1. INTRODUCTION

- "Phonological teamwork" (Lionnet in prep.): two segments aspiring to trigger the same phonological process (here assimilation), but too weak to trigger it on their own, may "join forces" and together pass the threshold necessary for that process to occur.

- Two logical ways of dealing with such phenomena:
  - Grammatically derived: gang-up of weak grammatical constraints, each of which wants a categorical assimilation
  - Local Constraint Conjunction, e.g. Simoni (1997)

- Harmonic Grammar, e.g. Lionnet (2015)

- Problem: do not account for phonetic effects to be shown here → overprediction

- Phonetically grounded: gang-up of weak phonetic effects to make a single strong influence (e.g. Fleming 1997, 2002)

- "Stabilization problem" (Hayes and Steriade 2004:7)

2. DATA: LAAL

- Laal: isolate, ca. 750 speakers, two villages, southern Chad

- Doubly triggered rounding harmony:

3. A PHONOLOGICAL ALTERNATION

- Opacity of intervening /w/:

  (3) Sg. /P. suffix = -a
  a. wádr ‘genet’ wëdr-ô
  b. gäw ‘hunter’ gäw-ô
  c. jëw ‘cheetah’ jëw-ô
  d. mëw ‘scorpion’ mëw-ô
  e. sëw ‘fish’ sëw-ô

- Morphologically conditioned (affix-specific type):
  - Number-marking affix: Doubly triggered rounding harmony
  - Other affixes: systematic and unconditional Rounding harmony

4. SUBFEATURES

- Featural level: binary contrast
  - [+ round] /u, i, ia, u, o, ua/
  - [- round] /i, a, ia, i, a, a/

- Subfeature level: multi-level scale
  - [0 round] /i, e, ia, i, a, a/
  - [1 round] /ï, í, ä, ä/
  - [2 round] /ū, i, ia, u, o, ua/

- Subfeature distinction without featural contrast
  - [i, a]: [- round] [0 round]
  - [ï, í]: [- round] [2 round]

- Word-level rounding harmony targets all [-round] vowels, no reference to subfeature level

- Stem-level rounding harmony
  - Targets only [5 round] vowels
  - Parastichy on height and backness

- Any theory of parastichic vowel harmony can account for the Laal doubly triggered rounding harmony, if it is allowed to refer to subfeature representations.

5a. PHONETIC UNDERPinnings

- Average ΔF0: 299 Hz
  - p = 2.2 × 10^-11
  - 99 Hz
  - p = 4.3 × 10^-10
  - 110 Hz: p = 0.21

- Labial consonant = significant lowering of F2

- No effect on F3

- No effect of following round vowel

- Conclusion: Specific realization of /i, a/ = [ï, í] next to labial C:
  - [i, a] and [ï, í] are perceptually distinctive
  - Not pure coarticulation (F2 = F3)

5b. PHONETIC UNDERPinnings

- Solving the "stabilization problem" (Hayes & Steriade 2004:7)
  - Subfeatures = partly phonological representations, phonologized phonetic information
  - Reification of PROSODIC KNOWLEDGE (Kingston and Diehl 1994), at the basis of Markedness constraints according to Hayes and Steriade (2004:1)

- Representing enhancement

6a. IMPLICATIONS AND CONCLUSION

- No necessity for phonetically grounded abstract relations between redundant and distinctive features (Stevens et al. 1986).

- Subfeature scale results from the phonologization of phonetic enhancement relations → does not refer to those relations anymore, and does not impose any reference to an abstract relation between phonological features.

- Enriching phonology with subfeature representations:
  - Quantal perceptual representations → fine-grained representation of coarticulatory effects in phonology
  - In keeping with phonetically grounded approaches
  - Without abandoning the separation of phonology and phonetics

- In keeping with proposals such as Inkelas and Shih’s (2014) Q theory (also Steriade's (1993) Aperture Theory)
  - Q = three subsegments q1, q2, q3 (e.g. /t/ = t1, t2, t3)

- Subdividing features account for facts that question the validity of both
  - The binary dıkat in feature theory (without abandoning binary features)
  - The very definitions of PROSODY that phonologists have been working with for decades

6b. IMPLICATIONS AND CONCLUSION

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REFERENCES


Hayes, Bruce, Robert Kirchner and Donca Steriade. 2004. *Phonetically Based Phonology*. Cambridge: CUP.


