

Asymmetric infixation

Background. Infixes have long been observed to prefer left edges over right ones. In Yu (2002)'s typological survey for instance, 63% of infixes are left-edge oriented, 24% are prominence oriented, but only 13% are right-edge oriented. This is surprising from a typological standpoint, because affixation generally tends to favor right edges over left ones, as shown in the typological preference for suffixes over prefixes (Greenberg 1966, Hawkins & Gilligan 1988). This leads to a question: why is the distribution of infixes different from other forms of affixation?

Yu (2007) claims that infixes prefer psycholinguistically prominent landing sites (initial, final, & prosodically prominent positions). Diachronically, this preference favors learning of infixes in these sites, while biasing against infixes in others. Yu (2007) implements this via restricted Generalized Alignment constraints (McCarthy & Prince 1993a), which he claims can only align infixes to landing sites in initial, prosodically prominent, or final positions.

Proposal. In this paper, I revisit this claim that infixes may be left-edge, right-edge, or prominence oriented. Based on a new typological survey of 43 putative right-edge infixes (19 language families, 3 isolates), I claim that *right-edge infixes do not exist*. All putative right-edge infixes occur in languages with some type of right-edge prosodic prominence. This means that all right-edge infixes may be readily reanalyzed as prosodically-oriented infixes. This gap is significant because the same does not hold for left-edge infixes. If a language has a left-edge infix, the prosodic prominence may fall in any position and is not restricted to the left edge (e.g. Temiar, /<ən>+go'lap/ → [g<ən>o'lap] 'carrying on shoulder', Benjamin 1976: 175). We therefore can be confident that left-edge infixes *do* exist, even if right-edge ones do not.

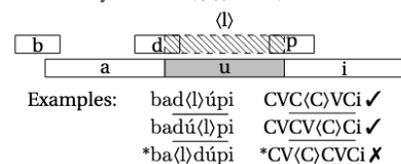
The typology of infixation sites is thus more asymmetric than we thought. Infixes may only land in an initial prosodic constituent or in the most prominent prosodic constituent. To capture this, I claim that infixation is implemented via asymmetric ANCHOR, following Nelson (2003). Nelson (2003) claims that a reduplicant can only stand in relation to prosodically prominent strings, initial strings, or both edges of the base, but it cannot reference the right edge alone. Nelson uses this to derive similar positional asymmetries in reduplication and truncation.

I translate this approach to infixation by claiming that infixes must overlap with an initial or prosodically prominent *vowel* of the stem, using Articulatory Phonology's notion of overlap. This account predicts that infix placement is a mixture of subcategorization and phonotactically-driven placement. An infix will be subcategorized for using a left-edge or prominence-based ANCHOR constraint, but the infix's position relative to *consonants* is determined by phonotactics.

Analysis. I define the infix-placing constraint as the following: ANCHOR(INFIX, INITIAL): For a vowel V_x in the input that corresponds to V_y in the output, the infix <inf> must *overlap* with some portion of the initial vowel of the stem. I also propose ANCHOR(INFIX, PROM), which targets the most prosodically prominent vowel. I assume there is no ANCHOR(INFIX, FINAL), following Nelson (2003), which captures the fact that there are no right-edge infixes.

For an example, a consonantal infix satisfying ANCHOR(INFIX, PROM) must occur within the interval in Figure 1. This is satisfied differently for infixes with vowels versus those that are only consonants. Vowel-bearing infixes only need to be adjacent to the stressed syllable (based on the assumption in Articulatory Phonology that all tier-adjacent vowels overlap slightly, Browman & Goldstein 1990). Consonant-bearing infixes will only overlap the stressed vowel when they are in the same syllable.

Figure 1. Possible landing sites of ⟨l⟩ in /ba'dupi/ that satisfy ANCHOR(⟨l⟩, PROM)



To illustrate, take the Koasati plural infixes <ho> and <s> shown in (1). These infixes both align to the prosodically prominent vowel of the stem. The <ho> infix *prefixes* to the prominent syllable, whereas <s> *suffixes* to the prominent vowel. In my analysis, this difference follows from their shape (as <C> vs. <CV> infixes).

- (1) Koasati plural infixation
- a. *Infixation of <ho>* — prefix to prominent syllable (Kimball 1985: 276)
- | singular | plural | gloss |
|----------|--------------|---------------|
| akátlin | ak(ho)átlin | 'to be loose' |
| okcáyyan | ok(ho)cáyyan | 'to be alive' |
- b. *Infixation of <s>* — suffix to prominent vowel, (Kimball 1991: 327)
- | singular | plural | gloss |
|-----------|-------------|--------------------|
| aká:non | aká(s)non | 'to be hungry' |
| imanó:kan | imanó(s)kan | 'to be winded' |
| maká:lin | maká(s)lin | 'to open the eyes' |

The infix <ho> surfaces before the prominent syllable for prosodic reasons. Koasati prefers for its prosodic prominences to (a) occur on the stem and (b) occur on the penult, which I represent with the cover constraint PENULT-STR. The infix will therefore prefix to the prominent syllable, because this allows the infix to overlap with the prominent vowel while maintaining penultimate prominence on the stem.

For the infix <s>, the situation is different because the infix does not contain a vowel. The infix must occur *inside* the prosodically prominent syllable in order for it to overlap with the prominent vowel. Thus, the infix must become the onset or coda of the

- (2) (CV) infixes prefix to the prominent syllable to keep stress stem-penultimate

/ho+okcáyyan/	ANCHOR((ho), PROM)	PENULT-STR	SWP
a. ho-okcáyyan	*!		
b. ok-ho-cáyyan			
c. okcáy-ho-yan		*!	
d. okcáy-hó-yan		*!	

- (3) (C) infixes suffix to the prominent vowel to make the syllable heavy

/s+imanókan/	ANCHOR((s), PROM)	PENULT-STR	SWP
a. s-imanókan	*!		*
b. ima.nók.-s-an	*!		
c. ima-s.-nó.kan	*!		*
d. ima.nó-s.-kan			
e. iman.-s-ó.kan			*!

prominent vowel to satisfy ANCHOR(<s>, PROM). In this case, the infix surfaces as the coda, thus also satisfying the Stress-to-Weight principle (Prince 1991).

Predictions. There are four novel predictions this account makes: (1) All infixes overlap with the most metrically prominent vowel or the leftmost vowel of the stem. (2) Infixes that appear near the right edge can only occur in languages with right-edge metrical prominences. (3) An infix that occurs after or before a CVC pivot must contain a vowel (this follows from Articulatory Phonology assumptions on vowel-vowel versus vowel-consonant overlap). (4) The exact infix landing site within a targeted constituent (prominent or leftmost) should be phonotactically driven. Based on language-specific data from my survey, I demonstrate that each of these predictions is borne out.

Alternatives. I now compare these predictions with P>>M approaches (McCarthy & Prince 1993b, Wolf 2008, a.o.) and Generalized Alignment (GA, McCarthy & Prince 1993a, Yu 2007). P>>M incorrectly predicts that infixation is phonotactically optimizing (see Blevins 1999, Kalin 2021). In Leti, for instance, infixation creates a marked /#nk/→[#kn] cluster, even though [#nk] clusters are licit. For me, Leti creates marked clusters under infixation because it is the only way to overlap with the initial vowel while also preserving penultimate stress. In contrast, GA treats infix placement as phonotactically arbitrary. The problem is that GA is also used to derive the placement of stress. However, stress and infixation do not have the same positional asymmetries – fixed stress tends to prefer right edges (61% fixed-stress lgs. right-edge oriented, 39% left-edge, Goedemans & van der Hulst 2013), even though infixes prefer the left. Thus GA's uniform treatment of stress and infixes is not warranted.

Summary. I claim that infixation is implemented via asymmetric ANCHOR (cf. Nelson 2003), which derives the novel observation that right-edge infixes do not exist. This approach is a mixture of P>>M and subcategorization approaches. Position of the infix relative to a vowel is subcategorized for, but the position of the infix relative to consonants is the result of phonotactics.