

## Theoretical background

What grammatical principles and processes generate **infixation**? What kinds of **restrictions** does it have? How can infixation **interact with regular phonology**?

**A recent answer:** Kalin (2022) investigates the interaction of **suppletive allomorphy** and **infixation** and proposes a **strictly-cyclic** model of infix placement where infixes are underlyingly prefixes/suffixes, get infixed immediately after exponent choice, before various (morpho)phonological operations. Therefore: (though see Kalin 2022:fn.28)

- > Infixation can only be **inward**, towards the root (due to strict cyclicity).
- > Infixes can only participate in (regular, non-cyclic) phonology **in their infixed position** (since infix placement precedes phonology).

## What we argue for

- > Infixes can displace **outward** from the root (contra Kalin 2022).
- > Infix placement can occur **in the phonology** (McCarthy & Prince 1993).
- > Infixation can be driven by **morpheme-specific constraints ranked under regular markedness & faithfulness constraints**, driving regular phonological interaction in both the **origin** and **landing site** of infixation.

**Case study:** An **infixing allomorph** of the verbal negative marker in Passamaquoddy (Eastern Algonquian), in particular in the conjunct order (a verbal inflectional paradigm), which appears to involve **outward infixation**.

(1) a. <i>Independent</i>	b. <i>Conjunct</i>
ma k-tʃenehl-əku <b>-wi</b> -wa	skat tʃenehl-əl -ina <b>(h)</b> k <sup>w</sup>
Infl V+v Voice <b>Neg</b> Infl	V+v Voice <b>&lt;Neg&gt;Infl</b>
NEG 2- stop -INV <b>-NEG</b> -PL	NEG IC.stop -2OBJ <b>-&lt;NEG&gt;3:2PL.CJ</b>
Both: 'S/he stops y'all.'	

- Proposal:** Conjunct negation is spelled out by a suffix **-h<sup>w</sup>**, which
- cannot surface faithfully, and
  - infixes before the final C of the morpheme to its right, away from the root.

The behaviour of this suffix is due the interaction between a violable indexed ALIGN constraint (Yu 2007) and regular F and M constraints. We argue that alternative derivations of infixation fail to capture its unique properties.

## Basic data and explananda

**Assumption:** The Algonquian/Passamaquoddy verbal template reflects the clausal spine, V-v-Voice-Neg-Infl (1). (Oxford 2019, Grishin 2023)

Positive	Negative
(2) tʃenehl-ət IC.stop -2SG:3CJ 'you stop her'	→ tʃenehl-a <b>-w</b> -ən IC.stop -3OBJ <b>-NEG</b> -2SG.CJ 'you don't stop her'
(3) tʃenehl-ukət IC.stop -1PL:3CJ 'we stop her'	→ tʃenehl-a <b>-w</b> -e <b>(h)</b> k IC.stop -3OBJ <b>-NEG</b> <b>-&lt;NEG&gt;1PL.CJ</b> 'we don't stop her'
(4) tʃenehl-i-nəkət IC.stop -1OBJ -3:1PL.CJ 'she stops us'	→ tʃenehl-i -nəkə <b>(h)</b> k <sup>w</sup> <small>(UR: -nəkət)</small> IC.stop -1OBJ <b>-&lt;NEG&gt;1PL.CJ</b> 'she doesn't stop us'
(5) tʃenehl-ut IC.stop -IMPER:3CJ 'she is stopped'	→ tʃenehl-a -mu <b>(h)</b> k <small>(UR: -mak)</small> IC.stop -3OBJ <b>-&lt;NEG&gt;IMPER.CJ</b> 'she isn't stopped'

### Explananda:

- If the morphemes in Voice and Infl would create vowel hiatus, [w] appears in the base Neg position (2-3).
- If the exponent of Infl ends in a stop, [h] surfaces before it (1), (3-5).
- If negative [h] is adjacent to underlying /t/, /t/ → [k<sup>w</sup>] (4)
- If negative [h] is adjacent to a schwa and (i) and (iii) don't apply, the schwa rounds to [u] (5).

## Is the [h] really infixing outward? Yes!

**Argument 1:** In other paradigms, negation (mostly) appears in between Voice and Infl (1). It's plausible that negative [h] originates there as well.

**Argument 2:** Negation disrupts Voice-Infl portmanteaux (2-3), *even if not surfacing between them* (5). Under any mechanism of portmanteau formation which requires adjacency (whether linear or structural; Williams 2003, Radkevich 2010, a.m.o.), the fact the negative marker can disrupt portmanteaux even when it doesn't surface between Voice and Infl indicates that it must originate there.

**Outward infixation does exist.** Negative [h] originates in Neg, and then infixes *away from the root* to insert itself inside Infl.

## Analysis

- Neg morpheme is linearised between Voice and Infl;
- Neg is exponed by /h<sup>w</sup>/ in the conjunct;
- /h<sup>w</sup>/ is infixed into the exponent of Infl, away from the root, due to an ALIGN constraint (Yu 2007) specifying its pivot, which is the final C in the domain: ALIGN(h<sup>w</sup><sub>NEG</sub>, R, C#, L). Note that this constraint is *violable*.

The interaction between ALIGN(h<sup>w</sup><sub>NEG</sub>, R, C#, L) and constraints on the inventory (\*h<sup>w</sup>, \*t<sup>w</sup>), phonotactics (see Sherwood 1983:71-80), and F constraints (MAX[round], MAX[voice], IDENT, INTEGRITY) that gives rise to (2)-(5).

/tʃenehl-a-h <sup>w</sup> -ən/	*h <sup>w</sup>	ONSET	hS#	MAX[rd]	ALIGN(h <sup>w</sup> ,C#)	MAX[voi]	INT
a. tʃenehlah <sup>w</sup> ən	*!				*		
b. tʃenehlaəwn		*!				*	
c. tʃenehlawəhn			*!				*
d. tʃenehlahən				*!	*		
e. ☞ tʃenehlawən					*	*	

/tʃenehl-a-h <sup>w</sup> -ek/	MAX[rd]	IDENT[dor]	ALIGN(h <sup>w</sup> ,C#)	MAX[voi]	INTEGRITY
a. tʃenehlahək <sup>w</sup>		*!	*		*
b. tʃenehlawək			*!	*!	
c. tʃenehlahək	*!		*		
d. ☞ tʃenehlawək					*

/tʃenehl-i-h <sup>w</sup> -nəkət/	*t <sup>w</sup>	MAX[rd]	ID[dor]	ALIGN(h <sup>w</sup> ,C#)	MAX[voi]	ID[cor]
a. tʃenehlinəhk <sup>w</sup> ət			*!	*!		
b. tʃenehlinəkəht <sup>w</sup>	*!					
c. tʃenehlinəkək <sup>w</sup>					*!	*
d. ☞ tʃenehlinəkək <sup>w</sup>						*

/tʃenehl-a-h <sup>w</sup> -mək/	*CS	MAX[rd]	IDENT[dor]	IDENT-V	ALIGN(h <sup>w</sup> , C#)	INT
a. tʃenehlawməhk	*!					*
b. tʃenehlaməhk		*!				
c. tʃenehlaməhk <sup>w</sup>			*!			
d. ☞ tʃenehlamuhk				*		*

## Against non-outward-infixing analyses

**Alternative 1: Conjunct [h] is due to allomorphy of Infl in the context of Neg.**

- > Unlikely as [h] infixation happens to *all* exponents of Infl, with only two exceptions: -an '1SG' and -ən '2SG'.
- > There is also a robust generalization that [h] infixes into all exponents of Infl that have final stops, and it fails to appear in only those two exponents of Infl that lack final stops. This alternative misses these generalizations.

**Alternative 2: Two negation positions, one occupied by /w/ in Neg (which sometimes deletes) and one occupied by /h/ outside of Infl (infixing inward).**

- > Problem: [h] can cause surrounding segments to round, suggesting it bears the feature [+rd]—and these rounding effects are in complementary distribution with [w], suggesting they have the same source.
- > This behavior is better captured with a single exponent /h<sup>w</sup>/, which must then be in Neg to account for portmanteau blocking.
- > Also: no clear evidence for two Neg positions outside conjunct inflection.

## Against alternative derivations of infixation

**Alternative 1: The input to the phonology has /h<sup>w</sup>/ in its infixed position.**

- > Issue: /h<sup>w</sup>/ needs to "know" its original position in order for [w] to be able to resolve vowel hiatus only there and nowhere else. Compare:

(6) a. /apk <sup>w</sup> ətə <sup>s</sup> ə <sup>w</sup> / 'open-cut' → [apk <sup>w</sup> ətəs <sup>(w)</sup> ]	*[apk <sup>w</sup> ətə <sup>s</sup> ə <sup>w</sup> ]
b. /sehke <sup>s</sup> ə <sup>s</sup> (h <sup>w</sup> )k/ 'stand-(NEG)21.CJ' → [sehke <sup>w</sup> əhk <sup>w</sup> ]	*[sehke <sup>s</sup> ə <sup>s</sup> (h <sup>w</sup> )k] *[sehki <sup>j</sup> ihk <sup>w</sup> ]

- > Note: hiatus isn't tolerated and is regularly resolved with schwa deletion and/or glide insertion (depending on the context; LeSourd 1993).

**Alternative 2: Infixation occurs entirely due to regular phonology.**

- > Issue: other morphemes do not regularly displace, even in similar kinds of phonological contexts:

(7) a. /tʃenehl+əke+h <sup>w</sup> +ek/ 'IC.hit-INV.IMPER:NEG-1PL' → [tʃenehləkewehk]	*[tʃenehləkewehk]
b. /apk <sup>w</sup> asək+eh <sup>w</sup> +ek/ 'IC.unlock-by.tool-1PL' → [apk <sup>w</sup> asəkehk]	*[apk <sup>w</sup> asəkewehk]

- > **Open Q** (for us): Why is [+rd] of /eh<sup>w</sup>/ deleted in (7b)?

## Consequences

What Passamaquoddy conjunct negation shows: **Outward infixation exists.**

- > The principles governing infix placement can interact with regular phonology.
- > Infix placement can't (always) be driven purely by regular phonology.

Straightforward extension of Kalin (2022), if we take fn.28 seriously:

- > infixation-in-morphology behaves exactly as Kalin (2022) predicts,
- > infixation-in-phonology allows for outward infixation and infixation-phonology interactions.

Why the robust (at least statistical) universals found in Kalin (2022)? Hard to learn the kind of indexed constraints necessary for infixation-in-phonology?

## Open questions

Following Infl, it's possible to suffix tense markers (e.g. -əpən PST) and an extra agreement suffix (C; e.g. -ik 3PL). But /h<sup>w</sup>/ *never* infixes inside those morphemes, nor does it round schwas there: it's as if it's "trapped" within the "Infl domain".

(5) a. tʃenehl-a-mu <b>(h)</b> k-əpən	*[tʃenehl-a-mə <b>(h)</b> k-upən]
b. tʃenehl-a-mu <b>(h)</b> k-ik	*[tʃenehl-a-mək- <b>i</b> (h)k]

- > Does Infl delimit some kind of domain/cycle of its own?
- > How is this domain defined? One idea: BD-Correspondence to minimal free-standing verbal forms, which always contain Infl? (Donca Steriade, p.c.)