[1] Issue: Phonologically-conditioned allomorphy and directionality

- Phonologically-conditioned allomorphy (PCA) – multiple underlying forms whose complementary distribution is conditioned based on phonological environment
- Directionality – Below the trigger (the lexical head) is located inward compared to the target (the article)
  - English: *a* fly vs. *an* ant [cf. *at a* fly to *no fly*]
  - Is outward-looking PCA also possible? The collective answer is either it does not exist or it is very rare
  - Cilungu: *u*-a-

[2] Claim: PCA is outward-looking in Cilungu

- A new example from grammatical tone patterns in Cilungu, used to express tense/aspect/mood (TAM)
- Outwardly-located trigger: Subject agreement markers
- Inwardly-located TAM: Exponents
  - [*SUBI* (NEG) TAM (OM) [STEM ROOT (DERIV) TAM FV ]]
- Non-H-toned subject markers (a phonological condition) trigger tonal allomorphy of 3 inward TAM designs
  - Trigger is a phonological natural class, but not a morphosyntactic natural class
- Within relevant morphological domain, requires sensitivity both inward and outward
- Supports a model in which *exponent* takes place simultaneously within the relevant domain, rather than strictly inside-out


- Cilungu (M Zone, Bantu: Zambia – Bickmore 2007, 2014)
- Tonal contrasts: H vs. Ø
- L by default
- Extensive phonologically- and condition tone operations

[4] Grammatical tone in the TAM system

- Expressing TAM: Unique combination of sub-exponents
  - i) 0, 1, or 2 prefixes
  - ii) 0 or 1 suffix
  - iii) Shape of the final vowel
  - iv) Grammatical tone ['Melodic Highs']
- Grammatical tone patterns target the stem (an inner constituent)
  - Ø No grammatical tone
  - H Fin H on final TBU of stem
  - H 2-fin H from 2nd to final TBU
- [Far Past] ↔ a- -e H Fin


- Prefixal subject markers (SMs) agree in noun class with the subject
  - Type 1, H toned SMs: Nearly all SMs have high tone underlingly
  - Type 2, ¬H toned SMs: class 1 (35G) u-å-, class 4 i- , and class 9 i-
- [Far Past] ↔ a- -e H Fin

[6] Outward-looking PCA with three TAMs

- In 3 TAMs, non-high tone SMs condition allomorphy
- [YESTERDAY PAST] ↔ (inner) á- -il-e H Fin if outer SM is H
- [RECENT PAST] ↔ H Fin if SM is H |
- [PERFECT] ↔ H Fin if SM is H |...H

[7] Implications for a model of morphology

- Bidirectionality: If this constitutes outward-looking PCA, we must conclude morphemes can be sensitive to phonological properties both inward and outward
- Within a Realizational morphological model (Stump 2001, a.o.) where exponents ‘realize’ morphosyntactic features, this entails bidirectional access to local exponents
- Achieved if exposition takes place simultaneously rather than strictly inside-out
- This supports Optimality Theoretic Distributed Morphology (OT-DM), in which Spell-Out constitutes a fully parallel mapping from Syntax (the input) to Phonology (the output)

Acknowledgments: Thanks to our colleagues at Princeton (Laura Kalt, Byron Ahn, Florian Lienert, Sam Zuffel, Sunwoo Jeong) and at Albany, and thanks for feedback from Larry Hyman, John Goldsmith, Karlos Arnaq, Joshen Toms, Eer Zimmerma, Der Reins, Sandhya Sunderson, and the audiences at the University of Chicago and University of Leipzig where portions of this paper were presented. We also thank the dedicated consultants who worked with the second author, without whom this work would not be possible.

Complete references are available on the first author’s website, next to link for this poster: www.nickrolle.com/resources