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Infixing outward

We argue for the following: (i) infixes can displace **outward** from the root (contra Kalin 2022); (ii) infix placement can occur **in the phonology** (McCarthy & Prince 1993, a.o.); and (iii) infixation can be driven by **morpheme-specific constraints** (Yu 2007). We make our argument by examining the morphophonology of the verbal negative marker in Passamaquoddy (Eastern Algonquian) in the conjunct order (a particular verbal inflectional paradigm). We propose that conjunct negation is underlyingly suffixal, and infixes itself before the final consonant of the morpheme to its right, *away* from the root. We derive its complex morphophonological behavior from the interaction between an indexed ALIGN constraint (Yu 2007) and regular F and M constraints, and argue that alternative derivations of infixation fail to capture its unique properties.

Explananda: We follow Oxford (2019) and Grishin (2023) in taking the Passamaquoddy verbal template to reflect the clausal spine: V–*v*–Voice–Neg–Infl (1). Given the position of Neg in the template, there are four morphophonological properties of conjunct negation to explain (data from Francis & Leavitt 2008):

  i. if morphemes in Voice and Infl would create vowel hiatus, [w] appears in the base Neg position (1)–(2);
  ii. if the exponent of Infl ends in a stop, [h] surfaces before it (2)–(4), note the [h] before the final C in (3);
  iii. if negative [h] is adjacent to underlying /t/, /t/ → [kʷ] (3);
  iv. if [h] is adjacent to a schwa and (ii) and (iii) don't apply, the schwa rounds to [u] (4).

(1) tekəm -a -**w** -ən
   IC.hit -3OBJ -**NEG** -2SG
   V+*v* Voice **Neg** Infl
   'you didn't hit him'

(2) tekəm -a -**w** -e⟨**h**⟩k
   IC.hit -3OBJ -**NEG** -⟨NEG⟩1PL
   'we don't hit him'

(3) tekəm -i -nəkə⟨**h**⟩k̲ʷ
   IC.hit -1OBJ -⟨NEG⟩3:1PL
   'he doesn't hit us'
   (underlying -*nəkət* '3:1PL')

(4) tekəm -a -mu̲⟨**h**⟩k
   IC.hit -3OBJ -⟨NEG⟩IMPERS
   'he isn't hit'
   (underlying -*mək* 'IMPERS')

Arguments for infixation: There are two arguments that negation really originates between Voice and Infl. **First**, in other inflectional paradigms, negation generally appears between Voice and Infl. **Second**, negation disrupts Voice–Infl portmanteaux, even if not surfacing between them. For example, *ut* 'IMPERS:3', a portmanteau which replaces -*a* '3OBJ' + -*mək* 'IMPERS' in the positive (*tekəm-ut* 'he is hit'), is split by negation (4). Under any analysis of portmanteau formation which requires adjacency (linear or structural; Williams 2003, Radkevich 2010), the fact the negative marker can disrupt portmanteaux even when it doesn't surface between Voice and Infl indicates that it originates there. So, **outward infixation exists**: the negative marker originates between Voice and Infl, and then infixes *away from the root* to insert itself inside Infl.

Analysis: We propose that Passamaquoddy conjunct negation instantiates non-suppletive allomorphy involving an infix. The marker's UR is /hʷ/, which is never allowed to surface faithfully, but yields the exponents in (1)–(4). The analysis contains the following components: (i) the Neg morpheme is linearised between Voice and Infl; (ii) Neg is exponed by /hʷ/ in the conjunct; (iii) /hʷ/ is infixed into the exponent of Infl, away from the root, due to an ALIGN constraint (Yu 2007) specifying its pivot, the final C in the domain: ALIGN(hʷ_NEG, R, C#, L). Step (iii) is handled by phonology, and it is the interaction of ALIGN(hʷ_NEG, R, C#, L) with constraints on the inventory (*hʷ, *tʷ), phonotactic constraints (ONSET; for restrictions on consonant–sonorant sequences see Sherwood 1983:71–80), and faithfulness constraints (MAX[round], MAX[voice], IDENT, INTEGRITY) that gives rise to the surface realisations in (1)–(4).

(5)

/tekəm, a, hʷ, ən/	*hʷ	ONSET	hS#	MAX[rd]	ALIGN(hʷ, C#)	MAX[voice]	INT
a. tekəmahʷən	*!				*		
b. tekəmaəwn		*!				*	
c. tekəmawəhn			*!				*
d. tekəmahən				*!	*		
☞ e. tekəmawən					*	*	

In tableau (5) above, [w] in the winning candidate [tekəmawən] is not inserted by regular hiatus resolution; regularly, after [–round] vowels the palatal glide [j] is inserted to break up V_1V_2 sequences.

(6)

/tekəm, a, hʷ, mək/	*hʷ	*CS	Max[rd]	Id[dor]	Ident-V	Align(hʷ,C#)	Int
a. tekəmahʷmək	*!					*	
b. tekəmawməhk		*!					*
c. tekəmaməhk			*!				
d. tekəmaməhkʷ				*!			
☞ e. tekəmamuhk					*		*

Tableau (6) shows that, when the [+rd] feature of /hʷ/ cannot surface with an inserted glide (6b) due to a phonotactic restriction on sonorant sequences, nor latch onto the [k] of the Infl suffix -*mək* (6d) due to the unavailability of a *k ~ kʷ* alternation, it docks onto the vowel of -*mək*, yielding -*muhk* (6e). Conversely, for the form [tekəminəkəhkʷ] (3), the ranking Max[rd] ≫ Ident-V ≫ Ident[cor] derives the *t ~ kʷ* alternation.

Against non-outward-infixing analyses: We argue against two alternative non-(outward-)infixing analyses. **Analysis 1:** Conjunct negation is contextual allomorphy of Infl in the context of Neg. This is unlikely as [h] infixation happens to *all* exponents of Infl besides two, -*an* '1sg' and -*ən* '2sg'. Additionally, there is a robust phonological generalization that [h] infixes into those exponents of Infl that have final stops (surfacing before the stop), and it fails to appear in only those two exponents of Infl that *lack* final stops. The contextual allomorphy account misses these generalizations. **Analysis 2:** There are two negation positions, one occupied by /w/ in Neg (which sometimes deletes) and one occupied by /h/ *outside* of Infl (which infixes *inward* towards the root). The problem is that [h] can cause surrounding segments to round (/t/ → [kʷ], /ə/ → [u]), suggesting it underlyingly bears the feature [+rd]. Moreover, these rounding effects are in complementary distribution with [w], suggesting they have the same source. This behavior is better captured with a *single* exponent for conjunct negation /hʷ/, which must then be in Neg to account for portmanteau blocking.

Against alternative derivations of infixation: We argue against two alternative derivations of infixation. **Derivation 1:** Infixation occurs in the morphology, and the input to the phonology contains /hʷ/ in its infixed position. The core issue here is that /hʷ/ needs to "know" its original position in order for [w] to be able to resolve vowel hiatus only there (and nowhere else). If the phonology only sees /hʷ/ in its infixed position, that information is lost. To illustrate this issue, compare (7a), which contains a morpheme with a labialized consonant (diagnosable by its ability to round schwas) which cannot surface faithfully (just like /hʷ/), /əsʷ/ 'cut', to (7b), the hypothetical input to the phonology under Derivation 1 after infixing /hʷ/:

(7) a. /apkʷəte+əsʷ/ 'do by tool' → [apkʷətes⁽ʷ⁾] 'cut open' (not *[apkʷətewəs])
     b. /sehke+ə⟨hʷ⟩kʷ/ 'ic.stand-neg-1pl.incl' → [sehkewəhkʷ] (not *[sehkehkʷ])

In (7a), vowel hiatus is resolved by schwa deletion (a regular process), and [w] epenthesis is impossible. In contrast, /hʷ/ resolves vowel hiatus by inserting [w], and schwa deletion is impossible (7b). This indicates that there is no general process of /w/ displacement to resolve hiatus—this process must be unique to /hʷ/, which we capture with an indexed Align constraint. **Derivation 2:** Infixation occurs entirely due to regular phonology. The core problem with this is that other morphemes do not regularly displace. Compare /hʷ/ (8a) to /ehʷ/ 'do by tool' (which also rounds surrounding schwas) (8b), as minimal a pair as we can get:

(8) a. /tekəm+əke+hʷ+ek/ 'ic.hit-inv.impers-neg-1pl' → [tekəməkewehk] (not *[tekəməkehek])
     b. /apkʷasək+ehʷ+ek/ 'ic.unlock-by.tool-1pl' → [apkʷasəkehek] (not *[apkʷasəkewehk])

Observe that /hʷ/ infixes the [h] and retains [w] in its original position (8a), whereas the /hʷ/ in /ehʷ/ 'do by tool' remains entirely *in situ* and, and [+rd] deletes. Thus, the infixing properties of /hʷ/ cannot be derived by regular phonology. It is the Align constraint indexed to /hʷ/ that derives this contrast under our analysis.

Consequences: Kalin (2022) derives the putative universality of inward infixation by placing infixation in the cycle (in a pre-phonology step of linear displacement). Our analysis of Passamaquoddy conjunct negation places infixation in the regular, post-cyclic phonology—it is this property that allows /hʷ/ to infix outward.