

ALLOMORPHIC DOMAINS AND OVERLAPPING PORTMANTEAUS IN KANIEN'KÉHA*

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1. Introduction

Verbs in the Northern Iroquoian language family may include one or more *pre-pronominal prefixes*, so named because of their location at the left edge of the verb stem immediately preceding the *pronominal prefix*, which indexes the core arguments of the verb. Pre-pronominal prefixes indicate a variety of meanings such as mood, direction, negation, and quantity (Abbott 1981, Bonvillain 1973, Lounsbury 1953, Michelson 2016, Mithun 2006, Mithun and DeCaire 2023).

The forms of these prefixes are often described in terms of co-occurrence restrictions and templatic ordering requirements (Diaz et al. 2019). An example is shown in the following pair of forms from Kanien'kéha. While there is a PARTITIVE prefix in (1) to indicate counting, negating this proposition in (2) introduces a NEGATIVE prefix, which blocks the appearance of the PARTITIVE.¹

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¹ Examples and linguistic forms are in Kanien'kéha orthography (Lazore 1993), except if there is ambiguity, in which case IPA will be used. Data from sources not using the orthography are adapted into it without loss of information. Graphemes mostly correspond to the same phonemes as IPA letters, except for the cases of <en> = /ɛ̃/, <on> = /ũ/, <iV> = /j/, and <'> = /ʔ/. For pitch accent, short level stress, long level stress, and falling stress are represented as á, á:, and à: respectively. Examples are glossed using Leipzig conventions, with the following abbreviations: 1,2 = first, second person; SG,DU,PL = singular, dual, plural number; incl,excl = inclusive, exclusive; FI = feminine-indefinite; FZ = feminize-zoic; M = masculine; N = neuter; A,P = agent, patient; X>Y = agent X acting on patient Y; STAT = stative; HAB = habitual; PUNC = punctual; REM.PST = remote past; PART = partitive; REP = repetitive; CIS = cislocative; FACT = factual; FUT = future; OPT = optative; DUP = duplicative; TRANS = translocative; NEG = negative; COIN = coincident; JR = joiner vowel. Periods indicate cumulative exponence of the relevant features (portmanteaus), and question marks indicate glosses which are used to illustrate intermediate analyses that will later be revised. Segmented morphemes mostly represent my analysis of underlying forms, except in cases which are not crucial to the analysis and do not contribute to understanding. Parses and glosses may diverge from the original sources if my analysis diverges. Pre-pronominal prefixes will always be identified by name in the prose with small caps, as in REPETITIVE or FUTURE.

- (1) Áhsen nihá:ti
 Ahsen **ni**-hati
 Three PART-MPLA
 ‘There are three of them (m.)’ (Martin 2023: 26)
- (2) Iah áhsen tehá:ti
 Iah ahsen **te**-hati
 NEG three NEG-MPLA
 ‘There are not three of them (m.)’ (Martin 2023: 26)

This complementary distribution does not appear to have a semantic, syntactic, or phonological basis. Under traditional analyses, the prefixes are simply represented in a slot-and-filler model of morphological ordering and compatibility. Table 1 shows one such model, adapted with modern terminology from Bonvillain (1973)’s grammar of Kanien’kéha.² Slots are classified as *modal* or *non-modal*: the natural class of modal prefixes can be defined based on the following similarities: (i) they occur in complementary distribution, (ii) they indicate meaning related to modality, and (iii) they obligatorily co-occur with the punctual (perfective) aspect (Bonvillain 1973). The NEGATIVE can be seen overlapping the PARTITIVE in the far left, reflecting their incompatibility as shown in (2).

Table 1. Pre-pronominal prefix template for Kanien’kéha (Bonvillain 1973).

Non-Modal	Non-Modal	Modal	Non-Modal	Modal	Non-Modal	Modal
PARTITIVE <i>n-</i>	TRANS-LOCATIVE	FACTUAL <i>wa’-</i>	DUPPLICATIVE <i>t-</i>	OPTATIVE <i>a-</i>	REPETITIVE <i>s-</i>	FACTUAL and OPTATIVE
COINCIDENT <i>s-</i>	<i>y-</i>			FUTURE <i>en-</i>	CIS-LOCATIVE <i>t-</i>	<i>a-</i>
CONTRASTIVE <i>th-</i>						
NEGATIVE <i>te’-</i>						

However, in some cases, the pre-pronominal prefixes are subject to morphological complexities that can complicate decomposition of forms and create difficulties with a simple template. Diaz et al. (2019) summarize as follows: “The [Oneida pre-pronominal prefixes] emphatically exhibit templatic characteristics, including (but not limited to) extended exponence, portmanteau position classes, zero morphs, discontinuous dependencies, and variable order.” An example of this is visible in Table 1, where the FACTUAL prefix appears in two positions across half of the template.

² *Mohawk* is a commonly used exonym in academic and colloquial contexts. Following recent work, I will refer to the language as *Kanien’kéha*. The common endonym for the language is *Onkwehonwehnéha*, but this may refer to Rotinonhsión:ni (Haudenosaunee) languages more broadly.

Drawing on a range of published material on Kanien'kéha and related languages, I propose an analysis of the pre-pronominal prefixes that eliminates the need for multiple orderings and/or exponence. This has the immediate benefit of simplifying the template, and thus any morphosyntactic analyses based on that template. Furthermore, I make use of a limited set of conditioning environments for allomorphs, eliminating the need for morphologically-conditioned allomorphy (in the terminology of Rolle 2023). In addition to language- and family-internal benefits of a simplified analysis, this analysis leads to two conclusions relevant to broader morphological theory. First, the distribution of types of allomorphy are sensitive to the same domains as phonology and syntax. And second, the creation of portmanteaus proceeds outwards from the root, in line with proposals for other morphological processes such as Vocabulary Insertion (Bobaljik 2000).

This paper is organized as follows. Sections 2 and 3 each describe a pre-pronominal prefix puzzle in detail and argue for a portmanteau analysis in each case. Section 4 describes the broader implications that arise from this analysis. Section 5 concludes.

2. Puzzle 1: the repetitive, cislocative, and the factual

The CISLOCATIVE prefix indicates a location or direction that is closer to the point of reference. As seen in (3), it typically occurs in the form *t-*. The REPETITIVE prefix indicates a repeated action. As seen in (4), it typically occurs in the form *s-*.³

(3) tkatá:wens
 t-k-atawen-s
 CIS-1SGA-swim-HAB
 'I swim there' (Martin 2023: 81)

(4) skatá:wens
 s-k-atawen-s
 REP-1SGA-swim-HAB
 'I swim again' (Martin 2023: 81)

The FACTUAL typically occurs in the form *wa'-*, as seen in (5). However, when a more peripheral prefix is added, such as the TRANSLOCATIVE *i-* in (6), the initial *w* drops off, leaving the form *-a'-*. Note that a FACTUAL must be present, since the verb is in the punctual aspect, which requires a modal prefix as mentioned in Section 1, and the prefix form is not of the other two modals, the OPTATIVE *a-* or FUTURE *en-* (Bonvillain 1973).

³ For more general information on the semantics of Northern Iroquoian pre-pronominal prefixes, readers may refer to Abbott (1981), Bonvillain (1973), Diaz et al. (2019), and the sources therein. Additional works on the semantics of Kanien'kéha pre-pronominal prefixes are Gatchalian (2025), Myers (2024), and Morgunova (2024).

- (5) wa'katá:wen'
wa'-k-atawen-'
 FACT-1SGA-swim-PUNC
 'I did swim' (Martin 2023: 95)

- (6) ia'kakhón:ni'
i-a'-ka-khw-onni-'
 TRANS-FACT-NA-food-make-PUNC
 'She/it did cook soon after arriving there' (Martin 2023: 151)

However, the FACTUAL does not pattern with other modals when the REPETITIVE prefix is present. (7) shows that the FUTURE *en-* and REPETITIVE *s-* combine transparently with ordering Modal-REP; compare the FUTURE in (8) without another pre-pronominal prefix.

- (7) entkéhtahkwe'
en-t-k-ehtahkw-'
 FUT-CIS-1SGA-believe-PUNC
 'I will believe it' (Martin 2023: 115)

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

On the other hand, (9) shows that the FACTUAL appears to surface after the REPETITIVE when segmented out, resulting in a contradictory order of REP-Modal. Because of this, the class of modal prefixes cannot fully represent a shared position: as a result, templates are forced to stipulate multiple orderings (c.f. Michelson (2016) as well as Table 1).

- (9) sakató:ri'
s-a-k-atori-'
 REP-FACT?-1SG-drive-PUNC
 'I did drive again' (Martin 2023: 152)

However, the presence of the REPETITIVE has another unexpected result: as seen in the decomposition in (9), the FACTUAL appears to have the form *-a-*, instead of *-wa'* - as in (5). The disappearance of the initial *w* can be explained as type of phonological cluster reduction and is consistent with the presence of another preceding prefix, as in (6). On the other hand, the disappearance of the final glottal *-'* is not expected phonologically – the trigger of the alternation and the alternation itself are not local to each other, and *-a'k-* is a licit sequence. Thus, the same environment which creates contradictory linearization also requires positing a suppletive allomorph. These patterns are summarized in Table 2.

Table 2. Allomorphy and ordering in combinations of the factual and other prefixes.

Morpheme Combinations	Possible Modal Orderings	Factual Allomorph
FACT+REP	Modal-REP, REP-FACT	-a’-
FACT+Other	Other-Modal	-a-

I propose that these two irregularities are best accounted for in a unified manner by *not* decomposing *sa-* into a REPETITIVE and a FACTUAL morpheme. Instead, I propose that *sa-* represents a single **portmanteau**: that is, the sequence represents a fused REP.FACT form.

I remain agnostic as to the exact theoretical implementation of portmanteau formation, though I will elaborate on the implications of this analysis in Section 4. In principle, any theory of morphology which uses an item-and-arrangement approach and allows for cumulative exponence independent of phonology, like the *Fusion* operation in Distributed Morphology (Halle and Marantz 1993), should capture this approach.

In addition to removing a need for multiple orderings, this analysis is supported by the behaviour of the REPETITIVE-FACTUAL sequence when another prefix precedes them. (10) and (11) show that adding a preceding prefix results in an intrusive *-on-* (the orthographic representation of the nasal vowel /ũ/) between the two prefixes.

(10) shonsá:keke’
 sh-**on**-sa-k-k-’
 COIN-?-REP.FACT-1SGA-eat-PUNC
 ‘When I ate it again’ (Martin 2023: 137)

(11) ionsakató:ri’
 i-**on**-sa-k-atori-’
 TRANS-?-REP.FACT-1SG-drive-PUNC
 ‘I did drive toward there again’ (Martin 2023: 152)

This vowel cannot be accounted for phonologically: it does not match the identity or distribution of any of the three already attested epenthetic vowels (see Michelson 1988). Given that it is associated with the REP+FACT combination, I propose that the *-on-* is a part of the REP.FACT portmanteau. That is, the REPETITIVE and FACTUAL morphemes surface as a portmanteau with the form *-onsa-* when another prefix precedes them.

To account for the *-onsa-* ~ *-sa-* alternation, I propose that the underlying form of the portmanteau is *-onsa-*: when there are no previous prefixes, the initial vowel is deleted to respect a constraint requiring verbs to be consonant-initial (Flack 2009). Since pronominal prefixes are required and all begin with consonants (Bonvillain 1973), it can be seen that the vowel-initial verbs only occur when vowel-initial pre-pronominal prefixes are present at the start of the verb. The only such prefixes that surface are the FUTURE and OPTATIVE, which happen to consist of a single vowel, and so this process must not occur if an entire morpheme would be deleted.

One final alternation in these portmanteau forms must be noted for completion. As exemplified by (12) and (13) respectively, the REPETITIVE-FACTUAL form is realized as *se-* before *s* and *t*, which alternates with an *-onse-* form when not initial (Martin 2023).⁴

(12) setewátien'
se-tewa-atien-'
 REP.FACT-1INCL.PLA-sit-PUNC (Martin 2023: 145)

(13) tonsesewaté:ni'
t-onse-sewa-teni-'
 DUP-REP.FACT-2DUA-change-PUNC
 'Yous pl. changed it back' (Martin 2023: 137)

This is possible to model as phonological assimilation in a framework where front high vowels and coronal consonants share a common feature, as in certain versions of Feature Theory (Heather Goad, p.c.). This is supported by the prevalence of identical *a ~ e* alternations in several pronominal and pre-pronominal prefixes (see e.g. Michelson et al. 2024: 13). However, this vowel raising process does not occur in all environments: as shown in (14), the imperative form of the CISLOCATIVE creates the same environment but does not trigger vowel raising. As a result of this idiosyncrasy, I choose to model the *a ~ e* alternation as suppletive allomorphy.

(14) tasáhset
ta-s-ahset
 CIS.IMP-2SG.IMP-count
 'Count!' (Michelson et al. 2024: 51)

The form of the CISLOCATIVE in (14), *ta-*, is syncretic to its factual form. While I leave the partial syncretisms between the imperative and the factual to future work, I will account for the cislocative allomorphs in the factual. In general, the forms of the cislocative are identical to those of the repetitive, except that instances of *s* are replaced with *t*. By the same reasoning established in this section, I propose that cislocative-factual forms are portmanteaus. Allomorphs proposed in this section are summarized in Table 3.

Table 3. Proposed allomorphs for repetitive and cislocative portmanteau forms.

⁴ Form (13) is from paradigmatic data and does not have a translation included. However, the root is identified as *-atien-* "sit", so it can be inferred as something like "We all (inclusive) did sit again".

Morpheme	Allomorph	Environment
REP.FACT	<i>-onse-</i>	/ {s,t}
REP.FACT	<i>-onsa-</i>	Elsewhere
CIS.FACT	<i>-onte-</i>	/ {s,t}
CIS.FACT	<i>-onta-</i>	Elsewhere

This creates one downside: these allomorphs do not capture the shared patterns within the strings, especially the correspondence between the CISLOCATIVE *t* and REPETITIVE *s* as highlighted in Table 3. I argue that this is acceptable, and that capturing this pattern would require an unnecessary enrichment of the morphological mechanism. Separating out these exponents would then require an account for the *-on...a-* sequence, which only appears in these specific contexts involving the factual. Diaz et al. (2019) capture this generalization by associating the FACTUAL with the morpheme partial *-on...a-*, which then combines non-concatenatively with the REPETITIVE or CISLOCATIVE. I argue that introducing a non-concatenative process is not sufficiently motivated in this case, as these types of processes do not appear widespread in the language.

3. Puzzle 2: the duplicative and the factual

The DUPLICATIVE is described as being used in contexts which involve abstract reference to "two", or a change of state (Martin 2023, Michelson 2016). For example, in (15) it is used with a counting verb to indicate a count of two houses, with the form *te-*.

- (15) tekanónhsake
te-ka-nonhs-a-ke
 DUP-NA-house-JR-be.many.STAT
 ‘Two houses’ (Martin 2023: 84)

As seen in (16) and (17) respectively, the DUPLICATIVE combines with the FUTURE and OPTATIVE in the order DUP-Modal. This requires positing a simple hiatus resolution process that deletes the first vowel in a sequence.

- (16) tenkatskà:hon’
te-en-k-atskahon-’
 DUP-FUT-1SGA-eat-PUNC
 ‘I will eat’ (Martin 2023: 86)

- (17) tahahsháro’ke’
te-a-ha-hshar’ok-’
 DUP-OPT-MSGA-clap-PUNC
 ‘You will clap once’ (Martin 2023: 86)

(18) shows the combination of the FACTUAL and the DUPLICATIVE, which appear to be ordered as Modal-DUP.

- (18) wa'tekkwátho'
wa'-te-k-kwatho-'
 FACT?-DUP?-1SGA-hem-PUNC
 'I hemmed it' (Martin 2023: 85)

As with the case described in Section 2, this once again creates a contradiction under the assumption that modals are a natural class. However, there is also a corresponding phonological irregularity in the form of the DUPLICATIVE. (15) shows that the DUPLICATIVE again has the form *te-* before a pronominal prefix beginning with *s*. However, (19) exemplifies that in the context of the FACTUAL, the DUPLICATIVE has the form *-ti-* before *s* and *t* (Martin 2023).

- (19) wa'tiso'tsísiko'
wa'-ti-sa-o'tsisko-'
 FACT?-DUP?-2SGP-slip-PUNC
 'You slipped' (Martin 2023: 85)

The FACTUAL also behaves unexpectedly in this context. (20) exemplifies that the FACTUAL has the form *we-* before *s* and *t* (Martin 2023). However, the previous forms in (18) and (19) show that before the *t*-initial DUPLICATIVE, the FACTUAL surfaces as *wa'*.

- (20) wesén:ta'we'
we-sa-ita'w-'
 FACT-2SGP-sleep-PUNC
 'You did sleep' (Martin 2023: 98)

Again, there is no clear phonological account for these alternations. $e \sim i$ is not an attested alternation elsewhere in the language, and so positing a morphophonological cause would be just as stipulative as positing a different allomorph.⁵ As mentioned in Section 3, *a* raises to *e* before coronal obstruents in some prefixes, but this does not occur consistently, such as with the imperative example in (14). Besides, a vowel raising account still does not explain the disappearance of the glottal *-'*, as with the case of the REP.FACT *sa-*.

As a result, I argue that accounting for these alternations must involve suppletive allomorphy, not phonology. Table 4 summarizes the morphological and phonological alternations between the FACTUAL+DUPLICATIVE environment and other environments.

Table 4. Patterns of allomorphy and linear ordering in the FACTUAL+DUPLICATIVE combination versus others.

⁵ The cislocative has allomorphs *ti-* before coronal obstruents and *t-* elsewhere (Martin 2023), suggesting that the unusual duplicative forms may originate diachronically from a reanalysis of the cislocative.

Morpheme Combinations	Possible Modal Orderings	Factual Allomorph / _{_{s,t}}	Duplicative Allomorph / _{_{s,t}}
FACT+DUP	Modal-DUP	<i>wa'</i> -	<i>ti</i> -
Other	DUP-Modal	<i>we</i> -	<i>te</i> -

Once again, a constellation of factors are sensitive to the specific combination of two morphemes. I propose that this case also involves a portmanteau: the FACTUAL and DUPLICATIVE are realized as a single form with two allomorphs: *wa'ti*- before coronal obstruents and *wa't*- elsewhere. These are summarized in Table 5.

Table 5. Proposed allomorphs for FACTUAL-DUPLICATIVE portmanteaus.

Morpheme	Allomorph	Environment
FACT.DUP	<i>wa'ti</i> -	/ _{_{s,t}}
FACT.DUP	<i>wa't</i> -	Elsewhere

This analysis also has another benefit. As seen in (15), the DUPLICATIVE has a final *e*, which is absent in the FACT.DUP allomorph that I propose. This is based on alternating forms like in (21), where an *e* is present, and (22), where it is absent.

(21) *wa'tekté:ni'*
wa'-te-k-teni'
 FACT-DUP?-1SGA-change-PUNC
 'I changed it' (Michelson 1988: 135)

(22) *wa'tkenéra'ke'*
wa'-t-k-ner'ak'
 FACT-DUP?-1SGA-mistake-PUNC
 'I mistook it' (Martin p.c.)

I propose that the vowels present in the FACT.DUP forms are *epenthetic*. Michelson (1988) lays out a nearly complete analysis of vowel epenthesis in the language but notes that the case of the DUPLICATIVE is problematic: it appears to have a full underlying vowel in only *some* cases (Michelson 1988: 135). I propose that the relevant generalization is that this *e* appears epenthetic *only in the case that the FACTUAL is also present*. By encoding a lack of underlying vowel in the portmanteau form, the distribution of vowels in the FACTUAL+DUPLICATIVE environment can then be derived through epenthesis.

4. Summary and implications

I have examined a few examples of puzzling morphological behavior amongst the pre-pronominal prefixes, and demonstrated that these in each case coincide with unexpected patterns of allomorphy that cannot be attributed to phonology. I have proposed that these anomalies are illusory, and result from attempting to decompose morphemes that are not

truly synchronically decomposable. Instead, each set of anomalous morpheme pairs is the result of a portmanteau: REP.FACT, CIS.FACT, and FACT.DUP, each with independent patterns of allomorphy. This analysis avoids the need to posit additional morphological mechanisms such as distributed exponence, and also leads to two results of interest to the broader language and to morphological theory. The first concerns the distribution of the types of allomorphy throughout the word, the second the directionality of allomorphy.

4.1 Allomorphic domains

As seen by the allomorphs in Tables 3 and 5, the portmanteau morphs I propose make use of *phonologically-conditioned allomorphy*. This allomorphy is *inwards-conditioned*, since the trigger of the allomorphy is closer to the root than the target: research has converged on the prediction that phonologically-conditioned allomorphy should always have this directionality (Bobaljik 2000, Rolle 2023), making this pattern expected.

Phonologically-conditioned allomorphy is also widespread amongst the pronominal prefixes. Introduced in Section 1, pronominal prefixes are obligatory and are located between the pre-pronominal prefixes and the verb stem, the stem being minimally composed of a root. Figure 1 shows this in a schema of the Northern Iroquoian verb template, along with derivational, aspectual, and temporal suffixes. Optional elements are in parentheses, and the verb stem is enclosed in square brackets.

(Pre-pronominal prefixes) – Pronominal Prefix – [(Reflexive) – (Incorporated Noun) –
Verb Root – (Derivational Suffixes)] – Aspect – (Tense)

Figure 1. Northern Iroquoian Verb Template (adapted from Mithun 2017).

Iroquoianist literature groups verb and noun stems into five classes based on initial segment, which then conditions the allomorph of the pronominal prefix (Michelson 1988, 2016). While no prefix varies with respect to all five classes, Table 6 provides an example of the neuter agent prefix’s allomorphs in each environment.

Table 6. Summary of Northern Iroquoian stem classes (adapted from Michelson 1988).

Stem Class	Initial Segments	NA Form	Example	Verb Gloss
Consonant-Stem	{w, r, t, i /j/, s, h, k, n, ’}	<i>ka-</i>	<i>kathè:ta’</i>	‘pound’
A-Stem	{a}	<i>w-</i>	<i>wáhtons</i>	‘disappear’
I-Stem	{i /i/}	<i>ken-</i>	<i>kèn:terons</i>	‘reside’
E-Stem	{e, en}	<i>w-</i>	<i>wehsén:rate’</i>	‘be pink’
O-Stem	{o, on}	<i>i-</i>	<i>iohétstha’</i>	‘pass by’

Notably, this type of allomorphy is not attested in any suffixes: derivational and inflectional suffixes may have more than one suppletive allomorph, but these appear to be inwards-conditioned on arbitrary morphological classes: a minimal pair with both stems ending in *k* but with different habitual suffix allomorphs is given in (23) and (24).

- (23) *iotékha'*
 io-tek-**ha'**
 NP-burn-HAB
 'It is burning' (Michelson et al. 2024: 391)
- (24) *kattó:kas*
 k-attok-**as**
 1SGA-notice-HAB
 'I notice it' (Michelson et al. 2024: 447)

Conversely, morphologically-conditioned allomorphy has been posited for prefixes: Bonvillain (1973) and Diaz et al. (2019) rely upon it to address puzzling forms in the pre-pronominal prefixes. These are the same forms which I address with my analysis in Sections 2 and 3: I claim that the morphological conditioning patterns are illusory and such allomorphy does not occur in the pre-pronominal prefixes.⁶

Another allomorphic prefix-suffix asymmetry is found in a particular series of pronominal prefixes, which are sensitive to whether they are the most peripheral prefix in the word. (25) and (26) show a minimal pair: the 2SG>1SG prefix has the form *tak-* when it is the most peripheral prefix, but the presence of the negative prefix results in the suppletive form *hsk-*. I will refer to these as *peripherally-conditioned* allomorphs.⁷

- (25) *takenòn:we's*
tak-nonhwe'-s
 2SG>1SG-like-HAB
 'You like me' (Martin 2023: 66)
- (26) *iah tehskenòn:we's*
 iah **te-hsk**-nonhwe'-s
 NEG NEG-2SG>1SG-LIKE-HAB
 'You don't like me' (Martin 2023: 66)

As shown in Figure 1, aspect suffixes are obligatory, so the only environment in the suffixes where a peripheral alternation can occur is with a more peripheral tense suffix conditioning the aspect suffix. Aspect suffixes appear only inwards-conditioned by morphological class, with no outwards-sensitivity. While the absence of positive

⁶ A few other portions of the paradigm seem to require morphologically-conditioned allomorphy, which I address in the following sketch. I follow Diaz et al. (2019) in analyzing pre-pronominal prefix combinations of the form *Ca'te-* as involving a duplicative allomorph *-a'te-*, which is subject to a phonological peripherality alternation. For the distribution of the contrastive and negative prefix, I follow Morgunova (2024) in assuming that some instances of contrastive prefixes with the form *th-* are actually allomorphs of the negative prefix: I propose that this alternation is phonologically-conditioned on whether the following prefix is vowel- or consonant-initial, with the translocative being underlyingly vowel-initial.

⁷ Thank you to Jessica Coon for suggesting this term.

evidence does not provide a strict rule, this provides another example of prefix-suffix asymmetries in allomorphy. Table 7 summarizes the relevant asymmetries.⁸

Table 7. Distribution of types of allomorphic conditioning between prefixes and suffixes.

Domain	Allomorphy Present	Allomorphy Absent
Prefixes	Phonological, Peripheral	Morphological
Suffixes	Morphological	Peripheral

I have shown preliminary evidence that the types of allomorphy present within the Kanien'kéha verb is sensitive to a prefix-suffix difference: put differently, the prefixes and suffixes form two distinct *allomorphic domains*. Now, I will demonstrate that such domains are also sensitive to phonology and to syntax.

There is a phonological coalescence process active in Northern Iroquoian languages known as the *No-Wawa* rule, which can be schematized as $(w)a(')wa \rightarrow on$ (Michelson 1988). As suggested by the rule, the minimal environment for application is the sequence *awa*. This is demonstrated by the following pair. In (27), the REP.FACT prefix *sa-* concatenates to the pronominal prefix *k-*. However, in (28), the pronominal prefix has the form *wak-*, and the concatenation of *sa-* results in the sequence *sonk-*.

(27) **sakehià:ra'ne'**
 sa-k-ehiahra'n-'
 REP.FACT-1SGA-remember-PUNC
 'I remembered it or her/it again' (Martin 2023: 112)

(28) **sonke'serehtaién:ta'ne'**
 sa-wak-'sere-ht-a-ienta'-n'
 REP.FACT-1SGP-car-NMLZ-JR-obtain-PUNC
 'I got a car again' (Michelson et al. 2024: 177)

(29) shows that the *No-Wawa* rule does not occur outside prefixes (Michelson 1988).

(29) **sá:waks**
 hs-awak-s
 2SGA-shake-HAB
 'You shake it' (Martin 2023: 61)

⁸ For completion, there are two additional types of allomorphy in the verb. Pronominal prefixes exhibit unexpected forms adjacent to a limited set of verb and noun roots (Martin 2023:76, Michelson 1988: 152), constituting lexically-conditioned allomorphy in the terminology of Rolle (2023). A few derivational suffixes are outwardly-conditioned by aspect, as with benefactives in *konién:ni* "I have left it for you" and *wa'konién:hahse'* "I did leave it for you" (Martin 2023: 194), with stative form *-ni-* and punctual *-hs-*.

Thus, the *No-Wawa* rule constitutes a phonological process that only occurs within the prefix domain, instantiating an asymmetry between the same domains as allomorphy.

The syntactic asymmetry concerns the transparency of morpheme ordering. As shown in (30) and (31) respectively, suffixes are ordered with the derivational causative before the habitual aspect, and the habitual aspect before the remote past tense .

(30) tekténhstha'
te-k-tenh-st-ha'
DUP-1SGA-fly-CAUS-HAB
'I make it fly' (Martin 2023: 170)

(31) kata:wenskwe'
k-atawen-s-hkw'
1SGA-swim-HAB-REM.PST
'I used to swim' (Martin 2023: 138)

This mirrors the typical hierarchical ordering of the categories of Tense>Aspect>Voice. Specifically, the suffixes provide a transparent instantiation of the *Mirror Principle* (Baker 1986): the morphemes' ordering reflects a syntactic derivation.

However, the prefixes are not as transparent. Myers (2024) shows that the REPETITIVE, which introduces a repetitive presupposition, can do so over a wide range of scopes. Morgunova (2024) shows the same effect with the NEGATIVE prefix and the scope of negation. However, pre-pronominal prefixes are always linearized in the same position, suggesting their morphological position does not reflect their semantics, and thus syntactic position. This provides another asymmetry: suffixes appear to be linearized Mirror-Principally, while prefixes are not. These asymmetries are summarized in Table 8.

Table 8. Phonological, allomorphic, and morphosyntactic prefix-suffix asymmetries.

Domain	Allomorphic Conditioning Present	Allomorphic Conditioning Absent	Unique Phonological Processes	Mirror Principle Violations
Prefixes	Phonological, Peripheral	Morphological	No-Wawa Rule	Yes
Suffixes	Morphological	Peripheral		No

In summary, not only are types of allomorphy sensitive to prefix-suffix subword domains, but these allomorphic domains also correlate with the syntax and phonology.

4.2 Overlapping portmanteaus

The other broader implication of this analysis concerns the directionality of portmanteau formation. In my analysis, I proposed the portmanteaus REP.FACT, CIS.FACT, and FACT.DUP. FACT and DUP are compatible with REP or CIS, so combining these prefixes

would create a sequence DUP-FACT-REP or DUP-FACT-CIS, where portmanteaus are expected for DUP-FACT, FACT-REP, and FACT-CIS. This configuration of portmanteaus is hypothesized by Radkevich (2011), who refers to them as *overlapping portmanteaus*. (32) and (33) demonstrate forms with DUP-FACT-REP and DUP-FACT-CIS respectively.

(32) tonsahonré:ni'
t-onsa-hon-areni-'
 DUP-REP.FACT-MPLA-disperse-PUNC
 'They dispersed' (Michelson et al. 2024: 67)

(33) tontahí:ion'
t-onta-hii-on-'
 DUP-CIS.FACT-1SG>MSG-give-PUNC
 'I gave it back to him' (Martin 2023: 137)

Based on the proposed analysis, the resulting forms parse as DUP-REP.FACT and DUP-CIS.FACT. Notably, the FACT.DUP portmanteau is absent. The relevant generalization is that **the less peripheral portmanteau forms to the exclusion of the more peripheral portmanteau**. From this, I propose that portmanteau formation proceeds from the root outwards: portmanteaus closer to the root will form before those further from the root. Figure 2 schematizes this: the arrow indicates the direction of portmanteau formation, such that the FACT+REP pair is targeted for portmanteau formation first, excluding DUP.

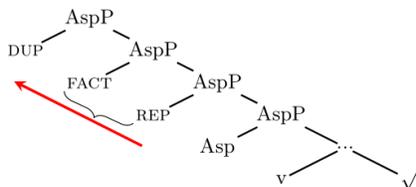


Figure 2. Schematization of the directionality of portmanteau formation.

This directionality is consistent with what has been proposed for other morphological processes, notably Vocabulary Insertion in Distributed Morphology (Bobaljik 2000, Halle and Marantz 1993). I leave the question of whether this directionality reflects linear or hierarchical directionality, along with the hypothesis in (34), to future research.

(34) **Defusion Hypothesis:** In a sequence of morphemes C-B-A-...-√ or √-...-A-B-C (or hierarchy [C [B [A-...-√]]]), with portmanteaus available for A+B and B+C, portmanteau formation applied to A+B bleeds portmanteau formation for B+C.

It is worth addressing that while Radkevich (2011) hypothesizes the overlapping portmanteau configuration, this is to propose that *they do not exist*. As this claim contradicts my proposal, I will address it and sketch an alternative analysis proposal.

Radkevich (2011) posits an absence of overlapping portmanteaus based on a survey of TAM morphology across a large survey of languages, which provides no evidence for such overlapping portmanteaus in these environments. The analysis for this observation claims that portmanteau formation requires locality, and locality arises from a process of morphological word formation on sequences of functional heads, which predicts that T-Asp and Mood-T cannot both be bracketed together within a given language. As a result, a language cannot have both pairs of heads local enough for portmanteau formation.

However, this argument presupposes that the locality required for portmanteau formation can only arise from one type of word-building, which creates words directly from a functional sequence. I argue that this does not predict the absence of overlapping portmanteaus in environments where word-building, and thus the morphological locality required for portmanteaus, has a different source. Based on this, I tentatively propose that the pre-pronominal prefixes are clitics, which attach to a word built from the main functional sequence of the verb root and its suffixes: Figure 2 serves as a tentative sketch.

This sketch finds support in the syntactic facts noted in Section 4.1, which are that Kanien'kéha suffixes appear to respect the Mirror Principle, while the prefixes do not. A possibility is that the suffixes are subject to the morphological constraint in Radkevich (2011) on linearization of a functional sequence, explaining the absence of overlapping portmanteaus and the presence of Mirror Principle effects. On the other hand, prefixes could be the result of a different word-building process. Myers (2024) analyzes the REPETITIVE as a concord marker, and the pronominal prefixes function as agreement markers: these could then be analyzed as markers of syntactic operations cliticizing to the left edge of the verb stem. This analysis predicts that Mirror Principle violations and overlapping portmanteaus should be found in the same environment within a word.

5. Conclusion

Much of the opaque behavior of the pre-pronominal prefixes in Kanien'kéha can be accounted for with a restricted set of analytical tools. This analysis results in (i) a simplified morphological template with no repeating slots and (ii) a very restricted set of allomorphic conditioning environments, allowing for a simplified understanding of the language, with potential extensions to other Northern Iroquoian languages.

Furthermore, probing this analysis reveals two further conclusions. First, the distribution of types of allomorphy are sensitive to the same domains as the phonology and the syntax. Second, the creation of portmanteaus proceeds outwards from the root. Such conclusions are broadly relevant to the field of morphology and merit cross-linguistic investigation.

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