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Expressing (most of) Phonotactic Knowledge as Contrast

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Phonotactic Ranking Information

- Based on complete outputs only.
  - No morphemic identity information.
  - No independent information on phonological inputs.
- Common assumption: for well-formed outputs, fully faithful inputs will map to those outputs.
  - Justified for systems of output-driven maps (Tesar 2008, to appear).
- **Phonotactic Ranking Information**: what must be true of the ranking for such candidates to be optimal?

What I'm Setting Aside

- Identical violation profiles
  - candidates with distinct outputs and identical constraint violations.

- Structural ambiguity in the output
  - the gap between what is overt and complete outputs.

Phonotactic Learning

- Learning based solely on observed (phonotactically valid) outputs, using fully faithful inputs.
- Phonotactic learning (Prince & Tesar 2004, Hayes 2004).
  - Build a support of winner-loser pairs, with faithfully mapped forms as the winners
  - Find the most restrictive ranking consistent with the support.

What is Represented How?

- Phonotactic restrictions are indirectly encoded in the restrictive constraint hierarchy.
- More directly encoded (in the support) is what phonotactic restrictions **can't** be.

- Phonotactic ranking information:
  - generalizations about what must be **allowed**.

A Winner-Loser Pair

Input	win ~ lose	WSP	ID[L]	*V:	MR	ML	ID[S]
/páka/	*páka ~ paká*				L	W	W

Observed: *páka* Presumed: */páka/*

MR must be dominated by one of {ML, ID[S]}

Two Grammatical Forms

- Suppose two distinct outputs are phonotactically valid.
  - Observed: *páka*, *paká*
- The two forms constitute a **contrast** in the language.

- Two things can be deduced from this:
  - The input(s) for one must differ from the input(s) for the other.
  - Some faithfulness constraint must be sensitive to a difference between the inputs.

Pairs from a Pair

Phonotactically valid: *páka*, *paká*

Create two winner-loser pairs, each using one as the winner, the other as the loser.

Input	win ~ lose	WSP	ID[L]	*V:	MR	ML	ID[S]
/*páka*/	*páka* ~ *paká*				L	W	W
/*paká*/	*paká* ~ *páka*				W	L	W

Contrast as F≫M

Input	win ~ lose	WSP	ID[L]	*V:	MR	ML	ID[S]
/páka/	*páka ~ paká*				L	W	W
/paká/	*paká ~ páka*				W	L	W
	Fusion:				L	L	W

Faithfulness constraints never prefer losers.

Markedness constraints that are active necessarily come out L in the fusion.

ID[S] ≫ {MR, ML}

Inventory Entailments

Input	win ~ lose	WSP	ID[L]	*V:	MR	ML	ID[S]
/pá:ka/	*pá:ka ~ páka*		W	L			

Only ID[L] prefers the winner.

Short vowels are less marked than long vowels.

Surface long vowels entail underlying contrast in vowel length.

ID[L] ≫ *V:

Pointless, but Harmless

Input	win ~ lose	WSP	ID[L]	*V:	MR	ML	ID[S]
/pá:ka/	pá:ka ~ páka		W	L			
/páka/	páka ~ pá:ka		W	W			
Fusion:			W	L			

The second pair is uninformative.

The fusion is identical to the first pair.

Not Just “Minimal Pairs”

Input	win ~ lose	WSP	ID[L]	*V:	MR	ML	ID[S]
/páka/	*páka ~ paká:*		W	W	L	W	W
/paká:/	*paká: ~ páka*		W	L	W	L	W
	Fusion:		W	L	L	L	W

The markedness constraints still fuse to L.

At least one of the faithfulness constraints must dominate the three active markedness constraints.

Asymmetric Faith Works the Same

Input	win ~ lose	WSP	ID[+L]	*V:	MR	ML	ID[S]
/páka/	*páka ~ paká:*			W	L	W	W
/paká:/	*paká: ~ páka*		W	L	W	L	W
Fusion:			W	L	L	L	W

ID[+L]: only violated when the input correspondent is long (and output correspondent is short).

To realize a contrast, a faithfulness constraint must be active for one of the pairs (not necessarily both) (Tesar 2006).

Neutralization

- Lack of a possible contrast requires neutralization of distinct inputs to a single output.
  - Richness of the Base
- If stress is predictably initial, there is no contrast.
  - */páka/* → *páka*
  - */paká/* → *páka* **not** *paká*
- Ranking: ML ≫ {MR, ID[S]}

Phonotactic M≫M is Different

Input	win ~ lose	WSP	ID[L]	*V:	MR	ML	ID[S]
/páka/	*páka ~ paká*				L	W	W

paká is not phonotactically well-formed.

Relations between markedness constraints require losers that are not phonotactically observable.

The W-L pair does **not** entail ML≫MR (it merely allows for it).

Markedness Dominated

- To be informative, an ERC must have at least one constraint preferring the loser.
- In phonotactic learning, faithfulness constraints never prefer losers.
- Any phonotactic ERC involves domination of (at least one) markedness constraint by something else.

Explicit vs. Implicit

- F≫M: explicitly indicated by contrasting forms.
  - Both winner and loser are phonotactically valid.

- M≫M: implicitly indicated by occurrence of some forms without occurrence of their hypothetical contrast counterparts.
  - Loser is not phonotactically valid.

Summary

- Phonotactic contrast knowledge can be expressed in terms of pairs of phonotactically valid outputs.
- Decomposition1: phonotactic vs. non-phonotactic ranking information.
- Decomposition2: contrast vs. non-contrast phonotactic ranking information.
  - Contrast: F≫M
  - Non-contrast: M≫M

References

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