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Phonologically Conditioned Affix Order in Washo

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1 Introduction

Claim: Affix order in Washo is phonologically conditioned.

More Specifically:

- in Washo, stem-level suffixes are reordered to avoid a stem-final stressed syllable
- a Stratal OT analysis: at the stem level, the phonological constraint NONFINALITY outranks morphological alignment constraints (making this a $P \gg M$ (*Phonological* $\gg$ *Morphological*) analysis, see McCarthy & Prince 1993, Paster 2006a,b, 2009)
- unstressed suffixes are later added at the word level but counterbleed the observed change in affix order

2 PCAO

- "phonologically conditioned affix order": semantically and/or morphologically unexpected affix order triggered by phonological constraint(s), affixes may be more than one segment long
- affix order in Washo is *non-transitive* (cf. Ryan 2010) and *opaque* (cf. Stiebels 2003), **but the deviations from "expected" affix order are not random, they can be explained by NONFINALITY-triggered avoidance of a stem-final stressed syllable**
- Washo (isolate, North America) is polysynthetic, mostly suffixing

- today, we will look at some infinite and finite verb forms
- data from Jacobsen (1964, 1973), who also identified the pattern as phonologically conditioned

(1) geyúliyé:sha
ge-yúli-**é:s-ha**
IMP-die-**NEG-CAUS**
"Don't kill it!'

First observations and further information:

- affix order in (1) is semantically opaque
- stress behaves much like lexical stress: in particular, we will see that some affixes, such as negative *-é:s* and most verbal roots always bear stress independently of their position in the word
- usually in Washo, causative *-ha* appears close to the verbal root, while negative *-é:s* appears relatively late in the stem[1]

Table 1: Partial template of the Washo verb based on Jacobsen (1964)

slot	-1	0	+1	**+2**	+3	**+4**	+5	+6	+7
morphemes	PERS.SUBJ	Verb	INCH	**PL.INCL**	NEAR.FUT	**NEG**	REC.PST	IND	SR
	PERS.OBJ		TRANS	**DU.INCL**		**Q**	DIST.FUT	DEP	
	IMP			**CAUS**			INT.FUT	REDUN	
				DUR				OPT	

(2) léme?huyáša?i
le-íme?-**hu-áša?**-i
1SBJ-drink-**PL.INCL-NEAR.FUT**-IND
"We (incl.) are going to drink."

(3) léma?áša?é:si
le-íme?-**áša?-é:s**-i
1SBJ-drink-**NEAR.FUT-NEG**-IND
"I am not going to drink."

[1]Abbreviations: 1SBJ: first person subject, DU.INCL: dual inclusive, PL.INCL: plural inclusive, NEAR.FUT: near future, DIST.FUT: distant future, INT.FUT: intermediate future, IND: independent mood, NEG: negation, Q: interrogative, DEP: dependent mood, REDUN: redundant, OPT: optative, CAUS: causative, REC.PST: recent past, IMP: imperative, DUR: durative, TRANS: transitory, INCH: inchoative, SR: switch reference

- from (2)-(3) we might infer: if PL.INCL-NEAR.FUT and NEAR.FUT-PL.INCL, then PL.INCL-NEG
- instead, we find *non-transitive* NEG-PL.INCL

(4) léme?é:shuyi
le-íme?-**é:s-hu**-i
1SBJ-drink-**NEG-PL.INCL**-IND
"We (incl.) are not drinking."

More affixes in unexpected places:

(5) léme?é:silegi
le-íme?-**é:s-ši**-leg-i
1SBJ-drink-**NEG-DU.INCL**-REC.PST-IND
"We (both of us) didn't drink."

(6) lémehé:šhugabi
le-íme?-**hé:š-hu**-gab-i
1SBJ-drink-**Q-PL.INCL**-DIST.FUT-IND
"Are we (incl.) going to drink?"

(7) gayáhayetihé:šha-i-š
ge-yáha-eti?-**hé:š-ha**-i-š
3OBJ-hurt-INCH-**Q-CAUS**-IND-SR
"Perhaps it started to hurt him."

(8) lakLášdɨmé:shayiŋa
le-kLášdɨm-**é:s-ha**-i=ŋa
3SBJ.1OBJ[2]-hide-**NEG-CAUS**-IND=but
"But (they) don't conceal it from me."

(9) ʔumk'uyéʔešlelhé:šuši
ʔum-k'uyéʔeš-lel-**hé:š-uš**-i
2SBJ-swim-TRANS-**Q-DUR**-IND
"Have you been swimming any?"

[2]sic

3 Washo verbs in Stratal OT

- stratal organization of Washo morphology and phonology:
- Stratum 0 "extended root": reduplication, stress assignment (see Yu 2005)
- Stratum 1 "stem": affixation stem-level affixes, **PCAO**
- Stratum 2 "word": affixation word-level affixes
- suffixes in Washo form two classes: *stem-level* (cf. Jacobsen 1964 stem-formative suffixes) and *word-level* (cf. Jacobsen 1964 prefinal and final suffixes, slots +5 and +6 in Table 1). Only stem-level suffixes appear on infinite verb forms. Some stem-level suffixes bear inherent stress, all word-level suffixes are unstressed.

Stratum 1: Stem-level suffixes (simplified)

(10)

/íməʔ/, /hu/, /éːs/	NONFINALITY	NEG-R	INCL-R
a. íməʔ-hu-éːs	∗!		∗
☞ b. íməʔ-éːs-hu		∗	

- morphemes are unordered in the Input, only stem-level affixes present
- NEG-R: assign * for every morpheme intervening between NEG and the right edge of PrWd (compare McCarthy & Prince 1993)
- NONFINALITY: assign * for a stressed syllable that is final in PrWd (Prince & Smolensky 2004)
- in addition, at least two further phonological constraints have to be considered:
- MÁX: assign * for a syllable that is stressed in the Input but not in the Output (cf. Pater 2000)
- *CLASH: assign * for a stressed syllable that is immediately followed by another stressed syllable (Kager 1999)
- morphologically preferred order (**semantically transparent, transitive**) encoded in morpheme alignment constraints (also see Potter 1996, who relates alignment constraints to the Mirror Principle (Baker 1985))

- **NONFINALITY can cause violation of alignment**, but alignment is violated minimally
- on Stratum 2, prefixes and word-level suffixes are added. The word-level suffixes are never stressed, so they never violate the phonological constraints active at the stem level
- if the last syllable is not stressed in the candidate with the order of affixes corresponding to the ranking of alignment constraints at the time of evaluation of Stratum 1, NONFINALITY will be satisfied and the order will stay as expected, as in (2)

(11)

/íme?/, /hu/, /ášaʔ/	*CLASH	MÁX	NONFIN	NEAR.FUT-R	INCL-R
☞ a. íme?-hu-ášaʔ					*
b. íme?-ášaʔ-hu				*!	

- NONFINALITY-driven reordering is blocked exactly in the cases where it would give rise to a clash, as in (3)

(12)

/íme?/, /ášaʔ/, /é:s/	*CLASH	MÁX	NONFIN	NEG-R	NEAR.FUT-R
☞ a. íme?-ášaʔ-é:s			*		*
b. íme?-ášaʔ-es		*!			*
c. íme?-é:s-ášaʔ	*!			*	
d. íme?-es-ášaʔ		*!		*	

4 $P \gg M$ and Subcategorization

- Paster (2006a,b, 2009) claims that all cases of PCAO can be reanalyzed as segmental metathesis or infixation
- claim for Washo: "[...] stressed suffixes subcategorize for a foot to their left." (Paster 2006a:229)

(13) léma?ášaʔé:shuyi
le-íme?-**ášaʔ-é:s-hu**-i
1SBJ-drink-**NEAR.FUT-NEG-PL.INCL**-IND
"We (incl.) aren't going to drink"

(14) a. *le-[íme?]$_{Ft}$-**é:s**-hu-ášaʔ-i
b. *le-[íme?]$_{Ft}$-hu-[ášaʔ]$_{Ft}$-**é:s**-i
c. (i) le-[íme?]$_{Ft}$-**ášaʔ**-hu ↯
(ii) le-[íme?]$_{Ft}$-[ášaʔ]$_{Ft}$-**é:s**-hu-i

- (13) is a more complex example where plural inclusive *-hu* is displaced to the right across two other affixes
- (14) shows that the subcategorization approach fails to predict the attested affix order
- this is not surprising considering that Paster (2009) explicitly states that subcategorization predicts only pairwise ordering effects
- in the $P \gg M$ system, the more global reordering effects in (13) are predicted and accounted for

(15)

/íme?/, /hu/, /ášaʔ/, /éːs/	*CLASH	MÁX	NONFIN	NEG-R	N.FUT-R	INCL-R
a. íme?-hu-ášaʔ-éːs			∗!		∗	∗∗
b. íme?-hu-ášaʔ-es		∗!			∗	∗∗
☞ c. íme?-ášaʔ-éːs-hu				∗	∗∗	
d. íme?-éːs-hu-ášaʔ				∗∗!		∗
e. íme?-éːs-ášaʔ-hu	∗!			∗∗	∗	

5 Conclusion

- PCAO exists
- a $P \gg M$ approach in Stratal OT allows us to capture a complex interaction between morphology and phonology in a simple and transparent constraint system
- something to think about: compared to strictly parallel OT, Stratal OT makes different predictions for PCAO - it allows for opacity (such as the counterbleeding opacity I argue for above), but it restricts PCAO to a more local domain: the stratum (compare Kiparsky 2015 on the general idea that Stratal OT can be more restrictive than strictly parallel OT)

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