

Cross-category agreement as reference to general dominance

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Main Points

- Building on the Clements & Hume 1995 model, vowels and consonants **share** place features in a motivated and formally coherent way.
- The (expanded) **typology** of **cross-category agreement** motivates the homogeneity of vowel and consonant place features and the use of a syntagmatic **AGREE** constraint (Bakovic 2000).
- General dominance** of root nodes over individual place features is encoded in the model, and cross-category agreement (and faithfulness) constraints crucially make reference to this relation.

Definitions

Naturalness of Assimilation (NoA) is the idea that the rule or constraint causing an assimilation process refers to a *single* feature:

- $X \rightarrow [\alpha F] / _ [\alpha F]$ cf. $X \rightarrow [\alpha F] / _ [\beta G]$
- $*[\alpha F][-\alpha F]$ cf. $*[\alpha F][\beta G]$

Cross-category agreement or assimilation is the interaction of consonant place features with vowel place features.

Background and Data

- Padgett 2011 a.o.: the extent to which vowels can cause change in consonantal place of articulation is limited to palatalization.

Table 1: Cross-category typology of Padgett 2011

	Within-category	Cross-category
V-to-C	✓/e/ → [u] / _ w (Kabardian)	✓/i/ → [u] / p, m_ (Mapila Malayalam)
C-to-V	✓/T/ → [Tʰ] / _ i, e (Russian)	✓/k/ → [tʃ] / _ i (Slovak) ✗/k/ → [p] / _ u (Unattested?)

- In Vietnamese, back, round vowels cause velar coda consonants (stops and nasals) to become labial-velar double articulations, in addition to front vowels causing palatalization. (Kirby 2011, Phạm 2006, Thompson 1965)

Table 2: Rhyme restrictions in **Vietnamese** (summarized from Kang et al. 2016)

V↓ C→	Palatal	Velar	Labial-Velar
Front	[sec] 'slanting'	*[ek]	*[ekp]
Central	*[ac]	[sak] 'corpse'	*[akp]
Back	*[oc]	*[ok]	[sokp] 'shock'

- Vietnamese fills the empirical gap of a non-palatalization consonant-to-vowel cross-category assimilation process.

Representation

- Geometry for representations explicitly includes **transitive** association relation A_T (assumed to be dominance).

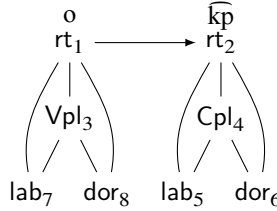


Figure 1: Model of representation for [okp]

- Consonants and vowels share the core set of place features [labial], [coronal], and [dorsal] (following Clements & Hume 1995).
- Grammar here does not make crucial reference to tier structure, so it is not encoded.

Grammar

- Cross-category $AGREE_X[LAB]$:

- $(\forall x, y)[\delta(x, y) \wedge isLab(x) \leftrightarrow isLab(y)]$
- $isLab(x) \equiv (\exists y)[Root(x) \wedge lab(y) \wedge A_T(x, y)]$

“For all root nodes x, y in a some domain δ , x generally dominates [labial] iff y generally dominates [labial].”

- No Rounding ($*C^w$):

$(\neg \exists w, x, y, z)[Root(w) \wedge C-pl(x) \wedge V-pl(y) \wedge lab(z) \wedge A_T(w, x) \wedge A_T(w, y) \wedge A_T(y, z)]$

Table 3: Cross-category agreement in Vietnamese

	/ok/	$AGREE_X[LAB]$	$*C^w$	IDENT[DORS]	$*COMPLEX$
a.	okp				*
b.	ok	* W			L
c.	ok ^w		* W		L
d.	op			* W	L

- The back, round vowel contains labial and dorsal V-place features, which totally agree with the C-place features of the double-articulation \widehat{kp} .
- Palatalization works in a parallel fashion: an input such as /ek/ is realized as [ec], where [c] is phonologically dorsal and coronal C-place: there is cross-category coronal assimilation, while the dorsal C-place of the input is preserved (see Danis 2017 for a full analysis/discussion).
- Class behavior of place: Feature Class Theory (Padgett 2002) or constraint summation (Danis 2017)

Discussion

- Models where phonetic rounding is expressed via [+round] (e.g. Halle et al. 2000, Ní Chiosáin & Padgett 1993, a.o.) cannot straightforwardly capture interaction with non-round labials while obeying NoA, as in Vietnamese.
- Halle et al. 2000's critique of C&H: actually modeling cross-category interactions is cumbersome (though see e.g. Selkirk 1988 and Urek 2016).

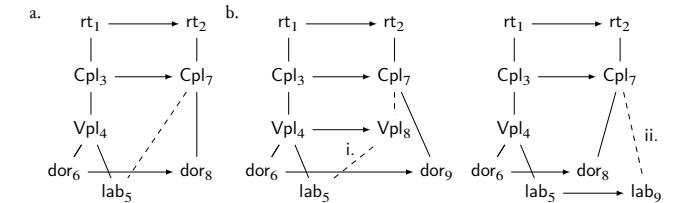


Figure 2: Vietnamese under the C&H model requires either transplanar spreading (a.) or a derivational process of spreading (bi.) and promotion (bii.) for cross-category assimilation

Cross-category faithfulness interactions also occur, and can be modeled with a parallel $IDENT_X$ constraint:

- Mumuye [mzm]: $\widehat{kp} \sim k^w$ alternation (Shimizu 1983)

Table 4: Cross-category faithfulness in Mumuye

	/kp/	$*COMPLEX$	$IDENT_X$	$*C^y$	$IDENT_c$	$*C^w$
a.	k ^w				*	*
b.	kp	* W			L	L
c.	k		* W		*	L
d.	p		* W		*	L
e.	p ^y			* W	*	L

Conclusion

- The general domination model plus cross-category $AGREE_X/IDENT_X$ straightforwardly captures both cross-category agreement and faithfulness processes while obeying Naturalness of Assimilation, supporting a model of unified place features.

References and Acknowledgements

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Bakovic, Eric. 2000. *Harmony, Dominance and Control*. Rutgers University dissertation. Clements, G. N. & Elizabeth V. Hume. 1995. The Internal Organization of Speech Sounds. In John Goldsmith, Jason Riggall & Alan C. L. Yu (eds.), *The Handbook of Phonological Theory*. Blackwell Publishing. Danis, Nick. 2017. *Complex Place and Place Identity*. Rutgers University dissertation. Halle, Morris, Bert Vaux & Andrew Wolfe. 2000. On Feature Spreading and the Representation of Place of Articulation. *Linguistic Inquiry* 31. 387–444. Kirby, James. 2011. Vietnamese (Hanoi Vietnamese). *Journal of the International Phonetic Association* 41(3). 381–92. Ní Chiosáin, Máire & Jaye Padgett. 1993. Inherent VPlace. Report LRC-93-09, Linguistics Research Center, University of California, Santa Cruz. Padgett, Jaye. 2002. Feature Classes in Phonology. *Language* 78. 81–110. Padgett, Jaye. 2011. Consonant-Vowel Place Feature Interactions. In Marc van Oostendorp, Colin J. Ewen, Elizabeth Hume & Keren Rice (eds.), *The Blackwell Companion to Phonology*, vol. 3, 1761–1786. Wiley-Blackwell. Phạm, Andrea Hôa. 2006. Vietnamese Rhyme. *Southeast Journal of Linguistics* 25(2). 107–141. Selkirk, Elisabeth. 1988. Dependency, Place and the Notion 'Tier'. UMass Amherst. Thompson, Laurence C. 1965. *A Vietnamese Reference Grammar*. Honolulu, HI: University of Hawai'i. Urek, Olga. 2016. Consonant-vowel interactions in Modern Standard Latvian: a representational and constraint-based account. *Glossa: a journal of general linguistics* 1(1).