statistically equivalent.

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8 Juin 2022

Session thématique : Atelier PhN3

A novel three-way prosodic contrast in Amuzgo word-initial NC sequences

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Cross-linguistically, nasal-plosive sequences (NC) reflect a diversity of phonological structures (Browman & Goldstein 1986, Herbert 1986, Maddieson 1989, Maddieson & Ladefoged 1993, Iverson & Salmons 1996, Downing 2005, Durvasula 2009, Riehl & Cohn 2011, Stanton 2017). They may be unary contour segments (prenasalized stops [^{n}d], postoralized nasals [n^{d}]), or bisegmental sequences of various prosodic configurations (tautosyllabic [nd] or heterosyllabic clusters [n.d], or syllabic nasals followed by a simple onset [n̩.d]). In this paper, we examine a three-way contrast in word-initial NC sequences in Amuzgo (Oto-Manguean; southern Mexico), as illustrated in (1) with data from the variety of San Pedro Amuzgos, Oaxaca (SPA; ISO-639 azg). We describe the phonetic nature of the contrast, assess its typological consequences, and discuss the syllable structures involved.

(1)	Word	Gloss	Phonological type	
a.	n^{d}ia^{H}	'clothes'	N^{C}	Post-oralized nasal
b.	n-dĩõ^{M}	'corral', pl.	NC	Nasal + obstruent cluster
c.	n̩-dũã^{M}	'wash', 3pl. fut.	N̩.C	Syllabic nasal + simple onset

Previous sources vary widely in their characterizations of the NC sequences (Bauernschmidt 1965: 476-480, Smith-Stark & Tapia García 1984: 208, Buck 2000, Herrera Zendejas 2009: 154, Buck 2018, Hernández 2019, Dobui 2021, Kim & Hernández 2021). To investigate the phonetic facts, we analyzed acoustic data from one male speaker (b. 1936) of SPA and one male speaker (b. 1960s) of the Xochistlahuaca, Guerrero variety (XA; ISO-639 amu); further data is currently being collected.

The results confirm that the three-way distinction is not just a morphophonological abstraction (cf. Ladefoged & Maddieson 1986), but is also robust on the phonetic level. Monosegmental N^{C} has a shorter overall duration than cluster NC. They have similar nasal durations, but NC has longer plosive duration (Figs. 1, 2). Meanwhile, in both varieties, the total durations of cluster NC and syllabic N̩.C are similar, but N̩.C has longer nasal duration (Figs. 2, 3). Consequently, syllabic N̩.C has a shorter plosive duration than cluster NC; we speculate that this may enhance the percept of nasal length.

Typologically, Amuzgo is the only language we know of with a three-way contrast in NC sequences, and it joins only a handful of other languages with a two-way contrast between monosegmental and bisegmental NC. Furthermore, due to allophonic voicing alternations before diphthongs and breathy-voiced nuclei (hV), the three-way contrast is available with both voiced and voiceless plosive phases. The examples in (2) show voiceless plosives, complementing the voiced plosives in (1).

(2)	Word	Gloss	Phonological type	
a.	n^{t}haʔ^{H}	'flower'	N^{C}	Post-oralized nasal
b.	n-ta^{L}	'wall', pl.	NC	Nasal + obstruent cluster
c.	n̩-t^{j}iʔ^{L}	'put in', 3pl. fut.	N̩.C	Syllabic nasal + simple onset

Amuzgo thus seems to be a strong counterexample to Riehl's (2008) and Riehl & Cohn's (2011) prediction that monosegmental and bisegmental NC of identical voicing can only contrast within a language that also makes a phonemic length distinction, which Amuzgo does not. However, we argue that Amuzgo can still be understood in the spirit of their proposal, which is that such contrasts must be supported by the language's prosody. Considering that the putative phonological categories are morphologically heterogeneous, we investigated whether there were durational differences between monomorphemic and plural-prefixed NC words. We found no notable differences (Fig. 3), and conclude that the various morphophonological sources converge on a limited number of phonological types which we argue to be independently attested in the language.

For Amuzgo, we propose that nasals participate in a broader syllabicity continuum that includes ‘minor’ syllables’ (Matisoff 1973, Thomas 1992) and extrasyllabic consonants (Vaux & Wolfe 2009) that have arisen through the diachronic compression of the Proto-Amuzgo-Mixtecan *CVCV couplet (Longacre & Millon 1961) into monosyllables. We view the diversification of syllable types as one of several strategies that have mediated between the need for contrast, and the structural constraints resulting from the tendency toward monosyllabification.

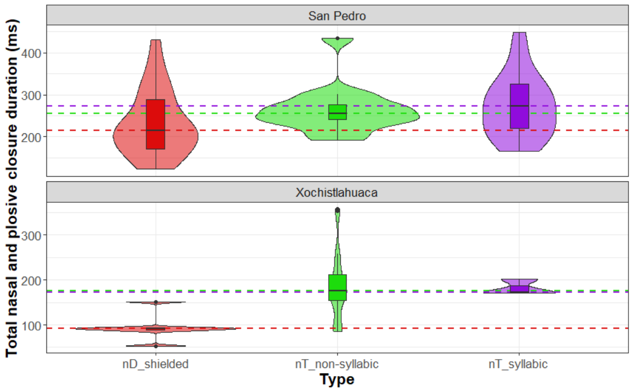

Fig. 1. Total durations of N^{C}, NC, N̩C with medians.

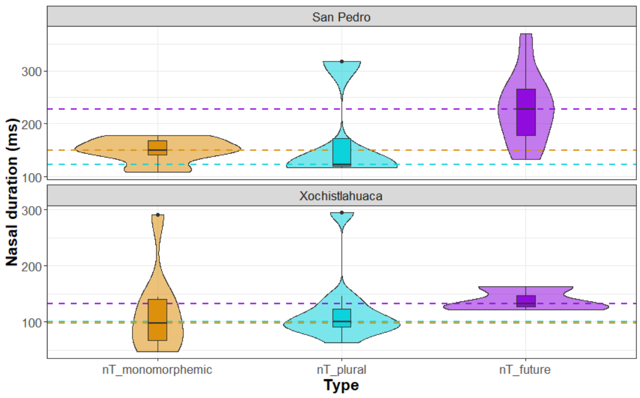

Fig. 2. Nasal durations across NC types with medians.

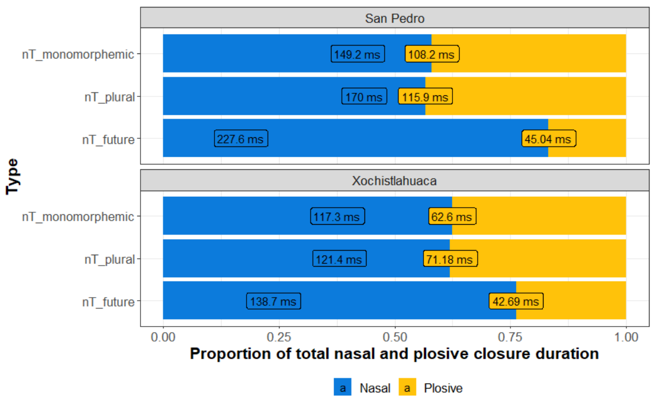

Fig. 3. Relative and raw mean component durations.

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Nasalization in Atchan: Sensitivity to morpheme identity

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Nasal harmony, a phonological pattern in which nasalization is transmitted at long distance, is found in languages around the world (Walker 2011). Systems of nasal harmony have been characterized in the literature based on whether both consonants and vowels undergo nasalization, as well as whether any segments are transparent to harmony. In this paper, however, I present the case of nasal harmony in Atchan [Kwa: Côte d'Ivoire], and demonstrate that it does not fit neatly into this categorization schema.

Nasalization in Atchan is unusual in that it is highly sensitive to morpheme identity. The domain of nasal spreading is dependent on the identity of the triggering morpheme. Only subject pronouns trigger the nasalization of following material: other morphemes with nasal vowels, like proper nouns or possessive pronouns, never do (1). Following some nasal morphemes, like the second person plural subject pronoun, the domain of nasal spreading is a single segment to the right (2). Following other morphemes, however, the domain of nasalization is much larger and involves the entire verb complex, including both auxiliaries and verbs (3). Following a nasal subject pronoun, progressive nasalization takes place: whether that nasalization applies locally or iteratively, however, depends on the identity of the trigger.

(1) akrã ɓa le ɓá
Akran FUT NEG come
'Akran will not come.'

(2) **ɔ̃́** **m**a le ɓá
2PL FUT NEG come
'You will not come.'

(3) **ã** **mã** **nɛ̃** **m**á
3SG FUT NEG come
'He will not come.'

Additionally, whether nasalization applies only to consonants, or to both consonants and vowels, is dependent on morpheme identity. Nasality is contrastive for vowels in Atchan, but not for consonants: nasal consonants are in complementary distribution with oral sonorants. The bilabial implosive alternates with [m], the lateral approximant with [n], and the labiovelar approximant with [ŋʷ]. When a verb follows a nasal subject pronoun, its initial consonant nasalizes, but the vowel remains oral. The vowel is pronounced as oral even when the following consonant is nasal (4). When an auxiliary, like FUT or NEG, follows a nasal subject pronoun, the consonant nasalizes as expected. However, the vowel also nasalizes when in between two nasal consonants (5-6). In the case of NEG, doing so involves a change in vowel quality: its underlying form is /le/ (cf. examples 1 and 2), but since mid and high +ATR vowels do not have nasal counterparts in Atchan, the vowel itself lowers to [ɛ̃].

(4) **ɛ̃́** **m**á ni
3SG.PFV come.PFV here
'He came here.'

(5) **ã** **mã** **m**á
3SG FUT come
'He will come.'

(6) **ɛ̃́** **nɛ̃́** **m**a
3SG.PFV FUT come
'He did not come.'

In constructions involving multiple verbs, we again see differences based on the identity of the triggering morpheme. Following a second person plural subject pronoun, nasalization is strictly local (8). If the initial segment is an obstruent, pre-nasalization results. After a third person singular subject pronoun, however, we observe what I term long-distance nasalization: the initial segment of each item within the verb complex nasalizes (9). The voiced obstruent [g] of the verb 'can' does not block nasalization of following consonants, and none of the vowels within the verbs nasalize.

(7) akrã gɛ lo wrɔ ndu
A. can go swim water
'Akran can go swim.'

(8) **ɔ̃́** **ŋ**gɛ lo wrɔ ndu
2PL can go swim water
'You can go swim.'

(9) **ã** **ŋ**gɛ **n**o **ŋʷ**rɔ ndu
3SG can go swim water
'He can go swim.'

The system of nasal harmony in Atchan involves several typologically rare features which are challenging for many accounts of nasal harmony. First, whether or not progressive nasalization occurs depends on the morphosyntactic features of the trigger: namely, harmony proceeds only if the trigger is a nasal subject pronoun. An analysis of harmony which involves autosegmental feature spreading (e.g. McCarthy 2011) fails to account for such a situation, since it would predict that all segments bearing the feature [nasal] would behave identically.

Second, the domain of nasalization is dependent on the identity of that triggering morpheme. Following a second person plural subject pronoun, nasalization spreads only one segment to the right. Following a first person or third person singular subject pronoun, however, each item in the auxiliary-verb complex is affected. Systems involving unbounded, or iterative, feature spreading are relatively common cross-linguistically, and have formed the basis for many frameworks in phonology: in such systems, a feature spreads and applies to all possible targets within a given domain (e.g. van der Hulst 1995). Recently, more attention has been paid to bounded spreading patterns, in which the spreading of a feature is limited in some way (e.g. Jurgec 2011, Kavitskaya & McCollum 2017). Such analyses, though, do not predict the coexistence of both iterative and non-iterative patterns involving the same feature within a single language: yet this is precisely what we find in Atchan.

Third, the effect of nasalization is dependent on the identity of the target morpheme. Both consonants and vowels within auxiliaries are susceptible to nasalization, while only consonants are affected within verbs. A mid or high +ATR vowel in an auxiliary will show a change in vowel quality in a nasalization context, but we never see an instance of such a change in a verb. It is not the case that these differences in nasalization can be attributed purely to the phonology: for instance, the auxiliary FUT and the verb 'come' share an identical underlying representation /ɓá/, but diverge in their behavior in nasal harmony contexts (cf. examples 4 and 5).

This data supports a view in which the presence of a certain morpheme triggers a particular constraint reranking or reweighting. In the case of Atchan, this results in the application of harmony across distinct amounts of material, with effects beyond the word level. In this paper, I propose that the difference in domains of nasalization is best accounted for using Cophonologies by Phase (Sande et al. 2020), a framework of the phonology-syntax interface in which particular morphemes can trigger specific operations at syntactic boundaries. This work contributes to the current discussion of iterative and non-iterative harmony: prior literature (e.g. Kaplan 2008) has argued that non-iterative harmony is epiphenomenal, and can instead be derived from independent phonological constraint interactions. In this work, though, I demonstrate that the source of apparent non-iterativity in nasal harmony in Atchan must be the identity of the triggering morpheme, necessitating an approach with makes reference to morphosyntactic features as well as phonological ones. Drawing on an ongoing collaboration with native speakers of Atchan, I investigate the morpheme specificity of nasalization patterns in the language and conclude that the surface realization of this phonological process is deeply tied to morphosyntactic features of both the trigger and target.

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A Diachronic Path for Non-Assimilatory Initial Nasalization in Lakes Plain

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The aim is to introduce a perhaps unique sound change *non-assimilatory initial nasalization* and propose its diachronic path (a) putting it in a theoretical context and (b) explaining its rarity.

East Tariku (ET) is a sub-group of the Lakes Plain language family spoken on the bird's head peninsula of the island of Papua. Proto-Lakes Plain is reconstructed without phonemic nasality (ibid:138): *p, *t, *k, *b, *d, *(w), *(j). Languages in the ET sub-group are nearly unique in not having any nasal segments, even allophonically (Clouse 1997:138). Elsewhere in the Lakes Plain language family, we do find phonetic nasality, however, in none of these languages is nasality phonemically contrastive. In the Lakes Plain languages that do have allophonic nasality, we see a vanishingly rare diachronic development named *non-assimilatory initial nasalization.* Voiced stops spontaneously (for non-assimilatory reasons) become nasal sonorants in initial position. According to the *Index Diachronica* database of sound changes, this change appears to be vanishingly rare/perhaps unique to this language family (West Tariku languages are named by their initials):

(1)	Saponi	*#d > #n	West Tariku	*#ba > #ma
	Awera	*#d > #n	Ki Fa Fy Se	*#da > #na
			Ki Fy Se Ta De	*#b > #b/^{m}b
			Ki Fy Ta	*#d > #d/^{n}d

Using a Substance Free interpretation of Dresher's Contrastivity Hierarchy (using Element Theory), it will be shown that voice/nasality is actually one of only two (or three) contrasts present in the consonantal inventories of the whole language family. Sometimes this is expressed as voicing and sometimes as phonetic nasality (cf. Ploch 1999, Botma 2004).

The path that leads to this change proceeds in two-steps. Firstly, there is a stage of prenasalisation that presumably occurs due to cue enhancement (Stevens & Keyser 1989; Hall 2011) and to reinforce voicing (Stampe 1979). Secondly, there is a stage of initial weakening, which is areally common. This second step, the loss of initial occlusion, leads to the word-initial sonorisation of prenasalised stops producing initial nasal sonorants: #d > #nd > #n. Traces of both these steps can be found in individual languages of this group.

(2) Kirikiri (Clouse 1997:149)
p → ɸ/h ti → s / _V (inc. initially)
b, d → b/^{m}b, d/^{n}d OR b, d → m, n / #_a

The rarity of the initial weakening contributes most to the rarity of the whole phenomenon.

The theoretical implications of this process is twofold. Firstly, from a diachronic perspective, since the pathway proposed is a two-step process, it means that a one-step *non-assimilatory initial nasalization (from stops to nasals)* is still in the class of unattested processes (see Honeybone 2016). Secondly, from a theoretical perspective, the unification of voicing and nasality is easy to achieve in ET, since it avoids universal articulatorily grounded features of *SPE* (Chomsky & Halle 1968) or the deterministic phonetics/phonology mappings of Concordia *Substance Free Phonology* (Volenec & Reiss 2020). The situation in Lakes Plain is a good demonstration of ET's core principle of isomeric contrast (AB)/((AB)A)/((AB)B) and non-deterministic phonetic interpretation of phonological features (Harris & Lindsey 1995), Scheer (2019). It also points to the broader relationship between phonetic contrasts and phonological representations, where isomeric contrast can be used in place of positing spurious natural classes, as is encouraged in *Radical Substance Free Phonology* (Odden 2022). Phonologically identical combinations can be duplicated isomerically, purely to provide further phonetic contrasts for interpretation.

Session Poster

A morphosyntactic approach to domain construction in T3 tone sandhi in Mandarin Chinese

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Introduction: A pure morphosyntactic approach is feasible to deal with longer sequences with complex morphosyntactic structures in the domain construction of T3 Tone sandhi in Chinese Mandarin (marked TSMC as follows), which is considered to be challenging in the literature, e.g., Zhang (2014). The current approach instantiates the algorithm of TSMC directly operating on the syntactic surface structures as an external sandhi P1 rule in Kaisse (1985), and dispenses with the exceptional lexical domains (phonological words/cliticization, syntactic words and complex predicates) in the classical hybrid "lexical phonology-OT" model in Chen (2009).

Analysis: ***a. C-command***: C-command is the main parameter in the direct-syntax approach from Kaisse (1985) in domain construction of syntactic structures sensitive P1 postlexical rules including external sandhi rules, e.g., TSMC. Pak (2008) proposes two kinds of domain construction rules (i.e., phrase-left and head-left concatenation rule) to derive domains for postlexical (phrasal) rules, which is based on the pure c-command relations between adjacent morphological words. ***b. Compound words with transparent morphological structures***: The internal structures of compound words plays an important role in TSMC. In [$_{CP}$ gou [$_{VP}$ yao [$_{NP}$ wo]]] (*[$_{CP}$ dog [$_{VP}$ bite [$_{NP}$ me]]]*) and [$_{CP}$ gou [$_{VP}$ yao [$_{NP}$ nü-ren]]] (*[$_{CP}$ dog [$_{VP}$ bite [$_{NP}$ woman]]]*) (illustrated in example 7 in data table below), the only difference that leads to distinctive sandhi domains is the object noun with different morpheme quantity. Chen (2009) tackled this problem in a separate domain construction in lexical level prior to postlexical level, which brings some side effects of exceptional situations in lexical domains. Our approach shows that it is the c-command relations in the internal structures of compound words that plays a role, instead of the lexical boundary or the proximity of morphemes in the compound words. ***c. Cyclic effects with the competition between algorithms***: Kaisse (1985) reported the unusual cyclic application of TSMC as a postlexical rule, which she assumes to be a counterexample to the claim that postlexical rules are not cyclic in Kiparsky (1985), e.g., In [[$_{s}$ni zou][$_{s}$ hao]] ("*it is better you leave"*) and [$_{s}$ni [$_{vp}$ zou hao]] ("*you walk well"*), cyclic application accounts for the fact that the first two T3 undergo sandhi change in the former and only the second T3 in the latter. Our current approach shows it may result in the competition between the two algorithms in Pak (2008). The example above can be differentiated in c-command algorithm—P M n M n # (or P M n # P n) in the former and (P (M n) P c) in the latter (see below).

Algorithms: The TSMC applies from "left to right" in the domain constructed by ***both*** phrase-left concatenation rule (maked as M…P c): identifies pairs of M-words X, Y where (i) X is left-adjacent to Y, and (ii) X does not c-command Y, ***and*** head-left concatenation rule (maked as P…M n): identifies pairs of M-words X, Y where (i) X is left-adjacent to Y, and (ii) X c-commands Y (Pak 2008). A sandhi domain boundary is inserted after the ultimate morphological word which can comply with the current Concatenation algorithms. Once one sandhi domain is determined, the subsequent new concatenation process is continued from the next Morphological word. The algorithms launch the internal competition, e.g., In (P (M n) P c), TSMC applies in M…P c firstly, which occupies the lower position in the syntactic tree, afterwards TSMC applies in P…M n. We add the internal c-command relations in the incorporated compounding structures (Harley 2009) of "N-N" and "A-N" structures (between 2 and 4 morphemes) into the algorithm (maked as m…p $_{c}$ and p…m $_{n}$ referring to the algorithm below classical phrasal level). **Data:** We use the original data from Chen (2009) covering basic syntactic structures—(S)V(O), (S)V+clause, involving different cases with PP, "baP", "V+resultant V" structure, "modifier-noun" structure, and cliticization of prepositions, object pronouns and classifiers. Please see the data section in the next page. **Implications:** It is shown that the unusual cyclicity of TSMC as a postlexical rule reported in Kaisse (1985) is not limited to lexical level in Chen (2009), but may result in universal competition in c-command based algorithms of domain construction in Pak (2008). Additionally, the c-command relations of the "N-N" compounding structures and "modifier-noun" structures ("N-N" or "A-N") seem to be the key factor to construct the unified algorithm.

Key words: T3 tone sandhi; Chinese Mandarin; external sandhi rule; phonology-syntax interface; compounding structures

Data section: Part of the data and algorithms are listed below: From **1** to **5** are cases of exceptional lexical domains in Chen (2009), which can be integrated in the current algorithm. **6** and **7** are data of comparison between monomorphemic structures and "N-N" compounding structures with two and four morphemes. **8** is an example of a longer sequence with the clitic of object pronoun, which is also illustrated in syntactic tree with the algorithm route in Figure 1. (# is used to mark a sandhi boundary.)

Data from Chen (2009)	**Type**	**Algorithm**
1. [$_{VP}$ kao # [$_{NP}$ **xiao**[**ruge**]] (*[$_{VP}$ roast # [$_{NP}$ small[squads]]]*)	"Modifier-Noun"	1. √**ruge**(√*squads*) p m_n # 2. (M (p_c)m_n)*
2. [$_{VP}$[$_{PP}$[$_{NP}$ zhong-tong-fu] **li**] you]# *([$_{VP}$[$_{PP}$[$_{NP}$ president palace]inside] have]#)*	Preposition	p m_n m_n M_n M_n #
3. [mao $_{VP}$[$_{PP}$[**bi** # gou] xiao] (*[cat $_{VP}$[$_{PP}$[than # dog] small]*)	Preposition	P M n. # P c. M n.
4. [$_{VP}$ mai [$_{CIP}$ **dian** [jiu]]] # (*[$_{VP}$ buy [$_{CIP}$ some [wine]]] #*)	Classifier	M M c P c #
5. [$_{CP}$ gou [$_{VP1}$ **chao xing** # [$_{VP2}$ [$_{NP}$ Xiaomei]]]]] (*[$_{CP}$ dog [$_{VP1}$ barks wakes up # [$_{VP2}$ [$_{NP}$ Xiaomei]]]]]*)	"V+Resultative V"	(P (m $_{n.}$) p $_{c.}$) # p $_{c.}$ m $_{n.}$
6. a.[$_{CP}$ gou [$_{VP}$ yao [$_{NP}$ wo]]] # (*[$_{CP}$ dog [$_{VP}$ bite [$_{NP}$ me]]] #*) **b.**[$_{CP}$ gou [$_{VP}$ yao # [$_{NP}$ nü-ren]]] (*[$_{CP}$ dog [$_{VP}$ bite #[$_{NP}$ woman]]]*)	Monomorphemic vs Two-morpheme compounding	**a.** (P (M n) P c) **b.** P M n. # p $_{c.}$ m $_{n.}$
7. [[[zhan-lan]$_{N1}$guan$_{N2}$]zhang$_{N3}$] # *([[[exhibition]$_{N1}$hall$_{N2}$]director$_{N3}$] #)*	Four-morpheme compounding	p $m_{n.}$ $m_{n.}$ $m_{n.}$ #

8. [$_{NP}$ fang-dong]#[$_{NegP}$ bu[$_{VP}$ yun-xu [$_{IP}$[$_{NP}$ wo]#[$_{VP}$ $_{PRO}$yang[xiao-mao]]]]

[$_{NP}$ landlord]#[$_{NegP}$ not[$_{VP}$ allow [$_{IP}$[$_{NP}$ me]#[$_{VP}$ $_{PRO}$ keep [kitten]]]]

p m $_n$ # (M $_n$ (p $_c$)m $_n$ M $_n$) # (M $_c$ (p $_c$)m $_n$)

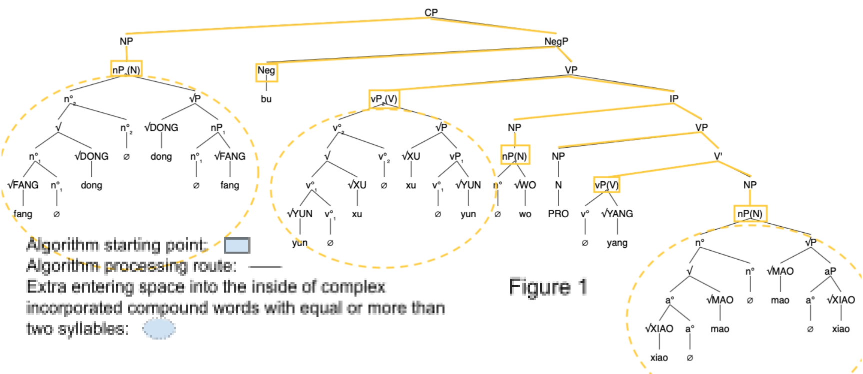

Figure 1

* *In complex "Modifier-Noun" structure (e.g., [A[N-N]], [A[A[N-N]]] or [N[N-N]]), we use the remuneration of roots (Shwayder 2015) to construct multiple steps of incorporation movements. Alternative consecutive incorporated structures are all ruled out in a test based on stress assignment and clash resolution in Shanghai Chinese. We suspect that this exception is due to the innate feature of incorporation construction from simple to complex "M-N" structures (e.g., consecutive incorporation movements in [A[N-N]] will move A to the adjunct position)*

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Epenthetic Vowels at the Phonology-Morphosyntax Interface in Mohawk

1. Epenthetic vowels (and stress assignment). Mohawk (Iroquoian, south-eastern Canada and north-eastern US) exhibits three epenthetic vowels which differ both in quality and function throughout individual words, as can be observed in 1) (underlined):

1a) *wakḗnyaks* /wak-nyak-s/ 1P-get.married-HAB 'I get married' (Rowicka 2001:112)

1b) *tehsaʔá:rarik* /te-hs-aʔar-rik-∅/ DU-2SG-curtains-put.together-IMP 'Put the curtains together' (Hajime 1995:63)

1c) *íktats* /k-tat-s/ 1P-offer-HAB 'I offer it' (Michelson 1989:45)

The example in 1a) shows epenthetic *-e-*, which is inserted to break up the illicit surface consonant sequence *[kny]. 1b) exhibits the 'stem-joiner' *-a-*, which is inserted to break up any inter-morphemic CC sequences within the verbal stem, i.e. the incorporated noun (if any), the verbal root and the derivational suffix.es. In 1c) insertion of prothetic *i-* is necessary to assign penultimate stress on the word. Furthermore, while *i-* always receives stress, *-e-* and *-a-* may only do so iff they are inserted in a triconsonantal cluster (1a)); otherwise stress becomes antepenultimate (1b)) (Rowicka 2001).

2. Morphosyntactic complementary distribution. Rawlins (2006) suggests that epenthesis targets different morphological domains within the word. In fact, it appears to be so (the epenthetic vowels are shown in the structures for ease of exposition):

2a) [$_{CP}$[$_{IP}$ *wak-e-* [$_{vP}$ *-nyak-* [$_{AspP}$ *-s*]]]]

2b) [$_{CP}$[$_{IP}$ te-hs- [$_{nP}$ -aʔar-*a*- [$_{vP}$ -rik- [$_{AspP}$ -Ø]]]]]

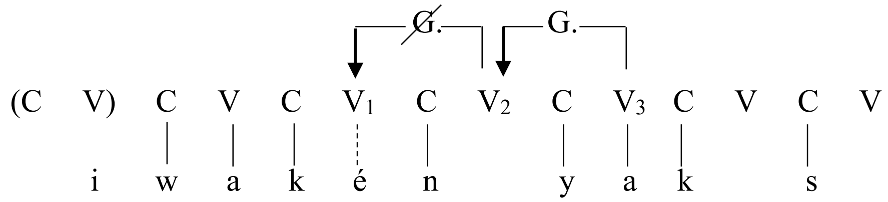
2c) *í-*[$_{CP}$[$_{IP}$ *-k-* [$_{vP}$ *-tat-* [$_{AspP}$ *-s*]]]]

The observation of the data leads to the following statements: *-a-*'s domain of insertion lies within the *v*P and at its left edge (2c), *i-* targets the outer left edge of the CP (2b), while *-e-* is operative everywhere else (within the CP yet outside of the *v*P) (2a).

3. Proposal. In order to account for the complementary distribution between these three vowels while dealing with their apparent distinct functions as well as their interaction with stress placement, I rely on several approaches: Direct Interface (Scheer 2012), Government Phonology (the strict-CV variant; Lowenstamm 1996, Scheer 2004) and cyclic spell-out (Chomsky 1998). I assume that epenthesis in Mohawk consists in a unified phenomenon occurring concomitantly with the spell-out (SO) of some phases (*v*P and CP) and their cyclic interpretation at PF:

4. Analysis. i) SO of *v*P: systematic *a*-epenthesis between inter-morphemic CC clusters; ii) SO of CP: insertion of a word-initial CV including a floating *i-*; iii) Linearization: *e*-epenthesis breaks up remaining illicit consonant clusters and Government relations may apply to calculate stress placement; if epenthetic *-e-* or *-a-* is penultimate but governed, it cannot receive stress and the latter must shift leftwards to the next filled V; if stress enters the domain of the initial CV, prothetic *i-* associates to the nucleus (only linearized structures are represented):

3a) Derivation of *wakḗnyaks* /wak-nyak-s/: i) SO of *v*P: /nyak-s/ (no *a*-epenthesis); ii) SO of CP: /i-wak-nyak-s/; iii) linearization:



V_1 is filled with epenthetic *-e-* to prevent the emergence of the illicit *[kn] cluster as well as the adjacency of two empty nuclei (V_1 and V_2). It moreover receives stress because it is in a penultimate filled nucleus (V_1) and it is ungoverned by V_2 (compare with *íseriht* (Hajime

1995:63) where epentjhetic *-e-* is penultimate yet in an open syllable (thus governed); prothesis is then required).

3b) Derivation of *tehsaʔá:rarik* /te-hs-aʔar-rik-Ø/: i) SO of *v*P: /aʔar-a-rik- Ø/ (*a*-epenthesis); ii) SO of CP: /i-te-hs-aʔar-a-rik-Ø/; iii) linearization:

											← G.				
(C	V)	C	V	C	V	C	V	C	V_1	C	V_2	C	V_3	C	V
		|	|	|		|	|	|	|	|	:	|	|	|	
	i	t	e	h		s	a	ʔ	á	r	a	r	i	k	

-a- is inserted in V_2 because /rr/ is an inter-morphemic sequence within *v*P. Yet it cannot receive stress because it is governed by V_3; stress then shifts leftwards and thus falls on lexically filled V_1.

3c) Derivation of *íktats* /k-tat-s/: i) SO of *v*P: /tat-s/ (no *a*-epenthesis); ii) SO of CP: /i-k-tat-s/; iii) linearization:

(C	V_1)	C	V_2	C	V	C	V	C	V
	:	|		|	|	|		|	
	í	k		t	a	t		s	

V_2 need not be filled since word-initial [kt] clusters are acceptable in Mohawk. If prothetic *i-* surfaces under V_1, it is then not for syllabification purposes but only to receive stress since no other filled nucleus precedes /a/.

5. Conclusion. The proposed analysis has two advantages. First, epenthesis in Mohawk may be interpreted as a unified process occurring along with cyclic SO: while insertion of underlying *-a-* and *i-* is tied to SO of *v*P and CP, *-e-* happens to be a surface segment which applies after linearization between illicit *CC clusters. Second, Government relations applying after linearization can entirely account for the interaction between stress placement and epenthesis.

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La nasale moraïque /N/ en position initiale dans les langues japoniques : phénomènes dialectaux et problématiques phonologiques

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La nasale uvulaire, traditionnellement notée /N/ par les phonologues japonais, est un phonème consonantique nasal de l'inventaire du japonais standard au statut particulier. Segment moraïque à lui seul, il ne se positionne jamais en initiale de mot en japonais standard, et est soumis à d'autres problématiques spécifiques (absence de resyllabation à l'initiale moraïque en position prévocalique (Labrune, 2006, p. 132‑ 134)... On tend donc à le ranger dans une catégorie d'unités phonologiques appelées « mores spécifiques ». Ce statut spécifique est parfois interprété par certains phonologues, comme Kubozono (2016), comme celui de mores secondaires, non-syllabiques, par opposition aux autres mores (de type (C)V) structurant de véritables syllabes. Ce postulat est sujet à de houleuses discussions tant la définition, et même l'existence de la syllabe japonaise reste à ce jour incertaine (Labrune, 2012).

La problématique des contraintes positionnelles du /N/, centrale afin de pouvoir positionner le phonème dans une analyse gabaritique et suprasegmentale de la chaîne parlée japonaise, est d'autant plus complexe que certains postulats empiriques de bases, comme la non-occurrence du /N/ en position initiale, est mise à mal par plusieurs variantes. On observe notamment ce phénomène au niveau dialectal dans 2 grandes aires du domaine japonique « métropolitain » : le nord de Tōhoku à l'est de Honshū (l'île principale de l'archipel japonais), le sud de Kyūshū, en particulier dans les dialectes de Kagoshima. Sans oublier les langues ryūkyū, formant leur propre branche au sein de la famille japonique, s'étant détachées des dialectes « métropolitains » bien avant les premières sources écrites du vieux japonais. Dans ces dialectes, on peut constater des mots commençant par une more nasale, dont la longueur varie du simple au double ; ces derniers sont liés pour la plupart à des évolutions relevant de l'assimilation phonologique, provoquant dans certains cas une transformation de voyelles en consonnes, de type /VC_nV/ → /NC_nV/, où C_n possède le trait [+ nasal], comme dans んまい /Nmai/ « sucré, goûtu », prononcé /umai/ ou encore /amai/ en japonais standard. On peut également citer le mot pour « cheval », うま /uma/, qui va correspondre à んま /Nma/ dans certains dialectes, voire en んーま /NNma/. Cette évolution, qui avait d'ores et déjà commencé en vieux japonais, semble s'être ancrée durablement dans la phonologie du japonais au fil du temps. Ce qui laisse à penser que la rétention de la voyelle initiale constituerait donc visiblement dans ces cas un « archaïsme » (Frellesvig, 2010, p. 38).

Après avoir clairement défini les contextes dialectaux mais aussi phonologiques et positionnels de ces occurrences en initiales de mots, nous nous pencherons sur les implications phonologiques de leurs réalisations. Ainsi, on pourra déterminer s'il s'agit d'une simple variation allophonique diatopique de certains phonèmes du japonais, où bien s'il est réellement pertinent de parler de changements de propriétés phonologiques de la nasale moraïque. D'autant plus que, du moins dans un certain nombre de dialectes du Tōhoku, cette présence de la nasale moraïque en initiale de mot survient conjointement avec la nasalisation de voyelles ou la pré-nasalisation consonantique. Il sera alors intéressant de mettre en parallèle ces divers phénomènes étant tous trois liés à la nasalité. Enfin, nous nous pencherons sur les implications de ce phénomène, les propriétés structurelles et gabaritiques de la nasale uvulaire, que ce soit sur sa qualité de more en elle-même, mais également sur sa place au sein d'une potentielle structure syllabique.

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Répartition pour le mot うま (uma) des zones avec (N) ou sans (V) consonantisation de la voyelle initiale ; carte n°201 de l’Atlas Linguistique du Japon (日本言語地図)

Present Subjunctive in Italian without polarity or class features: A phonological analysis

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Background and data: Authors (xxx) rendered the long-standing problem of class features in Italian nouns moot by showing that a fully phonological analysis could insightfully account for the phenomena that were previously ascribed to class features. The literature abounds in work analysing Italian nouns (and verbs) in inflectional classes, see a.o. Acquaviva (2009), Lampitelli (2010, 2017), Napoli & Vogel (1990), Passino (2009), Thornton (2001). In fact, class features are not independently required in Italian grammar, they have no phonological or other morphological application, and they are invisible to the syntax (Acquaviva 2008). Authors' (xxx) analysis begs the question about the verbal system, since Italian would seem to have three verbal inflectional classes: *cant-a-re 'sing-CL:1-INF', ved-e-re 'see-CL:2-INF', dorm-i-re 'sleep-CL:3-INF'*. These classes are differentiated in distinct paradigms, though classes 2 and 3 (*–ere* and *–ire*) only marginally so: *ved-e* 'see-CL:2-3.SG.PRES.IND' vs. *dorm-e* 'sleep-CL:2.3.SG.PRES.IND'. Nowhere is the use of verbal class features more apparently necessary than in the formation of the present subjunctive. Since here the construction of the PRES SUBJ is apparently allomorphic for verb-class, moreover it appears at least superficially to be some sort of class polarity: Class I → Class III, Class II & III → Class I. In (1), the set of data INF contains the infinitive forms of each class, whereas PRES.SUBJ presents the entire paradigms of the present subjunctive. Finally, the table highlights the polarity effect between the infinitive and the present subjunctive.

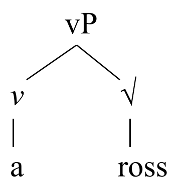
(1) Present Subjunctive

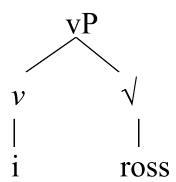
		Class I	**Class II**	**Class III**
INF		cant-a-re	ved-e-re	dorm-i-re
PRES SUBJ	1sg	cant-i	ved-a	dorm-a
	2sg	cant-i	ved-a	dorm-a
	3sg	cant-i	ved-a	dorm-a
	1pl	cant-iamo	ved-iamo	dorm-iamo
	2pl	cant-iate	ved-iate	dorm-iate
	3pl	cant-i-no	ved-a-no	dorm-a-no
INF > PRES.SUBJ		I → III	II → I	III → I
		a → i	e → a	i → a

Aim: Since nominal class features have been shown to be redundant (Authors xxx), we will question the need for verbal class features also. To do so, we will provide a fully phonological account of the derivation of the present subjunctive in Italian.

Counteranalysis: Extending Fabregas' (2017) account of Spanish theme-vowels into Italian, we propose that what are traditionally thought of as a verb with a suffixal theme vowel are, in fact, composed of a root and a light verb type predicate. This allows us to remove class-features in verbs as an explanation for the root + theme vowel pairings. In other words, whilst class features are diacritics, *v*'s are syntactically motivated. Their exponents, in turn, are derived in the phonology, as we show below. This has welcome consequences such removing the unnecessary polysemy of the root *rosso* 'red' for example: *rosso* 'red' (CL: I) *a-rross-a-re* 'to *redden' vs. rosso* (CL: III) *a-rross-i-re* 'to blush'. This opposition is shown in (2).

(2) a. *a-rross-a-re* 'to redden' **b. *a-rross-i-re* 'to blush'**





Assuming *Element Theory* in particular (Harris & Lindsey 1995; Backley 2011), there is a phonological observation to be made that Class II and Class III are a natural class defined by headed |I| (see 3, I-headed classes as opposed to A-headed class; the exponents of theme appear in the column 'Theme'). Italian has two contrastive front mid-vowels: /e/ vs. /ɛ/, both of which are an amalgam of |A| and |I| elements. Processes like unstressed vowel reduction show that the distinction is one based in headedness, with the open-mid vowels being |A|-headed, while the front close-mid vowel is |I|-headed. This renders it a natural class with /i/. The phonological characterisation of the subjunctive can therefore be analysed as a kind of derived polarity effect. We hypothesize that the subjunctive is exponed by both a headed |I| and headed |A| (column labelled 'PRES.SUBJ' in 3). If the light verb ('theme vowel') and the PRES.SUBJ have the same head, this is eliminated from the structure and the remaining element surfaces at the end of the derivation. This leads to the appearance of polarity (class-shift) between the 'theme' of the infinitive and the present subjunctive, as shown in the last column.

(3) The phonological derivation of the present subjunctive

Traditional Conjugation Class	**Polarity**	**Theme** {} = head	**PRES SUBJ**	**Derivation**	**'Class Shift'** **INF > PRES.SUBJ**
	A-headed				
1	I → III	({A})	{A} {I}	{I} ~~{A} {A}~~	a → i
	I-headed				
2	II → I	(A, {I})	{A} {I}	~~{I} {I}~~ A {A}	e → a
3	III → I	({I})		~~{I} {I}~~ {A}	i → a

In our account, theme is the syntactic head taking (lexical) roots as complements (as in 2); its phonological exponents are what are traditionally seen as class markers. The theoretical advantage of such a phonological analysis over a class-based one lays in the fact that the latter requires ad-hoc diacritics, whilst the former sees class as the phonological exponent of a syntactic head, *v*.

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Processing Nasality: Lexical Access or Phonological Inference

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Introduction: The ongoing debate on lexical effects in perception centers around the question of how lexical information is used during perception. Theories with an interactivist view argue for a top-down effect of lexical knowledge on earlier stages of processing (Cutler and Norris 1979; Elman and McClelland 1988; McClelland and Elman 1986; McClelland et al. 2006), whereas theories that oppose an interactive effect claim that lexical information is not necessary in prelexical processes involving acoustic signals and phoneme identification (Norris 1994; Norris and McQueen 2008; Norris et al. 2000). This research sets out to answer this question with two perceptual experiments. Specifically, it focuses on the perception of anticipatory nasalization, which has been argued to be dependent on the listener's knowledge of nasalization in the corresponding languages (Beddor and Krakow 1999; Lahiri and W. D. Marslen-Wilson 1992; Ohala and Ohala 1993; Ohala and Ohala 1991, 1992) and is sensitive to coarticulation patterns in the language (Fowler and Brown 2000; Krakow et al. 1988; Zellou 2017). The study provides cross-linguistic evidence that listeners rely on phonological inference in processing vowel nasalization in perception. Previous work on the perception of gradient phonetic information related to nasalisation either tacitly assumed without evidence that lexical representations are the source of the perception, or cannot address this question as the experiments typically involved only real words stimuli. For example, Beddor et al. (2018, 2013) used a visual eye-tracking paradigm to examine the perception of nasalization with all real word stimuli, thus introducing lexical effects into the experiment with an assumption that the perception of nasalization is mediated by lexical information. Lahiri and W. Marslen-Wilson (1991) and Lahiri and W. D. Marslen-Wilson (1992) claimed that the phonological processing of nasalization is contingent on the underspecified phonological presentation of lexical forms. Ohala and Ohala (1995) argued against such a claim by suggesting that it is not accurate to assume only underlying lexical representation plays a distinct role in speech perception, and phonetic cues in derived surface structures are sufficient in segment identification in perception. The current study intends to show that phoneme identification can be reached with phonological inference. Specifically, native listeners rely on phonological inference in processing nasality in nonce words, and lexical module is not necessary to understand the incremental perception observed in previous research.

Experimental Design: This study discusses two perceptual experiments in PsychoPy (Peirce et al. 2019) using the gating paradigm (Grosjean 1980) in Mandarin Chinese and in Mainstream American English (henceforth MAE) (Schneider et al. 2004). The first experiment was conducted with 11 native speakers of Mandarin. It included a forced choice lexical identification task with real words and a segment identification task with both real words and nonce words. The gated stimuli were constructed using a Praat script that spliced each vowel into equal parts from the onset to the offset of the vowel.n Participants were asked to choose between two options by pressing '1' and '0' on the keyboard upon hearing the gated segment. The second experiment, conducted with native speakers of MAE, consisted of two identical separate sessions (number of participants = 39 and 34 respectively) conducted roughly a week apart. The second experiment mirrored the forced choice segment identification task in the first experiment, and used gated nonce word segments in MAE as stimuli. the participants listened to gated segments consisting of nine pairs of nonce word in [əCVN] and [əCVC] sequences. They were told that they would hear a series of words and the final sounds of these words had been shortened in many cases. The objective of the participants was to guess the final sound of each nonce word and respond on the keyboard, indicating whether they heard a nasal or an oral segment with the same place of articulation,

~~e.g. ‘n’ v.s ‘d’. Participants responses were modeled in R using mixed-effects logistic regression models~~ (Baayen 2012; Baayen et al. 2008).

Results: In the first experiment, participants performed equally well in nasal identification for both real and nonce words, and were able to accurately identify oral and nasal segments early in the vowel. Real word identification shares the same pattern of incremental processing in the lexical identification task (Figure 1) as that in the segment identification task (Figure 2). The trend lines in both of tasks show the split between oral and nasal identification at the point of Gate 3. Compared to real words, the split in nasal identification is earlier for nonce words, which would be surprising if lexical information aided nasal identification. The analysis of nasal identification patterns in the second experiment found that there was a significant effect of the type of segment (nasal consonant [CVN] v.s. oral consonant [CVC]) on participant’s nasal responses from the very beginning. The pattern can also be seen with a visual inspection of the trend lines in Figure 3 and 4. In other words, participants were able to correctly infer the upcoming oral and nasal consonants based on a minimal amount of acoustic cues in nonce words, which obey the phonetic, prosodic, and phonotactic rules of the language but arguably do not have lexical representations. The results in both experiments showed that native listeners relied on phonological inference in processing nasality, which supports the hypothesis that fine-grained gradient activation of phonemic segments can be achieved without feedback from the lexicon, and native listeners are not identifying phonemes based on enriched lexical representations from memory.

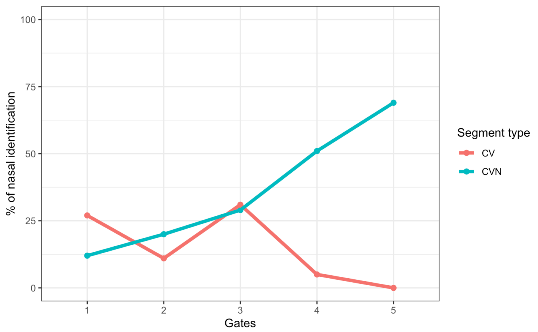

Figure 1. Exp. 1 Nasal identification rates for Mandarin real words in the lexical identification task

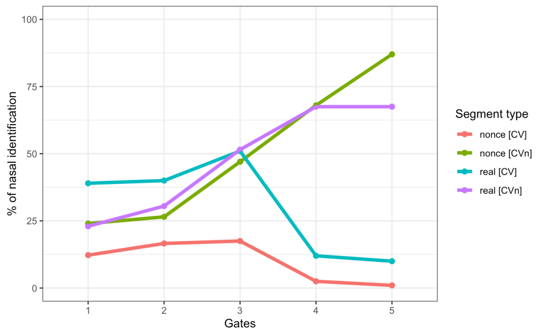

Figure 2. Exp. 1 Nasal identification rates for Mandarin real and nonce words in the segment identification task

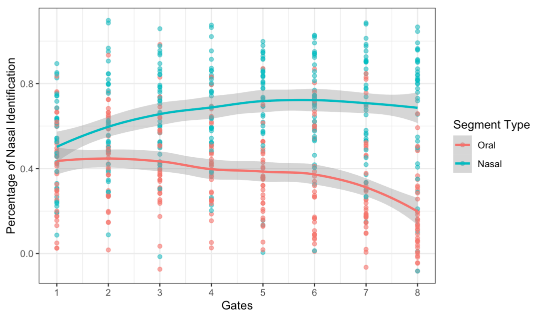

Figure 3. Exp. 2 Nasal identification rates for nasal and oral segments in MAE, Session 1

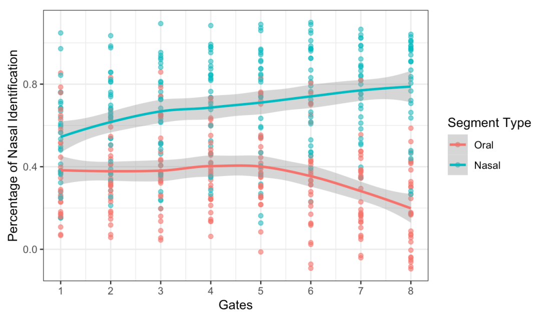

Figure 4. Exp. 2 Nasal identification rates for nasal and oral segments in MAE, Session 2

Implications: This study helps us gain a better understanding of the processing mechanism behind speech perception in general and the perception of vowel nasalization in particular. The pattern found in this research provides evidence that adds to the theoretical discussion on modularity in perception. The results imply that we can still get the same perceptual effect without having a lexical module interacting with pre-lexical perceptual representations in a feedback loop in perception. That is lexical module is not necessary to to understand the incremental perception observed in previous research. In addition, in line with recent recommendations (Mack 2019; Spruyt et al. 2004; Stemberger 1992) of the importance of replicability of phonological experiments, the results in the second experiment were directly replicated in a second session of the experiment, which thereby lends further credence to the results and the inference stemming from them.

Towards a typology of secondary articulations

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This study provides a typological overview of four major types of secondary articulations present in the languages of the world: labialization, palatalization, pharyngealization, and velarization. The first distribution analysis in ~ 317 languages was provided by Maddieson (1984). Other typological investigations of phoneme inventories (e.g., Gordon, 2016) did not address secondary articulations in more detail. Although large data on phoneme inventories are available today, it is still a fringe phenomenon in quantitative investigations. This study takes steps to fill this gap by investigating secondary articulations on a broader data basis using the PHOIBLE dataset (Moran & McCloy, 2019). We analyze token/type frequency patterns of these articulations, their dependencies and variability in terms of voicing, place and manner of articulation features.
The dataset constructed for this study consists of one randomly sampled phoneme inventory for each language according to the Glottocode (Hammarström et al., 2021) present in PHOIBLE. The study is thus based on 2177 phoneme inventories. The phonemes were grouped according to their secondary articulation, place of primary constriction, manner of articulation and voicing. Voicing and manner groupings were done based on the feature matrix provided in the dataset. The secondary articulations and places of articulation groups were built according to the respective IPA symbols in the standardized phoneme transcription (for the standardization see Moran, 2012).
We report here some results from a broader overview to more specific observations. About a quarter of the phoneme inventories in the dataset contains at least one secondary articulation (500/2177). Languages with one secondary articulation are the most common (399/500). 98 languages have two secondary articulations (e.g., Tamazight has both labialization and pharyngealization), and only three languages have three secondary articulations (Irish Gaelic, Abkhaz and Mfumte). Labialization is the most common, followed by palatalization; pharyngealization and velarization are the least distributed (Fig. 1). If a language has two secondary articulations it is highly likely to have labialization and palatalization (84% of the phoneme inventories). If a consonant has simultaneous double secondary articulations labialization is always one of the secondary articulations (e.g., /mʷˠ/ in Satawalese). Languages with simultaneous double secondary articulations are mostly found in Northwest Caucasian family, and exclusively in this family for simultaneous labialization and pharyngealization (as for /ɢʷˤ/ in Rutul, for e.g., see Beguš, 2020).
The set of consonants with a secondary articulation in a given language is always inferior or equal to the set of their plain counterparts (e.g., Fig. 2 for labialization in dorsals). A language is most likely to have secondary articulation in stops (85% of the languages with secondary articulation) and most unlikely in taps or trills (13 %) and affricates (11%). No such clear pattern emerges in terms of voicing, although there is a slight preference for palatalization, pharyngealization and velarization to target voiced consonants, while labialization is more often observed in voiceless consonants. The pattern in terms of place of articulation varies depending on the type of secondary articulation. When looking at the absolute and discretized distances between the primary and secondary place of articulation, it is observed that the highest phoneme variety clusters close to the secondary constriction for palatalization, while the highest phoneme variety for pharyngealization is found at a greater distance (Fig. 3). Because places of articulation are not evenly distributed in the phonemic inventories (coronals are more frequent), the results are reported with normalized data. They show that labialization is more often found with dorsals, while palatalization is more often found in coronals. Pharyngealization and velarization also preferentially target coronals. If a language has labialized dorsals, then around 60% of its plain dorsals are labialized, but if a language has labialized labials, only 10% of the plain labials are labialized. These and additional frequency patterns are analyzed to see how feature-based principles, namely Feature Economy and Marked Feature Avoidance, govern the shapes of phoneme inventories (e.g., Clements, 2009; Hall, 2011; Mielke, 2008), and to call attention to the importance of considering secondary articulations to test generalizations about cross-linguistic phoneme typology.

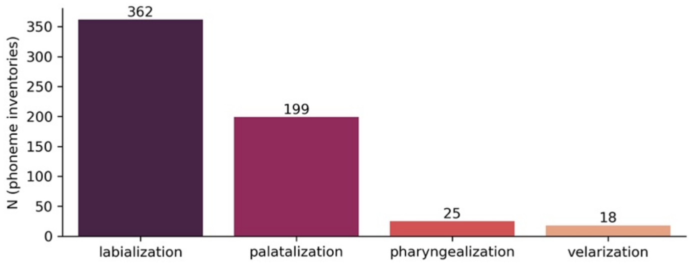

Figure 1: Number of phoneme inventories with secondary articulation. Languages with multiple secondary articulations count for each type.

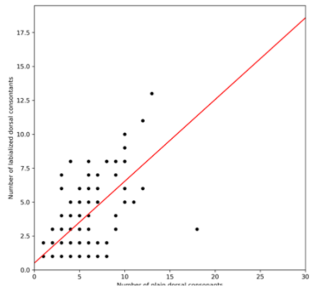

Figure 2: Number of labialized phonemes by the number of plain dorsal phonemes, along with the estimated regression line. One data point can correspond to more than one phoneme inventory.

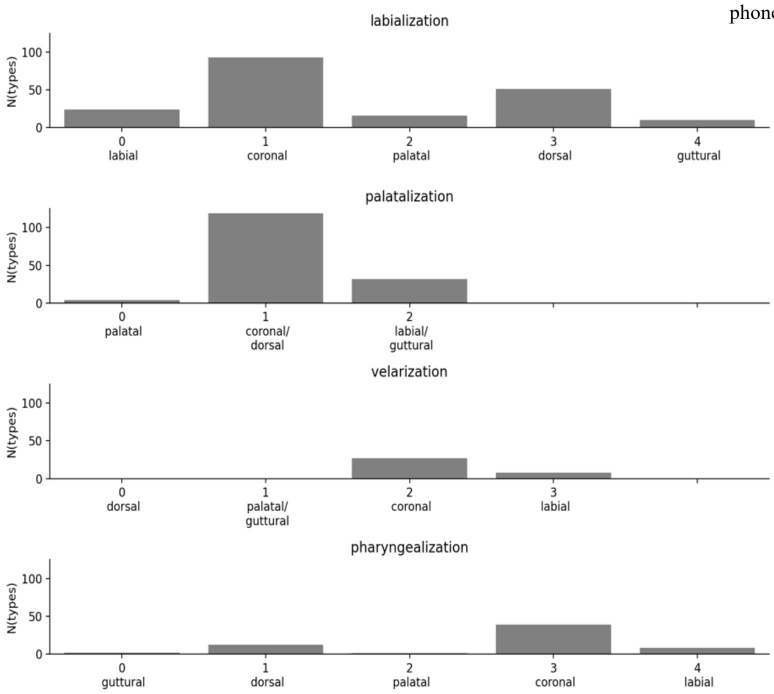

Figure 3: Number of phoneme types by absolute distance between the locations of secondary and primary constrictions. An index was assigned to each place (labial = 1, coronal = 2, palatal = 3, dorsal = 4, guttural = 5) and secondary articulation (labialization = 1, palatalization = 3, velarization = 4, pharyngealization = 5) to compute absolute distance. Labels on the x-axes indicate the places of the primary constriction according to their distance to the secondary constriction (e.g., |index(pharyngealization) – index(coronal)| = 3, |index(palatalization) - index(dorsal)| = 1 → coronal/dorsal). Note: these distances were not calculated on normalized data.

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Yer alternations and frequency effects

The process of vowel-zero alterations in Polish, also referred to as yers, has been debated widely in the phonological literature. One of the main analytic generative approaches of the process focuses on the role of the syllable structure in the realization of yers, and denies the difference between yers and full vowels (Gorecka, 1988; Czaykowska-Higgins, 1988; Jarosz, 2005; Rysling 2016 and others), whereas the second prominent approach assumes that yers differ from the full-vowels and should be marked as exceptional segments in the underlying representation (Gussmann, 1980; Rubach, 1986, 2016 and others). However, none of these approaches considers the possible variability of the process. Even though numerous words always display alternations in everyday language, e.g. *pies* 'dog' (nom. sg.) – *psa* (gen. sg.), Polish speakers sometimes use different forms of some words alternately, for example, words such as *karczma* ('inn' nom. sg.) can be inflected both as *karczem* or *karczm* in the genitive plural. The variability of this process is also visible in loanwords such as *falafel*, which manifest themselves in two possible genitive singular versions (*falafela* or *falafla*).

Owing to these problems, there is still no consensus reached on the nature of those alternations, that is, whether yers should be treated as exceptional underlying segments encoded within a word or if there exists a grammatical rule which results in vowel epenthesis in certain contexts. These analyses focus mainly on finding a unified account for the alternation process, ignoring the fact that there exists variability in the inflected forms in native speakers. Thus, it seems that trying to establish a solid, unified account without mentioning the discrepancy of native speakers' intuitions equals omitting an important aspect of the process itself: the variability and the ongoing change in the occurrence of the process in some contexts.

Regarding the problems with the generalization of yers and their representation, this paper proposes a different perspective that allows gradience and bases its productivity on the probabilistic premises: the usage-based theory (Pierrehumbert, 1999; Bybee 2001; Mańczak, 2011 and others). For this purpose, an experiment was conducted in order to investigate whether frequency has any impact on vowel-zero alternations in Polish.

In order to check whether the sonority influences the process of vowel-zero alternations in Polish, the nonce words were divided into four groups according to their final consonant cluster. The second factor taken into account while designing the experiment was the frequency of occurrence of given final clusters. The data was extracted from NKJP (Narodowy Korpus Języka Polskiego – 'The National Corpus of Polish') and cleared out of foreign words and abbreviations, so in total it consisted of around 220 million tokens. The experiment was built using Google Forms and was conducted online. It consisted of 58 examples, each containing 4 nouns to rate on the scale from 1 (very natural) to 5 (very unnatural). In total, the participants rated 232 items. 23 nouns were masculine, 30 feminine, and 5 neuter. 13,804 data points were collected from 119 participants. The statistical analysis of the data was performed with Cumulative Link Mixed Model fitted with the Laplace approximation from the original package (Christensen, 2018) for R (R Core Team, 2018). The statistical analysis of the data demonstrated that the frequency of occurrence of certain patterns influences the productivity of the yer alternations in Polish.

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Session parallèle

A new proposal for the tonal representation of phonological phrases in Northern Bizkaian Basque

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In Northern Bizkaian Basque (NBB) there is a lexical contrast between words that show prosodic prominence (known as 'accented words') and words that do not (known as 'unaccented words'). Word-level prosodic prominence is introduced by a lexical tone carried by specific morphemes and realized as a falling pitch movement. The local variety of NBB that has been studied in more detail is the one of Lekeitio, where the falling pitch movement in accented words is realized on a single syllable, the penultimate one (Hualde et al. 1994; Elordieta 1997, 1998, 2003, 2015; Jun & Elordieta 1997; Gussenhoven 2004; and Elordieta & Hualde 2014, among others). The pitch accent has been described as H*+L, that is, a rapid movement from a high pitch level to a low pitch level on a single syllable (Pierrehumbert 1980; Ladd 2008), and this pitch accent has been assumed for NBB in general.

However, this assumption is called into question by work on other local NBB varieties such as Gernika and Bermeo, where word-level prominence may be realized on a syllable further to the left from the right edge of the word. In words with two, three and four syllables following the accented syllable the pitch fall is not steep but gradual, and the L tone target may be realized as far right as the last syllable of the word. This is why Gandarias (2013) and Sastre (2021) suggest that the pitch accent in Gernika and Bermeo is H* rather than H*+L, and that the L tone may be a boundary tone. Gandarias (2013) suggests it could be a boundary tone of a prosodic word, but this cannot be right, as unaccented words do not show this boundary tone.

A second, independent argument in favor of a monotonal H* accent is that it fits better with Egurtzegi & Elordieta's (in press) reconstruction of the evolution of phrase- and word-level prominence in Basque. These authors argue that H* was the original pitch accent, and that a L boundary tone marked the right edge of a phonological phrase. Although no analysis is offered of how phonological phrases are created (it is not part of their goal), we can build on work by Elordieta (2015) and Elordieta & Selkirk (2018, in press) on the derivation of phonological phrases (φ) from syntactic structure in NBB. They argue that in NBB a φ in prosodic structure corresponds to any syntactic phrase containing an accent (i.e., a φ must contain a head which must be prosodically prominent through an accent).

Thus, we claim that in NBB a H* tone is associated to the head of a φ and that a $L_φ$ boundary tone is phonologically associated to the right edge of a φ, realized on the final syllable on the surface. The tonal composition of a φ in NBB is completed with the LH tonal sequence at the left edge (cf. references in the first paragraph), which we transcribe as $_φ$LH. Hence, we propose that the phonological tonal representation of a φ in NBB (including Lekeitio) is $_φ(_φ$LH H* $L_φ)_φ$. In (1a-b) we illustrate the phonological association of the tones of a φ (formed by an unaccented word and an accented word) with their respective anchors. (1a) would correspond to the varieties of Gernika or Bermeo, and (1b) would correspond to Lekeitio. Lexical H* associates with the accented syllable (marked with ′), and the $_φ$LH and $L_φ$ boundary tones associate with the left and right edges of φ, respectively. With Hualde (1983), we assume that in Lekeitio and in neighboring towns a diachronic innovation shifted the H* lexical tone to the penultimate syllable. We argue that this rightward shift of H* made the adjacent phonetic realization of H* and $L_φ$ ambiguous with a bitonal H*+L pitch accent, and that this surface realization is what lead the researchers mentioned in the first paragraph to assume that the tonal representation of φ's in NBB is $_φ(_φ$LH H*+L$)_φ$ rather than $_φ(_φ$LH H* $L_φ)_φ$. We propose the latter as a unified representation for all NBB varieties, one which is compatible with H and L phonetic realizations and with a historical reconstruction of accentuation in NBB.

(1) a. $_{\varphi}$LH H* L_{φ}

$_{\varphi}(_{\omega}$(lagunen)$_{\omega}$ $_{\omega}$(lengúsuekiñ)$_{\omega}$)$_{\varphi}$
friend-gen.sg. cousin-comit.pl.
'with the friend's cousins'

b. $_{\varphi}$LH H* L_{φ}

$_{\varphi}(_{\omega}$(lagunen)$_{\omega}$ $_{\omega}$(lengusuákiñ)$_{\omega}$)$_{\varphi}$
friend-gen.sg. cousin-comit.pl.
'with the friend's cousins'

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Occlusivisation post-sonante en kabyle
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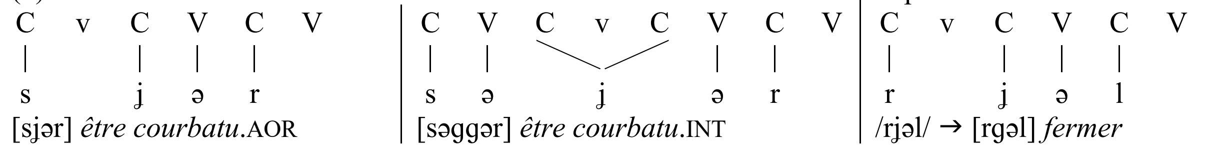
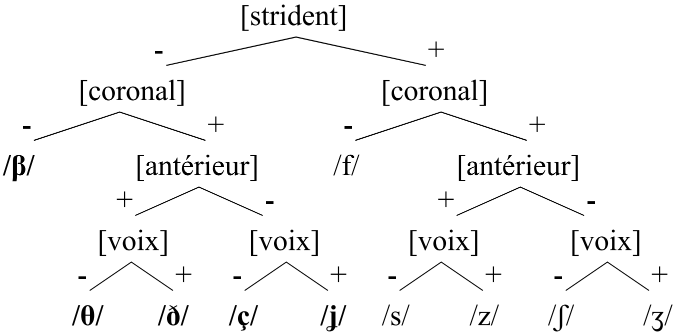
En kabyle[1], la gémination provoque l'occlusivation des fricatives (BADER 1989, CHAKER 1983, ELIAS 2020, ELMEDLAOUI 1993, SAIB 1974, voir aussi LOWENSTAMM & PRUNET 1986 pour ce phénomène). Ainsi, la racine √sɟr *être courbatu* se réalise [sɟər] à l'AORISTE mais [səggər] à l'INTENSIF où une position supplémentaire permet la gémination de la consonne médiane (1a).

(1) a. aoriste / intensif b. post-sonante



OCCLUSIVISATION. On observe cependant des cas où, en l'absence d'une position supplémentaire, certaines fricatives sont réalisées occlusives. Par exemple /rɟəl/ *fermer*, (1b), est réalisé [rgəl] et non *[rɟəl]. Cette occlusivisation a lieu post-sonante et touche un ensemble spécifique de fricatives : /β, θ, ð, ç, ɟ/, soit l'ensemble des consonnes [-strident] de la hiérarchie contrastive partielle (DRESHER 2009, HALL 2007) présentée en (2).

(2) Hiérarchie contrastive (partielle)



(3) Réalisations

	mates			*stridentes*	
	simple	*géminée*		*simple*	*géminée*
/β/ :	[β]	[b]	/f/ :	[f]	[p]
/θ/ :	[θ]	[t]	/s/ :	[s]	[t͡s]
/ð/ :	[ð]	[d]	/z/ :	[z]	[d͡z]
/ç/ :	[ç]	[k]	/ʃ/ :	[ʃ]	[t͡ʃ]
/ɟ/ :	[ɟ]	[g]	/ʒ/ :	[ʒ]	[d͡ʒ]

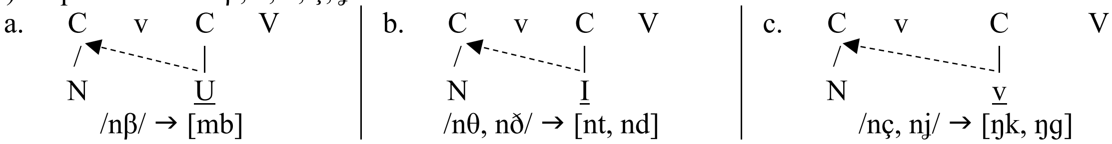
Les données en (4) illustrent la réaction des cinq fricatives mates /β, θ, ð, ç, ɟ/ au contact d'une sonante dans le parler kabyle de Chemini (ChK).

(4) Séquences Sonante + /β, θ, ð, ç, ɟ/

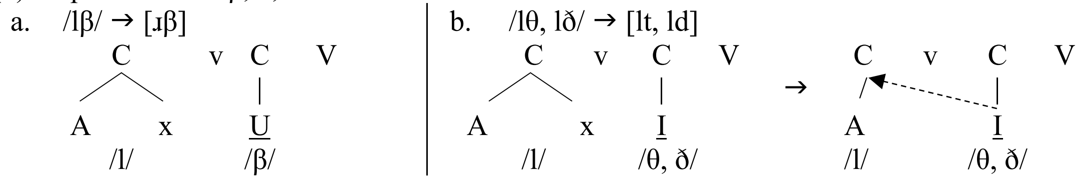
	/r/__	/l/__	/n/__	/m/__
a. /β/	[r**β**u] *mettre bas*	[ɹ**β**uβəɣ] *être trempé*	[m**b**əh] *avertir*	[im**b**uxən] *suie*
b. /θ/	[θir**θ**əwθ] *chassie*	[l**t**əf] *masser*	[n**t**u] *être enfoncé*	[θasum**t**a] *oreiller*
c. /ð/	[r**ð**əx] *écraser*	[al**d**un] *plomb*	[an**d**a] *où ?*	[θam**d**a] *bassin*
d. /ç/	[r**k**u] *être pourri*	[θiɹ**k**iθ] *pour*	[ŋ**k**əṛ] *nier*	[am**k**an] *place*
e. /ɟ/	[ar**g**az] *homme*	[aɹ**g**am] *bride*	[ŋ**g**i] *égoutter*	[am**ɟ**uð] *bouture*

Ce sont les comportements de ces segments et des sonantes /r, l, n, m/, qui déclenchent le phénomène, que nous analysons, ici, dans le cadre de la Phonologie du Gouvernement (KLV 1985, LOWENSTAMM 1996, SCHEER 2004, HARRIS 1990, 1994, HARRIS & LINDSEY 1995, BACKLEY 2011). Nous montrons que, post-sonantes, le contenu des fricatives mates a la capacité de se propager sur la sonante déclenchant ainsi leur occlusivisation.

(5) Séquences /n/ + /β, θ, ð, ç, ɟ/ en ChK



[1] Le kabyle, aussi θaqβajliθ, est une langue berbère appartenant au phylum afro-asiatique parlé principalement au nord de l'Algérie en Kabylie. Il existe une variété standardisée (StK). Les données, de première main, proviennent d'un locuteur natif de Chemini (sud-ouest de Bejaïa).

NASALES. Cette propagation peut engendrer des modifications de qualité de la sonante. Par exemple, après /n/ toutes les fricatives mates /β, θ, ð, ç, ɟ/ occlusivisent et la nasale devient homorgane : /nβ/ → [mb], /nθ, nð/ → [nt, nd] et /nç, nɟ/ → [ŋk, ŋg]. La fricative en se propageant sur la sonante à gauche, transmet son contenu mélodique, comme cela est illustré en (5). La nasale labiale /m/ a un comportement différent, elle autorise la “gémination” du segment mat qui suit mais n’accepte pas de contenu mélodique étant elle-même porteuse de mélodie (|U|)[2]. En ChK, la dorsale voisée n’occlusivise pas : /m**ɟ**/ → [m**ɟ**].
LIQUIDES. [l] ne peut apparaître que s’il est associé à deux positions sinon il prend une forme réduite [ɹ] en ChK. Pour prendre sa forme pleine, /l/ attend du contenu fourni par le segment suivant. Le seul contenu licite est |I| (cf BEDAR & QUELLEC, 2020 :18) : |U| ne peut se propager sur la latérale. Par conséquent les formes [ɹβ] et [lt], [ld] en (6) sont parfaitement attendues.
(6) Séquences /l/ + /β, θ, ð/ en ChK


En (6a), |U| étant banni de cette position, la fricative ne peut se propager et la latérale prend sa forme réduite. En (6b), le partage de |I| permet à la latérale de prendre sa forme pleine et aux coronales /θ, ð/ de s’occlusiviser. L’un des points intéressants de ce comportement est l’interaction de la latérale avec les dorsales /ç, ɟ/. Si les dorsales partagent du contenu avec /l/, c’est-à-dire |I|, on s’attendrait à une réalisation bipositionnelle des deux segments : *[lk, lg]. Or, on constate bien l’occlusivisation des dorsales alors que la liquide se réalise sous sa forme réduite : [ɹk, ɹg] (cf. 4d,e). Cela signifie que le contenu des dorsales n’est pas transmissible : /ç, ɟ/ sont “vides”. Cette propriété explique la forme réduite de la latérale mais aussi le comportement de /ç, ɟ/ vis-à-vis de la rhotique. Comme la latérale, elle rejette |U| : /rβ/ → [rβ] et l’on n’observe ni changement de qualité de la rhotique, ni propagation de la fricative. De même, au contact de /θ, ð/ qui contiennent |I|, les fricatives mates n’occlusivisent pas : [rθ, rð]. Seules les dorsales s’allongent à la suite de /r/ : [rk, rg]. Ce point est cohérent avec un contenu mélodique ne contenant aucun trait marqué pour les dorsales (ie |v|). Cette proposition explique aussi, pour partie, l’aspect variable de l’occlusivisation post-/m/.
Dans cette présentation, nous revenons en détail sur les représentations que nous défendons pour l’ensemble des séquences sonante+fricative mate en ChK et nous proposons une solution unifiant l’ensemble de ces phénomènes.
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[2] L’occlusivisation des mates lénis/voisées est sujette à variation dans les dialectes kabyles.

The sibilant buffer
Identity avoidance in the morphophonemics of Tashlhiyt Berber

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Epenthetic consonants have received a great deal of research in phonological theory, which aimed at determining their nature and the exact contexts in which they occur. One major result has been achieved in this respect, namely the fact that epenthetic consonants are selected on the basis of their markedness: coronals and glottal stops (typically [t] and [ʔ]) have been argued to be the unmarked consonants in epenthesis (Paradis & Prunet 1991, Lombardi 1997, 2002, Pagliano 2003, Uffmann 2007, among others). In addition to this, it has been argued that consonant epenthesis is mainly used as a means to repair illformed syllabic structures and to avoid hiatus (onset identification).

This paper draws attention to a particular type of consonant epenthesis in Tashlhiyt Berber, which some readers may not even qualify as such for reasons that will be immediately apparent. Firstly, the context in which the consonant is inserted would normally trigger vowel epenthesis in languages other than Tashlhiyt (illicit consonant clusters cross-linguistically tend to undergo vowel epenthesis, e.g. i-epenthesis in Lebanese Arabic, Abdul-Karim 1980, Hall 2011: 1576). Secondly, [s] is a rather unusual epenthetic consonant not only in the language under scrutiny but also cross-linguistically (see Nuñez-Cedeño 1988, and Vaux 2003 on s-epenthesis in Dominican Spanish). The data in (1) illustrate the phenomenon in Tashlhiyt.

(1) *S-insertion in Tashlhiyt Berber*

	Verb Perfective + Object Clitic	*Phonetic Form*	
a.	zˤrˤi-ʁ-t see-1SG-CL.OBJ	[zˤrˤiʁt]	'I saw him'
b.	zˤrˤi-ʁ-t-t see-1 SG-CL.OBJ-FM	[zˤrˤiʁtt]	'I saw her'
c.	t-zˤrˤi-t-t 2SG-see-2SG-CL.OBJ	[tzˤrˤitt]	'you saw him'
d.	t-zˤrˤi-t-**s**-t-t 2SG-see-2SG-**EP**-CL.OBJ-FM	[tzˤrˤit**s**tt]	'you saw her'
e.	t-zˤrˤi-t-t-n-t 2SG-see-2SG-CL.OBJ-PL-FM	[tzˤrˤittnt]	'you saw them (FM)'

The examples above show the linear arrangement of person, object clitic, gender and number markers in verbs. From (1a), one can see that /-t/ stands for an object clitic, immediately preceded by the 1PERS.SG marker /-ʁ/. In (1b), the feminine gender brings an additional -t which results in a geminated consonant. Geminated [tt] also appears in (1c) as the result of the concatenation of 2PERS.SG and CL.OBJ suffixes. Interestingly, when another identical suffix is added immediately after this geminated [tt], a sibilant consonant [s] (bolded in (1d) appears between the first two t's (**EP** = epenthesis).

Whatever is the nature of this sibilant insertion, it is clear from the above examples that its occurrence is in tight relationship with the presence of three adjacent identical suffixes, namely the 2PERS.SG, the object clitic and the feminine marker. This sibilant not only has no clear grammatical function, and may not appear when another consonantal suffix intervenes between the three identical consonants, as does plural -n- in (1e), but it also alternates with a vowel -i- in the preverbal position, that is when the object clitic attaches to preverbal particles such as the negative /ur/ (see 2d [urtt**i**tzˤrˤit], not *[urtt**s**tzˤrˤit]).

(2) *Alternation with i- in preverbal position*

	Negation + Object Clitic + Verb	*Phonetic Form*	
a.	ur-t zˤrˤi-ʁ NEG-CL.OBJ see-1SG	[urtzˤrˤiʁ]	'I didn't see him'
b.	ur-t-t zˤrˤi-ʁ NEG-CL.OBJ-FM. see-1SG	[urttzˤrˤiʁ]	'I didn't see her'
c.	ur-t t-zˤrˤi-t	[urttzˤrˤit]	'you didn't see him'

	NEG-CL.OBJ 2SG-see-2SG		
d.	ur-t-t **-i-** t-zˤrˤi-t NEG-CL.OBJ-FM-**EP** 2SG-see-2SG	[urtt**i**tzˤrˤit]	'you didn't see her'

Neither [i] nor [s] are the prototypical epenthetic segments in Tashlhiyt Berber. This language has very common complex consonant clusters which require no vowel epenthesis in order for them to be syllabified (Dell & Elmeldlaoui 2002). However, in hiatus contexts, it is rather [j] or [w] that appears (Guerssel 1986, Lahrouchi 2013). In addition to these segments, Tashlhiyt can also use the consonant [t] as an epenthetic consonant. It is inserted in some specific contexts, such as between the plural suffix /-n/ and stems which end in /a/: e.g. arra (sg) / arra-**t**-n (pl) *arra-n 'writings'; aga (sg) / aga-**t**-n, *aga-n 'buckets' (see Iazzi 2018: 843, Boukous 204: 49, among others). In any case, there is not one single prototypical epenthetic consonant in Tashlhiyt, nor is there a well-defined phonological context where such an epenthesis would systematically occur. Not any instance of three identical coronal consonants resort to -s- or -i- epenthesis. For instance, the 3FS marker /t-/ can well be prefixed to a verb which begins with a geminated tt- without this triggering any epenthesis to avoid segmental identity: e.g. ttu 'forget' / t-ttu 'she forgot', ttˤaf 'own' / t-ttˤaf 'she owned'. At the phonetic form, the three t's are realized with two independent articulatory gestures (2 closures): one single [t], followed by one geminated tt.

Moreover, i-epenthesis is not limited to the left edge of the word, as opposed to s- epenthesis. -i- can also be inserted at the right edge of the verb, such as between the 3rd person plural suffix /-n/ and the locative suffix /-nn/: e.g. skr-nn 'do there!' / skr-n-**i**-nn 'they did there'.

Despite all these disparities in the behavior of s-epenthesis as opposed to i-epenthesis, there are several morphophonological features which emerge from their analysis. The present paper will try to highlight them. At the morphological level, s-epenthesis behaves as a null morpheme, which has no grammatical content (as opposed to a zero morpheme which has a grammatical content but no phonetic realization). It is an interfix in the sense of Plénat (2005), which acts at the phonological level as a segmental buffer that avoids a sequence of three identical consonants or two identical root nodes (identity avoidance, OCP effect). Though its distribution is not fully predictable, its realization between the first two [t]'s rather than between the second and the third [t] can be argued to obey a strict left-to-right directionality, the same which underlies other identity avoidance phenomena in the language, such as the dissimilation targeting the leftmost labial consonant in the word (e.g. /**m**-ħi**m**il/ > [**n**-ħi**m**il], not *[**m**-ħi**n**il] 'like each other', Lahrouchi 2001, 2003, 2018). At the melodic level, though [s] may appear as an unusual epenthetic consonant, it is but a coronal stop /t/ which lost its closure feature (|ʔ| in Element Theory, Harris 1994, Backley 2011: 125). The frication (noise) element |H| acts then as a dissimilatory element which breaks a sequence of three identical consonants.

```
(3)     t- zˤrˤi - t   s  t  t
                   |   |  \/
                   •   •   •
                  |ʔ| |H| |ʔ|
                  |A| |A| |A|
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A phonological (not phonetic) analysis of intervocalic obstruent lenition in Mandarin

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1. Introduction

Due to the Chinese philological tradition, Chinese phonology often focuses on stable phonological structures in monosyllables. However, the concatenation of these latter in plurisyllabic words gives rise to phonotactic phenomena such as syllable weight change, tone sandhi, but also the lenition of intervocalic consonants (or "consonant reduction").

Mandarin intervocalic lenition has few mentions in the literature (Chao 1968; Xu 1980; Duanmu 2007) and is considered so far as a phonetic phenomenon of connected speech. In this contribution I will argue that on the contrary, it is a phonological phenomenon conditioned by the syllable structure and stress.

2. Previous observations

Duanmu (2007: 298-299) notes the phenomenon and makes some preliminary phonetic observations without seeking an explanation:

(1)	a.	[p, t, k, ʈʂ]	→	[b, d, g, ɖʐ]	
		[li-pa]	→	[li-ba]	'fence'
		[ti-ti]	→	[ti-di]	'younger brother'
		[kɤ-kɤ]	→	[kɤ-gə]	'older brother'
		[kan-ʈʂə]	→	[kan-ɖʐə]	'do ASP (doing it)'
	b.	[ʂ, xʷ, ɕ]	→	[ʐ, w, j]	
		[pau-ʂaŋ]	→	[pau- ʐə̃]	'in the newspaper'
		[ɕau-xʷo-ʈʂʰɤ]	→	[ɕau-wo-ʈʂʰɤ]	'small train'
		[waŋ-ɕan-ʂəŋ]	→	[wɑ̃-jə̃ -ʐə̃]	'Wang mister (Mr. Wang)'
	c.	[k, ʈʂ, ʈʂʰ]	→	[ɣ, ʐ, ʐ]	
		[kaŋ-kaŋ-tɕʰʷy]	→	[kɑ̃-ɣɑ̃-tɕʰʷy]	'just went'
		[pu-ʈʂʐ-tau]	→	[pu-ʐ-tau]	'don't know'
		[ʂəŋ-ʈʂʰan-ɕan]	→	[ʂə̃-ʐɑ̃-ɕan]	'production line'

For him, the intervocalic lenition "seems to be easier in the second position of a trisyllabic expression" and "is harder in a disyllabic expression" (except for those with neutral tone on the second syllable as in 1a). He then points out that the reduction of aspirated obstruents [pʰ, tʰ, kʰ, tsʰ, s, f] is hard to be found, which will be considered below.

3. Corpus

This contribution is not a corpus-driven study, but corpus is helpful to give some insight of the understanding of the phenomenon. Mandarin Chinese has 17 initial obstruents, I compile a list of 17x2=34 words based on the reference dictionary of Standard Chinese, *Xiandai Hanyu Cidian*, structured as follows: the part 1A consists of 17 disyllabic words with an obstruent as the onset of the second syllable [XY] where X and Y stand for monosyllabic morphemes, the part 1B adds to each of 1A words a third monosyllabic morpheme at the right, giving trisyllabic words or phrase having [XY]Z structure[1]. These words are read to 2 native speakers of Mandarin with intervocalic lenition of the second onset. The native speakers should answer if they accept or not the pronunciation. In (2) are shown three examples of the corpus.

(2)	a.i	[ʈʂoŋ tsʰan]	→	[ʈʂõ tsʰan]	'Chinese food'
	ii	[ʈʂoŋ tsʰan kuan]	→	[ʈʂõ **z**ã kuan]	'Chinese restaurant'
	b.i	[ʈʂʷɑŋ tʰou]	→	[ʈʂʷɑ˜ tʰou]	'bedside'
	ii	[ʈʂʷɑŋ tʰou kʷei]	→	[ʈʂʷɑ˜ **d**o kʷei]	'bedside table'
	c.i	[jen tɕou]	→	[jẽ tɕou]	'research'

[1] As an ongoing work, a part 2 of the corpus is under construction, with an obstruent as the onset of the first syllable of [XY], and an added third monosyllabic morpheme at the left, giving Z[XY] structure.

ii. [jen tɕou s^{w}o:] → [jẽ **jo** s^{w}o:] ‘research centre’

Contrary to Duanmu’s claim, both two native speakers accept lenis forms in (2a-ii), (2b-ii) and (2c-ii), aspirated obstruents or not, and refuse to have lenition in (2a-i), (2b-i) and (2c-i).

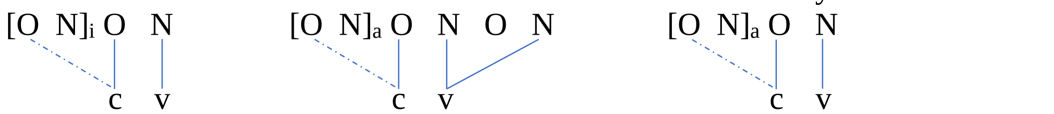
4. Phonological analysis

Three observations can be made on the intervocalic lenition: 1) the onset of the second syllable of a disyllabic word resist to lenition unless 2) this second syllable has a neutral tone or loses its lexical tone by de-stressing; 3) the onset of the second syllable of a trisyllabic word or phrase is the target of the lenition, that of the third syllable is not. This can be sketched in the following table.

Distribution	**Lenition**
#__V_1	No
#CV_1.__V_2#	No
#CV_1.__V_2# (V_2 has no tone)	Yes
#CV_1.__V_2.CV_3#	Yes
#CV_1.CV_2.__V_3#	No

According to Yue-Hashimoto (1987), Mandarin Chinese is among languages dominated at the right. Liu (2008) shares the same view that non-final syllables are relatively short in Mandarin. Luo (2013) claims that the length of final syllable is phonological, while de-stressed final syllable is phonologically short as non-final syllables and neutral-tone functional words. The same behaviour of the non-final second syllable onset (1bc) and that of the final neutral-tone syllable (1a) follows from this claim. Yue-Hashimoto (1987) also highlights that the final syllable in Mandarin has a stress. The stress in Mandarin is ambiguous (Chao 1968; Hoa 1983; Liu 2008). By admitting its existence, following the linearisation of stress (Ségéral & Scheer 2008), in CVCV framework, stress should be translated into space inserted on the left of the syllable, giving rise to virtual length (dotted line) having the same representation as in word initial position (3ab, $[ON]_i$ for initial CV, $[ON]_a$ for CV of the stress).

(3) a. word initial b. word final with stress c. internal syllable with stress



The hypothesis of stress in Mandarin also accounts for trisyllables with final neutral tone where internal onset is preserved from lenition, regardless of the internal structure of the word. Consider (4) with neutral tone on final [tsɨ] that cannot bear the stress, this latter goes onto the penultimate syllable and gives the space inserted on the left (3c), [x] and [tɕ] resist to lenition even in the second position of a trisyllable, compared to (1bc) and (2).

(4) a. [tɕau x^{w}a tsɨ] → [tɕɔ **x**^{w}a tsɨ] ‘beggar’

b. [pau tɕau tsɨ] → [pɔ **tɕɔ** tsɨ] ‘make raviolis’

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Session parallèle : Atelier PhN3

<u>Nasal harmony in Deori</u>

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Deori is a Tibeto-Burman language spoken in the Northeastern States of Assam and Lohit and Changlang districts of Arunachal Pradesh. It belongs to the Bodo-Garo group which is listed as a 'definitely endangered' language in UNESCO (2009). Deori is considered an endangered language because of its less number of speakers (Brown, 1895) and lack of intergenerational language transmission (UNESCO, 2009). Deori has 14 distinct consonants and they are: [±voice] stops /p//b//t//d//k//g/, [+voice] nasals /m/ /n/, [±voice] fricative /s/ /h/, [±voice] affricates /tʃ/ /dz/, [+lateral] /l/, [+continuant] j/, and three allophones: [+nasal] [ŋ], [-lateral] [ɹ] and [+continuant] [w]. Deori has ten distinct vowels: 5 oral vowels /ɑ, ɛ, i, ɔ, u/ and 5 nasal vowels /ɑ̃, ɛ̃, ĩ, ɔ̃, ũ/. This is the first time that Deori nasal harmony has been discussed.

Deori has (1) distinct nasal vowels which changes the lexical meaning of a word, for instance, the words *bi* "peel" and *bĩ* "carry" have different meanings because of the nasal-oral vowel contrasts, (2) vowels in proximity to nasal consonants are also nasalized in Deori, for instance, *mɛ̃ba* 'fat', *mɔ̃sa* 'child', and (3) nasalization in Deori is also attained through the process of 'nasal effacement'[1] where the presence of nasal vowels may be the outcome of a context where a sequence of oral vowels existed in close adjacency with nasal consonants before the deletion of the consonant, for instance, *aŋ* > *ã* 'first person singular', *tʃituŋ* > *tʃitũ* 'rope/old'. The nasal harmony system adheres to an implicational hierarchy shown in (4) where the segments to the left will undergo nasalization, while those to the right will block.

(4) $_1$Vowels $_2$ Semi vowels $_3$ Liquids $_4$ Fricatives $_5$ Obstruent Stops $_6$

← high-*compatibility with nasalization*-low →

The hierarchy in (4) highlights that vowels, semi-vowels, and liquids are highly compatible with nasalization, fricatives, and obstruent stops are less compatible with nasalization.

Vowels are the triggering segment in Deori which affects glides, and liquids. Glides and liquids are the target segments in Deori, for instance, *gã.ɹ̃ɔ̃* 'pot', *tʃĩȷ̃ã* 'fish/wife of younger brother'. Apart from vowels, nasal consonants also trigger nasal harmony in Deori, for instance, *mĩ.ɹ̃ũ* 'uncooked rice', *nĩȷ̃ã* 'cook', *mɔ̃kɔ̃* 'rice', *mũsã* 'grass, weed', *mĩtʃɔ* 'platform of the house'. The examples also highlight that nasalization does not spread through [+voice] obstruent stop /b/ (example: *ibã 'flower'*), [-voice] fricative /s/ (example: *isã 'shawl'*), and [-voice] affricate /tʃ/ (example: *aʧɔ̃ 'house'*) in Deori which are less compatible with nasalization.

Directionality in Deori is progressive and can be verified when root+suffix words are taken into consideration. Glottal fricative /ɦ/, and glides [w] and /j/ are target segments in Deori. The locative suffix -*ɦɔ*, the thematic marker -*wa*, and the possessive marker -*jɔ* have a nasal variant -*ɦ̃ɔ̃*, -*w̃ã*, and -*ȷ̃ɔ̃* respectively, for instance, *udzũ.ɦɔ*[2]→ *udzũɦ̃ɔ̃* 'navel/bamboo tube.LOC', *ditɔ̃.ɦɔ* → *ditɔ̃ɦ̃ɔ̃* 'throat.LOC', *dã.wa*[3]→*dãw̃ã* 'mosquito.THEMATIC', *nɔ̃.wa*→ *nɔ̃w̃ã* '2nd person sing/pl. THEMATIC', *ʧĩȷ̃ã.wa* → *ʧĩȷ̃ãw̃ã* 'the fish.THEMATIC'. Following Walker and Pullum (1999), nasalized glottal fricative /ɦ/ can be termed as laryngeals for their glide like phonological classification and are grouped with highly compatible segments, vowels, and glides. Obstruent stops /p,t,k,d,g/ are opaque to nasal harmony in Deori as it blocks nasal spreading, for instance, *nĩȷ̃ã.pa.ɹi* → *nijãpaɹi* 'cook.CAU.PROG'→ 'made to cook, *nɔ̃.pa.ɹi* → *nɔ̃paɹi* 'do.CAU.PROG' → 'made to do', *ɦidzɛ̃.ku.n*→ *ɦidzɛ̃kun* 'see.FUT[4].IMP'→'will see', *tũ.nɛ̃.du* → *tũnɛ̃du* 'throw.IMP.APPL'→ 'throw at somebody', *ɦidzɛ̃.gɛ* → *ɦidzɛ̃gɛ* 'see.NEG'→ 'could not see', *nĩȷ̃ã.gɛ* → *nĩȷ̃ãgɛ* 'cook.NEG'→'could not cook'.

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[1] Nasalization of vowels necessitates two stages. First, a syllable-final nasal triggers regressive vowel nasalization, and secondly, the syllable-final nasal gets deleted but the feature [nasal] remains. This context of nasalization of vowels is referred to as "nasal effacement" by Foley (1975).

[2] Locative suffix.

[3] Demonstrative marker.

[4] Future marker

The target and the opaque segment in Deori agree with the implicational hierarchy in (4). However, there are a few exceptional occurrences in Deori that show deviation from the cross-linguistic nasal harmony typology. The exceptional occurrences in Deori are: (i) [+continuant] liquid [ɹ] changes to sonorant stop /n/ when preceded by a nasal vowel in the derived domain, unlike underived domain, and (ii) [+voice] obstruent stop /b/ undergoes nasal harmony in the derived domain and changes to /m/ when preceded by a nasal vowel. While [+voice] alveolar and velar stops /d/ and /g/ block nasal harmony in Deori, [+voice] bilabial stop /b/ undergoes nasalization in derived domain and changes to /m/. For instance, after oral vowels, *ʧa.ba* → *ʧaba* 'bad.VN', *kɔ.ba* → *kɔba* 'come.VN', after nasal vowels, *bɔ̃.ba* → *bɔ̃mã* 'somewhere.VN', *kã.ba* → *kãmã* 'hot.VN'. In these examples, it is evident that the verbal-noun suffix *-ba* and *-bɛm* are realized as *ba* and *bɛm* after oral roots and changes to *mã* and *mɛ̃m* after nasal roots. Liquid [ɹ] is a target segment both in the derived and the underived domain, but in derived domain liquid [ɹ] changes to /n/, unlike underived domain. For instance, after oral vowel, *ʧuʧa.ɹɛ*→ *ʧuʧaɹɛ* 'good health.FOC', *saba.ɹɛ* → *sabaɹɛ* 'illness.FOC', after nasal vowel, *ʧĩʧã.ɹɛ* → *ʧĩʧãnɛ̃* 'fish.FOC', *nĩʧã.ɹɛ* → *nĩʧãnɛ̃* 'cook.FOC'. Suffixes *-ɹɛ*, *-ɹi*, and *-ɹɔm* remain oral following an oral root and suffixes *-ɹɛ*, *-ɹi*, and *-ɹɔm* change to *-nɛ̃*, *-nĩ*, and *-nɔ̃m* respectively when preceded by a nasal vowel. This unusual pattern of suffixal alternation in Deori does not conform to the implicational hierarchy shown in (4).

Walker (1998) has formulated a unified typology of featural markedness constraints which captures nasal harmony pattern cross-linguistically and has ruled out faithfulness constraints, as shown in (5).

(5) *NASOBSSTOP » *NASFRIC » *NASLIQ » *NASGLIDE » *NASV

While the target segment in Deori is taken care of by ranking spreading constraint SPREAD-R([+nasal], Pwd) over the markedness constraints *NASLIQ » *NASGLIDE »*NASV, the opaque segment in Deori is taken care of by the ranking *NASOBSSTOP » *NASFRIC » *NASAFFRICATE » SPREAD-R([+nasal],Pwd) as shown in tableau (6) and (7) below:

(6) Vowels are target segments in Deori

I: /tʃimĩ/	SPREAD-R([+nasal],Pwd)	*NASV
a. tʃimi	*!	
b. ☞tʃimĩ		*

(7) Opacity of voiceless obstruent stop

I: /nɔ̃/+/pɑ/+/ɹi /	*NASOBSSTOP	SPREAD-R([+nasal],Pwd)	SPREAD ([+nasal],W)
a. ☞nɔ̃pɑɹi		****	****
b. nɔ̃p̃ɑ̃ɹ̃ĩ	*!		

However, the markedness constraints that predicts the nasal harmony pattern cross-linguistically fail to capture the exceptional suffixal alternations in Deori in the derived domain. Modification of constraints in OT in capturing borrowings from a different language is attested in the works of Tsuchida (1995) and Davidson and Noyer (1997). Tsuchida (1995) states that OT constraints must be modified to account for the phonology of English loan words in Japanese. Similarly, Davidson and Noyer (1997) state that borrowings from Spanish into Huave violate Huave stress rules, thus, to account for the lexical borrowings re-ranking of the constraints is necessary. Nasalization in Deori is considered as an areal feature and is adopted from languages such as Mishmi and Tani dialects of Arunachal Pradesh with whom Deori was in close contact with (Jacquesson, 2005). Hence, it can be assumed that exceptional occurrences of suffixal alternations in Deori are contact-induced innovation which necessitates an additional constraint to account for such occurrences.

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Preoralized nasal consonants in Nambikwara do Campo (Southern Nambikwara) and Latundê (Northern Nambikwara)

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This work provides a comparative analysis of the behavior of the preoralized nasal consonants in the Nambikwara do Campo and Latundê languages which are respectively in the Nambikwara do Sul (Southern Nambikwara) and Nambikwara do Norte (Northern Nambikwara) branches of the Nambikwara language family, one of the 41 surviving linguistic families in Brazil. Nambikwara do Campo is spoken by the Kithãulhu, the Halotesu, the Sawentesu, and the Wakalitesu indigenous peoples (Telles, 2002), who live on the Nambikwara and Sapezal Indigenous Territories, located in the state of Mato Grosso, in the Cerrado region, while Latundê is spoken by the homonymous community, who lives in the Tubarão-Latundê Indigenous Territory, located in the state of Rondônia.

Nambikwara do Campo and Latundê are phonologically complex languages with an intricate phonetic-phonological interface which has many phonological processes that interact with different aspects of the grammar. Latundê has two phonological nasal consonants that occur in onset position, /m/ and /n/. Also in onset position, both nasal consonants were found in minimal pairs where the contrast between /m, p/ and /n, t/ are present. In Nambikwara do Campo, there are also two nasal consonants that can occur in onset position: /n/ and /ˀn/. The ejective /ˀn/ is much less frequent than the coronal /n/, and minimal pairs involving the contrast /n, t/ were also attested. Both languages have phonological oral and nasal vowels in stressed syllables. In unstressed syllables, the oral/nasal contrast in vowels is neutralized.

Regarding the coda position of the syllable, in Latundê it may be occupied by an underspecified nasal consonant, while in Nambikwara do Campo /n/ is the only nasal consonant occurring. In both languages, in stressed syllables, the presence of tautosyllabic nasal consonants does not affect the vowel nasality, hence the vowel always preserves its nasal or oral status in this context.

Both nasal and oral vowels may or may not be followed by a nasal consonant in coda. However, as these vowels are contrastive in stressed syllables, it is essential that there is no assimilation of nasality by the oral vowel when followed by a tautosyllabic nasal consonant. Thus, in order to avoid such assimilation, oral vowels have an “enhancement behavior” (Eberhard, 2011; Wetzels & Nevins, 2018) as a strategy to preserve their oral feature, and the following nasal consonant has a preoralized realization.

In this context, in stressed position, the allophonic variation between oral and nasal vowels, possible in unstressed syllables due to the neutralization of the contrast between them, is not allowed, so there must be a blockage of the nasality spread from the nasal consonant towards the underlying oral vowel in the nucleus. Therefore, the preoralization of the nasal coda occurs in the word prosodic domain, and it is only observed in stressed syllables, in which the contrast between oral and nasal vowels should be protected. See the examples below from Costa (2020), for Nambikwara do Campo:

[ˈ**ha**^{d}**n**naɾa]	[ˈ**hãnː**naɾa]
/**han**.na.ɾa/	/**hãn**.na.ɾa/
han- ∅- na- ɾa	**hãn-** ∅- na- ɾa
to be clear, bright-3sg-present tense-perfective	to be white-3sg-present tense-perfective
“it’s clear, bright”	“it’s white”

As we can see above, the preoralization of /n/ in coda blocks the assimilation of the nasality by the nuclear vowel, which remains oral on the surface. Here, the preoralized segments are interpreted as contour segments, with phonological “edge effects” (Clements & Hume, 1995).

According to Wetzels (2008), contour segments involving an oral and a nasal phase are common in the languages of the world. Literature explains the oral phase of the underlyingly nasal segment as an enhancement strategy to maintain a clear distinction between oral/nasal vowels. Here, we assume the concept of “enhancement” as proposed by Wetzels and Nevins (2018): “enhancement involves recruiting a globally or locally noncontrastive feature in order to further improve the realization of a contrastive feature. [...] Languages may create prenasalized, postoralized, or other partially nasal contour segments as a way of enhancing other contrasts”. Examples of preoralized nasal consonants in coda in Latundê and Nambikwara do Campo are presented below:

Latundê (Telles, 2002):

[ˈ**si^{d}n.**dãn] ~ [ˈ**sid**.dãn] ~ [ˈ**siːn**.dãn]

/**siN**.tan/

siN- tan

to be smoking-nominal sufix

“it’s smoking (there is smoke)”

Nambikwara do Campo (Costa, 2020):

[jaˈ**la^{d}n**^{t}su]

/i.a.**lan**.su/

ia**lan-** su

hook, tucano-nominal suffix

“hook, tucano (bird)”

The preoralization of nasal consonants in coda is also observed in other Nambikwara languages, such as Mamaindê (Eberhard, 2009), Negarotê (Braga, 2017) and Lakondê (Telles, 2002). While this phonological process is strongly preferred in Nambikwara do Campo, it is not as common in Latundê. Both languages can also use different strategies (in free variation) to carry out the preservation of oral/nasal contrast in vowels as described, such as complete oralization of the nasal consonant, realization of the nasal consonant as a glottal stop, and vowel lengthening. In Nambikwara do Campo, the preoralization of the nasal consonant is always preferred, while in Latundê this process is less distributed and varies greatly with the other alternatives, especially in adult speech (Telles, 2019).

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Étude acoustique et aérodynamique des consonnes géminées nasales sourdes du parler d'ikema-miyako des langues ryukyu en voie de disparition

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Le miyako est une des langues ryukyu en danger de disparition, parlé dans les archipels de Miyako au Japon. Cette langue comprend dans son inventaire des consonnes géminées qui peuvent apparaitre en position initiale et médiane de mot. L'ikema est le seul dialecte du miyako à avoir des consonnes géminées nasales sourdes dans son inventaire phonologique. Elles apparaissent dans les mots courants et sont en opposition avec leurs contreparties voisées (par exemple : la consonne géminée nasale voisée [nna] 'coquillage' s'opposera à la consonne géminée nasale non voisée [n̥na] 'corde'). La première moitié de la consonne géminée [n̥n] sera produite non voisée. En comparant des mots apparentés en proto-miyako et dans les dialectes modernes du miyako, on peut retracer le développement de ces nasales dévoisées : [m̥mu] 'nuage' < [fumu], [n̥nu] 'corne' < [tsɿnu], [n̥nu] 'hier' < [kɿnuː] ([ɿ] qui est une voyelle apico-alvéolaire souvent réalisée avec un bruit de friction) ([1]). Après la chute de la voyelle fermée, les géminées nasales sourdes semblent conserver le trait non voisé et le trait fricatif de la première syllabe d'origine et la nasalité de l'attaque de la syllabe suivante, ainsi que leur nombre de mores

Les nasales sourdes sont relativement rares dans les inventaires phonologiques (par exemple, /m̥ n̥/ ne se trouvent que dans 2% des langues du monde [2], [3]), ce qui peut être attribué à leurs faibles indices de lieu ([4], [5]). Des études précédentes, portant sur le birman et l'angami, ont identifié deux types de réalisations différentes pour ses consonnes nasales sourdes ([6], [7], [8]). Nous souhaitons par cette étude déterminer si les nasales sourdes de l'ikema se rapprochent plus du birman ou de l'angami. En outre, les nasales sourdes de l'ikema sont uniques du fait qu'elles ne se produisent que dans le cadre de géminées à l'initiale de mots. Le but de cette étude est d'analyser la réalisation de l'opposition de voisement des géminées nasales à l'initiale de mot en ikema et de voir dans quelle mesure les nasales sourdes préservent les caractéristiques des mots du miyako apparentés.

Des études acoustiques précédentes sur l'ikema ont identifié la présence de bruit de friction dans la réalisation des nasales sourdes ([9], [10]). Pour cette étude, nous avons collecté des données aérodynamiques et acoustiques auprès de dix locuteurs de l'ikema (trois répétitions de 12 mots à l'isolée). Parmi les différents corrélats acoustiques liés au voisement, nous avons mesuré le souffle et la fréquence du fondamental au début de la voyelle suivante ([11], [12], [13]). Nos analyses acoustiques comprennent : 1) la durée des nasales sourdes et 2) leurs proportions dans les géminées ainsi que 3) des mesures acoustiques au début de la voyelle (f0, H1*-H2* et CPP).

Les résultats indiquent que les nasales sourdes de l'ikema sont composées d'une période initiale non voisée suivie d'une partie voisée avant l'explosion de la consonne, cette partie voisée se retrouve dans beaucoup de langues ayant des consonnes nasales sourdes dans leur inventaire. Ohala, en 1975, suggère que cette partie voisée facilite l'identification du lieu d'articulation [14]. Le flux d'air nasal commence un peu avant la consonne nasale sourde et continue à travers le relâchement jusqu'à la voyelle suivante (Figure 1), ce qui correspond à la description des consonnes nasales sourdes en birman. Le contraste de voisement dans les nasales en ikema semble se faire principalement pendant un intervalle non voisé relativement court. Les mesures acoustiques au début de la voyelle ont montré peu de différences entre les géminées nasales voisées et les non voisées. La partie voisée de la consonne avant la voyelle peut possiblement empêcher de se propager les caractéristiques acoustiques de la partie sourde de cette même consonne et ainsi ne pas affecter la voyelle qui suit. La proportion de voisement en ikema est presque inversée par rapport aux nasales sourdes du birman ([6], [7], [8]). Ainsi, seule la première moitié de la géminée peut être phonologiquement spécifiée comme non voisée. Les résultats conduisent à une prédiction selon laquelle les indices sourds pour ces segments ne sont pas assez robustes pour maintenir le contraste à long terme et peuvent expliquer leur rareté parmi les dialectes du miyako et également à travers des langues du monde.

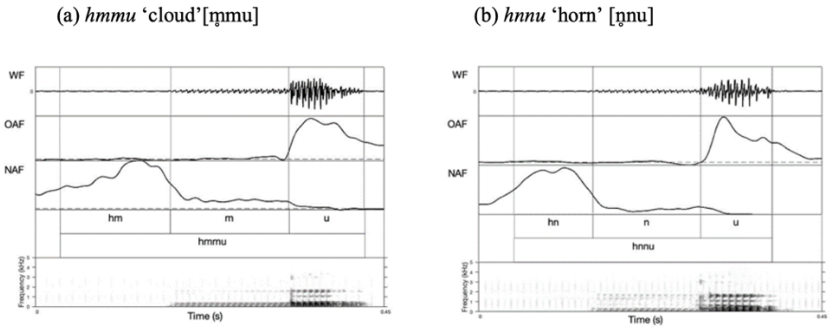

Figure 1. a) [m̥ mu], b) [n̥ nu] produits avec une consonne géminée nasale sourde par le locuteur 4. Pour les deux figures, WF représente le signal acoustique du microphone, OAF le flux d'air oral et NAF le flux d'air nasal, le spectrogramme étant représenté avec le dernier graphique (kHz). Les valeurs de flux d'air sont exprimées en volumes relatifs (litre/sec). L'intervalle de temps pour les figures a et b sont fixés autour de 450 *ms*.

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Session générale

Prominence over boundary in prefix stress resistance | RFP2022 Abstract

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In this paper, I present evidence of a novel stress asymmetry based on crosslinguistic data from 138 languages: prefixes almost never shift stress leftward if a language's default stress is initial, whereas peninitial stress languages willingly incorporate prefixes into their stress assignment domains. Of all the prefixing languages surveyed with reliable data, all peninitial stress languages (7/7) incorporate prefixes, and all but one initial stress languages (30/31) do not. Two characteristic examples are given below (primary-stressed syllables boldfaced):

(1) Prefix stress resistance in initial Tenango Otomi (Blight & Pike 1976)

a.	ˈ**thè**be	'beads'	b.	ˈ**zà**fànĩ	'cornstalk
	mȁ-zí-ˈ**thè**be	'my little beads'		ra-ˈ**zà**fànĩ	'DET-cornstalk'

(2) Prefix stress incorporation in peninitial Osage (Quintero 2004)

a.	ðaahˈ**tã**	'drink'	b.	ðaˈ**waa**	'count'
	ã-ˈ**wa**-ðaahˌtã	'we drink'		wa-ˈ**ða**waa	'count sth.'

Two potential analyses of prefix stress resistance in initial stress systems are entertained. First is STRESS-Rσ_1, which simply requires root-initial syllables to be stressed. This constraint is undominated in initial stress languages (3). In cases including secondary stress, we can also postulate a constraint in which root stress is always primary. In peninitial-stress languages on the other hand, STRESS-Rσ_1 is outranked by foot structure constraints, leading to prefixes' incorporation into the stress assignment domain (4).

(3)

/thèbe/	STRESS-Rσ_1	TROCHEE	ALL-FT-LEFT	PARSE-σ
☞ a. (ˈthèbe)				
b. (thèˈbe)	*!	*		
/mȁ-zí-thèbe/	STRESS-Rσ_1	TROCHEE	ALL-FT-LEFT	PARSE-σ
☞ a. mȁ-zí-(ˈthèbe)			**	**
b. (ˈmȁ-zí)-thèbe	*!			**
c. mȁ-(zí-ˈthè)be		*!	*	**

(4)

/ðaahtã/	IAMB	ALL-FT-LEFT	STRESS-Rσ_1	PARSE-σ
☞ a. (ðaahˈtã)			*	
b. (ˈðaahtã)	*!			
/ãk-ˈwa-ðaahtã/	IAMB	ALL-FT-LEFT	STRESS-Rσ_1	PARSE-σ
☞ a. (ã-ˈwa)-(ðaahˌtã)			*	
b. ã-(wa-ˈðaah)tã		*!		**
c. ã-wa-(ˈðaahtã)	*!	**		**

The second possibility, which I reject, utilizes ALIGN-L(Root, PrWd) to interpose a prosodic boundary between the root and any prefixes. This constraint prefers the root to initiate a new prosodic word, which would then be the domain of footing. This account fails to explain the difference between initial- and peninitial-stress languages, as the ALIGN constraint is not sensitive to foot type:

(5)

/mà̃-zí-thèbe/	ALIGN-L(Root, PrWd)	TROCHEE	PARSE-σ
☞ a. mà̃-zí-[(ˈthèbe)]$_ω$			
b. [(ˈmà̃-zí)-thèbe]$_ω$	*!		**
/ãk-wa-ðaahtã/	ALIGN-L(Root, PrWd)	IAMB	PARSE-σ
💣 a. ã-wa-[(ðaahˈtã)]$_ω$			
☹ b. [(ã-ˈwa)-ðaahtã]$_ω$	*!		**

The need to analyze this stress asymmetry as root-initial prominence maintenance shows a novel instance of root-initial syllables resisting phonological alternation (e.g. Becker et al. 2012). It is likely that this resistance is due to the high degree of psycholinguistic salience carried by root-initial position but not necessarily by word-initial positions, due to root-initial material being highly relevant to lexical access (Gaskel & Marslen-Wilson 2002). As such, we can offer a likely functional explanation for root-initial stress maintenance in initial stress languages: STRESS-Rσ1 is highly ranked for these languages due to its psycholinguistic grounding – shifting stress, which itself is an important cue for lexical access, leftward under prefixation would blur the highly salient root-initial percept. (The sole apparent counter-typological case, Bardi (Nyulnyulan; Bowern 2012), does give initial stress to prefixes: however the root-initial syllable must also bear at least secondary stress, even if it induces clash, indicating that STRESS-Rσ1 is still undominated in this language.) Conversely, constraints that aim to maintain stress in medial/final positions either do not exist or are ranked lower in a stringency hierarchy (de Lacy 2004).

To assess the validity of this assumption, I undertook two companion crosslinguistic surveys of ultimate-stress languages and penultimate-stress languages to see if they include suffixes into stress assignment domains at statistically higher rates than initial stress languages. Of the over 200 languages in these surveys, around 90% of them with reliable sources were found to incorporate suffixes, indicating that root-final positions are nowhere near as resistant to alternation as root-initial position, thus confirming the hypothesis.

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Inferring the phonological representation of Portuguese palatals from their distribution

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The mainstream literature on Portuguese palatal sonorants, [ɲ] and [ʎ], always assumes that they are rare and restricted in terms of their distribution (Mateus & Andrade, 2000), although it never tells us *how rare* and *how restricted* they are. Unlike /m, n, l/, the palatals [ɲ, ʎ] (i) are disallowed word-initially (nome 'name' vs *ɲome), (ii) do not admit complex rhymes at their left (orla 'edge' vs *orʎa), (iii) nor can they occur in the last syllable of proparoxytones (fenómeno 'phenomenon' vs *fenómeɲo). They are therefore considered either phonological geminates (Wetzels, 2000) or complex segments (Veloso, 2019; Pimenta, 2019). Moreover, palatal sonorants are usually represented in a similar fashion. Nevertheless, [ʎ] is typologically rarer, it is acquired much later in both European and Brazilian Portuguese (Costa, 2010) and it is more unstable in the transfer between Portuguese and its creoles (Author, forc).

The present study challenges the current representations of palatal sonorants based on the statistical analysis of their distribution. Our proposal is grounded in an extensive number words based on two lexical corpora: DicioAberto (Simões & Farinha, 2010) and Wikcionário Meyer & Gurevych (2012). This approach enables us not only to evaluate the usage frequency use of these consonants, but also to assess the limits of their variation within the Portuguese lexicon. We measure (i) the context-free frequency of the palatals; (ii) their frequency depending on their position within the words, (iii) the frequency of the vowel quality on their left.

We find that both palatals are relatively rare in Portuguese when compared to consonants such as /p/ and /m/. However, contrary to what we were expecting [ɲ] is less frequent than [ʎ]. Our data also shows that these consonants occupy the word-final onset in around 60% of the items– a position in which they play a role in stress assignment. Word-initial palatals where only found in loanwords. Lastly, we found that these consonants, along with the palatal glide [j], share a scale of preference regarding their left edge, namely |I| > |A| > |U|. Nevertheless, they also display some individual behavior regarding how restrictive they are in relation to this scale ([j] > [ɲ] > [ʎ]).

These results suggest that the palatal sonorants have slightly different phonological representations. On the one hand, the preference for palatal environments and for the last onset of the word, id est, the relevant position for stress assignment, corroborates the idea that these consonants have a palatal autossegment in their internal structure (Veloso, 2019). On the other hand, the greater frequency and flexibility of [ʎ] over [ɲ] can be explained by differences in their internal components. Therefore, we propose that [ʎ] = |A,U|I|| (if we accept that /l/ = |A,U| and /ɲ/ = |L|I||, following the Element Theory (Backley, 2011)). In other words, [ʎ] is more complex due to element asymmetry within the segment (|U| and |I|), which explains its late acquisition, but the presence of these elements makes it less restrictive concerning its left edge and, thus, more frequent in the lexicon.

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Turbid strict CV

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Main claims By upgrading strict CV (Lowenstamm 1996; Scheer 2004) with Turbidity Theory (TT, Goldrick 2001), a set of empirically and conceptually puzzling issues can be given a straightforward solution. The possibility to formally distinguish between empty V nodes (EV) and V nodes that have some unpronounced melodic content (eV) allows to neatly account for a variety of phenomena that would otherwise be labeled as exceptional, or require complicate phonological rules. This is shown by discussing (i) the interaction of glide mutation and transfer (**GliM**) in Classical Arabic (CA) (Bohas & Lowenstamm 2021, BL), and (ii) the behaviour of word-final consonant cluster (**WFCC**) in Colloquial Egyptian Arabic (CEA) verbs (Fathi 2013, FT).

TT representations TT posits two asymmetric melody-prosody relations: a projection relation (↓) expressing the lexical affiliation of a melodic prime to a prosodic node, and a pronunciation relation (↑) expressing the phonetic interpretation of a melodic prime in a specific prosodic node. Full V has both (d.), eV has only ↓ (c.), EV have no melodic primes (b.), and floaters are melodic primes with no prosodic node (a.):

a.	b.	c.	d.
	V_1	V_2	V_3
		↓	↕
|A|		|A|	|A|

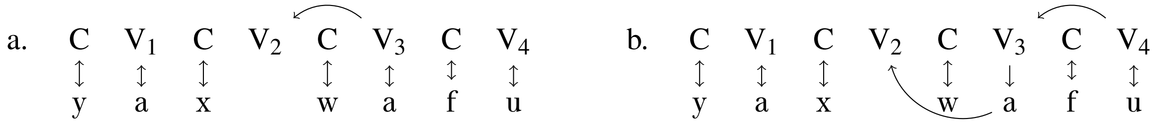
Phonetically, the melodic content of full V is always interpreted, whereas the phonetic interpretation of eV and EV depends on the context: if followed by a proper governor, they can stay silent, otherwise EV is assigned a default melody, while eV has its projected melody interpreted. Floaters are pronounced if associated to some prosodic node (via ↑). Phonologically, assuming a direct relation between representational complexity and lateral strength, where TT relations are included in the calculation of complexity, the lateral strength decreases from full V to eN to EN.

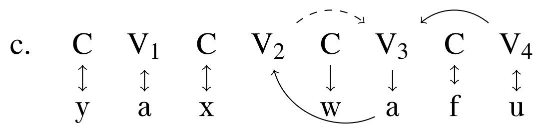
GliM - Background CA triconsonantal roots can surface as biconsonantal due to a process of glide mutation that transforms a glide occurring between *a* and another V into *alif*, which marks the lengthening of *a*. E.g. $\sqrt{\text{XWF}}$ 'fear' → /xawifa/$_{\text{PRF.3M.SG}}$ → *xāfa*. This process interacts with a transfer process, which targets forms with a medial glide and 'moves' the V occurring between C_2 and C_3 to the left of C_2. E.g. $\sqrt{\text{QWL}}$ 'say' → /yaqwulu/$_{\text{IMPRF.3M.SG}}$ → *yaquwlu*. The interaction of these processes can be seen in $\sqrt{\text{XWF}}$. Its IMPRF.3M.SG UR /yaxwafu/ should surface as *yaxawfu* due to transfer, but we observe *yaxāfu*. The puzzle is represented by *ā*. Due to glide mutation, *ā* is expected when a glide is preceded by *a* and followed by another V, but the triggering context occurs neither before - /yaxwafu/ - nor after transfer - *yaxawfu*. BL maintain that "the vowel has been removed from its canonical position, yet its former presence somehow continues to count [and as] the Arab grammarians explicitly talk about vowel movement, the modern theoretical construct that most closely corresponds to [it is] trace theory". BL thus propose the rule in (1) (G = *glide*):

(1) $a\text{G} \rightarrow \bar{a}$ / _ {V, t_a}

Transfer turns /yaxwafu/ into /yaxaw$t_a$fu/, providing the environment for (1), which yields *yaxāfu*.

GliM - Analysis TT eV neatly formalize the concept of phonological *trace*. Because of the lack of the pronunciation relation (↑), eV is not phonetically interpreted. Its projection relation (↓), though, makes it phonologically active. This is shown with derivation of IMPRF.3M.SG of $\sqrt{\text{XWF}}$:





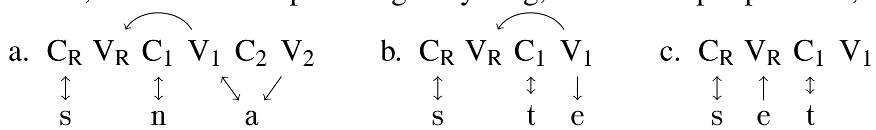
In a. we have the 'regular' IMPRF form /yaxwafu/, where V_2 is properly governed by V_3. This form is the input to transfer, yielding /yaxawfu/ (b.). In the latter, V_3 is an eV: its melody is still part of the phonological string, but is not pronounced where it belongs. The melodic content of V_3 though does get phonetically interpreted, albeit in V_2 (*a*-to-V_2 ↑). Transfer is hence a process that only shifts the pronunciation of the melody of V_3 to V_2, without removing the melody's projection relation. Crucially, the presence of *a* on both sides of the glide (c.) creates the environment for mutation to apply, yielding *yaxāfu*. The deletion of the glide is interpreted as the removal of ↑ (possibly due to the reduced licensing power of the following silent V), and the lengthening of *a* as the spreading of the melody pronounced in V_2 to V_3 (dashed arrow).

WFCC - Background The CEA 3F.SG subject marker shows an interesting contrast with the 1SG marker, as shown by (a chunk of) the PRF paradigm of $\sqrt{\text{LBS}}$ 'put (clothes) on' (FT:34):

1PL	lebesna
1SG	lebest
3F.SG	lebset

The presence of *e* between the root's C_2 and C_3 depends on the context: it surfaces only if followed by a C cluster (1PL, 1SG), i.e. only when followed by EV. If the latter is pronounced, *e* doesn't surface (3F.SG). The same alternation involves the V between the root's C_3 and the marker. If properly governed by full V, it stays silent (1PL), otherwise *e* surfaces (3F.SG). In 1SG, though, the root-final V stays silent despite being followed by a final EV. Traditionally, final EV's ability to properly govern a preceding EV is determined parametrically. If we assume that in CEA this parameter is ON, we can account for 1SG, but not for 3F.SG. If it's OFF, we can account for 3F.SG but not for 1SG. Clearly, a systemic parameter is not the best formal tool to account for this pattern.

WFCC - Analysis The puzzle can be solved if we assume that the 1SG and 3F.SG markers end in different Vs. The one of 3F.SG is an EV, thus cannot govern the root-final EV, which surfaces as *e* (c.). The one of 1SG is an eV, thus can properly govern (b) (a., b. and c. only show the root-final CV and the markers; the *a* of 1SG is phonologically long, as all CEA peripheral V; see FT).



Conclusions As shown, TT provides the tools to explain cases of opacity (GliM). Furthermore, by preserving a direct relation between lateral actorship and representational complexity, it improves on the inconsistent use of the parameters regulating the final EV's lateral actorship. This suggests that the parameter defining the lateral actorship of V could be possibly dispensed with, its effect being due to the phonological make up of V, thus, ultimately, to the Lexicon. Time permitting, we will also show how TT allows for an improved formalization of *yers* and Magic Government.

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Session parallèle A

Maintien ou chute de la voyelle finale des proparoxytons dans la phonétique historique du français

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Les conditions exactes qui ont gouverné la chute ou le maintien de la voyelle finale des mots proparoxytons dans l'évolution phonologique du latin en ancien français ont d'un point de vue explicatif toujours posé problème et, à notre avis, n'ont jamais été décrites de façon pleinement satisfaisante. Dans l'évolution de, par exemple, colaphu > °[kɔlpu] > *colp*, *cop* 'coup' on peut constater la chute de la voyelle finale et dans celle de, par exemple, cubitu > *cote*, *code* 'coude' on peut constater son maintien. Les explications traditionnelles (entre autres Fouché, 1952, 1961 et Bourciez et Bourciez 1967) supposent un accent secondaire sur la finale des proparoxytons qui ont connu une syncope tardive et supposent que la chute de la finale était bloquée par cet accent secondaire. A juste titre cette explication a été critiquée par Ségéral (2021) qui remarque que supposer une syncope précoce « dès lors qu'on n'a pas le ə final attendu est circulaire ». A cela s'ajoute encore le fait que dans la phonétique historique du français un des moyens utilisés par la langue pour se débarrasser des proparoxytons latins consistait précisément dans la chute de la syllabe finale, comme dans, par exemple, imagine > image(ne) > 'image', virgine > virge(ne) > *virge* 'vierge' ou margine > marge(ne) > 'marge' (Pope 1934 : §644, Bourciez et Bourciez 1967 : §15). La chute de la syllabe finale est difficilement compatible avec un accent secondaire. Comme les syncopes et les apocopes dans l'évolution du français ont toujours été limitées à des voyelles inaccentuées, il faudrait supposer un accent secondaire pour expliquer le maintien de la voyelle finale, mais en même temps, à moins que l'on ne permette la chute de voyelles accentuées, supposer son absence au moment de la chute de la syllabe dernière, ce qui rend les explications traditionnelles effectivement assez circulaires.

Une explication alternative a été avancée par Sampson (1980) et a été reprise par Ségéral (2021). Selon cette thèse le ə final se serait maintenu après des groupes C.C « latins » et serait tombé après des groupes C.C « non latins ». Comme le groupe [l.p] dans colaphu > °[kɔl.pu] existait en latin, la finale du proparoxyton serait tombée ici et comme le groupe [b.t], dans cubitu > °[kɔb.du], °[kɔb.tu] ou le groupe [t.d] dans °fatidu > °[fat.du] n'existait pas en latin, le ə final se serait maintenu dans ces proparoxytons pour finalement aboutir à *cote*, *code* 'coude' et à *fade* 'sans saveur, sans couleur'. Pourtant cette explication n'est pas non plus sans poser des problèmes, parce que, entre autres, il faut premièrement supposer une connaissance sur les groupes hétérosyllabiques latins « possibles » et « impossibles » là où, en général, les contraintes phonotactiques d'une langue s'expriment, et se limitent largement, en termes de groupes d'attaques ou de groupes codas possibles. Ensuite, cette alternative n'explique pas pourquoi le ə final serait tombé après le groupe [b.t], dans dubito > °[dɔb.to] *dot* 'je doute' ou debitu > °[dɛb.tu] *det*, *debt* 'dette' ou, après le groupe [t.d], dans nitidu > °[nɛt.du] *net* 'net, propre, pur'. De plus, la chute constante de la voyelle finale après les groupes [l.v] et [r.v] comme dans les paroxytons du type servu [sɛr.vu] 'serf' ou salvu [sal.vu] *salf* 'sauf' également supposée être gouvernée par la même division entre groupes « latins » et « non latins » est d'autant plus surprenante vu que [v] n'existait pas en latin.

Dans cette communication nous aimerions proposer une explication qui est basée sur une interaction plus complexe entre les processus de syncope, d'assimilation et de dégémination. L'idée centrale est la suivante : les groupes consonantiques résultant de la syncope ont été sujets à des moments différents, selon le moment où la syncope a eu lieu, précoce ou tardive, à l'assimilation et ensuite à la dégémination, qui, elle aussi, s'est étalée sur une période plus longue. Contrairement à l'explication traditionnelle nous supposons que la voyelle finale s'est maintenue après une consonne géminée, mais qu'elle a chuté après une consonne dégéminée. Nous supposons que les géminées héréditaires, du type drappu, cattu ne l'étaient plus au moment de la chute de la voyelle finale, °[drap.pu] > °[dra.pu] et °[cat.tu] > °[tʃat.tu] > °[tʃa.tu], d'où 'drap' et 'chat' tout comme celles au même moment dans °[dɔb.to] > °[dɔt.to] > °[dɔ.to] ou °[dɛb.tu] > °[dɛt.tu] > °[dɛ.tu] ou dans nitidu > °[nɛt.du] > °[nɛt.tu] > °[nɛ.tu], mais qu'elles l''étaient encore dans °[kɔb.du] > °[kɔd.du] ou dans °fatidu > °[fat.du] > °[fad.du].

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Le vide phonologique et la tendance à la palatalisation en vieux français

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On observe dans l'évolution du latin vulgaire à l'ancien français une tendance à la palatalisation qui se manifeste par divers phénomènes affectant les consonnes et les voyelles (Zink 1986) : **i.** la palatalisation des vélaires en coda (IIIème s.), **ii.** la palatalisation des vélaires devant /a/ (Vème s.), **iii.** le développement de la voyelle /y/ (VIIIème s.), et **iv.** le développement des diphtongues (IV-XIèmes s.).

Ces palatalisations ne sont pas conditionnées par l'environnement segmental des sons qu'elles affectent[1]. Plus étrange encore, la palatalisation du /uː/ latin amène à un système phonologique typologiquement rare. Ni le contexte ni le système ne semblent donc en mesure d'expliquer ces changements spontanés.

Je propose une explication théorique dont le mérite est de mettre au jour une cohérence entre ces phénomènes de palatalisation parfois éloignés de plusieurs siècles. Bien que ces palatalisations touchent des segments phonétiquement très distincts (vélaires, voyelles accentuées, voyelles longues), l'approche théorique permet d'établir un lien entre ces derniers. Il faut pour cela se fonder sur les développements de la Phonologie du Gouvernement (Kaye et al. 1985, 1990). Ce cadre théorique, qui représente la quantité et la qualité des segments par des objets distincts (positions vs éléments mélodiques), est fondé sur le postulat qu'il existe des « vides » représentationnels : des positions ou des éléments neutres qui demandent à être remplis sous certaines conditions.

Or, l'accent, la longueur et la vélarité sont tout trois représentés à l'aide de ces vides. L'accent est une position vide qui s'insère en syllabe tonique ouverte (Chierchia 1986, Larsen 1994, Scheer 2004) ; la longueur est une position vide qui accueille la propagation d'un segment adjacent (McCarthy 1979) ; et les vélaires contiennent un élément de lieu par défaut |@| (Harris & Lindsey 1995). Mon hypothèse est que ce sont ces vides qui déterminent les différents types de palatalisation évoqués plus haut. En effet, il est admis qu'un vide ne peut se maintenir que s'il y est autorisés par son environnement immédiat (Kaye et al. 1990, Scheer 2004). Dans les autres cas, il est soumis à l'apparition d'un élément prédictible. L'alternance V/Ø du français moderne répond par exemple à ce principe : la voyelle /ə/ apparaît lorsqu'une position ne peut rester vide en vertu de la loi des trois consonnes (Scheer 2001).

Selon Nasukawa & Backley (2015), la nature mélodique de l'élément épenthétique varie selon les langues mais se rattache nécessairement à l'un des trois éléments de lieu primitifs : A (a, ə), I (i, ɪ) ou U (u, ɯ). Or, un phénomène comparable à l'alternance V/Ø du français moderne apparaît dès le IIème siècle en latin vulgaire : la voyelle prothétique /i/ (réduite ensuite à /e/) permettant d'éviter les groupes consonantiques initiaux de type sC (1). Dans les termes de la théorie, cette prosthèse est un élément |I| remplissant une position initiale vide. D'où la généralisation suivante : « les positions et éléments vides du français archaïque sont réalisés sous la forme d'un élément |I| ».

(1) *schola* > *ischola* (> *eschola* > *école*)

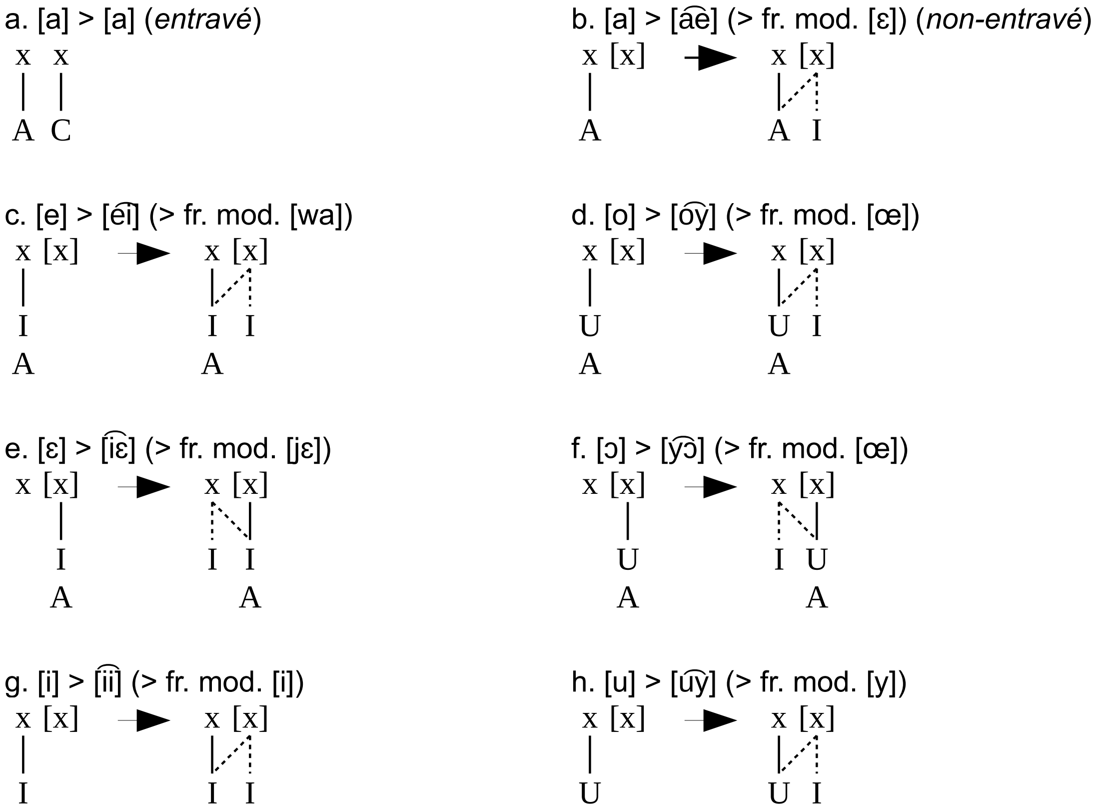
```
[x] x x x x x   ──►   [x] x x x x x
    | | | | |          ⋮  | | | | |
    s k o l a          I  s k o l a
```

Cette généralisation permet notamment de révéler la cohérence des différentes palatalisations qui affectent les voyelles. Nous savons que la diphtongaison touche les voyelles toniques non-entravées, soit la configuration dans laquelle s'insère la position vide notée ici [x] (comparer 2a-b). En appliquant désormais l'équation Ø = |I|, on prédit l'ensemble des diphtongues en (2b-f)[2]. Plus intéressant encore, l'application de cette proposition aux

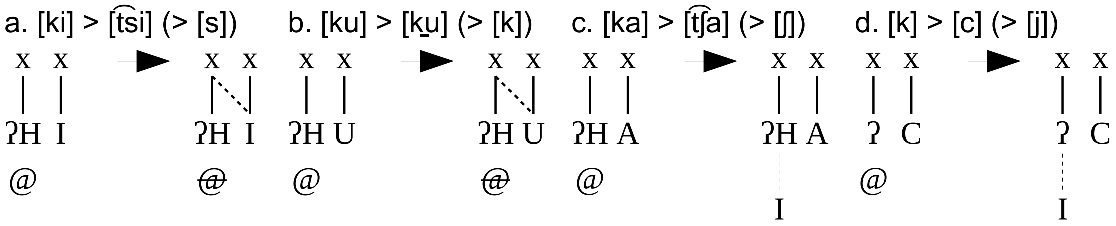
1 La question se pose à la rigueur pour les vélaires devant /a/, mais cette hypothèse se heurte au fait que la palatalisation des vélaires et l'antériorisation du /a/ sont parfois imputées l'une à l'autre.

2 Le contraste entre les voyelles moyennes ATR et RTR s'explique aisément si l'on reporte simplement leur différence de tête aux positions du noyau, la première position étant tête et la seconde étant complément.

voyelles échappant à la diphtongaison (2g-h) prédit le maintien de /i/ et une transition de /uː/ vers /y/, inscrivant ainsi ces voyelles dans un schéma diachronique affectant l'ensemble du système vocalique.

(2)


L'évolution des vélaires, hors contexte assimilatoire (3a-b), répond aux mêmes principes : la réalisation d'un |I| à la place du vide |@| aboutit à un [t͡ʃ] en présence de l'élément de bruit |H| (3c) et à une occlusive implosive en l'absence de ce même élément en coda (Harris 1990) (3d). Le mécanisme qui amène ensuite cette occlusive vers une spirante est du ressort de la lénition (Ségéral & Scheer 2001).

(3)


En résumé, cette présentation a pour but de mettre au jour la cohérence des phénomènes qui s'incrivent dans qui peut être qualifié de tendance générale à la palatalisation en français.

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Le sandhi externe en très ancien français : *où est le CV initial ?*

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Le sandhi externe, qui prévoit la concaténation de mots successifs au sein de la même unité computationnelle, est attesté en ancien français (CHASLE 2008 ; SCHEER 2020) et était déjà actif en latin impérial et mérovingien (VÄÄNÄNEN 2006 [1981] ; RUSSO & GIULIANI 2004 ; RUSSO 2011 ; 2013 ; 2014). Il s'exprime notamment par la sonorisation de consonnes finales devant initiale vocalique (1), ou leur chute devant initiale consonantique (2), ainsi que par l'élision de la voyelle d'un monosyllabe fonctionnel (3) ou du schwa final d'un polysyllabe (4). Dans tous ces cas, l'unité sur laquelle travaille la phonologie n'est plus le mot, tel qu'issu du lexique et de l'inflexion morphologique, mais un constituant prosodique.

(1) *ud ad* au lieu de *ut ad* (RUSSO 2014)
(2) *Sein Gabriel* au lieu de *Seint Gabriel* (SCHEER 2020)
(3) *qu'en* au lieu de *que en* ; *l'emperere* au lieu de *li emperere* (*Chanson de Roland* (MOIGNET 1972) ; PREMAT & POGGIO [à paraître])
(4) *ensembl od* au lieu d'*ensemble od* (*Chanson de Roland*)

Cette présentation vise à documenter et modéliser quelle est la situation du sandhi externe en très ancien français, c'est-à-dire dans les quelques textes d'oïl datant du IX^e^ au XII^e^ siècle. En nous appuyant sur des analyses traditionnelles et sur une analyse informatique de corpus, nous entendons démontrer que si le sandhi externe est bien actif en très ancien français, il demeure non systématique. Si l'on trouve en effet des instances de sandhi externe (*Sein Gabriel*, *qu'en*, *l'emperere*), on trouve aussi en très ancien français de nombreux cas où celui-ci ne semble pas s'appliquer (*Seint Gabriel, que en, li emperere*). On trouve également des situations en apparence paradoxales comme la présence d'un <d> après la conjonction *que* (*qued elle* vs. *qu'elle* dans la *Séquence de sainte Eulalie* (RAINSFORD & MARCHELLO-NIZIA 2018)), qui démontrent de l'alternance entre élision et réalisation d'une consonne flottante. À cela s'ajoute la question du rapport entre graphie et phonologie, dans la mesure où des occurrences graphiquement non élidées demandent parfois un traitement métrique monopositionnel (*ço est* = *c'est* monopositionnel, ou = *ço est* bipositionnel) et où des occurrences graphiquement élidées peuvent parfois correspondre à un traitement métrique bipositionnel (*l'emperere* = *l'emperere* tripositionnel (finale extramétrique), ou = *li emperere* quadripositionel (finale extramétrique)). Une analyse métrique informatique permet de repérer ces inadéquations entre élision graphique et élision phonologique, pour les intégrer à l'analyse (POGGIO & PREMAT 2019 ; PREMAT & POGGIO [à paraître]).

Au niveau formel, le sandhi externe peut être représenté, en CVCV, par l'absence d'insertion d'un CV vide initial entre deux items lexicaux (SCHEER 2009). Lorsque ce CV est présent, il brise l'adjacence entre les deux mots, bloquant ainsi les processus phonologiques ; lorsqu'il est absent, les deux mots sont concaténés et les processus phonologiques de sandhi peuvent s'appliquer sur les deux mots comme s'ils ne formaient qu'un. Cette approche, paramétrique, est *a priori* censée s'appliquer de manière discrète à la langue : la grammaire d'une langue donnée indique en tête de quel constituant prosodique insérer un CV initial, et n'en insère pas en tête des constituants inférieurs. Les alternances données au paragraphe précédent vont à l'encontre de cette prédiction : une telle théorie paramétrique ne peut produire une description adéquate des données.

Nous entendons montrer que l'adéquation observationnelle peut être obtenue en modulant d'une part le fonctionnement de la grammaire elle-même, et d'autre part les processus qu'elle gère. Au niveau de la grammaire elle-même, nous remplaçons la désignation discrète du constituant en tête duquel insérer un CV initial par une désignation continue, inspirée de la MATCH THEORY de SELKIRK (2011). Au niveau des processus grammaticaux, nous intégrons à l'analyse la question de la destruction des VC vides (GUSSMAN & KAYES 1993). Ainsi, c'est par l'union d'une théorie de la représentation (CVCV) et d'une théorie de la computation (Optimality Theory) que l'on peut parvenir à l'adéquation observationnelle. Enfin, nous montrerons comment une telle modélisation permet de rendre compte de l'évolution diachronique, en rendant compte de l'élargissement et du renforcement progressif du sandhi externe, du très ancien français à l'ancien français.

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La réduction et la chute des voyelles romanes : une perspective comparative et typologique

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Dans la diachronie du français, la plupart des manuels de phonétique historique soulignent que les voyelles atones, sauf /ă/ et /ā/ latins, ont chuté dans les syllabes atones intérieures (syncope) et dans la finale (apocope). Certains chercheurs proposent une étape logique et plausible, bien qu'hypothétique, d'une réduction des voyelles pleines vers *ə* avant la chute de ces voyelles (cf. La Chaussée 1974; Zink 1986; Ségéral & Scheer 2020, etc.) ; l'on signale rarement si cette réduction en cheva est de nature phonétique ou phonologique. Or, les attestations philologiques pouvant suggérer une rédaction en *cheva* sont quasiment absentes avant les *Serments de Strasbourg* composé au milieu du IXe siècle.

Dans cette communication nous argumenterons, en nous basant sur les données comparatives des langues romanes modernes, que l'apocope et la syncope de l'ancien français s'inscrivent dans un processus de réduction vocalique plus général, commun à l'ensemble de langues romanes. Nous proposons que la réduction des 10 monophtongues latines s'est faite de manière progressive en syllabes atones et selon les positions dans le mot : vers 7 voyelles contrastives dans la tonique, vers 5 dans les syllabes prétoniques et initiales, réduite ensuite vers 3 voyelles réduites mais contrastives dans les atones finales. L'étape intermédiaire du *cheva* qui précède la chute de la voyelle reste hypothétiquement possible, mais cesse d'être une étape essentielle à l'analyse diachronique et est même improbable en vue d'autres phénomènes tels que la prothèse du <i>, <e> devant les groupes /sC/ (cf. Väänänen 1981: 47–48), par exemple dans SCHŎLA → *iscola → fr. *école*. Notre argumentation se fait sur deux niveaux : 1. celui de la constitution phonologique des voyelles sur le plan représentationnel selon la théorie des éléments (**voir figure 1**) et 2. celui des données comparatives romanes.

La réduction vocalique

Figure 1. La représentation des voyelles dans la théorie des éléments

<table>
<tr><td>i |<u>I</u>|</td><td></td><td></td><td></td><td></td><td></td><td>u |<u>U</u>|</td></tr>
<tr><td></td><td>ɪ |I|</td><td></td><td></td><td></td><td>ʊ |U|</td><td></td></tr>
<tr><td>ẹ |<u>I</u>A|</td><td></td><td>ĭ |I.@|</td><td></td><td>ŏ |U.@|</td><td></td><td>ọ |<u>U</u>A|</td></tr>
<tr><td></td><td></td><td></td><td>ə |@|</td><td></td><td></td><td></td></tr>
<tr><td>ɛ |IA|</td><td></td><td></td><td></td><td></td><td></td><td>ɔ |UA|</td></tr>
<tr><td></td><td></td><td></td><td>ɐ |A|</td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td>a |<u>A</u>|</td><td></td><td></td><td></td></tr>
</table>

Dans la théorie des éléments, les voyelles sont caractérisées par les trois formants majeurs : |A| correspondant à une masse régulière d'énergie et à l'aperture, |U| correspondant à un rapprochement du F3 au niveau du F2, qui reflète la résonance horizontale et l'arrondissement labial, et |I| qui correspond à une baisse du F2 produite par l'antériorité articulatoire des voyelles (cf. Backley 2011). Dans cette même théorie, un phonème est représentationnellement complexe et ainsi *fort* soit par :

a. l'association de l'harmonie à plusieurs positions structurelles, tel est le cas des voyelles longues.
b. le fait d'avoir une tête phonologique, c'est-à-dire un élément dominant, voir omniprésent dans le signal acoustique et sa représentation psychique. Celui-ci correspond habituellement au trait [+atr], voire au caractère périphérique labovien (cf. Labov William 1994) qui l'éloigne de la qualité faible des voyelles centrales caractérisées par l'élément froid |@|.
c. la combinaison de plusieurs éléments, notamment de |I| ou |U| avec |A| résultant dans une voyelle à énergies spectrales mixtes.

Ainsi si l'évolution de la tonique représente une fortition du segment étymologique (cf. Anonyme 2022), dans toutes syllabes l'évolution diachronique témoigne d'une réduction du nombre de contrastes possibles. Dans cette communication, nous proposons qu'un phénomène miroir à la tonique s'est opéré dans les syllabes atones, par une sous-spécification croissante des syllabes de plus en plus faibles. Harris (2006) propose que la réduction vocalique - et la lénition plus globalement - se décrit comme la perte d'informations dans le signal acoustique. Dans la théorie des éléments cette réduction s'exprime donc par la perte d'un ou de plusieurs corrélats de la force représentationnelle (a., b. et c. mentionné ci-haut).

Les données comparatives romanes

C'est un fait bien connu de la diachronie romane que les syllabes atones permettent un plus petit nombre de contrastes vocaliques que les syllabes toniques. En italien par exemple, sept monophtongues contrastent en syllabe tonique /i/, /e/, /ɛ/, /a/, /ɔ/, /o/, /u/. Cependant, dans les syllabes atones les voyelles /ɛ/ et /ɔ/ sont absentes. Nous trouvons une situation semblable dans le galicien où les sept voyelles héritées du roman commun contrastent dans la syllabe tonique, tandis que /ɛ/ et /ɔ/ sont aussi perdues dans la syllabe post-tonique. Dans la finale absolue atone, le nombre de contrastes est davantage réduit à trois voyelles transcrites /ɪ/, /ʊ/, /ɐ/ ou / ẹ, ọ, ạ/ avec le diacritique de fermeture. Nous trouvons une réduction semblable dans le portugais brésilien tandis que dans le portugais européen, la réduction aux trois voyelles /ɨ~i~ɪ/ (souvent réduit à ∅), /u~ʊ/, /ɐ/ est caractéristique de toutes les syllabes atones. L'évolution précise des voyelles atones sera présentée dans différentes études de cas. Le français, cependant, est la langue ayant poussé cette réduction à sa conclusion logique extrême, ayant perdu la quasi-totalité des voyelles prétoniques, post-toniques et finales atones des mots hérités du latin.

S'il est habituellement admis que cette chute vocalique a affecté l'ensemble des voyelles atones héritées du roman commun, nous argumentons plutôt que l'ancêtre du français a dû passer par des phases semblables à ce que nous trouvons dans le galicien et les différentes formes du portugais, réduisant dans un premier temps le nombre de contrastes possibles à un simple contraste entre voyelle antérieure, voyelle postérieure arrondie et voyelle centrale ouverte ; et menant dans un deuxième temps à l'élimination totale de ces voyelles de la forme phonologique. Deux conclusions sont à retenir :

1. D'un côté la réduction des contrastes n'a rien d'aléatoire et suit un cheminement phonologiquement prévisible selon une procédure de sous-spécification croissante dans les syllabes de plus en plus faibles.
2. L'état synchronique des langues romanes actuelles préserve des captures temporelles du processus diachronique ayant présumément affecté le français dans une période qui nous est « presque » invisible par l'absence de textes contemporains.

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Session parallèle B

Brazilian Portuguese coda allophony and vowel epenthesis are driven by melodic complexity in obstruents

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Introduction This talk argues that theories which make good use of representations have an advantage over theories which dispense with them, in that they can explain certain phonological phenomena which sparse representations can only describe.

Data In Brazilian Portuguese as spoken in the city of Rio de Janeiro (henceforth Carioca) the distribution of coda consonants is severely restricted: only /r/, /l/, and /s/ can surface in coda position. This distributional tendency is reinforced by a process of [i]-epenthesis triggered by obstruents–including the fricatives /v/ and /f/ but not the sibilant /s/–that would otherwise be realized as codas, which are instead realized as the onset of open syllables (1):

(1)	o[p].cional	→	o.[pi].cio.nal	'optional'
	a[d].vogado	→	a.[ʤi].vo.ga.do	'lawyer'
	pa[c].to	→	pa.[ki].to	'pact'
	a[f].ta	→	a.[fi].ta	'cold sore'

Interestingly, even when phonetically absent, epenthetic [i] participates in phonological processes, as noted by Collischonn & Wetzels (2016: 93). The epenthetic vowel blocks assimilatory voicing in words such as *observa* 'observe-3sg.pr.ind.', which can be realized as *o*[bis]*erva* or *o*[bs]*erva*, but never *o*[p]*serva*, where assimilatory devoicing would be expected otherwise. Further, the coronal stop in *étnico* is subject to palatalization and realized as *é*[ʧ]*nico*, even when the epenthetic vowel does not surface.

In contrast to the obstruents, but like /s/, the sonorants /r l/ do not trigger [i]-epenthesis and are permissible codas. However, the sibilant and sonorants cannot be said to form a natural class, exhibiting different behavior in a pattern of allomorphy of the prefix *in-,* which surfaces as [ĩ] when preceding obstruents and /s/, but as [i] when preceding sonorants and nasals (Wetzels 1997: 213). The sibilant, then, is capricious in its patterning, sharing behaviors with both obstruents and sonorants.

A further striking aspect of these licit sonorant and sibilant codas is that they cannot appear as codas without consequences, and are subject to positional allophony (2):

(2)	ma[ɾ]es	'seas'	→	ma[x]	'sea'
	brasi[l]eiro	'Brazilian'	→	brasi[w]	'Brazil'
	lu[z]is	'lights'	→	lu[jʃ]	'light'

The distribution of codas and their pattern of allophony in Carioca presents two challenges for any theory of phonology: 1) Explain why only obstruents are subject to a phonological process–epenthesis– which ensures their position as syllabic onsets while /ɾ l s/ do not. 2) Bring out any generalizations present in the alternations in (2). A unified account of the alternations is not immediately obvious, given the disparate nature of the underlying segments themselves and of their outcomes.

Analysis This analysis proposes a representational account for the pattern of coda distribution and allophony that reveals a surprising connection: both effects are responses to the interaction between licensing scales (Cyran 2010) and melodic complexity (Harris 1990; Cyran 2010). In Element Theory (ET) (Kaye et al. 1985; Harris & Lindsey1993, 1995; Backley 2011), segments can be more or less complex depending on the amount of melodic material they contain. As such, the phonological patterning of sibilant obstruents, non-sibilant obstruents, and sonorants shows that they are not alike in terms of the amount of melodic content of each class. Obstruents that cannot be codas have more melodic material in their representations than permitted codas.

Complexity is shown in this analysis to have a direct effect on the lateral relations between segments that build higher-order prosodic structure (Scheer 2004, 2012). The more complex a segment is in melodic terms, the more demanding it is of lateral relations. That is, a melodically complex object such as /p/ demands lateral relationships in order to be associated to the prosodic structure. The required lateral relationships are provided by an empty skeletal position being filled by [i]-epenthesis, which endows it with the power to license a preceding obstruent. Epenthetic [i] is not associated to its skeletal position, but is phonologically active, triggering palatalization in appropriate targets and providing the necessary lateral relationships for obstruents. This accounts for the restricted set of possible codas relative to onsets: /ɾ l s/ are melodically more simple than obstruents and so demand less from the prosodic structure, and can surface without contracting any lateral relationship.

Sonorants and /s/ must nevertheless satisfy a licensing restriction, shedding melodic material in order to appear as codas. This is the cause of the pattern of allophony in (2). The phonetically disparate outcomes in (2) can be given a unified account within ET. Here, the melodic content of segments is determines by phonological behavior (Kaye 2005). To wit, the palatalizing nature of /s/ (as in *lu*[jʃ]) suggests that it contains the element |I|, as well as the noise element |H|. This Element is also present in /r/, since /r/ is in an allophonic relationship with the noisy fricative [x]. Similarly, /l/ contains the Element |U|, which accounts for its realization as labio-velar [w] when in coda position. Following Backley (2011), all sonorants also contain |A|, an Element missing from /s/. The presence or absence of |A| accounts for the natural class behavior of sonorants and the nonsonorancy of /s/.

When realized in codas, prosodic requirements strip away one element, since only a single element can be realized in that position. An examination of the facts of allophony in Carioca shows that in the case of /s/, |H| is stripped away leaving only a palatal object attached to a consonantal position, resulting in [ʃ]. In turn, |A| is stripped from sonorants, resulting in the pattern of allophony in (2): |H| in the case of [x]; |U| in the case of [w]. The result is an account that shows how both [i]-epenthesis and coda allophony emerge from well-formedness requirements imposed by the prosodic structure; two phenomena which do not otherwise seem related.

Consequences This representational account has advantages over theories which do not have a representational wing since it provides an explanation for the observed distributions and alternations. OT and other constraint-based theories are able to describe the empirical situation by making an appropriate ranking of NoCoda and faithfulness constraints, resulting in a repair by epenthesis. In turn, that sonorants and sibilants constitute possible codas can be accounted for by the constraints NoCoda(Son) and NoCoda(Sib) being ranked higher than NoCoda(Glide) and the appropriate faithfulness constraints.

An additional challenge is to make sense of the disparate outcomes of coda allophony which OT can provide a unified account of by a similar ranking of NoCoda constraints and faithfulness constraints that preserve manner realizations for liquids, and delete nasals. Such solutions, however, merely recapitulate the empirical situation–they have nothing to say about why things are as they are. Worse, they make no predictions about what is possible and what is impossible in language, since anything can be described. A different constraint ordering could generate a language where obstruents are possible codas but sonorants are not, an unattested pattern. The representational account provided here makes firm predictions about what is possible and what is not.

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Corsican lenition and fortition. Tracing a mental grammar from variation

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Corsica is linguistically considered part of the Italo-Romance space. However, the consonantal organization is complex, particularly with regard to the lenition/fortition process, depending on the geo-linguistic area as well as on diachronic factors phonologized in the synchronic variation. Considering the relation between Tuscan and Corsica, one would not expect the phonological Western lenition process to take place, since modern Italo-Tuscan (Eastern Romance) does not phonologically lenite obstruents in weak intervocalic positions vCv (but see Russo 2015)[1]. However, at the same time, Corsican language shares geminates with Italo-Romance (with Tuscany and Southern Italy), both in initial position {# / C}__ (triggered by Syntactic Doubling), as well as in lexical vCCv position (intervocalic geminates also resulted from Latin). On the contrary, Western Romance lost diachronically inherent geminates; furthermore, gemination at word boundaries can only be residual. In the Northern Corsican area, we find alternations such as (see Stefanaggi 2001; NALC vol. I, 2007):

Syntactic Doubling	Lenition	
C [$_{\sigma}$C V	V [$_{\sigma}$C V	
[trɛ pˈpɑ̃ni]	[u ˈbɑ̃nɛ]	'three breads/the bread'
[ɛ gˈgrɑ̃nu]	[u rɑ̃nu]	'(this) is wheat/ the wheat'
[sɔ fˈfɔlɛ]	[ˈparɛnu ˈvolɛ]	'are fairy tales /seem fairy tale'

The above alternations involve all types of obstruents, including the Latin confusion b/w in /β/. This consonant alternation is typical of the Western Romance (Ibero-Romance, Occitan) and it is found in some areas of Sardinian. The positional realization of /β/, weak and strong (/β/ → [v/b/w]), depends on the geographical area. It produces [w] in vCv, for instance in the Northern and Southern area (/β/ → [w]: [ˈuwa]), whereas in Northern Corsica [binu] 'wine' occurs in initial strong position {# / C}__ or in ∅Cv (∅ is the empty nucleus before the onset according to the Strict-CV representation of the Coda Mirror/strong position, Scheer and Zikova 2010).
In this talk we raise the following phonological issues around the concepts of consonant weakening and strengthening in Corsican language, discussed within government (templatic and non-templatic) phonologies, as well as in elements theories. We use data from NALC-BDLC (the *Corsican Language Database* sound archive, https://bdlc.univ-corse.fr/bdlc/corse.php) and NALC 1 (*Aréologie phonétique*, 115 localities, 200 maps and 70 synthetic maps). First, we identify how initial strength is conceived (both in initial and post-consonantal gemination): our data show that an initial CV (before W_2) in a sequence of W_1W_2 triggers gemination. However, this final CV of W_1 is not only anchored to a lexical latent consonant of W_1 (see Sheer 2012); Corsican shows two ways leading to gemination, one is lexical (with an initial parametric CV realization under syntactic conditions), the other is prosodic, driven by W_1 stress which also inserts an initial CV. We will also investigate how the Western phonology of the strong/weak alternation ([β/w/v]), interfered with Eastern phonology, since Corsica shows a lenition/fortition pattern by mixing features from both Romance areas. Secondly, treating all type of Corsican lenition, we will focus on the Western/Eastern Romance phonological decomposition factors. Going through theory specific definition models, we will identify the phonological lenition scales on which it is possible to make predictions about consonant phonological strong/weak behaviour, the sub-segmental make-up underlying trajectories both in strong and weak phonological environments. The aim is to sketch the abstract phonological properties in order to define the positional and segmental

[1] As it is well–known the phonological weakening of Latin intervocalic stops (with voicing and/or deletion) subdivided the Romance–speaking area of Europe into two major typological domains, the Western and the Eastern Romance. We do not take under consideration here the intervocalic lenition process known as Tuscan *Gorgia* (Marotta 2004; Dalcher 2008; Russo 2015) which does not fall within this typological Western/Eastern lenition.

contrasts through the lenition/fortition scale. The purpose is also to set up the lenition trajectories and strength hierarchies of the Corsican 'multilingual' phonology. This will help placing Corsica in the Romance area among native features, features shared both with Western and Eastern Romance, and features shared with micro-areas attached to different Italo-Romance languages, such as the Genoese, Tuscan, Pisan, as well as Sardinian sphere.

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Finding branching onsets in your croissant

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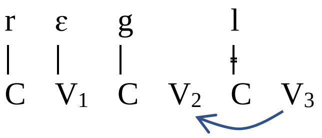
The French village of Nouzerines (postal code 23600) is located in the west of "The Linguistic Croissant", a Croissant-shaped area where the two historical "languages" of France, langue d'oc and langue d'oïl, intermingle. In the vernacular of this village, henceforth nouzerinois, when a verbal stem ends in a Consonant-Liquid (CL) sequence, that sequence is broken by a stressed vowel [œ] (in bold in 1i, cf. and 1ii,iii). Interestingly, in nouns, there is never epenthesis: the noun [rɛg] 'rule' shares the same root as (1d), but is never pronounced [regœl]. A similar morpheme-internal alternation is illustrated by the verb in (1c), which will be regarded as CC-final (i.e, underlyingly /ʒt/).[1]

A related alternation occurs in the future conjugation. The exponent of future tense is [r]. When it is followed by an inflectional affix (1iv), CL and CC-final stems appear with the same morpheme-internal epenthesis as in (1i). But in the FUT.3SG, there is no inflectional suffix (unlike in Standard French *chanter-**a***): in that case, all C-final stems (i.e., CL, CC *and* VC final stems like 1d [ʃãt]), occur with a vowel [œ] *between* the stem and the future exponent (again in bold in 1v). Importantly, verbs such as (1e), whose stems are consistently followed by a theme vowel *-i*, do not exhibit the last effect in the FUT.3SG: there is no suffix *and* no stem-internal change.

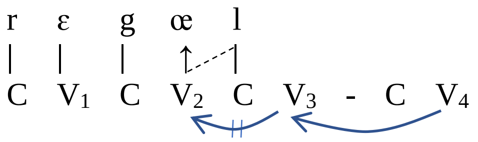
(1)		a. 'pay'	b. 'enter'	c. 'throw'	d. 'sing'	e. 'end'
i.	IND.SG	reg**œ**l	rãt**œ**r	ʒœt	ʃãt	fin-i
ii.	IND-1/3PL	regl-ã	rãtr-ã	ʒt-ã	ʃãt-ã	fin-is-ã
iii.	INF	regl-a	rãtr-a	ʒt-a	ʃãt-a	fin-i-r
iv.	FUT-1SG	regœl-r-e	rãtœr-r-e	ʒœt-r-e	ʃãt-r-e	fin-i-r-e
v.	FUT.3SG	regl-**œ**r	rãt-**œ**r	ʒt-**œ**r	ʃãt-**œ**r	fin-i-r

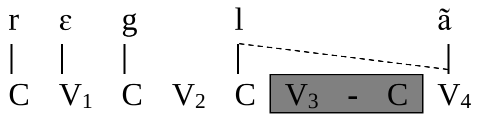
I propose an analysis of the facts in the Strict CV framework (Lowenstamm 1996, Scheer 2004). I show that the IND.SG and the FUT.3SG do in fact carry a suffix: an empty CV unit with no segmental material.

The analysis begins by making two assumptions about nouzerinois. First, final empty nuclei can govern (words like [ʃarʃ] 'look for' are attested). Second, /r,l/ must branch onto a realized nucleus in order to be realized themselves. Thus, in a noun such as [rɛg] 'rule' (2), the final empty nucleus V_3 governs V_2; /l/ is engulfed by empty nuclei, and therefore cannot be realized.

(2)


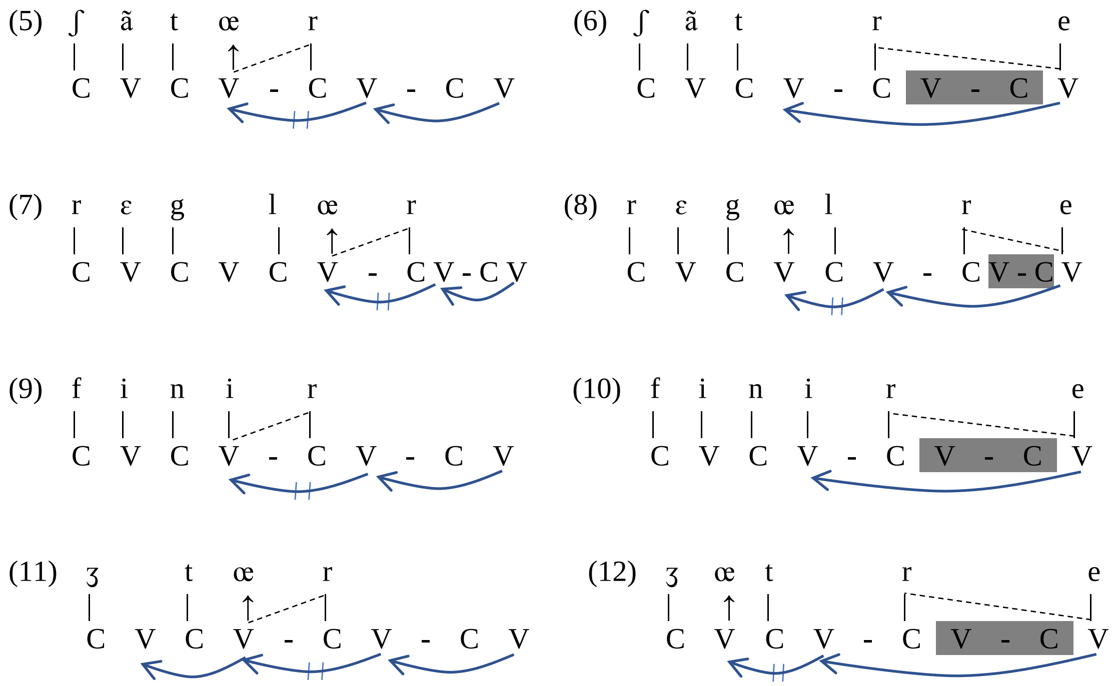
In the verb, as proposed, there is an additional CV unit (3). The final nucleus V_4 governs V_3, which in turn cannot govern V_2. V_2 therefore must be realized, thereby permitting the realization of the liquid. In the IND.1/3PL, the suffixal position is not empty. After the deletion of the empty VC sequence in grey (as per "VC-deletion", Gussmann & Kaye 1993), V_2 is governed and therefore not realized; and the liquid branches rightwards. I assume VC deletion only occurs when the second V is contentful.

(3)


(4)


[1] All data originate in the authors elicitation work. Stress is always on the last vowel.

The same holds for unsuffixed (5) and suffixed (6) future bases (for reasons of space, I skip over the explanations for each and and every pair). Assuming that the future suffix is /r/, the behavior of CL-final verbs in the future (3SG [reglœr], 1sg [regœlre]) is predicted (7,8); as is that of verbs with a thematic vowel [i], where there is simply no need for epenthesis (9,10). Finally, verbs like [ʒta] 'throw' from (1c) also fall out of the analysis, assuming – as above – that they are underlyingly vowel-less (11,12).



Having accounted for the general alternations, and if time permits, I will speculate on the motivation for the additional CV in the indicative mood, as well as comment on further configurations that were uncovered in the elicitation process. Among these are: **i.** verbs with V-final stems like [klu-a] 'nail', which unsurprisingly behave like (9,10), forming a 3SG.FUT [klur] ; **ii.** Short verbs like [j-a] 'tie' [nw-a]'make a knot' [ʧw-a] 'kill', which surface with an additional [e] in the IND.SG [nwe] and in the 3SG.FUT [nwer] 'make a knot' (Quint 2021); and **iii.** the interesting case of [etrãʎ-a] 'strangle-INF', [jetrãgœl] 'I strangle'.

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Caractérisation du trill /r/ et du tap/flap /ɾ/ à partir de descriptions issues de grammaires

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[Dans cette communication, nous utiliserons le terme trill pour faire référence à la consonne vibrante multiple, et tap/flap pour faire référence à la consonne battue.]

Le malais/indonésien est généralement décrit comme possédant un trill phonémique (Deterding et al., 2022; Macdonald & Darjowidjojo, 1967) alors que le soundanais dans la même famille linguistique austronésienne (branche malayo-polynésienne) est décrit comme ayant un flap phonémique (Van Syoc, 1959). Nous cherchons à comprendre et expliquer cette différence dans leur description. Au delà de ces deux exemples isolés, il devient important d'ouvrir la réflexion sur ce qui caractérise un trill et un tap/flap du point de vue phonologique dans le but de mieux interpréter les bases de données phonologiques comme PHOIBLE (Moran & McCloy, 2019), PBASE (https://pbase.phon.chass.ncsu.edu/query) ou encore LAPSyD (Maddieson et al., 2013) qui généralement se base sur les descriptions issues de grammaires de langues (Tableau 1).

Phonèmes	PHOIBLE	PBASE	LAPSyD
/r/	1332 (44%)	359 (57%)	196 (30%)
/ɾ/	774 (26%)	101 (16%)	201 (31%)
/ɽ/	179 (6%)	33 (5%)	48 (7%)

Tableau 1 : Comptes d'inventaires en fonction de la présence de différents phonèmes (avec leurs fréquences), le trill alvéolaire, le tap alvéolaire, et le flap rétroflexe, dans différentes bases de données phonologiques.

D'un point de vue phonétique, Ladefoged et Maddieson (1996) dans leur chapitre des rhotiques font une description de ce que les trills et les taps/flaps sont à travers les langues du monde. D'un point de vue purement phonologique, des essais de caractérisation des rhotiques ont déjà été proposés (Chabot, 2019; Natvig, 2020). Le trait [± continuant], qui reprend des arguments phonétiques, a aussi été mis en avant pour les langues ayant dans leur système phonémique un contraste entre un trill et un tap (Dickey, 1997). Cependant, il s'agit dans tous les cas de travaux qui prennent comme acquis les données des langues. Il n'est donc pas évident de comprendre ce que sont ces trills et ces taps/flaps cross-linguistiquement et ce qui les différencie.

Dans cette communication, nous proposons d'apporter des éléments de réponses en utilisant comme support des grammaires de plus de 150 langues faites principalement par des linguistes de terrain où le trill ou le tap/flap sont décrits dans les sections relatives à la phonologie.
Nous avons regardé avec attention différentes sections dans ces grammaires et en particulier les sections concernant la phonologie pour en faire des inférences sur ce qui caractérise le trill et le tap/flap :

- phénomènes d'allophonie contextuelle ou de libre variation (par exemple *r ~ ɾ ~ ɹ*)
- phénomènes d'alternance (par exemple avec *d* ou *l*)
- phénomènes d'assimilation
- les paires minimales proposés qui mettent en avant la proximité phonologique supposée selon l'expertise des linguistes de terrains des segments vis à vis d'autres segments dans le système de la langue (nous considérons que mettre en contraste un *r* par rapport à un *l* n'a pas la même valeur que contraster un *r* à un *d* ou encore un *r* à un *n*)

Cette analyse sera aussi l'occasion de revenir à un problème majeur qui doit être abordé pour la meilleure comparaison des ouvrages de références des langues : la terminologie ainsi que les symboles associés pour les transcriptions peuvent varier d'un système de transcription à un autre. La distinction trill – tap n'est pas toujours par défaut présente et de plus le *r* peut souvent être utilisé de manière générique (Barry, 1997; Whitley, 2003) faisant que certains auteurs auteurs se sont interrogé la réelle présence de certains *r* réalisés comme des trills dans les langues du monde (Lindau, 1985; Maddieson, 1984).

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