When allomorphy meets infixation: Cyclicity and separation

1. Introduction: This paper takes up two phenomena that impinge upon the morphological transparency of a word: suppletive allomorphy, (1), and infixation, (2).

(1) **Suppletive allomorphy:** The existence of multiple replacive exponents for a single abstract morpheme (a root or an affix), distributed based on the morpheme's phonological, morphosyntactic, and/or lexical environment
Ex.: Plural = *-s* in *dog-s*; *-ren* in *child-ren*; *-∅* in *fish-∅*; etc. (English)

(2) **Infixation:** The appearance of an affix *inside of* the stem it combines with
Ex.: *kasi* 'to dig' (V) + *ni* 'NOM' = *k-ni-asi* 'act of digging' (N) (Leti; Blevins 1999)

Most investigations of suppletive allomorphy are studies at the morphology/syntax interface (e.g., Carstairs 1987, Bobaljik 2000, 2012, Embick 2010, Deal and Wolf 2017, Gribanova and Harizanov 2017, though cf. Kager 1996, Paster 2006), whereas investigations of infixation concern themselves mainly with the morphology/phonology interface (e.g., McCarthy and Prince 1993, Blevins 1999, Klein 2003, Yu 2007). While there is far from a consensus on how to model these phenomena, crosslinguistic studies of both infixation (Yu 2007) and suppletive allomorphy (Paster 2006, Bobaljik 2012) have compellingly argued that these phenomena must be formally separate from the purely phonological and syntactic components of the grammar.

The different analyses/theories cited above make very different predictions about the sorts of interactions we should (and shouldn't) expect to find *between* the phenomena at hand. To tease these analyses/theories apart, I ask, **What happens when suppletive allomorphy meets infixation?** I consider a sample of 15 languages (geographically diverse and from 10 different language families) in which I have found an interaction between suppletive allomorphy and infixation. What the data tell us is that such interactions are **uniform**. At a theoretical level, the nature of these interactions supports *cyclicity* (bottom-up derivations), *separation* (morphology before phonology), and *late insertion* (of exponents), and furthermore, shows that allomorph choice *precedes* infixation.

2. Allomorphy × Infixation: I have identified two types of relevant interactions, (i)–(ii):

(i) ALLOMORPHY OF AN INFIX: An infix may be one of a set of suppletive exponents. Ex.: In Bahnar (Banker 1964), a Mon-Khmer language, nominalization is usually marked with the infix *-ơn-*, (3a–b), but this morpheme has the prefixal realization *bơ-* when the root is *m*-initial, (3c–d).

(3) a. *kao* 'to make a wedge' b. *k-ơn-ao* 'a wedge'
c. *muih* 'to make a field in the woods' d. *bơ-muih* 'a field in the woods'

Considering only clearly *replacive* allomorphy (i.e., where the forms of allomorphs cannot be derived from one another), I have thus far found 12 other cases of infix suppletive allomorphy.

(ii) ALLOMORPHY AROUND AN INFIX: An infix may combine with a stem that itself is morphologically complex, and contains suppletive allomorphs. I have thus far found two cases where an infix ends up linearly lodged in a position between a suppletive allomorph and the trigger of this allomorphy. Ex.: In Palauan (Embick 2010, who draws on Flora 1974, Josephs 1975, 1990), the past tense marker is an infix, *-il-*, as seen with a monomorphemic stem in (4a–b).

(4) a. *kie* 'live' b. *k-il-ie* 'lived' (from [*il* [$_{\text{STEM}}$ *kie*]])

Most verbs (excluding some stative verbs, like in (4)) appear with a prefixal "verb marker", which has two suppletive allomorphs, *m(ə)-* (elsewhere), (5a), and *o-* (conditioned by verb class), (5b).

(5) a. *mə-lim* 'drink' b. *o-siik* 'look for'

The past marker can combine with a verb stem bearing a verb marker, and in these cases, the past infix lodges linearly between the verb root and the verb marker, as in (6a–b) with the verbs of (5).

(6) a. *m-il-lim* 'drank' ([*il* [$_{\text{STEM}}$ *mə-lim*]]) b. *o-il-siik* 'looked for' ([*il* [$_{\text{STEM}}$ *o-siik*]])

Notice that allomorphy of the verb marker (*m(ə)-/o-*) persists across the linearly-intervening infix. A comparable case is found in Turoyo (Neo-Aramaic; Kalin 2018, who draws on Jastrow 1993), where even phonologically-conditioned suppletive allomorphy persists across an infix.

3. Proposed universals: While the sample size is small, striking generalizations emerge from my survey, which I formulate as four (of course tentative) universals in (7a–d), each followed (in square brackets) by what I take to be the implications for a working model of the grammar.

(7) a. When a morpheme has multiple allomorphs, at least one of which is infixal, all the allomorphs orient with respect to the same edge of the stem.[1,2] (see, e.g., (3))
[= Linearization of an affix (as preceding or following the stem it combines with) precedes both allomorph choice and infixation (displacement of an infix into the stem) of the affix.]

b. Infixes never supplete based on their surface (infixed) environment.
[= Allomorph choice for an infix precedes infixation of the infix.]

c. Allomorphy within the stem an infix combines with (both suppletive allomorphy and morphophonological[3] allomorphy) *is unaffected* by the infix. (see, e.g., (6))
[= Allomorph choice within the stem an infix combines with precedes infixation of the infix.]

d. Surface phonology within the stem an infix combines with *is affected* by the infix.[4]
[= Infixation of an infix precedes surface-level phonological processes.]

4. Implications: The supported derivational ordering after structure-building is as follows:

(8) a. *Go to the most embedded unexponed morpheme*
b. Apply a cycle of morphology and morphophonology
(i) Linear concatenation of morpheme with stem (if not the most deeply embedded)
(ii) Exponent choice for the morpheme (including conditioned forms)
(iii) Linear displacement of morpheme into stem (if it's an infixal exponent)
(iv) Morphophonological processes
c. *Repeat the cycle above for all morphemes in domain, then continue*
d. Apply surface phonology (over the whole domain)

The model in (8) is *cyclic*, *serial*, and *realizational*. It crucially separates stem-level linearization (step b-i) from intra-stem linearization (infixation, step b-iii), as well as separating exponent choice (step b-ii) from infixation (step b-iii), and both from surface phonology (step d). No existing theoretical models of allomorphy and infixation (that I'm aware of) separate/order all of the components of the derivation that are necessary to capture the data in my survey (see, e.g., McCarthy and Prince 1993, Paster 2006, Yu 2007, Wolf 2008). However, the model in (8) and the data are very naturally accommodated within a general architecture like that assumed by Distributed Morphology (Halle and Marantz 1993, 1994), providing strong novel support for this type of theory.

[1]Note that this is only clearly testable for edge-oriented, and not prominence/stress-oriented, infixes.

[2]This likely can be more generally stated: When a morpheme has multiple allomorphs, all the allomorphs orient with respect to the same edge of the stem. (See Weisser 2018.) This version, however, has apparent counterexamples.

[3]This universal includes an additional language I excluded above, ChiBemba (Hyman 1994, Orgun 1996), which features the persistence of non-suppletive allomorphy (consonant mutation) across an infix.

[4]This universal draws from a separate sample of 9 languages in which phonology and infixation interact.