

Affix order and the availability of phonological information

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Outline: The extent to which phonological effects on morphology are derived and predicted in serial and parallel models differs dramatically. The discussion often centers on the question of phonologically conditioned allomorph selection. Another phenomenon with the ability to showcase differences between these models is phonologically conditioned affix order. In this talk, I present evidence for what Embick (2010) calls “limited global” interaction of morphology and phonology in the form of phonologically conditioned affix order. I show that Washo (isolate, North America, Jacobsen 1964) exhibits this phenomenon in a way that cannot be reduced to segmental metathesis or some form of infixation (e.g. via subcategorization as proposed by Paster 2006, 2009). I argue that in Washo, unexpected affix orders arise due to a constraint against stressed stem-final syllables. I analyze the complex non-transitive pattern of affix orders in the language as the result of a conflict between the morphologically predicted and preferred order of affixes and constraints on prosody such as NONFINALITY (making this a *P(honological) >> M(orphological)* analysis, cf. McCarthy & Prince 1993). I show that Stratal OT can model morphology-phonology interactions in such a way that the phenomenon is predicted and readily accounted for. In the vein of e.g. Deal & Wolf (2017), I claim that strict locality of morpho-phonological interaction as proposed by Embick (2010) cannot be maintained, but that locality does play a role in determining domains and triggers for phonologically conditioned affix order. **Data:** Affix order in the Washo verb was analyzed as phonologically conditioned as early as Jacobsen (1973), from where all of the following data were taken. Accented vowels (e.g. á) indicate inherent stress on the corresponding syllable.

- (1) ge-yúli-é:s-ha
IMP-die-NEG-CAUS
“Don’t kill it!”

The relative order of Negative *-é:s* and Causative *-ha* in the non-finite Imperative in (1) is unexpected for two reasons. Firstly, the Causative typically follows the verbal root directly in Washo (see discussion of finite verbs below for an argument of this type in more detail). Secondly, (1) is semantically opaque and violates the Mirror Principle (Baker 1985), to get the reading “Don’t kill it!” (as opposed to “Cause it not to die!”), we would expect the suffixes to appear in opposite order. We make a similar observation in finite verbs, which include an additional class of suffixes to mark categories such as tense and mood.

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| (2) | lémeʔšiyášaʔi
le-ímeʔ-ši-ášaʔ-i
1 SBJ-drink-DU.INCL-NEAR.FUT-IND
“We (both of us) are going to drink.” | (3) | lémaʔášaʔé:si
le-ímeʔ-ášaʔ-é:s-i
1 SBJ-drink-NEAR.FUT-NEG-IND
“I am not going to drink.” |
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(2) shows the Dual Inclusive morpheme *-ši* preceding the Near Future marker *-ášaʔ*. Near future *-ášaʔ* in turn precedes the Negative *-é:s* in (3). From this, a researcher attempting to formulate a descriptive template for the Washo verb might infer this order: DU.INCL-NEAR.FUT-NEG. However, we find that the obvious prediction, that the Dual Inclusive *-ši* should precede the Negative *-é:s* when they co-occur, is not borne out, (5) is ungrammatical, instead, we find (4).

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| (4) | lémeʔé:silegi
le-ímeʔ-é:s-ši-leg-i
1 SBJ-drink-NEG-DU.INCL-REC.PST-IND
“We (both of us) didn’t drink.” | (5) | *lémeʔšiyé:slegi
le-ímeʔ-ši-é:s-lég-i
1 SBJ-drink-DU.INCL-NEG-REC.PST-IND
“We (both of us) didn’t drink.” |
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(4) and (5) illustrate the puzzle which is at the center of this talk. We observe that DU.INCL and NEG appear in unexpected order: DU.INCL-NEAR.FUT and NEAR.FUT-NEG but NEG-DU.INCL. Affix order in the Washo verb is *non-transitive* (terminology c.f. Ryan 2010). **Analysis:** I argue

that in non-finite verbs such as (1), the expected *ge-yúli-ha-é:s is indeed the underlying order (in the sense that it is preferred by morphological alignment). However, the suffixes change order to avoid a violation of the high-ranked phonological constraint NONFINALITY, which is violated by a stressed syllable in PrWd-final position. Interestingly, the data from finite verbs can be captured by the same mechanism under the assumption that the additional suffixes in finite verbs are added on a separate stratum. Stratal OT introduces a way to model opacity in Optimality Theory by relating it to the size of the domain in which the relevant phonological process applies (see e.g. Kiparsky 2000). I argue that the observed change in affix order results from a constraint against stressed final syllables, a version of NONFINALITY, the effect of which is only visible at the stem level. I show that the addition of (unstressed) additional suffixes in the Washo finite verb counterbleeds that change. The “expected” transitive order of affixes is encoded by a series of affix-specific alignment constraints which align the right edge of a suffix with the right edge of the prosodic word (c.f. McCarthy & Prince 1993). In cases of multiple suffixation, the suffixes are unordered in the input. The order of suffixes is determined by the ranking of the alignment constraints, violated once for every morpheme intervening between the suffix and the right edge. Crucially, however, in this $P \gg M$ analysis, the phonological constraints NONFINALITY and MAX-STRESS outrank them. They thereby override the morphologically preferred pattern of alignment, producing the non-transitive pattern. In (3), the process is blocked by *CLASH, which is undominated in Washo. As an example, the stem-level evaluation of (4) is shown in (6).

	/ímeʔ/, /ši/, /é:s/	MAX-STRESS	NONFINALITY	É:S-R	ŠI-R
(6)	a. ímeʔ-ši-é:s		*!		*
	b. ímeʔ-é:s-ši			*	
	c. ímeʔ-ši-es	*!			*

Only after this stem-level evaluation, where the optimal candidate may display a change in affix order due to the constraint NONFINALITY, is a second batch of affixes added to form finite verbs. These word level affixes are never stressed and therefore do not interact with the phonological constraints from before. **Discussion:** Phonologically conditioned affix order is relevant to the discussion of the availability of phonological information to morphology. The crucial difference between the two strata (in this particular case) is not the ranking of the constraints, but the absence of certain affixes at the stem level. The stem thus defines an important locality domain for the process which could not easily be captured in a fully global approach. As shown in (7), where Plural Inclusive *-hu* is displaced from the root-adjacent position across two affixes to the end of the stem, this process can also change the respective order of affixes in longer configurations but will still require reference to the locality domain “stem”.

- (7) lémaʔášaʔé:shuyi
 le-ímeʔ-ášaʔ-é:s-hu-i
 1 SBJ-drink-NEAR.FUT-NEG-PL.INCL-IND
 “We (incl.) aren’t going to drink.”

I argue that Embick’s (2010) claim about the locality of interaction between morphology and phonology is too strong (see Deal & Wolf (2017) for a similar argument based on data from outward-sensitive phonologically conditioned allomorph selection in Nez Perce) and that the results of allowing “limited global” interactions as in Stratal OT are in fact attested and thus desirable.

Selected References: Deal, Amy Rose, and Matthew Wolf (2017): Outwards-sensitive phonologically-conditioned allomorphy in Nez Perce. In Vera Griбанова and Stephanie Shih(eds.), *The Morphosyntax-Phonology Connection*, pp. 29-60. Oxford: Oxford University Press • Jacobsen, William H. (1964): *A grammar of the Washo language*. PhD thesis, University of California, Berkeley • Jacobsen, William H. (1973): *A rhythmic principle in Washo morphotactics*. Presentation at Symposium on California Indian Linguistics