The too many tools problem in phonology:

Multiple Phonologies
+ Prosodic Hierarchy
= unfalsifiable theories

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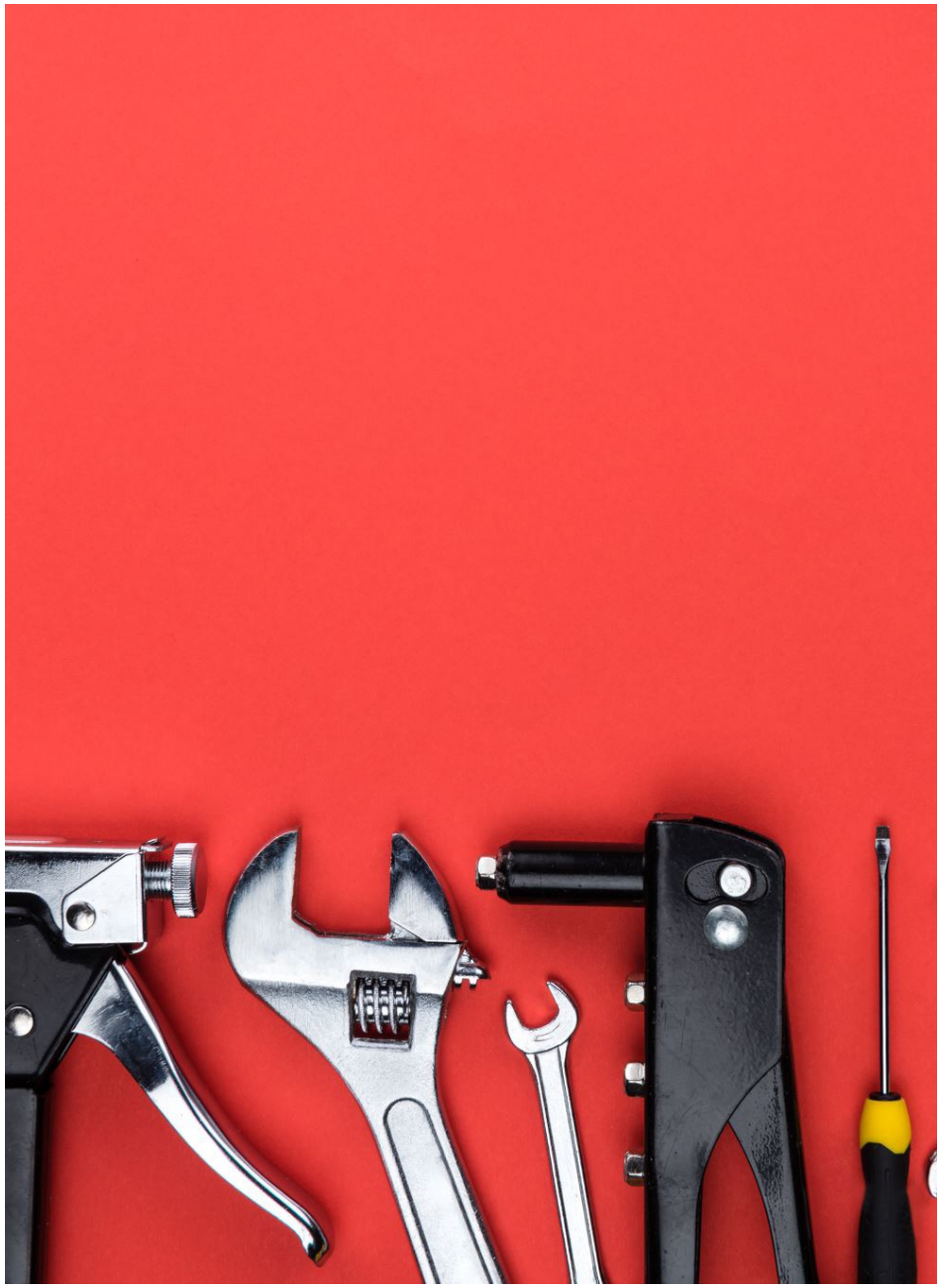
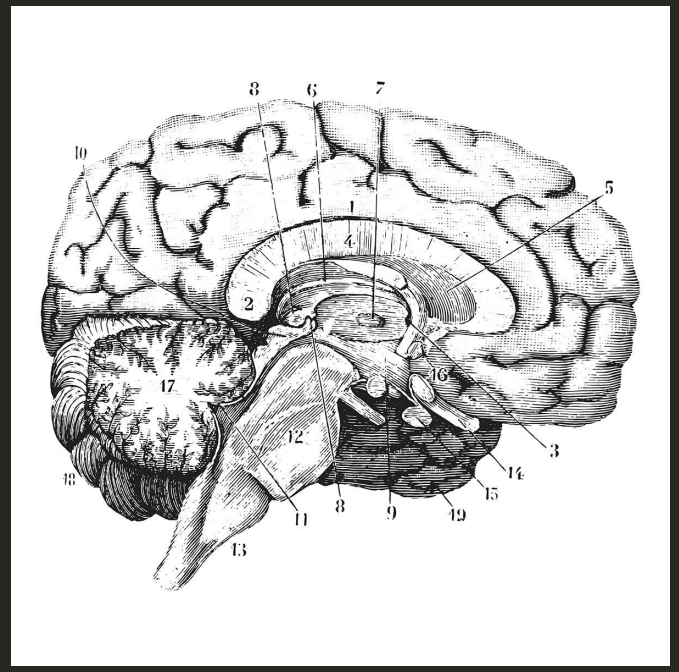




"My thesis is that what we call 'science' is differentiated from the older myths not by being something distinct from a myth, but by being accompanied by a second-order tradition – that of critically discussing the myth."

-Popper (1974:127)

The myths/hypotheses I will promote in this talk

There is good reason to believe that there is no prosodic structure above the foot, and there is only a single phonology in each grammar.

Roadmap

§1 Why question prosodic domains and multiple phonologies?

- §1.1 Arguments for the Prosodic Hierarchy, and its relation to multiple phonologies.
- §1.2 Hypotheses and predictions.
- §1.3 Arguments against the Prosodic Hierarchy.

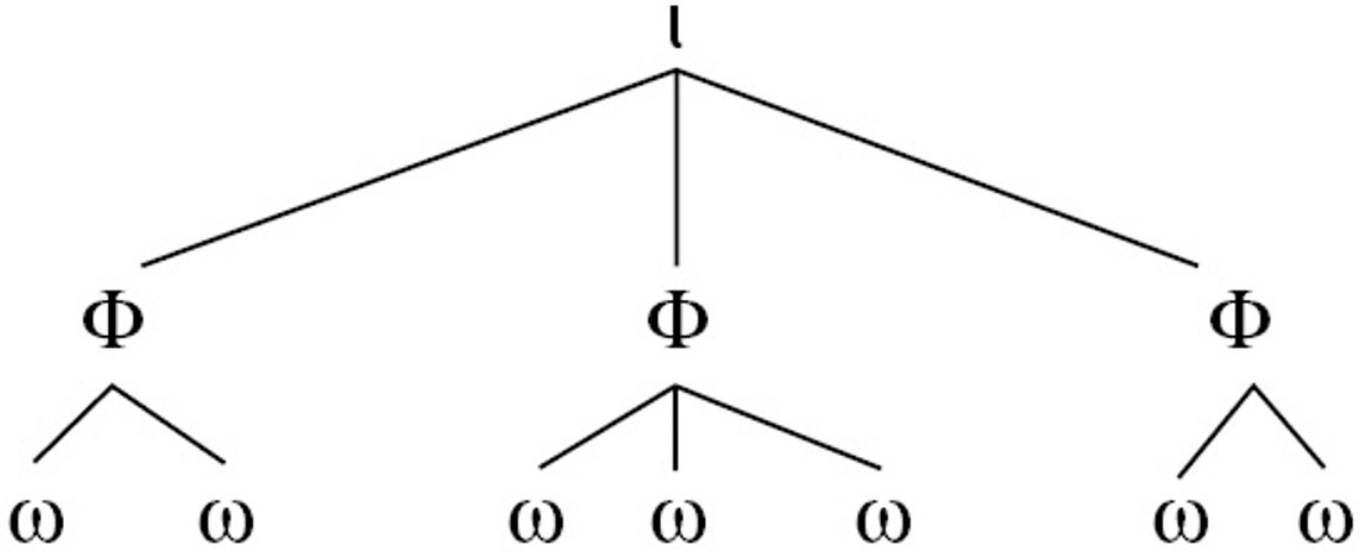
§2 Phonological turn-ons and turn-offs.

- §2.1 Phonological rules don't turn off. Phonology is always turned on.
- §2.2 An aside on putting the PIC aside. The syntax is also always turned on.

§3 Comparing accounts

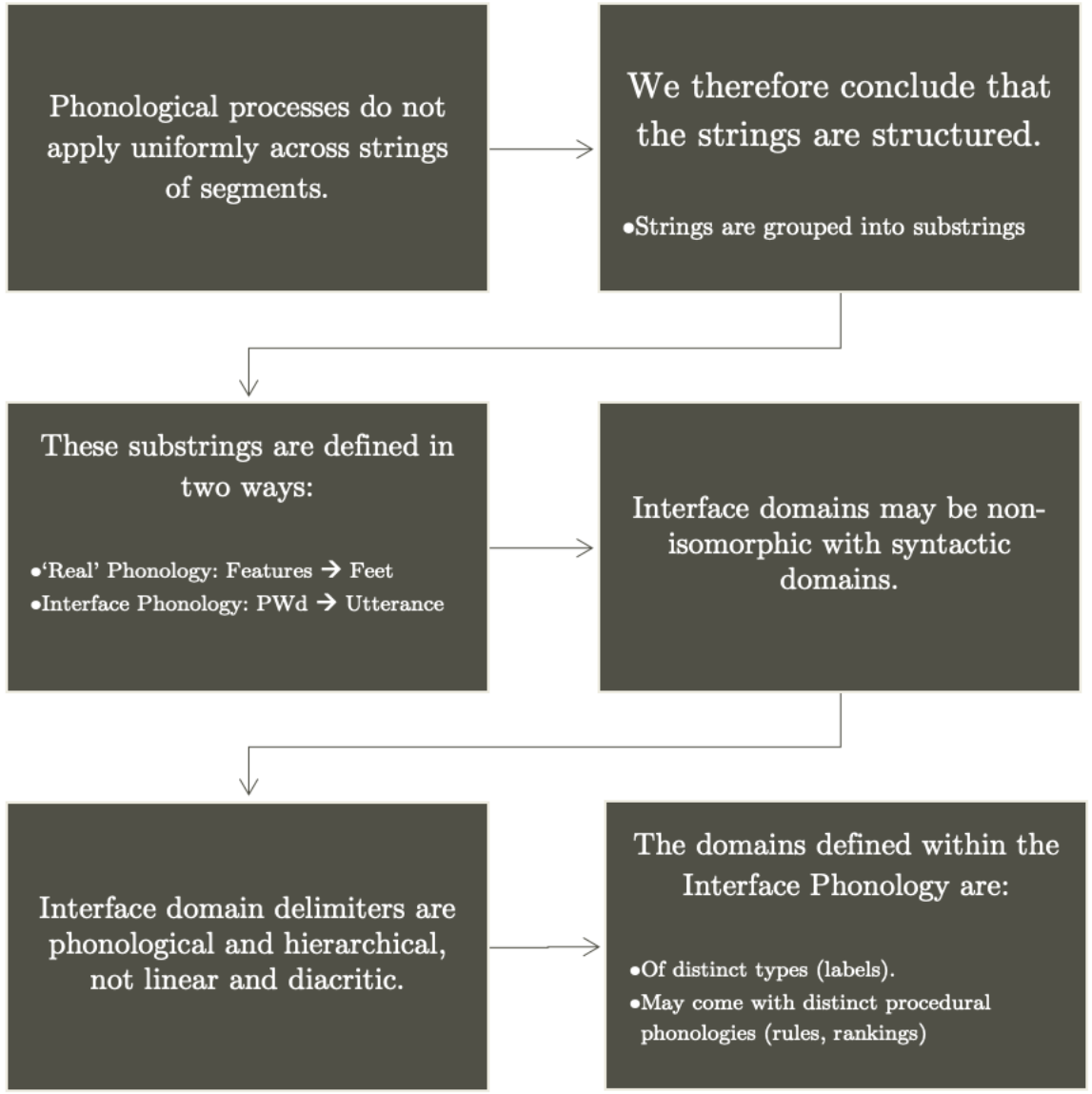
- §3.1 Armenian stress and high vowel reduction
  - Multiple phonologies vs 1
- §3.2 Xitsonga Tone Spreading and vowel lengthening.
  - PH vs Syntactic cycles and Production planning

§4 Final Thoughts



§1 Why question prosodic domains and multiple phonologies?

§1.1 Arguments for the Prosodic Hierarchy.



§1.2 Hypotheses and predictions.

The falsifiability of theories of phonological interface domains

I Many Phonologies + PH	II One Phonology + PH
III Many Phonologies, No PH	IV One Phonology, No PH

- The PH is not inherently constrained. There are as many types, or as many levels, as needed. (ex. recursive structure)
- Different phonological computations (rules/orderings, constraints/rankings) per (PH) domain, then these are not inherently constrained in number either. (ex. co-phonologies by phase/morpheme).
- The above are two areas of debate that have led to a particular proliferation of phonological theories.
- We need to push scenario IV as hard as we can. It is the closest thing we have to an out-of-the-box falsifiable/testable hypothesis.

§1.3 Arguments against the Prosodic Hierarchy.

The people you expect (among others):

"A formal definition of the term "diacritic" must rely on its status as a stranger in the environment where it acts: in module X, something is a diacritic that serves no other purpose than storing and restoring information from other modules that is needed for the computation in module X. To all extents and purposes, "#"s and "omegas" meet this condition: they are nonphonological intruders in the phonological word whose only purpose is to store extraphonological information."

The domains of the Prosodic Hierarchy make no inherent predictions. (Scheer 2008:159)

"Notably, bracketing paradoxes can only exist within a theoretical framework that proposes that hierarchical structure exists both in the morphosyntax and in the phonology, or that the morphosyntax/semantics and phonology must both be read off of the same hierarchical structure. This is the reason why bracketing paradoxes were not mentioned before the introduction of theories such as ... prosodic phonology (Selkirk, 1982; Nespor & Vogel, 1986)." (Newell 2021b:5)

The domains of the Prosodic Hierarchy make erroneous predictions.

"Non-isomorphism between syntactic and phonological domains is the motivation for the Prosodic Hierarchy. Most (if not all) of the arguments for non-isomorphism in Nespor & Vogel (1986) do not follow through. The majority of the examples motivating non-isomorphism involve adjuncts/prefixes." (Newell 2017a:24)

The basis of the non-isomorphism argument must be revisited.

§1.3 Arguments against the Prosodic Hierarchy.

But also, it's going that way in the pro Prosodic Hierarchy crowd:

"In Prosodic Hierarchy Theory, a large number of distinct prosodic categories has been proposed in order to provide enough separate domains for different processes. While empirically well-founded, this research program has resulted in an embarrassment of riches: These categories have never been instantiated in a single language in their totality, and their crosslinguistic identification has remained a largely unsolved problem."

(**Ito & Mester** 2013:39)

"In this paper, I have assumed a distinction between just two levels, ϕ and ω, with no evidence presented that would bear on the presence of a third category .. An even more radical proposal would see no categorical distinction between prosodic categories at all, with different levels of prosodic boundary strength responsible for demarcating what would appear to be different "types" of prosodic categories, along the lines of that proposed in **Wagner** (2005, 2010)."

(**Elfner** 2015:1204)

The inventory of prosodic domains is smaller than what has been proposed, and maybe domains are not of different types at all.

§1.3 Arguments against the Prosodic Hierarchy.

But also, it's going that way in the pro Prosodic Hierarchy crowd:

"One benefit of [MAXIMIZE PROSODIC DOMAINS] over the class of MATCH constraints is that the latter putatively apply to all XPs. But such a theory seems to overgenerate: there are fewer prosodic domains than XPs once functional structure is taken into account.

(**Sande et al.** 2020:1222)

The prosodic domains that there are are not defined with reference to syntactic structure, but rather to domains of computation.

"Constraints of the interface spell-out module relate morphosyntactic properties of the output morphosyntactic representation to phonological properties of the input representation for the phonology per se. As for the constraints which have direct impact on the output phonological representation PO, these are purely phonological markedness or faithfulness constraints of the phonology per se, relating just the PI and PO levels of phonological representation

(**Kratzer and Selkirk** 2020, §§12.6–12.7).

Syntactic structure and Prosodic structure can be non-isomorphic because of syntactic features, not just because of the phonology/syntactic structure.

§1.3 Arguments against the Prosodic Hierarchy.

Low conditional probability;

Liaison rate approx. 13%

Ils construisent des douches intérieurs.

'They are constructing interior showers.'

High conditional probability;

Liaison rate approx. 40%

Mathilde regarde ses déssins animés.

'Mathilde is watching her cartoons.'

(Wagner et al. 2020)

Production Planning

"... sandhi processes involve phonological rule application (or something similar to that), and are constrained by the locality of production planning." (Wagner et. al. 2020)

Variation in the size of a planning window is due to things like cognitive load, number of upcoming words, and the predictability of a following word. (Wagner et. al. 2020) Adjuncts and Specifiers are predictably able to be planned separately. (Hirsch & Wagner 2016)

This difference is not syntactic, and not phonological, (and not even linguistic!) but has the effects we attribute to non-isomorphism and the Prosodic Hierarchy.

3

This is a 3rd factor effect. If the boundaries we see are the noise and not the signal, they should not be represented in the phonology.

(N.B. this is my logical extension of their work)

So, where do we go from here?

§2
Phonological turn-ons and turn-offs.

Why do phonological rules 'turn on or off'?

Table 85.1 Two types of morphosyntactic conditioning acknowledged throughout the history of generative phonology

Theory	*Representational effects*	*Procedural effects*	*Sample reference*
SPE	boundary symbols (+, #)	the cycle	Chomsky & Halle (1968)
Lexical Phonology	prosodic units (built by rules)	the cycle (with levels)	Booij & Rubach (1984)
Stratal OT	prosodic units (controlled by ALIGN)	the cycle (with levels)	Bermúdez-Otero & Luís (2009)
Classical OT	prosodic units (controlled by ALIGN)	OO-correspondence	Raffelsiefen (2005)
Lateral Phonology	empty CV units	the cycle (phases)	Scheer (2008)

(Bermúdez-Otero 2011:2019)

§2.1 Phonological rules don't turn off. Phonology is always turned on.

The cycle is the domain delimiter.

All instances of the phonology 'turning off' are derived environment effects/non-derived environment blocking

- This talk/research programme follows Kula (2008) closely. See references therein for GP and non-GP structural analyses of DEEs.
- See also Newell & Ulfsbjorninn's (2021) Special issue of *The Linguistic Review* for implications of structural phonology for phonology vs. allomorphy in various frameworks, Newell (2021a), and Ulfsbjorninn, under revision.
- "Processes apply whenever the conditions that trigger them are satisfied" (Kaye 1992:141)
- "I shall assume whether or not an affix is cyclic is not a property of the morphological rule by which it is assigned, but is rather an idiosyncratic and variable property of the affix." (Halle 1986:6)
- "Simply put, if the representations are right, the rules will follow." (McCarthy 1998:84)

And, importantly here, so are the effects of the phonology 'turning back on'

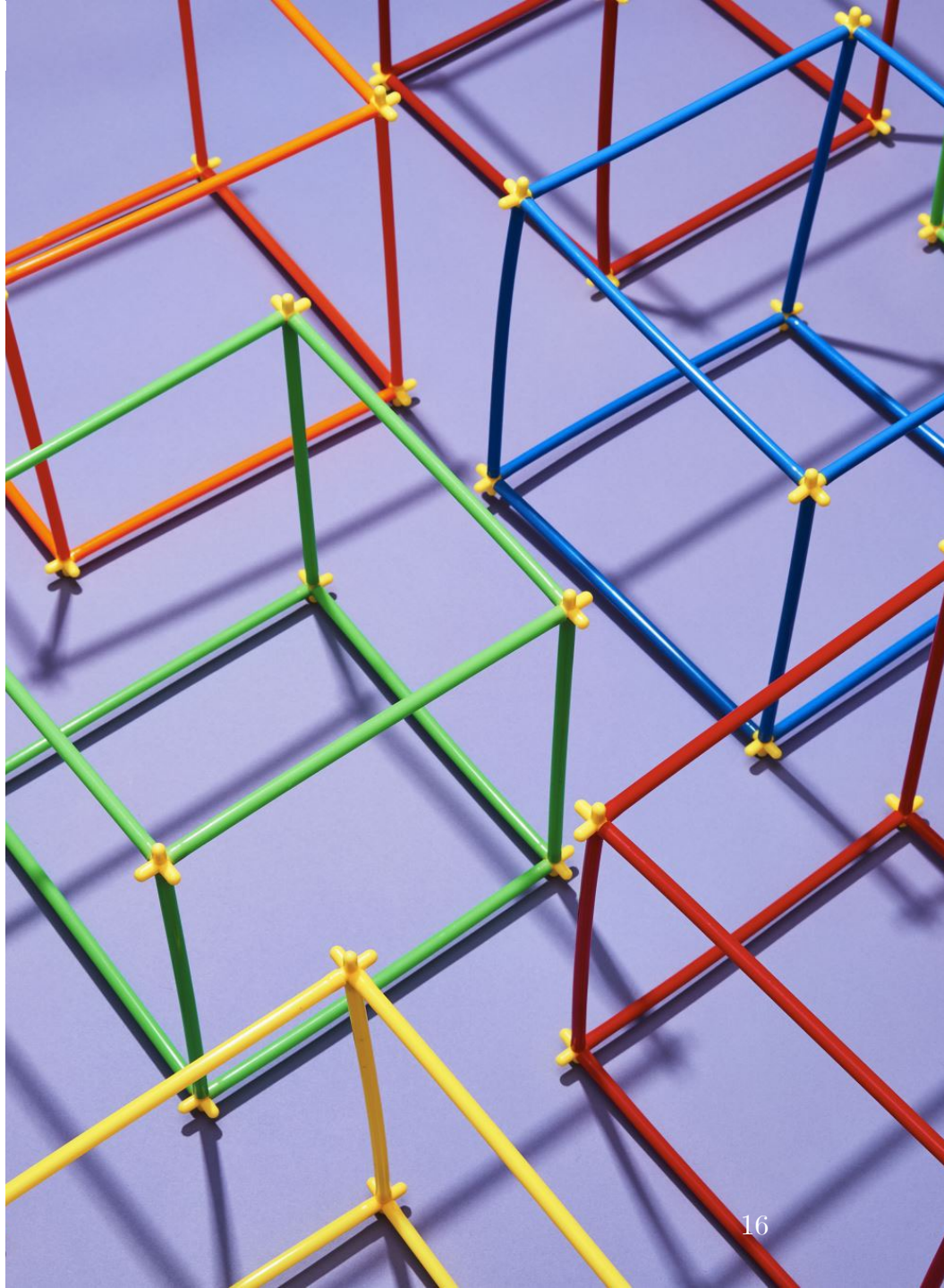
- But that's just because they're always on, contra the Russian Doll Theorem (Bermúdez-Otero 2011) and the Strong Domain Hypothesis (Kiparsky 1985).

The structures we must have:

We all agree on the existence of the following, regardless of our stance on the Prosodic Hierarchy and/or the existence of domain-specific phonologies (I think).

- Sub-segmental entities (features/elements)
- Organization of segment-internal structure (complexity/geometry)
- Syllable structure (syllables/timing tier/government & licensing/moras)
- Organization of syllables (binarity/feet)
- Relations between these levels of structure

If we can do what we need without more than this (in the phonology), then we should.



§2.2 An aside on putting the Phase Impenetrability Condition aside.

The syntax is also always-on.

- It is of note that there are no theories of syntax (that I know of) wherein distinct syntactic rules/rankings are proposed at each stratum (even within the almost universally rejected OT-syntax).

Syntactic rules apply when their structural conditions are met.

Just like phonological rules.

- No one says 'Agree applies at the vP phase, but not at the CP phase').
  - We should all wonder why syntax would be simple, and phonology full of sub-modules. (They are both cyclic. They both have access to stored lexical items.)
- What about the PIC?
  - The PIC is a theoretical proposition, not backed up by any solid positive evidence (so, rules don't 'turn off'). (Embick 2014, Newell 2017b).
  - The PIC, in both phonology and syntax, is an epiphenomenon of syntactic cyclicity and feature-valuation, structure building, and structure modification.

The absence of the PIC in Phonology

- If syntactic movement can happen after phonology then there is no PIC in the syntax, so we should not expect it in the phonology.
- Guébie : harmony is in the vP, not in a prosodic domain. And after harmony, the particle moves.
- Malagasy : The same affix triggers distinct effects depending on timing of spell-out, not syntactic structure or affiliation of the affix to a stratum. And after phonology happens, the verb raises.
- These types of data are explained at the segmental level within the first cycle of interpretation of the relevant morphemes.

joku$^{2.3}$	ɔ^{3}	ka^{3}	ɟɔkʷɪ-a$^{2.3.2}$	ni^{4}
PART	3SG.NOM	PROSP	bird-PL	see

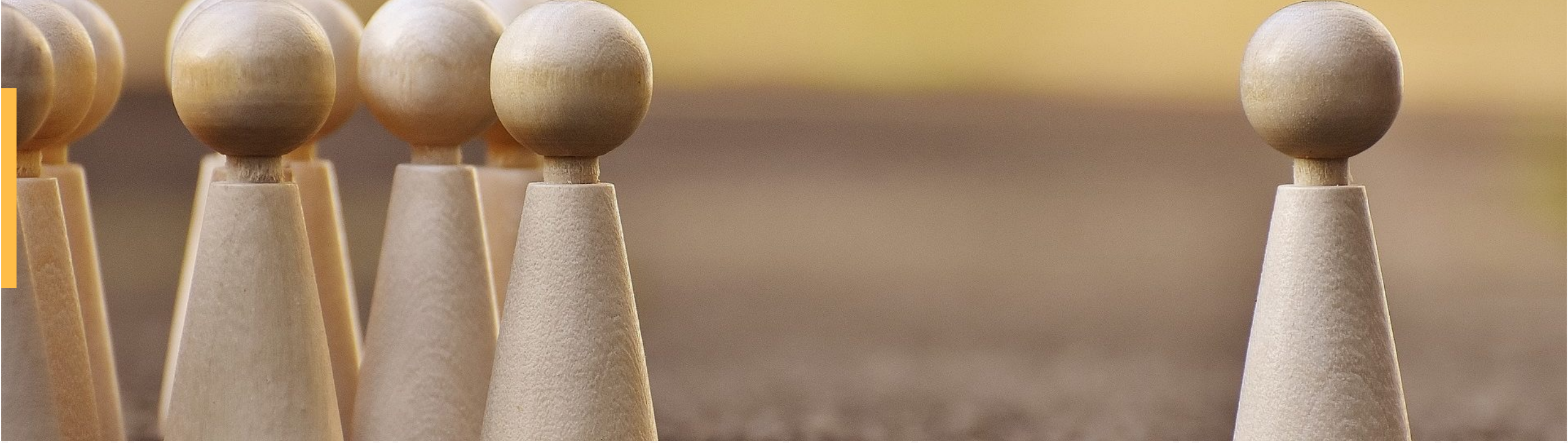
'He will SEE birds.' (cf. [grimi-ə$^{2.3.2}$] agouti-PL 'agoutis')

(Sande 2022 : Guébie discontinuous vowel harmony)

A^{m}pamaran-dRakoto	^{m}pivarotra	ny	menaka.
AN-F-AN-FATRA-ANA=Rakoto	seller/s	DET	oil
cause-event-cause-measure-ct=Agent	Causee	Theme/Subject	

'Rakoto makes sellers measure the oil.' (oil = subject)

(Newell 2017b : Malagasy NF-sequences and verb movement)



§3 Comparing accounts

One phonology, or many? Prosodic Hierarchy, or no?

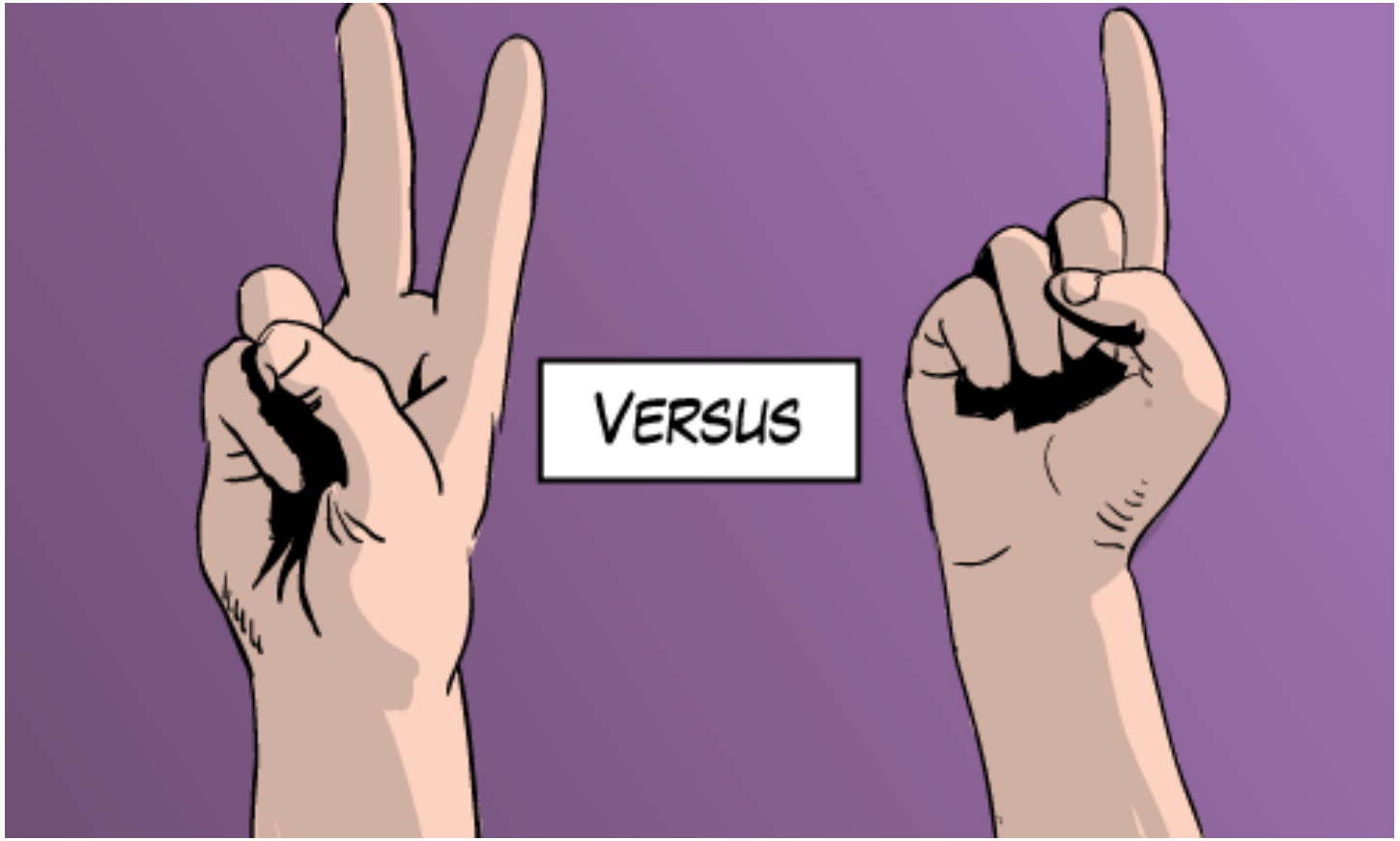
In the next 2 subsections

- I will look at two analyses in the literature that claim to require multiple phonologies at multiple levels, or to require the PH.
- Dolatian's (2021) analysis of Armenian stress and vowel reduction
- Lee & Selkirk's (2022) analysis of Xitsonga Tone spreading and V lengthening
- Why these?
  - The first argues explicitly that there *must* be distinct phonologies in the grammar.
  - The second argues that the PH is the only way to get the pattern of seemingly overlapping domains of phonological processes.

§3.1 Armenian

One phonology, or two (or more)?

A reanalysis of Dolatian (2021)



Armenian stress and high vowel reduction.

High vowels delete(reduce) iff they were stressed in cycle X, and then stress shifts in cycle X+1:

a. Base:	amusín	‘husband’
b. Der. Suffix:	amusn-utjún	‘marriage’
c. C-init Infl. Suffix:	amusin-nér	‘husband-Pl.’
d. V-init. Infl. Suffix:	amusin-óv	‘husband-Instr.’ (West. Arm.)
	amusn-óv	‘husband-Instr.’ (East. Arm.)

N. B. the position of the deleted vowel will be pronounced as schwa if needed to break up illicit consonant sequences.

Dolatian's Stratal OT analysis is as follows (simplified for exposition):

Derivation [amusnutún] 'marriage'

Stem Level (base) : AlignStressRight : DestressHighV >> MaxV → amusín
Stem Level (deriv.): AlignStressRight : DestressHighV >> MaxV → amusnutjún

V-initial Inflection (WA) [amusinóv] 'husband-Instr.' (C-initial for both: amusinnér)

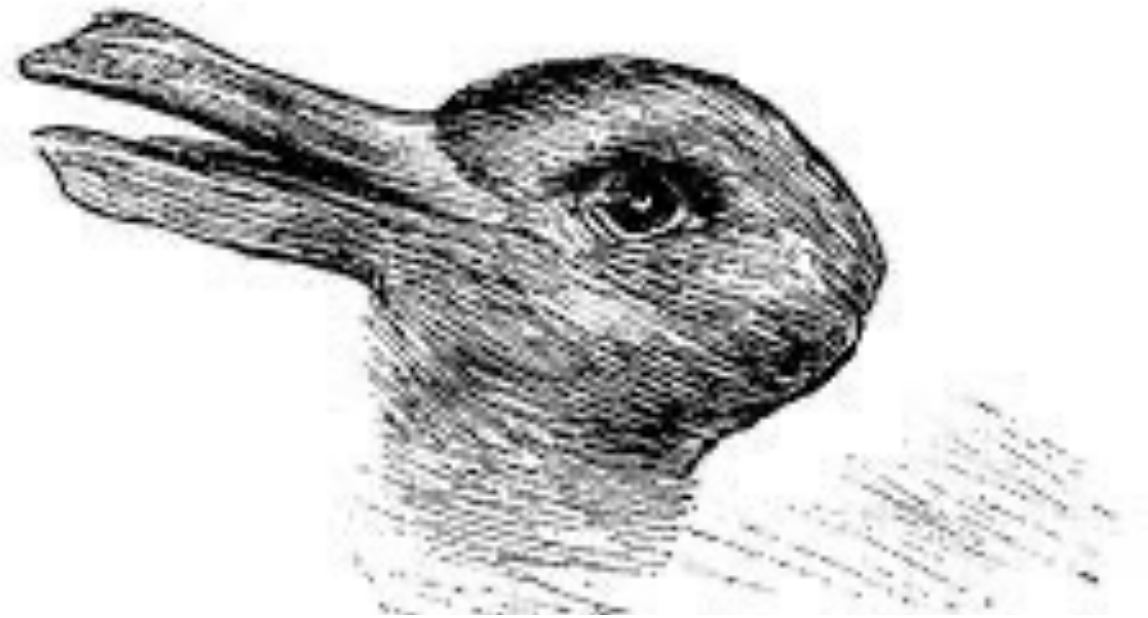
Stem Level (base) : AlignStressRight : DestressHighV >> MaxV → amusín
Word-Level: MaxV >> AlignStressRight : DestressHighV → amusinóv

V-initial Inflection (EA) [amusnóv] 'husband-Instr.'
Stem Level (base) : AlignStressRight : DestressHighV >> MaxV → amusín
Stem-Level: AlignStressRight : DestressHighV >> MaxV → amusnóv

N.B. V-initial affixes in EA are re-prosodified as part of a smaller domain due to constraints on syllable alignment, so they do not trigger word-level phonology. This looks like a structural, not a stratal solution!

There is a plausible alternative 1-phonology analysis

But first : Phonetics ≠ Phonology



There are (at least) two classes of phonetic reflexes that indicate stress/length :

(1) amplitude/pitch/length (the expected reflexes), and

(2) non-reduction (the illusion).

Like discussions of virtual length, which will also come into play in this analysis, we can call the second pattern virtual stress.

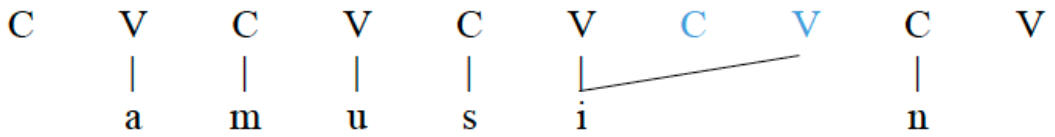
A non-reduction/deletion re-analysis

- Deletion of the first cycle's CV entails deletion of high vowels as well, leaving an empty V position.
  - We'll talk about why in a sec, and about why the domains merge in Cycle 2.

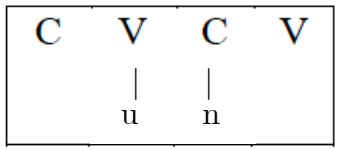
Derivation [amusnutún] 'marriage'

Cycle 1

a.

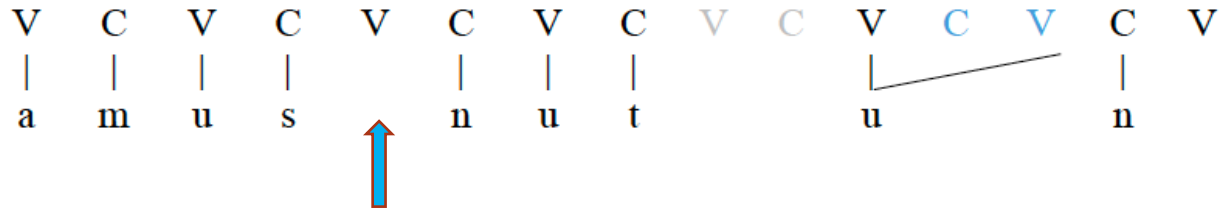


UR of suffix:



Cycle 2 : merger of 2 domains : deletion of CV *and* the segment attached to it.

b.



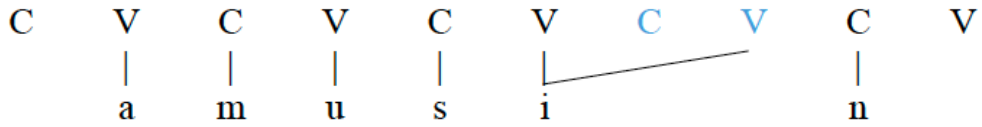
A non-reduction/ deletion reanalysis continued…

(We'll talk about EA V-initial inflection in the next section)

Inflection: [amusinóv] 'husband-Instr.' (WA)

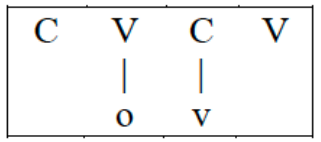
Cycle 1

a.

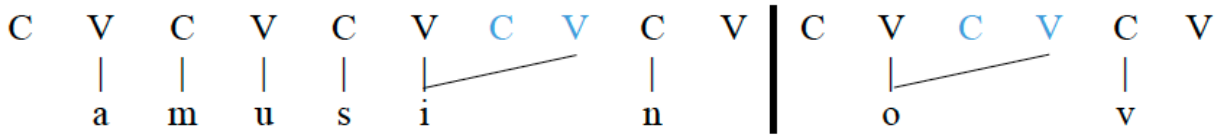


Cycle 2 : no merger of 2 domains (just linearization) : no deletion : Primary & Secondary stresses survive.

UR of suffix:



b.



Levels of stress

We know (1) that various levels of stress emerge in languages, and (2) we know that different stresses have different phonetic values, and (3) we know that stress/length prevents reduction.

We would only need to posit that Destressed High Vowel Reduction is 'turned off' at the word level if the previously stressed high vowels are in fact destressed.

I contend that they are not, and that Armenian has the same phonological grammar at all levels.

This gives greater insight into why it is high vowels that are reduced.

*Dolatian's proposal: *i,u[-STRESS]&ID[STRESS] ~ *ǐ, ŭ:*
There are no vowels which are unstressed high vowels and which gained or lost stress in the derivation

Why high vowels? Structure to the rescue again.

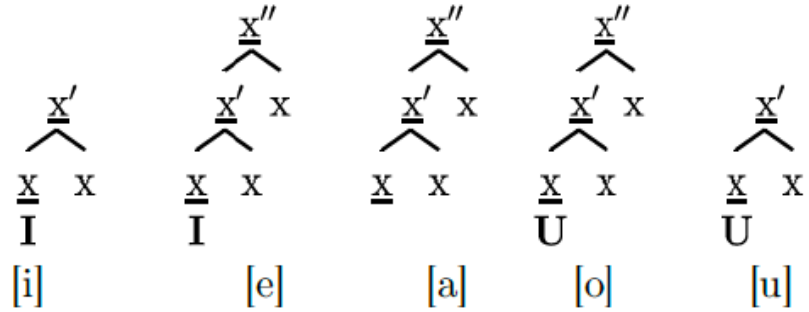
Armenian has a typical triangular vowel system

i =|I| (ə = | |) ɯ = |U|

ɛ/e = |I<u>A</u>|/|IA| ɔ/o = |U<u>A</u>|/|UA|

ɑ |A|

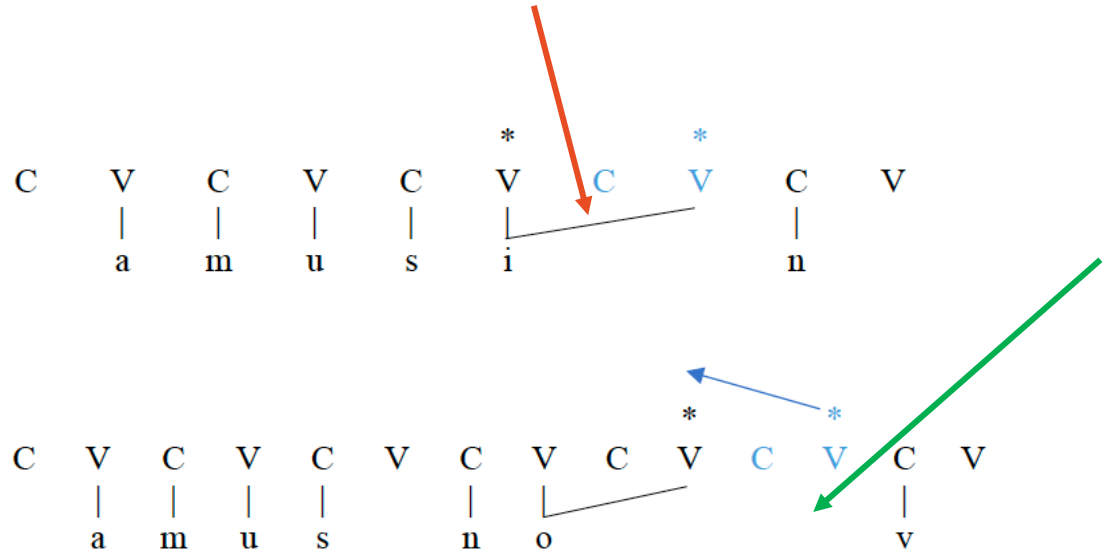
Consider the structure of vowels in Pöchtrager (2018:62).



Why high vowels?

Structure explains, constraints describe.

- High vowels are simpler than mid and low vowels structurally – they emerge as reduced forms of mid vowels in many languages.
- High vowels are weaker, and therefore they are subject to reduction. Vowels with more structure 'hang on'. See Honeybone's (2005) Sharing makes us stronger: process inhibition and segmental structure.
- |A| vowels behave even more differently cross-linguistically, and Pöchtrager translates this as structure (not elements).
- The lack of high vowel reduction in certain environments in Armenian is not due to a constraint-reranking. It has a deeper motivation.
- Non-high vowels are already long. They are stressed via inheritance of metrical information (following Ulfsbjorninn 2014 and more recent work, including Faust & Ulfsbjorninn 2018).
- High vowels are underlyingly short, and lengthen into the stress CV. When it goes, vowels that are attached to it go too.



- mid and low vowels are not linked to the stress CV (no superlong vowels) and so its deletion does not affect them structurally.

§3.3 When rules do turn back on. Non-isomorphism

"violations" of the Russian Doll Theorem/Strict Domain Hypothesis

Eastern Armenian V-initial inflection

If we look at Dolatian's SOT account of Armenian, we have a bit of a contradiction.

First, affixes in his account are marked with Stem or Word Level diacritics.

Der: -utun$_S$ vs. Infl: -ner$_W$ / -ov$_W$

But, in his account, resyllabification across a Stem-boundary will trigger a Stem-Level Phonology, ignoring the diacritic on the suffix.

This causes a procedural glitch.

The affix comes into the derivation with W but then must change affiliation to S after syllabification.

Prosody vs phonology?

Stratal and prosodic derivation of amusn-ov (EArm), amusin-ov (WArm), *and* amusin-ner (both)

Input			EArm /amusin -Ø$_S$ -ov$_W$/	WArm /amusin -Ø$_S$ -ov$_W$/	EArm &WArm /amusin -Ø$_S$ -ner$_W$/
Cycle 1			(a.mu.sín)$_s$	(a.mu.sín)$_s$	(a.mu.sín)$_s$
Cycle 2	MORPH	Spell-out	(a.mu.sín)$_s$ - /-ov$_W$/	(a.mu.sín)$_s$ - /-ov$_W$/	(a.mu.sín)$_s$ - /-ner$_W$/
	PROSODY	Syllabify	(a.mu.sí.n)$_s$-ov	(a.mu.sí.n)$_s$-ov	(a.mu.sín)$_s$-ner
		Readjust PStem	(a.mu.sí.n-ov)$_s$	(a.mu.sí.n-ov)$_s$	
	PHONO	*PStem-level* Stress	(a.mu.sǐ.n-óv)$_s$	(a.mu.sǐ.n-óv)$_s$	
		DHR (EArm)	(a.mus.n-óv)$_s$		
	PHONO	*WLevel* Stress	(a.mu.sn-óv)$_s$	((a.mu.sin-óv)$_s$	(a.mu.sin)$_s$-nér)
Output			amusn-óv	amusin-óv	amusin-nér

(Dolatian 2021:868)

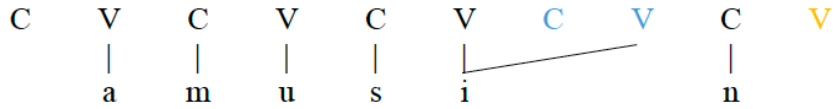
In putting syllabification in the PROSODY level, Dolatian is separating it from phonology, blurring the line between interface levels and phonological structure. Also, the Stem (M-Stem) and P-Stem (readjusted W-level) are 2 separate levels.

We just turned HVR on, then off, then on.

The 1-Phonology Solution

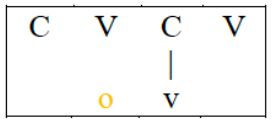
Inflection [amusnóv] 'husband-Instr.' (EA)

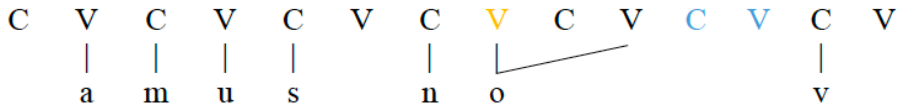
Cycle 1



Cycle 2 : merger of 2 domains : initial floating vowel : deletion of CV *and* the segment attached to it.

UR of suffix:



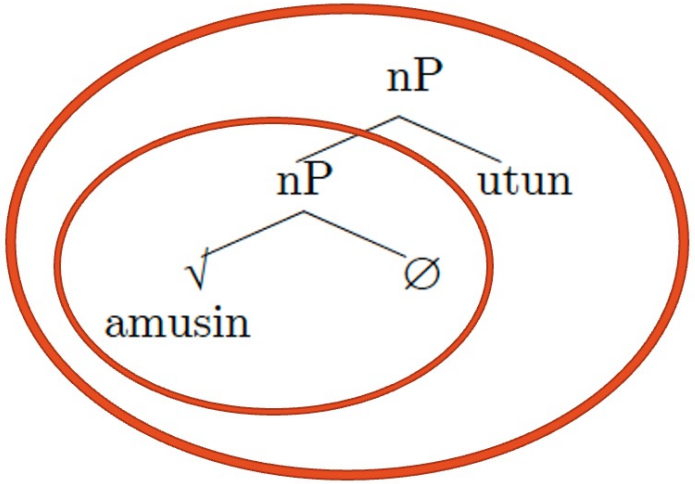


- Morphemes treated in separate domains are linearized in the phonology (as we saw for WA Inflection).
- Morphemes may merge with an adjacent domain due to purely phonological requirements. (see Newell & Piggott 2014; Newell 2021a and references therein)
- -ov is lexicalized with an initial floating vowel in EA.
- Armenian is an example of a language with virtual length (ex. Ségéral & Scheer 2008; Bucci 2013, 2018; Ulfsbjorninn 2021; Chabot to appear).
- When the representations are right, the rules will follow.
  - A single domain has a single stress.
  - Adjacent domains may have two.

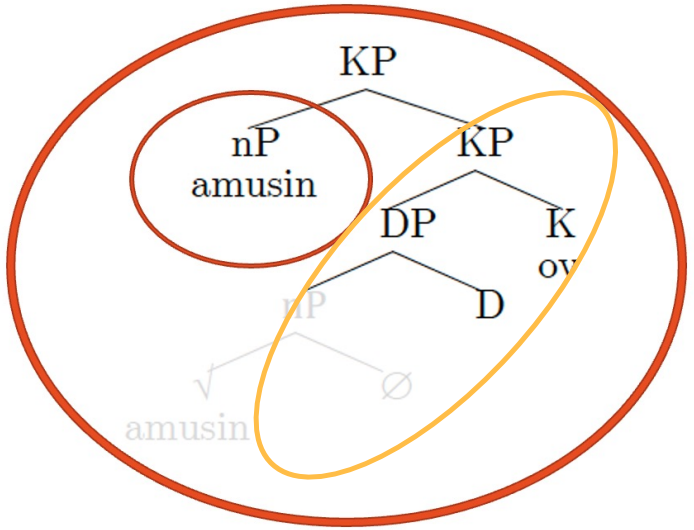
How might we explain the domains of Armenian Derivation vs Inflection?

Syntax, cycles, and sub-prosodic phonology are all we need to get the Armenian pattern.

Derivation – no movement – base visible at spell-out of suffix



Inflection – movement – base invisible at spell-out of suffix

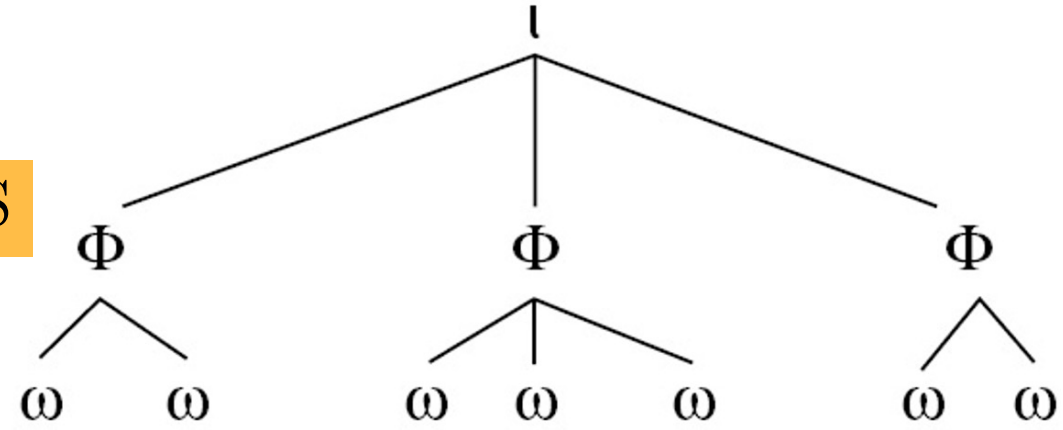


§3.2 Xitsonga

High Tone Spread and Penultimate Vowel Lengthening

A (more tentative) reanalysis of Lee & Selkirk (2022)

VS



Xitsonga vowel lengthening

End of clause: ɪ(ndzi-xavela xi-phukuphuku fo:le)ɪ

[ndzi-xav-el-a	[[xi-phukuphuku]	[fole]]]clause
1st.sg.Subj-buy-appl-FV	fool	tobacco

‘I am buying tobacco for a fool’

End of right/left dislocated phrase: ɪ(ɪ(yâ:j!á)ɪ n-gúlú:ve)ɪ

[[y-â-j!á]clause	[n-gúlúve]]clause
Class9.subj-tense-eat-FV	Class9-pig

‘It’s eating, the pig’

How is this explained?

Dislocated phrases are mapped to intonational phrases.

(Selkirk 2011, Lee & Selkirk 2022, following Kisseberth 1994)

$_{\iota}(_{\omega}$(ngúlú:ve)$_{\omega})_{\iota}$ 'pig'

- Note the violation of Strict Layering, as φ must be binary.
  - This loosening of restrictions weakens falsifiability.

- V→V: penultimately within an Intonational Phrase.

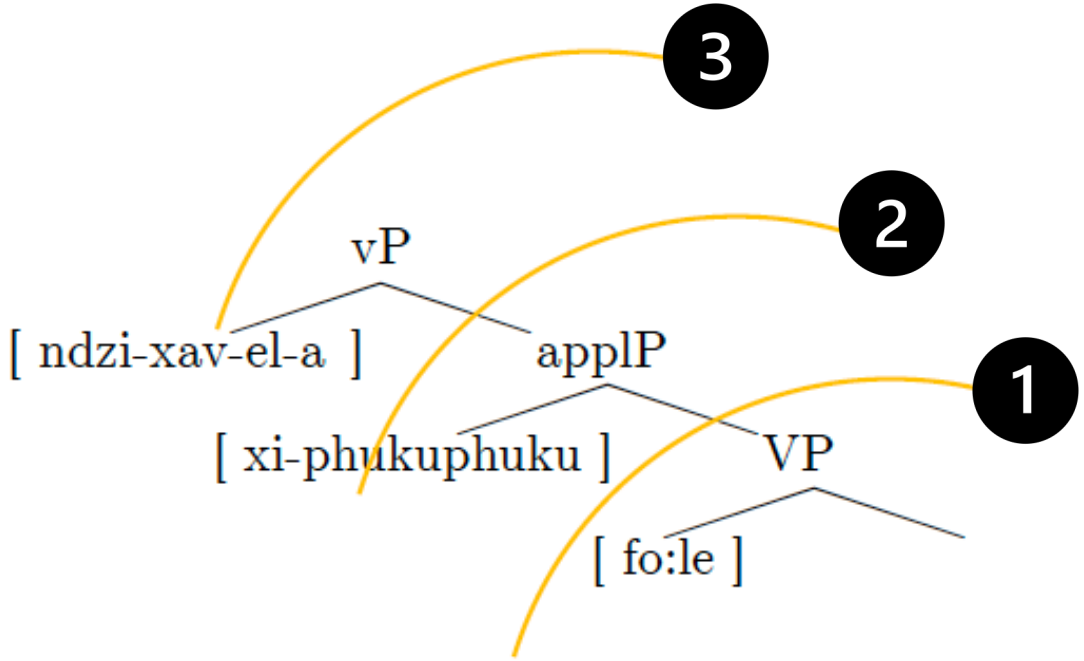
Non-isomorphism

- "These Xitsonga data on penultimate lengthening in preposing structures show a certain divergence between syntactic structure and the phonological domain structure, given that the preposed phrases constitute ι-domains which do not correspond to syntactic clauses."

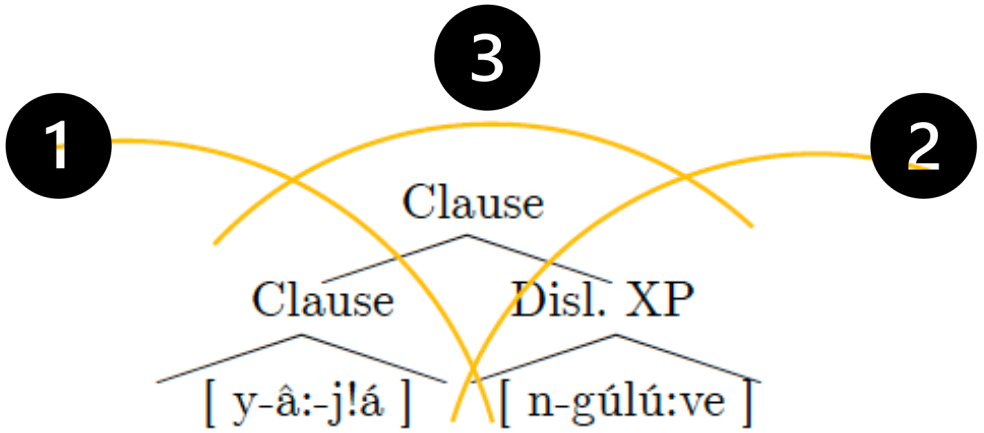
(Selkirk 2011)

- Actually, it is argued in the literature that Right-dislocation is clausal, followed by raising and ellipsis (ex. Tanaka 2001)

[[It is eating] [The pig ~~is eating~~]]



'I am buying tobacco for a fool'



'It's eating, the pig'

The computational alternative: Last is just last

Without dislocation: 1 = last, 2 ≠ last, 3 ≠ last

With dislocation: 1= last, 2= last, 3 = linearize

No need to make reference to phonological domains or to motivate non-isomorphism..

(19)

a. verb [*noun*]$_{NP1}$ [*noun*]$_{NP2}$ ❶

PI: ni-hlawulela hosí/H\ hlambeto
1SG-select chief cooking.pot

PO: ni hlawulela hosí/H hlámbé:H\to
'I select for the chief a cooking pot.'

b. *verb* [*noun*]$_{NP1}$ [*noun* [*mod*]$_{MP}$]$_{NP2}$ ❷

PI: ni-hlawulela hosí/H\ hlambeto yi-n'we
1SG-select chief cooking.pot CL9-one

PO: ni hlawulela hosí/H\ hlambeto yi:n'we.
'I select for the chief one cooking pot.'

Xitsonga Tone Spreading

- Tone spreading patterns are complex! (even more complex that we will see)
  - Tone spreads from the verb to its closest object, but not to the next (NonFinality).
  - Tone spreads between the IO and the DO.
  - Tone spreads between a word and a right dislocated phrase.
- Spreading is blocked if the spreadee contains more than one word.

(yá/H\nwá/H má:H\tí/H) (ngúlú:H\ve)

(yá/H\nwá/H má:H\tí/H) (nguluve yintsó:/Hngó H\ )
SM9-drink CL6-water pig CL9-small
"It drinks water, the (small) pig"

(ni/Hlává ngúlú:H\ve)
1SG-want-FV pig
"I want a pig"

(hi/Hlává H\ (hlambeto yi-↓ntsó:ngó))
1PL-want-FV cooking.pot CL9-small
"We want a small cooking pot."

Tone. Is it different?

- (One of the) problem (s)!
  - Tone : RDL and NPs behave the same
    - Tone spreads into a following single-word domain
  - Lengthening : RLD and Modified NPs behave differently
    - RDL adds a long vowel. A modified NP does not

Binarity, Strong Start, Crisp-edge

Selkirk (2011), Lee & Selkirk (2022): Tone is blocked from spreading across the left edge of a ϕ-domain.

- Mono-word NPs do not project a ϕ to satisfy binarity, and allow spreading (even into RNRed NPs across an ι boundary). (BINARITY)

(ϕ ni/H lává ngúlú:H\ve)
1SG-want-FV pig
"I want a pig"

- Modified NPs are parsed as ϕ due to binarity, and block spreading (CRISP EDGE)

(ϕ hi/H lává H\ (ϕ hlambeto yi-↓ntsó:ngó))
1PL-want-FV cooking.pot CL9-small
"We want a small cooking pot."

- A double-object construction is parsed ((V-O) O) due to strong start, and allow spreading to only the first O due to NONFINALITY. (STRONG START)
  - Not (V (O-O))

(ϕ (ϕ vé/H xávélá múnH\hu) tingu:vu)
1PL-buy-APPL someone CL10-cloth
"They are buying clothes for someone"

The production planning alternative

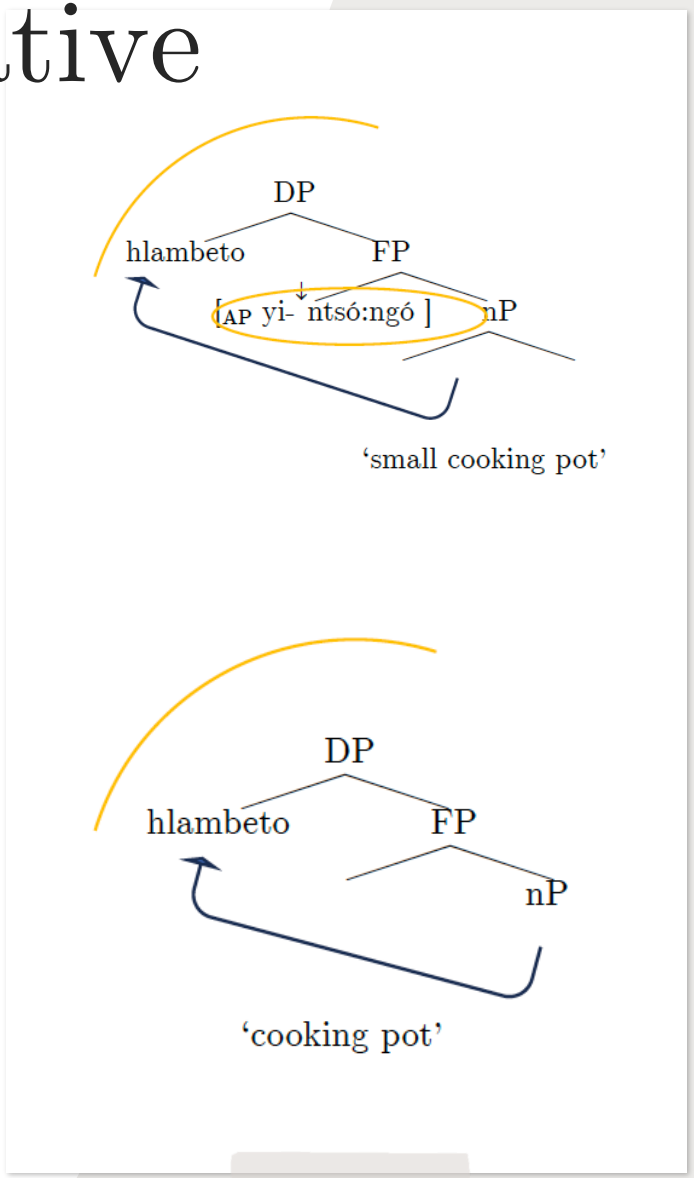
- Complex NPs in Xitsonga are structurally and computationally more complex than simplex NPs.
  - It has been shown that it takes longer to initiate computation on strings that are more complex. This leads planning effects/stronger boundaries. (Sternberg et. al. 1978, 1980)
  - A right-dislocated clause would contain this derivation, in addition to movement of the complex DP, and an ellipsis operation. (Tanaka 2001)
  - Lee (2015) has found that the effect of depressor consonants on tone spreading in Xitsonga is not categorical.
- Complex list parses emerge with a late boundary.
  - Hirsch & Wagner (2016) found that in list-reading (equal syntactic boundaries between constituents) a late boundary was preferred.
  - Tap the frog with the flower || on the hat. (List)

    'Use the flower to tap the frog on its hat'

    [V [mod] [mod]]
  - This is the parsing structure for Double Object constructions.

    [V [obj] [obj]]

This is the same pattern as with the RDL clauses, and between IO and DO. It is independent of the syntactic construction.



The whole derivation : Two options

Prosodic Hierarchy

- Vowels are lengthened at the end of ιPs

Tone spreading is sensitive to Left edges of ϕPs but not ωs or ιPs. Single word ιPs don't have a ϕP layer.

Computation & Planning

- Vowels are lengthened at the right edge of a syntactic computational domain (phase).

- Tone spreading will occur within a production window.
  - Affected by syntactic cycles and word count.

If the myth on the right is plausible, we have to consider that no reference to the PH is necessary to account for the data.

§4 Final thoughts

Final thoughts (1 of 2)

- When do we get non-isomorphism?
  - All 'non-constituent' non-isomorphisms are a supposed non-constituent followed by a constituent: [[-C] +C] (Wagner & Hirsch 2016)
    - Ex. [[The cat] [that ate the rat]]
  - This is explained by constraints on syntax, ex. Right Node Raising, adjunction.
  - The PH predicts non-isomorphisms of the type [+C [-C]]
    - Ex. [[very blue] [skies are nice]]
  - All non-isomorphisms in Nespor & Vogel (1986) are [[-C] +C]. The one that is not is small subjects phrasing with the verb, which is predicted by the late boundary preference.
- A lot of non-isomorphism is just be syntax. It is also 3rd factor effects. And, of course, sub-ω phonology.

Final thoughts

- Multiple Phonologies can be replaced with sensitivity to structure building.
  - This is what the promotion of Faithfulness constraints is replicating.
- Morpheme-specific phonologies can be replaced with articulated underlying representations.
- Variability in phrasing is rampant. If some of that is due to syntax, and some is due to production planning, we don't need to account for that in our phonology.
- We all need low phonological structure, cycles, and production planning.
- If we can capture the effects of multiple phonologies and the Prosodic Hierarchy with only these tools, we should.

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