Allomorphic Domains and Overlapping Portmanteaus in Kanien'kéha

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1 Introduction

1.1 Language Background

- Language of Interest: Kanien'kéha (alternative endonym: Onkwehonwehnéha, exonym: Mohawk)
- Spoken in present-day Ontario, Quebec, and New York.
- 500 native speakers, critically endangered, with strong revitalization programs in place (DeCaire, 2023).

1.2 Verb Structure

- Language is said to be **polysynthetic** (K. Michelson, 2020).
- Simplified verb template:

(*Pre-Pronominal Prefixes*)—Prononominal Prefixes—`[VERB STEM]`—Aspect Suffix—(*Tense Suffix*)

- **Verb stem:** minimally a verb root, plus optional incorporated noun and derivational suffixes.
- **Aspect Suffix:** obligatory marking of one of three aspects: **Punctual** (Perfective), **Habitual** (Imperfective), or **Stative**.
- **Tense suffix:** optional past tense marking.
- **Pronominal prefixes:** obligatorily mark agreement with animate subjects and objects, potentially including number, person, gender, and clusitivity. Three types: agent (agentive subject), patient (non-agentive subject or theme), and transitive (subject and object):[1]

[1]Glosses follow standard Leipzig conventions with the following additions: A = agent, C = complementizer, CONT = continuative, CONTR = contrastive, DIM = diminuitive, DIST = distributive, DUP = duplicative, EMPH = emphatic, EPEN = epenthetic vowel, FACT = factual, FI = feminine indefinite, FOR.PST = former past, FZ = feminine zoic, HAB = habitual, INCH = inchoative, INSTR = instrumental, JR = joiner, NE = ne, NSF =

(1) kenòn:we's
k-nonhwe'-s
1sgA-like-HAB
'I like it'

(2) wakatshennón:ni
wak-atshennonni
1sgP-be.happy[STAT]
'I am happy'

(3) konnòn:we's
kon-nonhwe'-s
1sg>2sg-like-HAB
'I like you'

- **Pre-pronominal prefixes:** optional part of the verb, mark qualities including mood, repetition, directionality, and negation.

2 The Pre-Pronominal Prefix Puzzle

2.1 Functions

- Some examples of the effects pre-pronominal prefixes have.
- The **repetitive**:

(4) khní:nons
k-hninon-s
1sgA-buy-HAB
'I buy' (G. Michelson, K. Michelson, and Deer, 2024:136)

(5) skhní:nons
s-k-hninon-s
REP-1sgA-buy-HAB
'I'm buying it again' (Martin, 2023:146)

- The **translocative**:

(6) katá:wens
k-atawen-s
1sgA-swim-HAB
'I swim or bathe' (Martin, 2023:151)

noun suffix, OPT = optative, P = patient, PART = partitive, PRO = independent pronoun, PUNC = punctual, PURP = purposive, Q = question particle, REM.PST = remote past, REP = repetitive, REV = reversative, SRFL = semireflexive, STAT = stative, TRANS = translocative. Orthography and glosses from original sources have been modified for consistency and to bring them in line with modern orthographic norms. Examples are presented in a four-line gloss, with the initial line written in the standard orthography, the second line representing morpheme breaks with underlying representations where relevant, the third line representing morpheme glosses, and the last line being a free translation into English. Stress and length are assigned by regular word-level phonological proceses (K. Michelson, 1988), and are thus written only on the first line.

(7) iekatá:wens
ie-k-atawen-s
TRANS-1SGA-swim-HAB
'I swim in that direction' (Martin, 2023:151)

- The **negative**

(8) shenòn:we's
hshe-nonhwe'-s
2SG>FI-like-HAB
'You like her/them' (Martin, 2023:80)

(9) iah tehshenòn:we's
iah **te**-hshe-nonhwe'-s
NEG NEG-2SG>FI-like-HAB
'You don't like her/them' (Martin, 2023:80)

- Summary (see Bonvillain, 1973 for full descriptions in Kanien'kéha, and Abbott, 1981 for a description of their semantics in closely-related Oneida).
  - **Group** - Morphemes in complementary distribution for reasons that aren't immediately attributable to semantics.
  - **Gloss** - Glossing abbreviation
  - **Independent Form** - Allomorph used when no other pre-pronominal prefixes are present.
  - **Meaning** - Short descriptor of meaning contribution

Group	Gloss	Independent Form	Meaning
5 (*Peripheral*)	PART	**ni-**	Quantity
	COIN	**shi-**	"When"
	CONTR	**thi-**	Surprise
	NEG	**te-**	Negation
4	TRANS	**ie-**	Distal
3	DUP	**te-**	"Two"-ness
2 (*Modal*)	DUP	**en-**	Future
	OPT	**a-**	Irrealis
	FACT	**wa'-**	Realis
1 (*Inner*)	CIS	**t-**	Proximal
	REP	**s-**	Repetition

- Note **modals**: other evidence for syntactic natural class besides complementary distribution:
  - **Punctual** aspect (perfective) requires a modal prefix (Martin, 2023).
  - Similar semantic function: modulating aspect/mood.

2.2 Templates

- Pre-Pronominal Prefix Templates from Bonvillain, 1973 (see also Diaz, Koenig, and K. Michelson, 2019; K. Michelson, 2020):

$$\left\{\begin{array}{l}\textsc{part}\\ \textsc{coin}\\ \textsc{contr}\\ \textsc{neg}\end{array}\right\} - \textsc{trans} - \textsc{fact} - \textsc{dup} - \left\{\begin{array}{l}\textsc{fut}\\ \textsc{opt}\end{array}\right\} - \left\{\begin{array}{l}\textsc{rep}\\ \textsc{cis}\end{array}\right\} - \left\{\begin{array}{l}\textsc{opt}\\ \textsc{fact}\end{array}\right\}$$

- **Problems:**
  - **Multiple Orderings:** Morphemes like the **factual** can appear closest or further from the pronominal prefixes depending on which other morphemes are present.
  - **Distributed Exponence:** Certain morphemes are analyzed as having their exponence distributed between other morphemes. Diaz, Koenig, and K. Michelson, 2019 on Oneida:[2]

    (10) usahotiké:tohteʔ
    u-s-**a**-hoti-ketoht-ʔ
    OPT-REP-OPT-MPLP-show.up-PUNC
    'they should show up again' (Diaz, Koenig, and K. Michelson, 2019)

  - **Morphologically-Conditioned Allomorphy:** In the terminology of Rolle, 2023, allomorphy conditioned by an idiosyncratic set of morphemes. This is not inherently undesirable, but is a last resort in terms of conditioning environment. The following rule is from Bonvillain, 1973:

$$\textsc{dup} \rightarrow \textit{tu-} \;/\; \_\{\texttt{REP,CIS}\}$$

- Proposal:
  - **Simplified template:** take idiosyncratic complementary distribution at face value:[3]

$$\left\{\begin{array}{l}\textsc{part}\\ \textsc{coin}\\ \textsc{contr}\\ \textsc{neg}\end{array}\right\} - \textsc{trans} - \textsc{dup} - \left\{\begin{array}{l}\textsc{fut}\\ \textsc{opt}\\ \textsc{fact}\end{array}\right\} - \left\{\begin{array}{l}\textsc{rep}\\ \textsc{cis}\end{array}\right\}$$

  - Deviations are mostly due to **portmanteaus**.
  - Allomorphy is only **phonologically-conditioned** and **peripherally-conditioned**.
- Two morpheme combinations to examine.

[2] Oneida and Kanien'kéha are closely related (K. Michelson, 1988). In the pre-pronominal prefix domain, differences between the two languages does not vary any more than variation between dialects of Kanien'kéha (c.f. Martin, 2023 on Kahnawa'kéha and Bonvillain, 1973 on Ahkwesahsnéha, versus Diaz, Koenig, and K. Michelson, 2019 on Oneida. As such, I refer to analyses of Oneida for comparison when necessary.

[3] I use a template as a convenient representation of ordering and complementary distribution. I do not claim that it is the true model of the morphosyntax. (see e.g. Crippen, 2019 on the problems with morphological templates as theoretical tools). Following Distributed Morphology (Halle and Marantz, 1993) and others, I assume this morphological template is fed by the syntax.

3 Data and Analysis

3.1 Puzzle 1: The Repetitive and the Inner Prefixes

- The repetitive and the future combine transparently in the sequence FUT-REP:[4]

(11) skátiens
s-k-atien-s
REP-1SGA-sit-HAB
'I sit again'
(Martin, 2023:145)

(12) enkatkétsko'
en-k-atketsko-'
FUT-1SGA-get.up-PUNC
'I will get up'
(Martin, 2023:100)

(13) enskátien'
en-s-k-atien-'
FUT-REP-1SGA-sit-PUNC
'I'll sit again'
(Martin, 2023:145)

- The same order occurs with the **cislocative**:

(14) tká:wi
t-k-awi
CIS-1SGA-give.HAB
'I give it'
(Martin, 2023:155)

(15) éntkon'
en-t-k-on-'
FUT-CIS-1SGA-give-PUNC
'I'll give it'
(Martin, 2023:155)

- With the factual this order is seemingly reversed:

(16) sakátien'
s-a-k-atien-'
REP?-FACT?-1SGA-sit-PUNC
'I sat again' (Martin, 2023:155)

(17) tá:kon'
t-a-k-on-'
CIS?-FACT?-1SGA-give-PUNC
'I gave it' (Martin, 2023:155)

- Under the assumption that the factual and the future form a morphosyntactic class of **modals**, and the cislocative and repetitive form a class of **inner** prefixes, we have conflicting orders of **modal-inner** and **inner-modal**.

- However, inwardly-conditioned allomorphy is reduced:

[4]Some data from Martin, 2023 are not originally provided with translations; I have inferred them when necessary. The correctness of translations do not affect the conclusions that may be drawn from the forms themselves.

(18) sakhiá:ton'
s-**a**-k-hiaton-'
REP?-FACT?-1SGA-write-PUNC
'I wrote again' (Dative:3422)

(19) wa'khiá:ton'
wa'-k-hiaton-'
FACT-1SGA-write-PUNC
'I wrote [it]' (Dative:4124)

- No phonological motivation for disappearance of the glottal stop.
- Summary of allomorphs:

Morpheme	Form
FACT	*wa'-*
Other-FACT	-a'-
Inner-FACT	-a-

- **Proposal:** the sequences *sa-* and *ta-* cannot be broken down, and actually represents a fusional form REP.FACT and CIS.FACT.
- Further puzzle: a preceding prefix causes a vowel *-u-* to appear:[5]

(20) tonsaionhséntho'
t-**on**-sa-ion-ahsentho-'
DUP-?-REP.FACT-FI.A-cry-PUNC
'[It] cried again' (Dative:4520)

(21) ionsakheiatewennáta'ahse'
i-**on**-sa-khei-atwennata'ahs-'
TRANS-?-REP.FACT-1SG>FI-call-PUNC
'[...] I called her back' (Dative:4488)

- This vowel is not one of the three epenthetic vowels already present in the language (K. Michelson, 1988).[6]
- This vowel is not attributable to the more peripheral prefixes in their independent forms:

(22) tekó:rens
te-k-oren-s
DUP-1SGA-split-HAB
'I split it in two' (2401)

(23) iekaié:ri
ie-ka-ieri
TRANS-NA-be.correct.STAT
'It's complete, it's whole' (3949)

- **Proposal:** The underlying form of the portmanteaus includes this initial vowel:

Morpheme	Form
REP.FACT	onsa-
CIS.FACT	onta-

[5] Uncited data comes from a database of fieldwork compiled by researchers at McGill Linguistics department.

[6] Additionally, <u> is the strongest vowel by measure of hiatus resolution (Hopkins, 1987). It would be unusual for the strongest/most complex vowel to be epenthetic.

- When these forms are initial, the initial vowel is deleted to respect a constraint on verbs requiring consonant-initiality (Flack, 2009).
- Further evidence: only three instances of vowel-initial verbs: future, optative, and optative with inner prefix.

(24)
enkatá:wen'
en-k-atawen-'
FUT-1SGA-swim-PUNC
'I will swim'

(25)
akatá:wen'
aa-k-atawen-'
OPT-1SGA-swim-PUNC
'I ought to swim'

(26)
aonsakátien'
aa-onsa?-k-atien-'
OPT-REP.FACT?-k-atien-'
'I ought to sit again' (Martin, 2023:145)

- Crucially, deletion of initial vowels would result in loss of information in these cases.
- In all other cases, various processes militate against vowel-initial verbs.
- In particular, initial consonants cannot be too weak: h alternates with r initially:

(27) ratá:wens
ra-atawen-s
MSGA-swim-HAB
'He swims' (Martin, 2023:80)

(28) iah tehatá:wens
iah te-**ha**-atawen-s
NEG NEG-MSGA-swim-HAB
'He doesn't swim' (Martin, 2023:80)

3.2 Combination 2: The Factual and the Duplicative

- The duplicative combines with the optative and future modal prefixes in the sequence DUP-MODAL:

(29) tahotèn:tshon
t-aa-ro-tenhsth-on
DUP-OPT-MSGP-win-STAT
'[...] he should have won' (4760)

(30)
ténhsta'ne'
t-en-hs-t-a-'n-'
DUP-FUT-2SGA-stand-JR-INCH-PUNC
'You will stand' (1603)

- Seemingly reversed with the factual:

(31) Owirà:'a wa'tionhsénhto'.
o-wira-'a **wa'?-t?**-i-onhsenhto-'
N.A-baby-DIM FACT?-DUP?-FI.A-cry-PUNC
'A baby cried.' (4519)

- Again, forced to posit multiple orders: DUP-**modal** and **modal**-DUP.
- Additionally, different patterns of phonologically-conditioned allomorphy:

(32) a. wetewahní:non'
we-twa-hninon-'
FACT-1INCL.PLA-buy-PUNC
(Dative:4438)

b. wa'tkatónhewe'
wa'?-t?-k-atonhew-'
FACT?-DUP?-1SGA-sweep-PUNC (Dative:4512)

(33) a. teseneriahsharíhtha'
te-sni-eriahshariht-ha'
DUP-2DUA-break.a.heart-HAB (Dative:2622)

b. wa'tisahén:rehte'
wa'?-**ti**?-sa-henreht-'
FACT?-DUP?-2SGP-scream-PUNC (Martin, 2023:85)

- Summary:

	Conditioning Environment	
Morpheme	-{/s/,/t/}	Elsewhere
FACT	*we-*	*wa'-*
FACT+DUP	*wa'-*	
DUP	*te-*	
DUP+FACT	*ti-*	*t(e)-*

- **Proposal:** the sequence *wa't(i)-* cannot be broken down, and represents a fusional form FACT.DUP.

- Summary of allomorphs:

	Conditioning Environment	
Morpheme	-{/s/,/t/}	Elsewhere
FACT.DUP	*wa'ti-*	*wa't-*
DUP	*te-*	

- Note that independent duplicative form has an underlying *e*, but not the fused form.

- Explains the epenthesis puzzle regarding the form of the duplicative put forth in K. Michelson, 1988:135).

- Occurence of *e* with FACT.DUP form is epenthetic.

3.3 Interim Conclusions

- By positing these forms along with a few others, several problems are resolved:

  1. Simplified template with no repeating slots: simplified syntax.
  2. Causes in allomorphic variation are indentified: simplified morphophonology.

- Only downside: does not capture certain patterns between the repetitive and cislocative:

	Environment	
Morpheme	-{/s/,/t/}	Elsewhere
REP.FACT	*onse-*	*onsa-*
CIS.FACT	*onte-*	*onta-*

- Need to appeal to grammar-external factors, like analogy or the diachronic origins of the prefixes.[7]

4 Theoretical Consequences

4.1 Allomorphic Domains

4.1.1 Allomorphy Throughout the Word

- Allomorphy used for analysis is found in other prefixes:

1. **Inward-facing** phonological conditioning.

Morpheme	-{a,e,en,o,on}	Elsewhere
NA	*w-*	*ka-*

2. **Outward-facing** peripheral conditioning.

Morpheme	Initial	Medial
2sg>1sg	*tak-*	*-hsk-*

- **Claim:** all pronominal and pre-pronominal prefix allomorphy can be reduced to these factors, plus minor lexically-conditioned allomorphy:

Morpheme	-{e,en,o,on}	-$\sqrt{ehre}$ "want"
FI.A	*iak-*	*ien-*

- Derivational suffixes exhibit inward-facing morphologically-conditioned allomorphy (G. Michelson, K. Michelson, and Deer, 2024; K. Michelson, 1988), as do aspect suffixes (Bonvillain, 1973; G. Michelson, K. Michelson, and Deer, 2024):

Morpheme	{$\sqrt{\text{-}atek\text{-}}$,$\sqrt{\text{-}the't\text{-}}$,„}-	Elsewhere
HAB	*-ha'*	*-s*

- Summary:

	Pre-Pron. and Pron. Prefixes	**Verb Stem**	**Asp. and T. Suffixes**
Allomorphy	**Inward:** Phonological and Lexical **Outward:** Peripheral vs. not	**Inward:** Morphological Class (G. Michelson, K. Michelson, and Deer, 2024)	

4.1.2 Phonological Domains

- K. Michelson, 1988: */awa/* -> [$\tilde{u}$] only in combinations of pronominal and pre-pronominal prefixes (K. Michelson, 1988).

- K. Michelson, 1988: *Joiner Insertion*, which inserts *a* at morpheme boundaries between consonants, only occurs within the verb stem.

- Phonological Domains:

[7] It is difficult to motivate the *a*/*e* alternations as phonological: while they occur in other parts of the prefixes, their distribution is irregular enough that allomorphy is a more likely explanation.

	Pre-Pron. and Pron. Prefixes	Verb Stem	Asp. and T. Suffixes
	Outward: Peripheral vs. not	(G. Michelson, K. Michelson, and Deer, 2024)	
Phonology	/awa/ → [ũ] (K. Michelson, 1988)	Joiner Insertion (K. Michelson, 1988)	

4.1.3 Synthesis:

	Pre-Pron. and Pron. Prefixes	Verb Stem	Asp. and T. Suffixes
Allomorphy	**Inward:** Phonological and Lexical **Outward:** Peripheral vs. not	**Inward:** Morphological Class (G. Michelson, K. Michelson, and Deer, 2024)	
Phonology	/awa/ → [ũ] (K. Michelson, 1988)	Joiner Insertion (K. Michelson, 1988)	

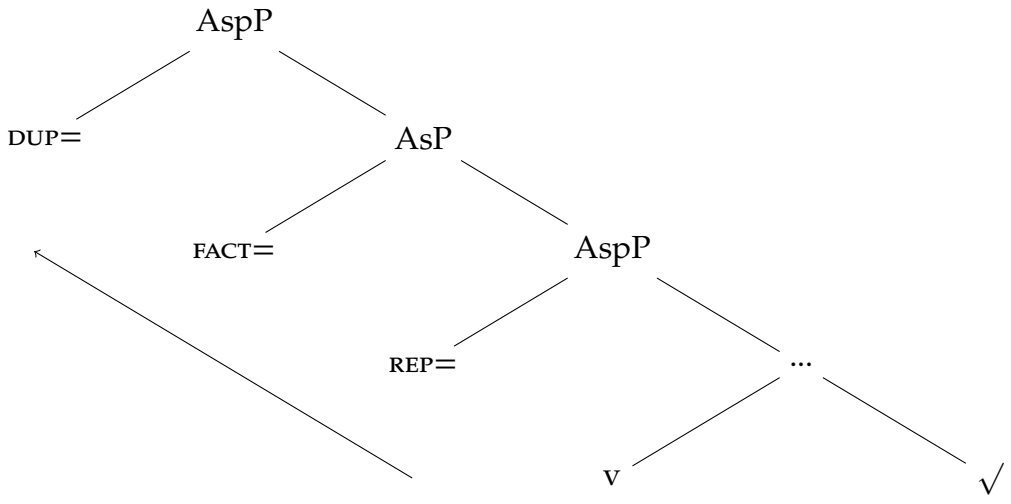
- Type of allomorphy is sensitive to the same subword domains as phonology.

4.2 Overlapping Portmanteaus

- Posited FACT.DUP, REP.FACT, CIS.FACT
- DUP-FACT-CIS, DUP-FACT-REP → **overlapping portmanteaus** (contra Radkevich, 2013).

Morphemes	Form	Parse
DUP,FACT,REP	*tonsa-*	DUP-REP.FACT
DUP,FACT,CIS	*tonta-*	DUP-CIS.FACT

- **Only inner two morphemes fuse.**
- Portmanteau formation proceeds from the root outwards → same direction proposed for Vocabulary Insertion (Halle & Marantz 1993, Bobaljik 2000).



Defusion Hypothesis: In a sequence of morphemes C-B-A-. . .-√ or √-. . .-A-B-C, where portmanteaus are available for A+B and B+C, the fusion of A+B bleeds the fusion of B+C.

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