

The Precedence Model Meets Performance Data

Andrew Nevins (Harvard University): nevins@fas.harvard.edu

Talk at C→U→N→Y Precedence Workshop, 25 Jan 2007

1. Bagemihl's Program: Ludlings extend, modify, or exaggerate attested NL processes

To explain the typology of attested and non-attested ludlings:

- No ludling reverses the middle two syllables
- No ludling moves the final syllable to the middle
- No ludling permutes every other segment in a word
- No ludling permutes feet
- No ludling permutes subsegmental features
- No ludling creates palindromes
- Precedence-modifying ludlings operate at the level of segmental sequences

2. A Vacuum left by the plutoing of the NCC



Figure 1: Rampant NCC violations

- (A) Canadian French [-ATR] VH may jump to first in sequence of high vowels: *si.mi.li.tyd* (ROA-861)
- (B) Lena Bable metaphony skips post-tonic vowel: *pášara, pášaros, pėšaru* (Hualde 1989)
- (C) Kuratowski's theorem: $K_{3,3}$ non-planar
- (D) Woleaian bidirectional harmony not well-captured by trigger-centric theory of spreading
- (E) Sibe high vowels need [+high] for rounding harmony but violate NCC with [-high] VC *dal-u-qun*
- (F) Nevins (2004), Heinz (2007): locality capturable by precedence grammars without need for NCC

3. Anchor Points and Precedence (Yu 2003, Fitzpatrick 2004, Raimy 2005, a.o.)

Precedence-modifying operations (redup, affixation, ludlings) may only target restricted parameters:

- (1) a. at/before/after
- b. first/last/stressed/ \forall
- c. segment, C, V, σ , body, coda

Arguably tied to Ψ biases for primacy, recency, prominence (J. Smith 2002, Endress 2005).

(1) yields ambiguity, accounting for nanovariation (Iba & Nevins 2004).

4. On to Ludlings

- (2) Hypothesis: UG only allows either
 - a. The Transpose or Exchange operation on $(x, f(x))$
 - b. The Flip operation on \forall {syllables, segments} within a {word, syllable}
- (3) Typed functions on x , where $x \in (1)$:
 - a. Preceder(x): $\lambda y \{seg, \sigma\}, y \rightarrow x$
 - b. Succeder(x): $\lambda y \{seg, \sigma\}, x \rightarrow y$
 - c. Complement(x): $\forall \{seg, \sigma\} - \{seg, \sigma\} \in x$
 - d. Polar(x): $\lambda y, \{seg, \sigma\}, -\alpha \text{ edge}(x)$
 - e. Doppel(X): $\lambda y, \{seg, \sigma\}, \alpha \text{ edge}(x)$ in an adjacent word
- (4) a. Immediate precedence relations hold between syllables as well as segments
- b. Onset, Body, Coda, Rime are also functions that return sequences of segments
- c. Syllabification is "persistent" and re-applies after every precedence-modifying operation
- (5) Transpose(X, Y): a. Delete the \rightarrow relation between $\text{final}(x)$ and $\text{initial}(y)$. b. Create a new \rightarrow relation between $\text{final}(x)$ and $\text{succeder}(\text{final}(y))$. c. Create a new \rightarrow relation between $\text{preceder}(\text{initial}(x))$ and $\text{initial}(y)$. d. Create a new \rightarrow relation between $\text{final}(y)$ and $\text{initial}(x)$.
- (6) Exchange(X, Y): a. Create a new \rightarrow relation between $\text{preceder}(\text{initial}(x))$ and $\text{initial}(y)$. b. Create a new \rightarrow relation between $\text{final}(y)$ and $\text{succeder}(x)$. c. Create a new \rightarrow relation between $\text{preceder}(\text{initial}(y))$ and $\text{initial}(x)$. d. Create a new \rightarrow relation between $\text{final}(x)$ and $\text{succeder}(y)$.
- (7) Flip(X): Create a new \rightarrow relation between x and $\text{preceder}(x)$. Delete $\rightarrow(\text{preceder}-x, x)$.

5. Case Studies (apud Bagemihl 1989 NLLT)

- (8) a. Fula: *pii.roo.wal* → *roo.wal.pii*
Transpose(First σ , Complement)
b. Tagalog: *ka.ma.tis* → *tis.ka.ma*
Transpose(Last σ , Complement)
c. Marquesan: *nu.ku.hi.va* → *ku.nu.hi.va*
Transpose(First σ , Successor)
d. Luchazi: *ya.mu.nu.kwe* → *ya.mu.kwe.nu*
Transpose(Last σ , Preceder)
- (9) a. Javanese: *duwit* → *wudit*
Exchange(First, Successor) over Onset
b. Tagalog: *dito* → *doti*
Exchange(First, Successor) over Nucleus
c. Hanunoo: *balaynun* → *nulayban*
Exchange(First, Polar) over Body
d. Finnish: *kenkänsä polki* → *pon.kansa kel.ki*
Exchange(First, Doppler) over Body
e. Finnish: *susi* → *kosi suntti*
Concatenate kontti and Exchange(First, Doppler) over Body
- (10) a. Saramaccan: *va.li.si* → *si.li.va*
 $\forall x$, Flip(X) over Type: Syll
b. English: *gə.rəʒ* → *ʒə.rəg*
 $\forall x$, Flip(X) over Type: Seg
c. English: *m.dɪg.nənt* → *nɪ.gɪd.tnən*
 $\forall y$, over Syll, $\forall x \forall y$, Flip(X) over Seg

6. Beyond Typology: Analytic Bias in AGL

You will now witness a Martian rite. The rite is a kind of game between the Martian in chief and a subordinate Martian. The Martian in chief always pronounces a sentence, and the subordinate Martian has to answer appropriately.

The two Martians whom you will hear now master the game perfectly. Take advantage of this opportunity, and try to figure out what the game is about.

- (11) 25 triostimuli, e.g. *kɛ.noi.fa* → *fa.noi.kɛ*

The Martian in chief will now perform the rite with another subordinate Martian who masters it less well.

Your task is now to judge how well the Martian performs. For each answer the second Martian gives, please rate on a scale from 1 to 9 whether the answer complies with the rules of the rite. 1 means that you are sure that the Martian's answer is wrong, 9 that you are sure that the answer was conform to the rules of the rite, and 5 means that you have no idea whether the answer was acceptable or not. Try to use the entire range from 1 to 9 for your ratings.

- (12) The pattern in (11) is if course compatible with at least four hypotheses:

- a. $\forall x$, Flip(X) over Type: Syll. Yields 4321
b. Exchange(First σ , Polar). Yields 4231
c. Exchange(Last σ , 2nd-to-Last σ). Yields 1432.
d. $\forall x$, Exchange x_k with x_{k+2} . Yields 3412.

Of course, (12-c) is ruled out by (1): antepenult is not an anchor point, and (12-d) is ruled out by (2), as “every other” is not a function on x . These are “unnatural” typologically and in the theory developed here. But could Bagemihl’s typology be the result of “Evolutionary Phonology”, free of substance, the vagaries of ludling diachrony?

What do people do when they rate a tetrasyllabic (e.g. *mi.da.ʒe.gu*) paired with each of these transformations? Joint work with Ansgar Endress:

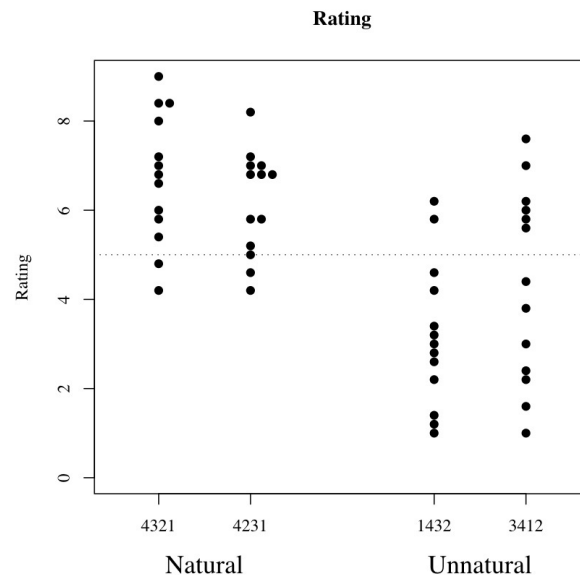


Figure 2: Experimental results, $n = 12$, five trials per condition. Natural vs. Unnatural **highly significant**: $F(1,11) = 20.43$, $p = 0.0009$. Within-natural not significant: $F(1,11) = 1.25$, $p = 0.2882$. Within-unnatural significant: $F(1,12) = 7.91$, $p = 0.017$. Latter result suggests “short-circuiting” rejection procedure.

7. Next Step: Relative Markedness of Args?

Does Exchange(C) vs. Exchange(V) yield equal measures in performance? No existing precedence-based models predict a difference. \diamond

References didn't fit; please ask me!