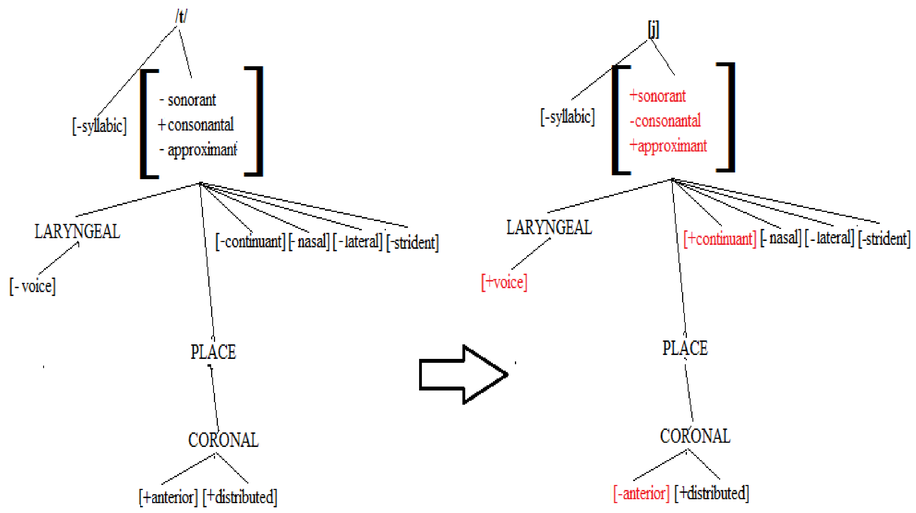
ZOOM Information
Meeting ID: 929 8833 4907
Link: https://yorku.zoom.us/j/92988334907

Feature Geometry in Harmonic Serialism

Nate Shaftoe
York University

Introduction and Theoretical Assumptions

- **Harmonic Serialism** (McCarthy 2016) is a form of derivational Optimality Theory.
  - Key difference is **Gradualness**: at each derivational step, only one unfaithful operation can be applied, winner of each step becomes input for a new step.
- **Feature geometry** (Clements 1985): segmental features are grouped in a hierarchical structure, grouped features often act together.
- This analysis relies on **Mora Theory** (Hayes 1989; Zec 1995): it proposes that the gliding is driven by a minimum sonority requirement for mora licensing.
- **Main question: how does feature geometry interact with Gradualness? How many features can be changed at once?**
- **Proposed answer: change is on a node-by-node basis.**



- To examine a **non-assimilatory feature change**, I examined an alternation in Chilean Spanish: coda stops glide /t d/→[j] and /p b k g/→[w].
  - This poster focuses on the /t d/→[j] alternation, since it touches on the widest variety of important points, such as the connection to /s/-aspiration.

•In the diagram to the left, red features are those which changed between the two segments.
  •[sonorant], [consonantal], [approximant], [continuant], [voice], and [anterior] all need to be changed for /t/→[j].

- **Chilean Spanish** does not allow obstruent segments to licitly bear morae, and thus coda obstruents must lenite into sonorants. The absence of /ʔ/ from the phonetic inventory prevents vacuous satisfaction through PLACE-deletion, and forces lenition to the most sonorous consonant segment possible.

Data

- Coda stops are banned in Chilean Spanish, alternating with glides. This study argues the alternation is caused by minimum sonority requirements for mora licensing in codas. Chilean Spanish does not generally allow non-/h/ obstruents in its codas.

/ad̲kirir/	→	[aj̲.kirir]	“to acquire”
/et̲niko/	→	[ej̲.niko]	“ethnic”
/ka̲ptura/	→	[kaw̲.tura]	“capture”
/a̲bsurdo/	→	[aw̲.sur.do]	“absurd”
/korek̲to/	→	[ko.rew̲.to]	“correct”
/dog̲ma/	→	[dow̲.ma]	“dogma”

- If there is a gradual procession through forms before reaching the glide, then the lenition cannot pass through /s/ or /r/, since neither glide.

/es̲to/	→	[eh̲.to]	“this”
/des̲de/	→	[deh̲.de]	“from”
so.pl̲ar	→	[so.plar̲]	“to blow”

- /s/ aspirates in a possibly related process.

The data for this analysis was drawn from Piñeros (2001), Broś(2018), and Martinez-Gil (1997).

Constraints

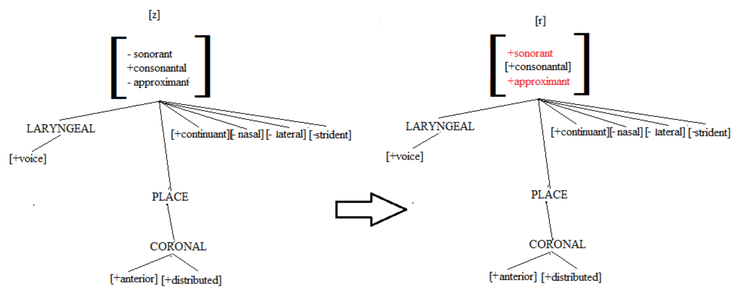
1. WEIGH-BY-POSITION (Hayes 1989): assign a violation mark for every coda which does not have a mora attached.
2. *OBSTRUENTMORA: assign a violation mark for every obstruent segment which bears a mora.
3. *SONORANTMORA: assign a violation mark for every sonorant segment which bears a mora.
4. DEP[mora]: do not add a mora to a segment.
5. IDENT[ROOT NODE]: assign a violation mark for every output segment which does not match the ROOT node features [sonorant, approximant, consonantal] of its input correspondent.
6. IDENT[CORONAL NODE]: assign a violation mark for every output segment which does not match the CORONAL node features [anterior, distributed] of its input correspondent.

- *OBSTRUENTMORA and *SONORANTMORA are both constraint ‘families’ with internally fixed rankings of more specific constraints. They represent the interaction of the sonority curve with mora licensing.
- IDENT[root node] and IDENT[coronal node] are both Nodal Faithfulness constraints. They govern the correspondence of features on a nodal basis: whether one or all of the features dominated by the node, only a single violation mark is incurred.
  - This means that each feature node represents a range of closely related configurations which can easily shift between each other between steps.
  - Adding in the Specified PLACE Exception implies that the three place categories (coronal, dorsal, labial) are internally fluid, but that changing between them is a difficult step.

Nodal Faithfulness Model

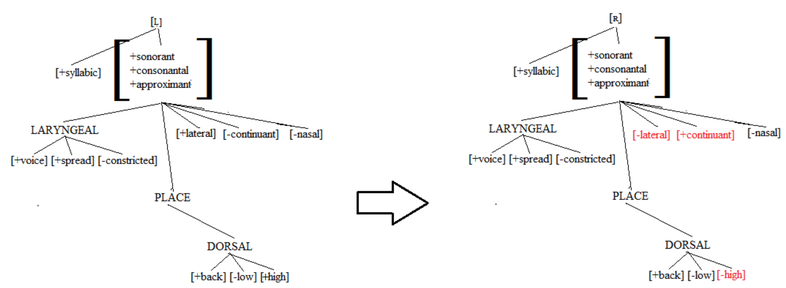
- This study proposes that in HS, changes are made on a node-by-node basis.
  - One feature at a time is too slow, while saying that any combination of features can be changed simultaneously essentially ignores the structures found in feature geometry.
  - Certain features are very closely connected (such as [+sonorant] segments generally being [+voice]). A feature-by-feature derivation would not be able to derive /d/→[l], since it could not change both [sonorant] and [approximant] in the same step.
- All features which are directly under a single node can have their values changed in a single step. In other words, features which group together can change together.

Example 1: /z/→[r] via changes to the ROOT node



- Additional component: the Specified PLACE Exception
  - The Nodal Faithfulness Model draws a distinction between the ‘bare’ PLACE node and the specific PLACE nodes which it dominates (such as CORONAL or DORSAL).
  - The specific PLACE nodes can have their features changed for free at the same time .

Example 2: /L/→[R], involving the Specified PLACE Exception



Coda Stop Gliding

Step 1: Mora insertion

etniko	WBP	*ObstruentMora	Dep[mora]
a. → et.ni.ko | μ		*	*
b. et.ni.ko	*!		

- The gliding is motivated by the constraint Weight-by-Position, which requires codas to have a mora.
- However, the *ObstruentMora constraints won't allow an obstruent to remain in a moraic coda. Since /ʔ/ is banned in Chilean Spanish, the derivation can't PLACE-delete to it.

1→2

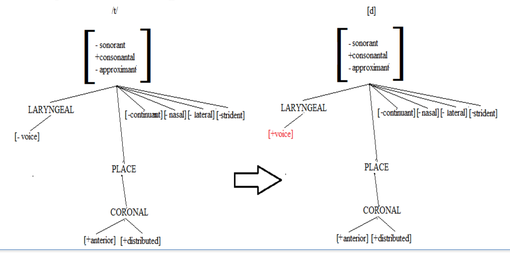
Step 2: Voicing

et.ni.ko | μ [-voice] [-continuant] coronal	*ʔ	Dep	*Voiceless Stop Mora	*Voiceless Fricative Mora	*Voiced Stop Mora	Max[place]	Ident [continuant]	Ident [voice]
a. →ed.ni.ko | μ [+voice]					*			*
b. et.ni.ko | μ [-voice]			*!					
c. es.ni.ko | μ [+continuant]				*!			*	
d. eʔ.ni.ko | μ ~~Place~~	*!					*		
e. e.tə.ni.ko | μ		*!						

- The inability to Place-delete leaves voicing as the best option, with a voiced stop being more sonorant than any unvoiced obstruent.
- A voiced fricative is better still, however, so frication is the next step.

2→3

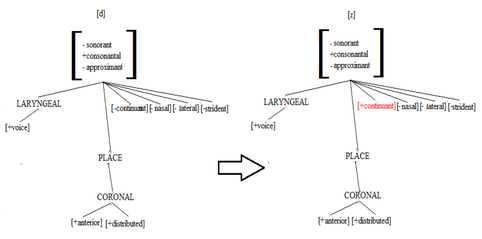
Step 2: Voicing



Step 3: Frication

ed.ni.ko | μ [-continuant] coronal	*Voiced Stop Mora	*Voiced Fricative Mora	Ident [continuant]	*z
a. ed.ni.ko | μ [-continuant]	*!			
b. → ez.ni.ko | μ [+continuant]		*	*	*

Step 3: Frication



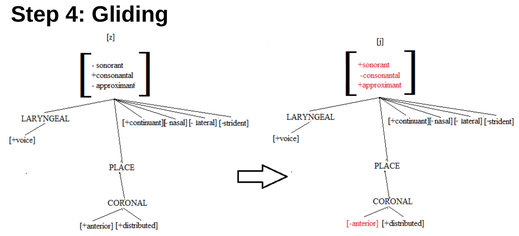
3→4

Step 4 Gliding

ez.ni.ko | μ [+anterior, -distributed]	*Voiced Fricative Mora	Ident [root node]	*Liquid Mora	*Glide Mora	Ident [coronal node]
a. eʒ.ni.ko | μ [-anterior, +distributed]	*!				
b. ez.ni.ko | μ [+anterior, -distributed]	*!				
c. er.ni.ko | μ [+anterior, -distributed] [+approximant]		*	*!		
d. →ej.ni.ko | μ [-anterior, +distributed] [+approximant]		*		*	*

- This step is where the Specific Place Exception comes in: we need to shift from alveolar to palatal in a single step to avoid passing through /r/. If we allow the shifting of place within the larger category (Coronal), then /j/ is the most harmonic option.
- If we don't allow a jump straight from /z/ to [j], then we need to go to /r/ before palatalizing, but underlying /r/ doesn't glide in codas. In HS, Eval doesn't normally distinguish underlying from derived forms, so we can't derive through a form which does not underlyingly change.

Step 4: Gliding



4→5

Step 5: Convergence

ej.ni.ko | μ [+voice] [+continuant] [-anterior, +distributed] [+approximant] [-syllabic]	Ident[Syllabic]	*Glide Mora
a. →ej.ni.ko | μ [-syllabic]		*
b. e.i.ni.ko | [+syllabic]	*!	

- Fully vocalizing isn't advantageous here, so the lenitions tops at gliding.
- Ident[root node] allows for voiced fricatives to transition into any non-vowel sonorant at equal cost: the same violations are applied no matter what combination of [sonorant, approximant, consonant] are changed. This is nodal faithfulness: being able to change any part of a node for only a single violation mark.

Conclusion and Future Directions

- The Nodal Faithfulness Model works in a practical sense: it allows Harmonic Serialism to take account of Feature Geometry and make limited changes per step, as per Gradualness.
- Nodal Faithfulness constraints are necessary to explain gradual feature changes, since some alternations (/t/→[z] →[j]) would otherwise pass through steps where the derivation should converge.
- Predicts that within the categories of Coronal, Labial, and Dorsal, place is somewhat fluid.
- This model makes significant predictions about lenition processes: cross-linguistically, we should see lenition processes at each intermediate step of the derivation presented here.
- Specified PLACE exception is necessary to make certain derivations work, such as [z]→[j], since deriving to intermediate stages would prevent the attested output.
- However, it's also a theoretical concern, the model would be better if we could either better justify it or remove it.

Acknowledgements

I gratefully acknowledge the financial support of York University. I am also thankful to Emily Elfner, Peter Avery, and the audiences of MOT 2019 and SPF 2019 for comments and feedback on this project.

References

Broś, K. (2018). Contiguity in prosodic words: Evidence from Spanish. *Poznan Studies in Contemporary Linguistics*, *54*(1), 37–82.
Clements, G. N. (1985) The geometry of phonological features. *Phonology Yearbook*, *2*, 225–252.
Hayes, B. (1989). Compensatory lengthening in Moraic Phonology. *Linguistic Inquiry*, *20*(2), 253–306.
Martínéz-Gil, F. (1997). Obstruent vocalization in chilean spanish: A serial versus a constraint-based approach. *Probus*, *9*(2), 167–202.
McCarthy, J. J. (2016). The theory and practice of Harmonic Serialism. In J. McCarthy & J. Pater (Eds.), *Harmonic Grammar and Harmonic Serialism*. London: Equinox Press.
Piñeros, C. (2001). Segment-to-syllable alignment and vocalization in Chilean Spanish. *Lingua*, *111*(3), 163–188. doi:10.1016/s0024-3841(00)00029-2
Zec, D. (1995). Sonority constraints on syllable structure. *Phonology*, *12*(1), 85–129.