

UC Santa Barbara

UC Santa Barbara Previously Published Works

Title

How fine are parallel principles governing morphology and syntax? On the hunt for explanations of morpheme orders

Permalink

<https://escholarship.org/uc/item/4w45n3rc>

Journal

WORD Structure, 19(2-3)

ISSN

1750-1245

Author

Mithun, Marianne

Publication Date

2026-07-01

DOI

10.3366/word.2026.0274

Copyright Information

This work is made available under the terms of a Creative Commons Attribution License, available at <https://creativecommons.org/licenses/by/4.0/>

Peer reviewed

How fine are parallel principles governing morphology and syntax? On the hunt for explanations of morpheme orders

Marianne Mithun
University of California at Santa Barbara

Abstract

There are now a variety of models available for describing morphology. Some are more static, simply laying out structure, while others are more dynamic, proposing sequences of operations by which structures might be derived. Different models might be useful for different purposes, different constructions, and different languages. But we can go beyond description toward explanation of the structures that exist by incorporating the diachronic dimension, examining the kinds of processes by which morphological structures develop over time in individual languages, then extracting general principles. Much of what we find synchronically might seem unmotivated until it is recognized that morphology reflects the crystallization of sequences of individual developments, each motivated at an earlier point in time. Such an approach is illustrated here with the development of tense morphology in languages of the Iroquoian family, indigenous to eastern North America.

Keywords: Iroquoian, diachrony, directionals, purposives, semantic extension, templatic structure, tense

1 Introduction

An old tradition distinguished two types of models of morphology: Item and Arrangement and Item and Process (Hockett 1954). Among current process-based models are some built on the idea that the same principles underlie morphological and syntactic structure: that complex words are derived by series of syntactic operations. Bobaljik describes a model of this type.

Distributed Morphology (DM) is a framework in theoretical morphology, characterized by two core tenets: (i) that the internal hierarchical structure of words is, in the first instance, syntactic (complex words are derived syntactically), and (ii) that the syntax operates on abstract morphemes, defined in terms of morphosyntactic features, and that the spell-out (realization, exponence) of these abstract morphemes occurs after the syntax. Distributing the functions of the classical morpheme in this way allows for analysis of mismatches between the minimal units of grammatical combination and the minimal units of sound. (Bobaljik 2017: 1)

The explanatory value of the model is seen by its authors in the postulation of universal derivational principles governing both syntax and morphology, before the insertion of vocabulary. Differences between the two domains are viewed as essentially inconsequential.

The derivation of a complex word begins in the syntax, which combines abstract (i.e., phonology free) pieces according to general principles. It is the output of the syntax

that is then interpreted by the morphology. A key part of the morphology, conceived of as the mapping from syntax to phonological form, is vocabulary insertion, the pairing of syntactic terminals with (possibly null) phonological underlying representations. Between these two ends of the morphological derivation, a variety of operations may apply which manipulate the representation in limited ways, via Morphological Merger (of terminals). (Bobaljik 2017: 4)

An example of the kind of repair operations handled by Morphological Merger involves the ordering of elements: the fact that English syntactic complementation is head-initial, but inflectional morphology is exclusively suffixing. Marantz proposed the operation in (1).

- (1) Morphological Merger: Marantz (1988: 261), cited in Bobaljik (2017: 3)
A syntactic complementation relation: $[X^0 \text{ YP}]$

may be realized in the morphology as an affixation relation:

X affixed to Y, the head of YP: $[[Y]X]$ or $[X[Y]]$

A detailed presentation of this model can be found in Embick (2015), with further discussion in the review in Spencer (2019).

A salient feature of some models of this type is the view that *explanations* of the morphological structures that exist are to be found within the models themselves. Bobaljik notes, for example, that “DM thus typically starts from the more restrictive theoretical position, in which observed typological generalizations are explained with the theory” (2017: 13).

Parallels between syntactic and morphological structure are certainly not surprising: much of morphological structure originates in syntactic structure diachronically, via well-known processes of grammaticalization. Recurring sequences of words can come to be processed as chunks, awareness of individual semantic features contributed by each can fade, formal boundaries between the components can weaken, and the forms themselves can erode. But many more processes can contribute to the formation of morphological structures. The structures of morphologically complex words are the crystallized result of various individual processes that have occurred, step by step, over time. If we incorporate the diachronic dimension, looking more closely at the individual steps that result in modern morphological structures, each with their own motivations, we can come closer to explanations of why they are as they are. Speakers routinize recurring patterns, draw generalizations, extend them, and reinterpret them. Each step makes sense at the time it occurs, but the results may seem unmotivated synchronically.

Some of the kinds of insight to be gained by attention to diachrony are illustrated here with tense morphology in languages of the Iroquoian family, indigenous to eastern North America.

2 The Iroquoian languages

Languages of the Iroquoian family are known for their polysynthesis: potentially complex morphological structures, particularly in verbs. All Iroquoian verbs contain minimally a pronominal prefix identifying core argument(s) and a verb root, but they may also contain a number of additional prefixes and/or suffixes, like the Mohawk verb in (2).

(2) Mohawk verb

Thia'tonsaiakwani'tsónhkwahkwe'.

th-ia'-t-onsa-iakwa-an-i'tsionhkw-ahkw-e-'

CONTR-TRL-DV-REP.FAC-1EXC.PL.AGT-MID-rear-pick.up-EP-PFV

'We just jumped right back in there.' (Watshenní:ne Sawyer, speaker)

Iroquoian morphological structure is primarily templatic: most individual morphemes occur in fixed orders. The basic verb template is in Table 1.

Table 1. Iroquoian verb template

Prepronominal Prefixes	Pronominal Prefixes	Reflexive Middle	Verb Stem	Verb Suffixes
---------------------------	------------------------	---------------------	--------------	------------------

But neither the positions of markers nor their forms match completely across the languages. Genealogical relations among the major languages are sketched in Figure 1.

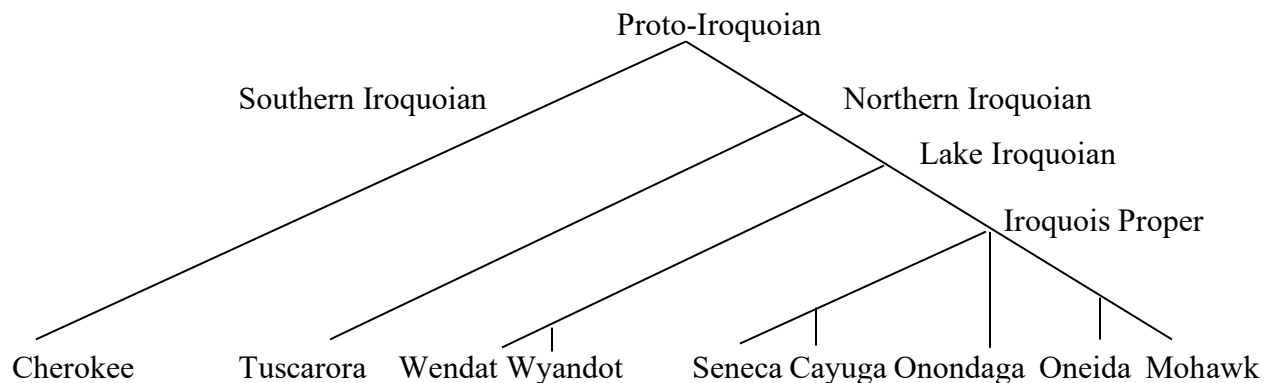


Figure 1. Relationships among major modern Iroquoian languages

The time depth of Proto-Iroquoian was estimated by Lounsbury (1961: 12) at 3500–3800 years, when the group split into a Southern Iroquoian branch, now represented only by Cherokee, and a Northern Iroquoian branch with all the others. The next major split occurred when the Tuscarora separated from the other Northern Iroquoians, estimated at 1900–2400 years ago. Lounsbury estimated the time of Iroquois Proper at 1200–1500 years ago. Of course splits were not instantaneous, and in a number of situations there has been ongoing contact.

Much of the morpheme order in the modern languages reflects sequences of developments through time. The innermost structure of the verb, sketched in Table 2, is the same across the languages and was apparently already present in Proto-Iroquoian. Cognates exist across the family for all of these positions.

Table 2. Innermost verb structure

Pronominal Prefixes	Reflexive Middle	Incorporated Noun Stem	Verb Stem
------------------------	---------------------	---------------------------	--------------

All of the languages also contain additional prefixes before the pronominal prefixes and suffixes after the verb stem. Some of the inner prepronominal prefixes match across all branches of the family, but the outer affixes do not. This can be seen by comparing the verb templates in Table 3. Nearly all of the prepronominal prefixes in the Iroquois Proper and Wendat languages can be reconstructed for their common ancestor, Proto-Lake Iroquoian: the Repetitive, Cislocative, Future, Irrealis, Duplicative, Factual, Translocative, Partitive, Coincident, and Negative. (The Wendat cognate of the Iroquois Proper Contrastive was still transcribed as a preverbal particle.) The more remotely related Tuscarora has cognates for the inner prefixes, the Cislocative, Repetitive, Future, Irrealis, Duplicative, Factual, Translocative, Partitive, and Contrastive, but not the outer Coincident and Negative. The most remotely related language, Cherokee, contains cognates of just the Cislocative, Repetitive, Future, Duplicative (a Distributive in Cherokee), and the Partitive, but not the Contrastive, Coincident, or Negative. Cherokee has different outer prefixes: an Irrealis and Relativizer.

Table 3. Prepronominal prefixes across Iroquoian languages

IRREALIS RELATIVIZER	TRANSLOCATIVE	PARTITIVE	DISTRIBUTIVE	FUTURE CISLOCATIVE	REPETITIVE	NEGATIVE
Cherokee						
CONTRASTIVE PARTITIVE	TRANSLOCATIVE	FACTUAL	DUPLICATIVE	FUTURE IRREALIS	CISLOCATIVE REPETITIVE	
Tuscarora						
PARTITIVE	COINCIDENT NEGATIVE	TRANSLOCATIVE	FACTUAL	DUPLICATIVE	FUTURE IRREALIS	CISLOCATIVE REPETITIVE
Wendat (= Huron)						
CONTRASTIVE PARTITIVE COINCIDENT	TRANSLOCATIVE	FACTUAL	DUPLICATIVE	FUTURE IRREALIS	CISLOCATIVE REPETITIVE	
NEGATIVE						
Iroquois Proper						

Slightly different organizations of the templates have developed in the different branches. In the Iroquois Proper languages, the Contrastive, Partitive, Coincident, and Negative prefixes cannot cooccur. To negate a verb with a Translocative, Duplicative, Future, or Irrealis prefix, the Contrastive is used rather than the Negative. Within all of the Northern Iroquoian languages, the Future and Irrealis prefixes cannot cooccur; this is not surprising, since they express contrasting semantic distinctions. Also within the Northern languages, the Cislocative and Repetitive prefixes do not co-occur; to express Repetitive meaning with Cislocative meaning, the Duplicative is used. In Cherokee, the Cislocative does not co-occur with the Future. And the two main branches of the family have developed entirely different suffixes.

Of special interest here are the Past and Future tense affixes. All of the languages in the family contain both Past and Future prefixes and Past and Future suffixes. But these affixes appear in different areas of the prefix and suffix templates in the two branches of the family. Furthermore, the markers themselves do not match in form across the family. The differences in their forms and positions are sketched in Table 4. The tense affixes of Southern Iroquoian, represented by

Cherokee, are shown above the template; those of the Northern Iroquoian languages are shown below.

Table 4. Iroquoian tense affixes

PAST <i>ji-</i>	FUT <i>da-</i>	Southern Iroquoian			FUT <i>-i</i>	PAST <i>-vʔv</i>
Prepronominal Prefixes	Pronominal Prefixes	Reflexive/Middle	Verb Stem	Verb Suffixes		
PAST <i>w-</i>	FUT <i>ɛ-</i>	Northern Iroquoian			FUT <i>-hr-/-hn-</i>	PAST <i>-kweʔ, -hneʔ</i>

We could simply say that the languages have different repair operations for turning the output of syntactic processes into morphology, or we could look further for explanation.

3 Past tense prefixes

A Cherokee Past tense prefix is *ji-*, as in (3).

- (3) Cherokee Past tense prefix *ji-*
Kilagwu *chiʔluuga.*
 kila=gwu *ji-hi-luuga*
 just.now=DELIMITER PAST-2A-climb-IMM
 ‘You climbed it just a moment ago.’ (Montgomery-Anderson 2015: 279–280)

Montgomery-Anderson points out that the source of this prefix can still be seen within the language. It is a relativizer, visible in that function in (4). (The symbol <v> represents a central nasalized vowel.)

- (4) Cherokee Relativizer *ji-*
Ahnawo *[jɪsginvʔvneelvʔ]* *jiiteesga.*
 a-hnawo *ji-sgi-nvʔvneel-vʔ* *ji-hteesga*
 3A-shirt REL-2>1-give.flexible.CPL-DVRB 1A-iron-PRES.CONT
 ‘I am ironing the shirt [**that** you gave me].’ (Montgomery-Anderson 2015: 281)

He describes the uses of the prefix *ji-* as follows:

Although one of its main uses is to indicate that a verb is part of a **relative clause**, it has several other important uses. One of its functions is to indicate a **definite past time frame** in which the verb took place; in this usage the clause is not subordinate to another clause. Often a verb with this prefix is accompanied by an **adverb** expressing a specific time, [as seen in (3) above]. (Montgomery-Anderson 2015: 279–280)

Montgomery-Anderson glosses the prefix REL in both of its uses, as a relativizer and as a marker of past tense. A possible pathway of development from the relativizer to past tense could be a construction consisting of a time word followed by a modifying relative clause. Montgomery-Anderson notes that now “Speakers may also use *ji-* without any specific past reference. In such

situations the prefix may be emphasizing that the event took place in the past” (2015: 280). He provides the examples in (5) and (6).

- (5) Cherokee past
Jaàwajootanvvʔi
ji-agi-ajootan-vvʔi
 REL-1B-ride:CMP-EXP
 ‘I rode it.’ (Montgomery-Anderson 2015: 280)
- (6) Cherokee past
Jagáliisgvʔi.
ji-a-gáliisg-cvʔi
 REL-3A-be.sunny:INCPL-EXP
 ‘It **was** sunny.’ (Montgomery-Anderson 2015: 280)

Likely cognates of the Cherokee prefix in the Northern Iroquoian languages are particles of the same shape that function as relativizers and other kinds of subordinators.

- (7) Mohawk subordinator *tsi*
Né: aorì:wa’ tsi ne:, onke’nikonkhráksen, . . .
ne’e ao-rihw-a’ tsi ne: wa’-wake-’nikonhr-aks-en
 that.is N.POSS-matter-NS **that** ART FAC-1SG.PAT-mind-be.bad-ST
 ‘That is the reason **that** I felt so bad.’ (Dorris Kawennanó:ron Montour, speaker)

The Northern languages also all indicate past tense with prefixes. Their forms are entirely different from the Cherokee Relative/Past prefix, but they are cognate across Northern Iroquoian: *w-*, *wa-*, *waʔ-*, etc. with certain additional phonological processes in some of the languages. (In Mohawk, glottal stop is represented orthographically with an apostrophe <’>.)

- (8) Tuscarora Past
Waʔkačhù:riʔ.
waʔ-k-ačhuri-ʔ
 FAC-1SG.AGT-eat-PFV
 ‘I ate.’ (Elton Greene, speaker)
- (9) Mohawk Past
Wahatihwistaniiontá:ko’
wa’-hati-hwist-a-niiont-akw-’
 FAC-M.PL.AGT-metal-LK-hang-REV-PFV
 ‘They removed the bell.’ (Josephine Kaieríthon Horne, speaker)

This prefix always occurs with a Perfective aspect suffix. Northern Iroquoian Perfectives must co-occur with a Future tense prefix, an Irrealis prefix, or a *w-* prefix. (The *w-* prefixes usually function as straightforward past tense markers, though Perfectives with *w-* can be used for an event simultaneous with the moment of speech, such as a performative like Mohawk

wa'tkwanonhwerá:ton' 'I greet you'. For this reason the prefix once termed an Aorist is now labeled a Factual in work on these languages.)

Of interest here is the fact that the Northern Iroquoian prefixes marking past tense occur in a different position in the template than the Cherokee prefix *ji-*. The Cherokee Past/Relativizer prefix *ji-* is always initial, but the Northern Iroquoian Past/Factual prefixes occur after certain other prepronominal prefixes, though these do not occur in every word. The source of the Northern Iroquoian prefixes is different from that of the Cherokee: it is descended from one of several Translocative prefixes that indicate location at a distance or direction away from a reference point. This prefix can be reconstructed for Proto-Iroquoian only with Translocative meaning. The Cherokee cognate still functions only as a Translocative indicating location at a distance or motion directed away, as in (10).

(10) Cherokee Translocative

Wigahlv'ga

wi-ga-hlv'ga

TRL-3A-put.in.container.IMM

'She put it in.' (Montgomery-Anderson 2015: 104)

In the Northern Iroquoian languages, the various Translocative prefixes occur in different morphological contexts in the various languages. In all of the Northern languages the *w-* Translocatives regularly occur as directionals in one or more forms of the verb *-e-* 'go'. It is not surprising that verbs based on a root 'go' would often occur with a directional prefix, nor that the older form of this prefix would be resistant to change in these high-frequency verbs.

(11) Tuscarora Translocative

Wá?θeh!

wa?-θ-e

TRL-2SG.IMPER.AGT-go

'Go!' (Elton Greene, speaker)

(12) Mohawk Translocative

Wá:s!

wa-s-e'

TRL-2SG.IMPER.AGT-go

'Get away!' (Annette Kaia'titáhkhe' Jacobs, speaker)

(13) Mohawk Translocative

Ka' wáhse'?

ka? wa-hs-e-?

where TRL-2SG.AGT-go-ST

'Where are you going?' (Leatrice Beauvais, speaker)

In the Northern languages the *w-* Translocatives also occur with Purposive suffixes adding the meaning 'going to', as in (14) and (15). Again, it is not surprising that verbs of going would co-occur with a directional.

- (14) Tuscarora Translocative
Waʔktyaʔnáhte? *utá:ʔnareh.*
waʔ-k-tyaʔn-a-the? u-taʔnar-eh
 TRL-1SG.AGT-buy-EP-PURP N-bread-NS
 ‘I’m going to buy bread.’ (Elton Greene, speaker)
- (15) Mohawk Translocative
Wahaterohrókhe’.
wa’-ha-ate-rohrok-he’
 TRL-M.SG.AGT-MID-watch-PURP
 ‘He is going to watch.’ (Annette Kaia’titáhkhe’ Jacobs, speaker)

The Tuscarora *w*- Translocatives occur in some additional contexts: with imperatives as in (16), with Habitual aspect verbs as in (17), and with Stative aspect verbs as (18).

- (16) Tuscarora Translocative
Waʔθúha!
waʔ-θ-u-ha
 TRL-2SG.IMPER.AGT-be.in.water-CAUS
 ‘Put it in water!’ (Elton Greene, speaker)
- (17) Tuscarora Translocative
Wehrúhahs.
we-hr-u-ha-hs
 TRL-M.SG.AGT-be.in.water-CAUS-HAB
 ‘He’s putting it in water.’ (Elton Greene, speaker)
- (18) Tuscarora Translocative
Wehraúhę.
we-hraw-u-ha-ę
 TRL-M.SG.PAT-be.in.water-CAUS-ST
 ‘He has put it in water.’ (Elton Greene, speaker)

The evolution of the marker from a Proto-Iroquoian Translocative marker of direction away or distant location to use as a Past tense is no surprise: the extension of meaning from space to time is one of the most common kinds of semantic change cross-linguistically.

4 Future tense prefixes

Future tense is marked by prefixes in all of the languages as well, but here, too, the prefixes occur in different positions in the verb templates in the two branches of the family, *and* they have different forms.

As seen earlier in Table 3, all of the languages contain sets of prepronominal verb prefixes. Their relative order is strictly templatic. The positions and forms of the Future prefixes can be compared in Table 5. Those in Cherokee differ in form and position from those in the North.

Table 5. The positions of Future prefixes across the Iroquoian languages

IRREALIS RELATIVIZER	TRANSLOCATIVE	PARTITIVE	DISTRIBUTIVE	FUTURE <i>da-</i> CISLOCATIVE	REPETITIVE	NEGATIVE
-------------------------	---------------	-----------	--------------	---	------------	----------

Cherokee

CONTRASTIVE PARTITIVE	TRANSLOCATIVE	FACTUAL	DUPLICATIVE	FUTURE <i>ε-</i> IRREALIS	CISLOCATIVE REPETITIVE
--------------------------	---------------	---------	-------------	-------------------------------------	---------------------------

Tuscarora

PARTITIVE	COINCIDENT NEGATIVE	TRANSLOCATIVE	FACTUAL	DUPLICATIVE	FUTURE <i>ε-</i> IRREALIS	CISLOCATIVE REPETITIVE
-----------	------------------------	---------------	---------	-------------	-------------------------------------	---------------------------

Wendat (= Huron)

CONTRASTIVE PARTITIVE COINCIDENT	TRANSLOCATIVE	FACTUAL	DUPLICATIVE	FUTURE <i>ε-</i> IRREALIS	CISLOCATIVE REPETITIVE
NEGATIVE					

Iroquois Proper

The Cherokee Future is expressed with the combination of a prefix *da-* and a suffix *-i*, glossed together as Completive Future by Montgomery-Anderson (2015: 115).

(20) Cherokee Future

Waloósiju *tiihwahtcvv'hi?*
waloósi=ju **da**-hii-hwahtvv'h-i
frog=Q **CMP.FUT-2A.AN-find.CMP-CMP.FUT**
‘Are you **going to** find the frog?’ (Montgomery-Anderson 2015: 95)

The suffix *-i* never occurs on its own, but the diachronic source of the prefix can still be discerned. It occurs in the same slot in the template as the Cherokee Cislocative *da-* ‘hither’, and it shows exactly the same set of forms, with the same allomorphy in the same contexts.

(21) Cherokee Cislocative

Dayuudansinvsv.
da-uu-adanasinuvs-v
CSL-3B-crawl.CPL-EXPERIENCED.PAST
‘The snake crawled (**in the direction of the speaker**).’ (Montgomery-Anderson 2015: 292)

The Future tense *da-* . . . *-i* constructions no longer include specification of directionality.

The Northern Iroquoian languages have clear cognates of this prefix, but in these languages, they have only the Cislocative function. (Voicing of obstruents is conditioned by phonological context. The stop /t/ is automatically voiced before a vowel. The voicing is distinguished in some of the orthographies but not others. In Tuscarora, Proto-Iroquoian *t > ?n before a vowel, with loss of the glottal stop initially.)

- (21) Tuscarora Cislocative
Nakà:yəʔ.
 na-kaye-e-ʔ
 CSL-3PL.AGT-go-ST
 ‘They’re coming.’ (Elton Greene, speaker)
- (22) Wendat Cislocative
Ontahaatenha.
 ʔta-ha-yaʔt-ɛ-h-aʔ
 FAC.CSL-M.SG.AGT-body-lie-INCH-PFV
 ‘He fell [**down here**] from above.’ (Lukaniec 2018: 139, citing Jesuit ms 62: 4)
- (23) Cayuga Cislocative
Dasádawɛ:!
 ta-s-at-awɛ:
 CSL-2SG.IMPER.AGT-MID-be.in.water
 ‘Swim **this way!**’ (Reginald Henry, speaker)
- (24) Mohawk Cislocative
Taseráthen!
 ta-se-rathen
 CSL-2SG.IMPER-climb
 ‘Climb up **here!**’ (Connie Jacobs, speaker)
- The Northern Iroquoian languages all contain a Future tense prefix, but it has a different form, which can be reconstructed to Proto-Northern-Iroquoian *ɛ-.
- (25) Tuscarora Future
Ēkačhù:riʔ.
 ɛ-k-ačhuri-ʔ
 FUT-1SG.AGT-eat-PFV
 ‘I’ll eat.’ (Elton Greene, speaker)
- (26) Wendat Future
Ehatirihwihchi’en’
 e-hati-rihw-ihsi-ɛʔ
 FUT-3M.PL.AGT-matter-finish-PFV
 ‘They **will** decide upon this matter.’ (Lukaniec 2018: 109, citing Potier 1751: 254)
- (27) Cayuga Future
Ēhé:gɛʔ.
 ɛ-he-kɛ-ʔ
 FUT-1SG>M.SG-see-PFV
 ‘I’ll see him.’ (Jim Skye, speaker)

- (28) Mohawk Future
Enhí:ken'
 en-hi-ken-'
 FUT-1SG>M.SG-see-PFV
 'I'll see him.' (Karihwénhawe' Lazore, speaker)

The extension of the Proto-Iroquoian Cislocative to a Future tense marker in Cherokee shows the same kind of semantic shift seen in the extension of the Proto-Iroquoian Translocative prefix to the Northern Iroquoian Past tense: Space > Time. It is noteworthy that the Cherokee prefix remained in its original internal position in the template despite the extension of its function to tense, a fact that speaks to the crystallization of morphological structure.

In addition to their tense *prefixes*, all of the Iroquoian languages contain tense *suffixes*. Within synchronic models of morphology, like Distributive Morphology, the locations of tense markers on both sides of the verb stem might be accounted for by processes like the late Morphological Merger operation proposed by Marantz to account for the positions of inflectional markers in English, an operation Bobaljik (2017:3) likens to Chomsky's *Affix Hopping*:

- (29) X affixed to Y, the head of YP: [[Y]X] or [X[Y]].
 (Marantz 1988: 261)

A Morphological Merger operation might describe their locations on both sides of the verb stem, but it would not explain them.

5 Past tense suffixes

Both branches of the Iroquoian family contain Past tense suffixes in addition to their Past tense prefixes, but these are later independent developments, which occurred after the separation of the Southern and Northern branches: the suffixes are positioned at the outer edges of the verb templates, they have different shapes in the languages of the two branches, and they contribute different semantic distinctions.

The Southern Iroquoian language Cherokee has two past tense suffixes, an Experienced Past and a Nonexperienced Past. Montgomery-Anderson (2015: 78) describes the first as follows.

The **Experienced Past** indicates that the speaker has firsthand knowledge of an event that took place in the past. It attaches to the Completive and Incompletive stems . . . This suffix more commonly appears in the short form.

Examples are in (30) and (31).

- (30) Cherokee Experienced Past
Gvnoosasgvv'ʔi.
 ji-vvnoosasg-vv'ʔi
 1A-sweep.INCPL-EXP.PAST
 'I was sweeping.' (Montgomery-Anderson 2015: 78)

- (31) Cherokee Experienced Past: Short form
Uùktoósdanv.
 uu-agahtoósdan-v
 3B-look.at.CMP-EXP.PAST
 ‘He **looked** at it.’ (Montgomery-Anderson 2015: 79)

Montgomery-Anderson reports that “This suffix is also used for events that the speaker may not have personally witnessed but knows for certain took place” (2015: 78), as in (32).

- (32) Cherokee Experienced Past
- | | | | |
|-----------------|----------------------|---------------|----------------------------|
| <i>Sigwooya</i> | <i>uùwotlvvvhv</i> | <i>jalagi</i> | <i>yidigawéésdi.</i> |
| sigwooya | uu-otlvvvhv-v | jalagi | yi-di-ga-weesdi |
| Sequoyah | 3B-make.CPL-EXP.PAST | Cherokee | INF2-DISTR2-3A-say-INF.INS |
- ‘Sequoyah **invented** the Cherokee syllabary.’ (Montgomery-Anderson 2015: 79)

With a Completive stem, the Cherokee Experienced Past suffix can indicate a time subsequent to that past time.

- (33) Cherokee Progressive Future suffix
- | | |
|----------------|-------------------------------------|
| <i>Galogwe</i> | <i>eeniidéeliisv’?i.</i> |
| galogwe | eenii-déel-i-vv’?i |
| gun | 1A.DU.AN-give.long.CMP-CMP-EXP-PAST |
- ‘We **were going to** give him that gun.’ (Montgomery-Anderson 2015: 93)

Montgomery-Anderson (2015: 79) describes the Nonexperienced Past as follows.

The **Nonexperienced Past** suffix *-ee?i* indicates an action in the past that the speaker has not witnessed, either because the speaker was physically absent or because the event has not actually taken place.

He illustrates the difference between the two pasts with the examples in (34) and (35), noting that (34) could occur only in the Experienced Past because it is in the first person and is not negated, while that in (35) could occur in either the Experienced Past (short form -v) or Nonexperienced Past (short form -e).

- (34) Cherokee Experienced Past
- | |
|-------------------------|
| <i>Aàgwuuhilóo?v.</i> |
| agi-uuhilóo?-v. |
| 1SG.B-wash.CPL-EXP.PAST |
- ‘I **washed** it.’ (Montgomery-Anderson 2015: 79)

- (35) Cherokee Nonexperienced Past
- | |
|-----------------------------|
| <i>Uùwuhilóo?e.</i> |
| uu-uhilóo?-e |
| 3SG.B-wash.CPL-NON.EXP.PAST |
- ‘He **washed** it.’ (Montgomery-Anderson 2015: 79)

The Northern languages also have Past tense suffixes, but they differ in both form and meaning from those in Cherokee. They follow the basic Habitual and Stative aspect suffixes, which do not themselves distinguish tense: with those the time is understood from context. The Former Past suffixes indicate an earlier situation no longer in effect at the time under discussion.

(36) Tuscarora Habitual Former Past

- a. *Ráhstha?*
ra-hst-ha?
M.SG.AGT-use-HAB
'He uses it.'
- b. *Ráhsthahk.*
ra-hst-ha'-**hk**
M.SG.AGT-use-HAB-FORMER.PAST
'He **used to** use it.' (Elton Greene, speaker)

(37) Tuscarora Stative Former Past

- a. *Kye?nè:rih*
k-yẹ?neri-h
1SG.AGT-know-ST
'I know.'
- b. *Kye?nè:rihahk.*
k-yẹ?neri-h-**ahk**
1SG.AGT-know-ST-FORMER.PAST
'I **used to** know.' ('I have forgotten.') (Elton Greene, speaker)

(38) Wendat Habitual Former Past

Etiond8tesk8a
etiondouthe'skwa'
et-y-qnoth-e?s-kwa?
CSL-3N.SG.AGT-rain-HAB-FORMER.PAST
il pleuvait par reprises
'It **was** raining on and off.' (Lukaniec 2017: 313, citing Potier 1751: 411)

(39) Wendot Stative Former Past

Ason *te satondi'nne.*
ahsonh te'satondihnen'
ahsəh te?-es-at-qni-h-**ne?**
yet NEG-2SG.PAT-MID-make-ST-FORMER.PAST
'You **had** not yet been born.' (Lukaniec 2017: 314, citing Jesuit ms60: 234)

- (40) Cayuga Habitual Former Past
- a. *Kahyá:gwahs.*
k-ahy-akw-ahs
1SG.AGT-berry-pick-HAB
'I pick berries.'
 - b. *Kahyagwahsgéhe:ʔ.*
k-ahy-akw-ahs-kéhe:ʔ
1SG.AGT-berry-pick-HAB-FORMER.PAST
'I **used to** pick berries.' (Reginald Henry, speaker)
- (41) Cayuga Stative Former Past
- a. *Dewagadqhwéjónih.*
te-wak-at-qhwéjoni
DV-1SG.PAT-MID-want.ST
'I want it.'
 - b. *Dewagadqhwéjónihne:ʔ.*
te-wak-at-qhwéjoni-hne:ʔ
DV-1SG.PAT-MID-want.ST-FORMER.PAST
'I **wanted** it.' (Jim Skye, speaker)
- (42) Mohawk Habitual Former Past
- a. *Katshókwahs.*
k-atshokw-ahs
1SG.AGT-smoke-HAB
'I smoke.'
 - b. *Katshókwahskwe'.*
k-atshokw-ahs-kwe'
1SG.AGT-smoke-HAB-FORMER.PAST
'I **used to** smoke.'

Stative verbs that describe situations with consequential effects, like picking berries, have perfect meanings, as in (43a). With the addition of a Former Past suffix, they are interpreted as past perfects, as in (43b).

- (43) Cayuga Stative Perfect Former Past
- a. *Agáhyagwəh.*
wak-ahy-akw-ə
1SG.PAT-berry-pick-ST
'I have picked berries.'

- b. *Agahyagwé:hne:?*
 wak-ahy-akw-é-**hne:?**
 1SG.PAT-berry-pick-ST-FORMER.PAST
 ‘I **had** picked berries.’ (Reginald Henry, speaker)

The difference between Statives that are not the result of a previous event, and those that are, can be also seen by comparing the verbs in (44) based on the stem ‘be alive’ and (45) based on the stem ‘bathe’. (The verb stem *-at-awen* can be interpreted as non-consequential or consequential.)

(44) Mohawk Stative Former Past

- a. *Rónnhe’*.
 ro-onnh-e’
 M.SG.PAT-be.alive-ST
 ‘He **is** alive.’
- b. *Rónnhehkwe’*.
 ro-onnh-e?-**kwe’**
 M.SG.PAT-be.alive-ST-FORMER.PAST
 ‘He **was** alive (but no longer is).’

(45) Mohawk Stative Perfect Former Past

- a. *Wakatá:wen*.
 wak-at-awen
 1SG.PAT-MID-be.in.water.ST
 ‘I am bathing, **have** bathed.’
- b. *Wakatawèn:ne’*.
 wak-at-awen-**hne’**
 1SG.PAT-MID-be.in.water.ST-FORMER.PAST
 ‘I **had** bathed.’ (Watshenní:ne Sawyer, speaker)

The verb stem in (46) ‘go somewhere’ is necessarily interpreted as consequential: the person going has ended up in a different place.

(46) Mohawk Stative Perfect Former Past

- Iáh* *tewakaterièn:tare’*
 iah te-wak-aterien’tar-e’
 not NEG-1SG.PAT-know-ST
 ‘I don’t know

ne *istèn:’a* *ka’* *niiakawenòn:ne’*.
 ne isten’=a ka’ ni-iakaw-e-n-on-**hne’**
 ART mother=DIM where PRT-F.SG.PAT-go-DIR.APPL-ST-FORMER.PAST
 where my mother **had** gone.’ (Sadie Sesír Cecelia Peters, speaker)

6 Future tense suffixes

In addition to their Future tense prefixes, both Cherokee and the Northern languages contain Future suffixes, but these, too, developed after the separation of the Southern and Northern branches of the family: they appear at the outer edges of the verb templates and do not match in form across the branches.

Cherokee contains a Progressive Future suffix *-éesdi*.

- (47) Cherokee Progressive Future suffix

Taliine iiga doòginiilvvhwisdaàneehéesdi.

tali-iine iiga dee-ooginii-lvvhwisdaàneeh-**éesdi**

two-ORD day DISTR-1B.DU.EXC-work.INCPL-**PROG.FUT**

‘Tuesday we **will** be working.’ (Montgomery-Anderson 2015: 93)

- (48) Cherokee Progressive Future suffix

Aànihwatiihéesdi.

anii-hwatiih-**éesdi**

3A.NON-SG-find.CPL-**PROG.FUT**

‘They **will** find it.’ (Montgomery-Anderson 2015: 93, citing Scancarelli 2005: 369)

Montgomery-Anderson identifies the diachronic source of the element *-sdi* of the ending *-éesdi* as an Infinitive suffix. The source of the element *-ée-* is also clear. It is etymologically related to the verb ‘go’, which has cognates throughout the family. Its use as a verb stem can be seen in (49).

- (49) Cherokee verb ‘go’

Teèna!

di-hi-eèna

CSL-2A-**go**.IMM

‘Come here!’ (Montgomery-Anderson 2015: 289)

Cherokee also contains what Montgomery-Anderson terms a Movement suffix which can have future implications, translatable as ‘going to’.

- (50) Cherokee Purposive

Eèjagooliyéegas?

eja-gooliy-éega=s

2O-examine.CPL-**MOVEMENT**.PRES.CONT=Q

‘Are you **going to go** to be examined?’ (Montgomery-Anderson 2015: 390)

This suffix, too, is based on the verb ‘go’. The element *-ga* in *-éega* Montgomery-Anderson identifies is a Present Continuous marker. The Movement suffix also occurs with other tense-aspect forms: Incompletive *-éeg*, Immediate Past *-éena*, and more.

The Northern Iroquoian languages also have suffixes which indicate motion with a purpose or intention with or without movement, but an implication of futurity. There are a number of forms, but they are generally cognate across the Northern Iroquoian languages. In these, too, aspectual

elements can be discerned. The basic Tuscarora forms are *-he?*, *-hte?*, *-hθe?*, *-hre?*, and *-hθre?*, with the addition of an epenthetic vowel *a* when they follow a consonant. The Mohawk forms are perfect cognates: *-he'*, *-hne'*, *-hre'*, and *-hsere'*. The other languages have similar forms.

- (51) Tuscarora Purposive

Waʔkayətù:rá:the?

waʔ-kaye-aturat-**he?**

TRL-M.PL.AGT-hunt-PURP

'They are **going** out hunting.' (Elton Greene, speaker)

- (52) Tuscarora Purposive

Wahrakyəthuʔθéhre?

wa-hrak-yəthw-ʔθe-**hre?**

TRL-M.SG>1.SG-plant-BEN.APPL-PURP

'He is **going to** plant for me.' (Elton Greene, speaker)

- (53) Wendat Purposive

onne, ichiaxe

d'ennonk8at

one yihchiak**he'**

de ënonhkwa't

one k-ihsak-**he?**

ne w-enqhkwaʔt

now 1SG.AGT-search.for-PURP

ART N-medicine

je **vais** chercher une medecine

'I'm **going to go** look for medicine.' (Lukaniec 2018: 116, citing Potier 1751: 386)

- (54) Wendat Purposive

,ia,enchre

yiayen**hchre'**

k-yakə-ʔ-**hsre?**

1SG.AGT-go.out-INCH-PURP

je **vais** à mes necessitez

'I'm **going to** tend to my needs', i.e. 'I'm **going to go** to the bathroom.' (Lukaniec 2018: citing Potier 1751: 207)

- (55) Cayuga Purposive

Agənadáəhne?

a-k-ə-nat-a-yə-**hne?**

TRL-1SG.AGT-MID-tent-LK-lay-PURP

'I'm **going** camping.' (Reginald Henry, speaker)

- (56) Cayuga Purposive

Agékdəhne?

ake=ktə-**hne?**

1SG.AGT=examine-PURP

'I'm **going to** see it.' (Reginald Henry, speaker)

- (57) Mohawk Purposive
Wa'khninòn:re'.
 wa'-k-hninon-**hre'**.
 TRL-1SG.AGT-buy-PURP
 'I'm **gonna** buy it.' (Annette Kaia'titáhkhe' Jacobs, speaker)
- (58) Mohawk Purposive
Wa'khnekihrà:ne'.
 wa'-k-hnek-ihr-**ahne'**
 TRL-1SG.AGT-liquid-consume-PURP
 'I'm **gonna** (go) drink it.' (Annette Kaia'titáhkhe' Jacobs, speaker)

These suffixes are now also used for impending events without motion or intention.

- (59) Mohawk Purposive
Kiheíonhsere'.
 k-ihei-on-**hsere'**
 1SG.AGT-die-ST-PURP
 'I am **going to** die.' (Josephine Kaieríthon Horne, speaker)
- (60) Mohawk Purposive
Iokennoréhsere'.
 io-kennore-**hsere'**
 N-rain.ST-PURP
 'It is **going to** rain.' (Josephine Kaieríthon Horne, speaker)

The Purposive suffixes in the examples above were also formed from two elements: *-h-*, *-hn-*, *-hr-*, and *-hser-*, plus a suffix, *-eʔ*. Forms with this ending are used for present situations. Forms ending in *-a* are used in commands, and those ending in *-aʔ* for Perfectives like pasts: 'I was going camping, was going to go camping'. The source of the element *-eʔ* is the verb root *-e-* 'go, go on foot' with Stative aspect suffix *-ʔ*. (Verbs must contain at least two syllables. If they would otherwise contain just one, a prothetic vowel *i* is added to bear the penultimate stress.)

- (61) Tuscarora root *-e-* 'go'
i:kyeʔ
 i-k-e-ʔ
 PROTHETIC-1SG.AGT-**go**-ST
 'I'm **going**.' (Elton Greene, speaker)
- (62) Wendat root *-e-* 'go'
i,é
 iye'
 i-k-e-ʔ
 PROTHETIC-1SG.AGT-**go**-ST
 je viens
 'I'm coming'. (Lukaniec 2018: 37, citing Potier 1745: 5)

- (63) Cayuga root -e- ‘go’
i:geʔ
 i-k-e-ʔ
 PROTHETIC-1SG.AGT-**go**-ST
 ‘I’m **going**, walking.’ (Jim Skye, speaker)
- (64) Mohawk verb -e- ‘go’
i:keʔ
 i-k-e-ʔ
 PROTHETIC-1SG.AGT-**go**-ST
 ‘I’m **going**, walking.’ (Ima Johnson, speaker)

The origins of at least one of the initial elements of the Purposive forms can also be discerned. The element *-hn-* matches an Ambulative suffix *-hn-* ‘while moving, walking’. In the languages in which it has been observed, it is not frequent.

- (65) Wendat Ambulative *-hnd-*
henta,rachonʔde
 hentayrahchon**hnde**ʔ
 ha-itakr-a-shq-**hn**-eʔ
 M.SG.AGT-be.lying-LK-INCH-DISTR-**AMBULATIVE**-ST
 il **va** tombant et retombant
 ‘He’s **going along** falling again and again.’ (Lukaniec 2018: 298, citing J. ms 62: 15)
- (66) Cayuga Ambulative *-hn-*
Dehohedáhneʔ
 te-ho-het-**ahn**-eʔ
 DV-M.SG.PAT-holler-**AMBULATIVE**-ST
 ‘He is **going along** hollering.’ (Reginald Henry, speaker)
- (67) Mohawk Ambulative *-hn-*
Ranonhtonniòn:neʔ
 ra-anonhton-nion-**hn**-eʔ
 M.SG.AGT-know-DISTR-**AMBULATIVE**-ST
 ‘He is thinking **as he is walking along**.’ (Annette Kaia’titáhkhe’ Jacobs, speaker)
- (68) Mohawk Ambulative *-hn-*
Tahoniarenʔtòn:neʔ
 ta-ho-niar-enʔton-**hn**-eʔ
 CSL-M.SG.PAT-neck-be.hanging-**AMBULATIVE**-ST
 ‘His head is hanging **as he is walking** this way.’ (Margaret Edwards, speaker)

The main feature which distinguishes the Ambulative from the Purposive is the meaning: the older Ambulative simply indicates motion, usually walking, with no indication of intention. The absence of intention with the Ambulative is clear in the examples above and in (69) below.

- (69) Mohawk Ambulative
Ok tontiáktsi kí:ken iakón:kwe wa'tionráhtate',
 ok tontiáktsi kiken iak-onkwe wa'-t-ie-arahtat-e-'
 and suddenly this FI.SG-person FAC-DV-FI.AGT-run-PFV
 'All of a sudden this woman ran,

tontaiakohenrehtà:ne'
 t-onta-iako-henreht-a-**hn**-e'
 DV-CSL-F.SG.PAT-yell-LK-AMBULATIVE-ST
 yelling as **she went.**' (Frank Miller, speaker)

The element *-hr-* in other forms of the Purposive resembles the verb root *-ehr-* 'want, think, wish, intend, believe', suggestive of a possible diachronic link.

- (70) Tuscarora *-er-*
rérha?
 ra-**er**-ha?
 M.SG.AGT-**think**-HAB
 'He **wants it, wishes, thinks.**' (Elton Greene, speaker)
- (71) Wendat *-ehr-*
i,erhe
 iyerhe'
 i-k-**ehr**-e?
 PROTHETIC-1SG.AGT-**think/want**-HAB
 volo, puto
 'I **want, I think**' (Lukaniec 2018: 37, citing Potier 1745: 5)
- (72) Cayuga *-ehr-*
ihe:
 i-hra-**ehr**-:
 PROTHETIC-M.SG.AGT-**want/think**-ST
 'He wants, **thinks . . .**' (Reginald Henry, speaker)
- (73) Mohawk *-ehr-*
Í:kehre'.
 i-k-**ehr**-e'
 PROTHETIC-1SG.AGT-**want/think**-ST
 'I **think, intend, want . . .**' (Annette Kaia'titáhkhe' Jacobs, speaker)

As can be seen, the Cherokee and the Northern Iroquoian Future tense suffixes are the result of separate developments, but their trajectories are similar to those in many other languages, where verbs of going are extended to indicate intention and, ultimately, future time, like the English *I'm going to eat* and the French *je vais manger*. The Northern Iroquoian **-hr-* may have developed along a trajectory similar to that of English *will*, from a verb of volition.

7 Conclusion

Structural similarities between morphology and syntax are not altogether surprising: much of morphological structure begins life as syntactic structure. But much more can be involved. We can move beyond description toward explaining differences between the two domains by looking at the varied factors which shape the development of morphological structure through time.

As seen here, the Iroquoian verb structures were apparently built up gradually, step by step, as frequently occurring sequences of words came to be processed as chunks, and boundaries between them weakened. This processing can result in a crystallization of the structures. Speakers become less conscious of the individual elements which make them up. Such awareness of course usually ranges along a continuum. Work over decades with skilled speakers of Iroquoian languages (those who are not linguists or do not spend time reading the language) indicates that many of the components of words are now opaque. These speakers generally have a clear sense of the meaning of the whole, but they typically could not consciously isolate most of the formal and semantic components. These speakers do, however, have a strong sense of the status of words: they know which words exist, which could exist but do not, and which could not exist.

But the formation of morphological structure is not limited to the fusion of erstwhile words. Speakers are constantly drawing generalizations, reinterpreting them, and extending them to new contexts, though most of this is unconscious. When we introduce the diachronic dimension, certain general principles of such processes emerge, illustrated here with tense morphology in languages of the Iroquoian family. One is the effect of the crystallization. For the most part, new affixes were added in Iroquoian languages at the edges of words, to units already processed as chunks. The heart of the verb, the pronominal prefixes and verb stem, is essentially the same throughout the family, reconstructible to their common parent, Proto-Iroquoian. Affixes at the outer edges of their verb templates are newer, more recent developments. The Cislocative prefix, one of the innermost prepronominal prefixes, was apparently added early within Proto-Iroquoian with the general meaning ‘at this/that place’. The Translocative prefix, an outer prepronominal prefix, was apparently added later, with the meaning ‘at a distance away, motion away’. Significantly, speakers apparently made little attempt to line up this new Translocative prefix in the template with its Cislocative counterpart. But its addition did affect the function of the Cislocative, adding a directional use ‘hither’ which now contrasts with the Translocative directional sense ‘thither, away’.

Effects of some other general principles are also reflected in the Iroquoian tense morphology. One is the semantic extension of markers from Space to Time. The Southern Iroquoian Cherokee Cislocative prefix ‘toward’ was extended to mark Future tense in combination with a newer suffix. The Northern Iroquoian Translocative prefix ‘distance away’ was extended to mark Past tense. Similar semantic extension can also be seen in separate developments in Southern and Northern Iroquoian with the use of verbs of motion toward a goal to mark future time with suffixes. These developments further illustrate a common pattern of reinterpretation of connotation as denotation: the verbs of motion toward a physical goal (‘going to hunt’) were first extended to indicate intention, and are now used as well for situations that do not include intention but simply mark future time.

A related common phenomenon in the development of morphological structure can involve the semantic nature of added morphology. A new marker may add finer semantic distinctions to

existing structures. All of the Iroquoian languages had both Past and Future tense prefixes in place before they added tense suffixes to their verb structures. The newer Southern Iroquoian Cherokee Past tense suffixes distinguish experienced versus nonexperienced past events. The newer Northern Iroquoian Past tense suffixes mark Former Pasts, situations no longer in effect or preceding the time under discussion.

If our goal is to go beyond description of structures to explanation of why these structures have the shapes they do, much can be learned by understanding morphological structure as the crystallization of the effects of sequences of developments through time, each motivated by cognitive and/or communicative factors, though these factors may or may not still be active synchronically.

Abbreviations

1	first person	IMPER	imperative
2	second person	INCH	inchoative
3	third person	INCPL	incompletive
A	pronoun set a (grammatical agent)	INF	infinitive
AGT	grammatical agent	INS	instrumental
APPL	applicative	LK	linker
ART	article	M	masculine
B	pronoun set b (grammatical patient)	MID	middle
CAUS	causative	N	neuter
CMP	completive	NEG	negative
CONT	continuative	NON.SG	non-singular
CONTR	contrastive	NS	noun suffix
CPL	completive	ORD	ordinal
CSL	cislocative	PAT	grammatical patient
DIR	directional	PFV	perfective aspect
DISTR	distributive	PL	plural
DU	dual	POSS	possessive
DV	uplicative	PRES	present
DVRB	deverbalizer	PROG	progressive
EP	epenthetic	PRT	partitive
EXC	exclusive	PURP	purposive
EXP	experienced	REL	relativizer
FAC	factual	REP	repetitive
FI	feminine-indefinite gender	REV	reversive
FUT	future	SG	singular
HAB	habitual aspect	ST	stative aspect
IMM	immediate	TRL	translocative

References

Bobaljik, Jonathan. 2017. Distributed Morphology. In Aronoff, Mark (ed.), *Oxford Research Encyclopedia of Linguistics*. Oxford: Oxford University Press.

DOI: 10.1093/acrefore/9780199384655.013.131

- Embick, David. 2015. *The morpheme: A theoretical introduction*. Berlin: De Gruyter.
- Hockett, Charles. 1954. Two models of grammatical description. *Word* 10. 210–234.
- Jesuit ms 60. *Dictionnaire français-huron*. Archives du Séminaire de Québec, Québec, QC.
- Jesuit ms 62. *Dictionnaire huron*. Archives du Séminaire de Québec, Québec, QC.
- Lounsbury, Floyd G. 1961. Iroquois-Cherokee linguistic relations. In Fenton, William N. & Gulick, John (eds.), *Symposium on Cherokee and Iroquois Culture*, 9–18. Smithsonian Institution Bureau of American Ethnology Bulletin.
- Lukaniec, Megan. 2018. *A grammar of Wendat*. Doctoral dissertation, University of California at Santa Barbara.
- Marantz, Alec. 1988. Clitics, morphological merger, and the mapping to phonological structure. In Hammond, Michael & Noonan, Michael (eds.), *Theoretical morphology*, 253–270. San Diego: Academic Press.
- Montgomery-Anderson, Brad. 2015. *Cherokee reference grammar*. Norman, OK: University of Oklahoma Press.
- Potier, Pierre. 1745. *Radices linguae huronicae*. Manuscript. Archives des jésuites au Canada, Montréal, QC.
- Potier, Pierre. 1751. *Radices huronicae*. Manuscript printed in Alexander Fraser (ed.), 1920. *Huron Manuscripts from Rev. Pierre Potier's Collection*. Fifteenth Report of the Bureau of Archives for the Province of Ontario, 159–455. Toronto: Clarkson W. James.
- Scancarelli, Janine. 2005. Cherokee. In Scancarelli, Janine & Hardy, Heather K. (eds.), *Native languages of the Southeastern United States*, 351–384. Lincoln: University of Nebraska Press.
- Spencer, Andrew. 2019. Manufacturing consent over Distributed Morphology: Review of Embick 2015. *Word Structure* 12(2). 208–259. <https://doi.org/10.3366/word.2019.0146>

ORCID 0000-0003-1215-1597

Email: mithun@linguistics.ucsb.edu