“A formal treatment of Mikasuki tense and aspect morphology”[[1]](#footnote-1)

Seth (Dani) Katenkamp[[2]](#footnote-2)

Cambridge SyntaxLab

18 Mar 2025

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# 1. Introduction

We’re going to examine the morphosyntax of graded tense through a case study of Mikasuki, a Muskogean language from the American Southeast.

“Graded tense” refers to the phenomenon of having multiple tenses in a given direction (i.e. past or future) which are distinguished by their distance from the present.

-often bundled with evidentiality, but can still be put in chronological order[[3]](#footnote-3) on a timeline like this one from Martin (2010:54).

(1) Temporal ranges of graded past tenses in Creek

A black text on a white background

AI-generated content may be incorrect.

Semanticists have worked on these (e.g. Cable, 2013, Johnson, 2022), but independent of the question of their logical forms is the question of their *morphosyntactic* forms-

**What syn-sem features and structure correspond to graded tense semantics?**

Two main goals for today!

(a) develop a concatenative/DM-based analysis with discrete phonological forms for Mikasuki tense and aspect morphology

(b) explore the question of how best to represent graded tense in morphosyntax.

The two goals come together in my use of a “multiple TPs” approach to explain some distribution details of Mikasuki tenses.

But first we need to:

-establish some background machinery

-parse existing descriptions of Mikasuki (there are two) and resolve their empirical discrepancies

-propose a hierarchical structure for Mikasuki clauses.

# 2. Background

## 2.1. The Mikasuki people

Mikasuki is a Muskogean language spoken historically in north Georgia, and then South Florida, and then Florida and Oklahoma.

-historical variety “Hitchiti”

-most closely related to Mvskoke/Creek (part of the Creek Confederacy)

(2) Florida within the United States



(3) Map of Seminole reservations in southern Florida today (Derrick-Mescua, 1980:37)

A map of the united states

AI-generated content may be incorrect.

There are two published accounts of tense and aspect in Mikasuki

-*A Phonology and Morphology of Mikasuki* (Derrick-Mescua, 1980), “DM80”

-*Mikasuki Grammar in Outline* (Boynton, 1982), “B82”

-University of Florida dissertations

-use a theory of morphology where individual morphemes (in this case individual tense and aspect affixes) don’t need to have separate/discrete phonological forms, each combination is a cell in a paradigm

## 2.2. Morphosyntax

### 2.2.1. Tense and aspect

Muskogean languages usually feature graded tenses (at least for the past), marked with suffixes

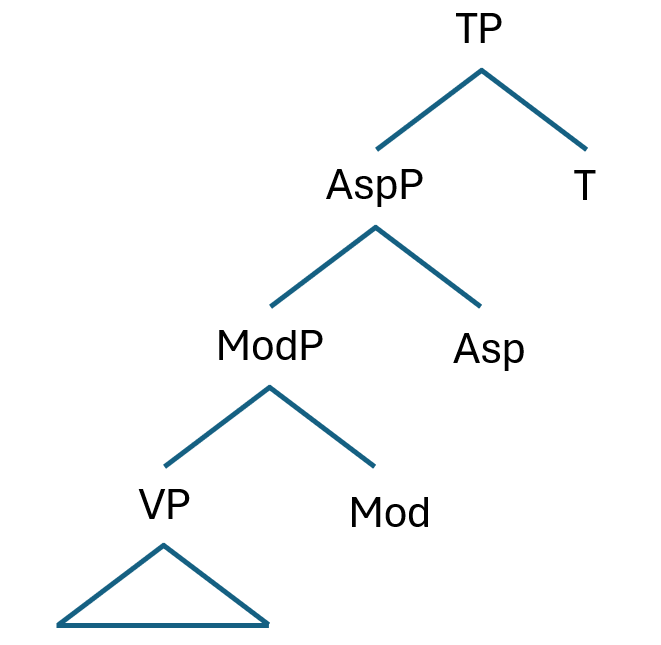
-Creek: five past tenses in the 19th century, four now (Martin, 2011, Johnson, 2022)

-Koasati: four past tenses (Kimball, 1985)

-Choctaw: two past tenses (Broadwell, 2006)

Aspect is usually marked with infixes, which are sometimes purely suprasegmental.

(4) The basic crosslinguistic structure of TAM



What is the content of these terminals?

-Mod quantifies over possible worlds (not really going to focus on that here)

-T just gives you an interval of time, e.g. the extended now, an otherwise unspecified stretch of time beginning prior to the moment of speech (S), etc.

-this is the reference (R) time

Asp expresses the relationship between the reference time and the event (E) itself

Future perfect (e.g. *I will have written the handout by Monday*) in Reichenbachian (1947) terms:

(5) S ≺ (E ≺ R)

### 2.2.2. Argument indexing clitics

-argument-marking clitics

These clitics are the heads of their corresponding DPs, which then raise to the head of their ‘host.’ (Arregi and Nevins, 2012, Tyler, 2019)

“Since Choctaw arguments are obligatorily clitic-doubled, I assume that where a clitic could be generated, it must be generated—there is no optionality in this domain. Furthermore, the adjoined determiner cannot stay put (this constraint is a necessary feature of all Big DP analyses). Instead, it must move and adjoin to a clitic-hosting head, as shown in [X]”

(Tyler, 2019:1182)

(6) Figure from Tyler (2019)

A diagram of a network

AI-generated content may be incorrect.

All Muskogean languages have at least three clitic sets which can be used on nouns or verbs:

-ergative (Class I) - agents

-absolutive (Class II)- themes

-dative (Class III)- experiencers and possessors

We’re really only interested in the ergative ones here because they’re suffixes (and thus relevant to affix ordering)

(7) (a) absolutive prefix

**čā**ˈhĩ̄:čom

**ca-** hi:ca -nas -om

**1s.abs-** see -prog -aux

‘she’s looking at me’

(b) ergative suffix

ˈīmhp**ička**š

impa -h- **-ička** -s

eat -p3- **-2s.erg** -dec

‘you ate (about three days ago)’

(8) Mikasuki ergative clitics move to T

A diagram of a diagram on a piece of paper

AI-generated content may be incorrect.

## 2.3. Relevant details of Mikasuki phonology

The relevant suprasegmental features in this paper are stress, tone, and nasalization,[[4]](#footnote-4) since all are at least purported to be part of underlying phonological forms of different TAM morphemes.

-Each verb has one stressed syllable, which is the tone bearing unit.

-High, Mid, or Low tone, though stressed syllables in verbs are only specified for High or Mid.

### 2.3.1. Vowel hiatus resolution

What happens when two vowels end up next to each other?

-if the first is longer, then the second deletes, otherwise the first one always deletes

-this is a *really* big phenomenon in verbs

(9) fayhˈn**á:**m

fayhn**i** -High **-ˈa:** **o**m

flow -perf -fut1 aux

‘The water is going to flow (but it hasn’t started yet)’

The only context in which you can see the final vowel of a verb is if it’s followed immediately by:

-the first person singular ergative *-li*

-the negative *-ti*

-the distant future *-:laka*

-the causative *-ci*

(10) imp**a**liš

imp**a** -li -š

eat -1s.erg -dec

‘I’m eating’

All other suffixes in this position are vowel initial and thus trigger deletion.

With that background complete, we can look at the existing documentation.

# 3. Derrick-Mescua’s (1980) account

From pages 380-391. DM80 proposes seven tenses and three aspects.

## 3.1. Meanings

“The range of time covered by each of these [past] tenses must be explored and correlated with time adverbials.” (DM80:386)

(11) Some time adverbials DM80 uses with each tense

present ‘just now’

pres. compl. ‘just a little while ago’, ‘a minute ago’

past 1 ‘just a little while ago’, ‘a minute ago’[[5]](#footnote-5)

past 2 ‘a while ago’, ‘yesterday’

past 3 ‘a week ago’

past 4 ‘long ago’

“Note that the adverbial *hī:mānkōn* [‘just now, just a little while ago’]is used with both present and past one forms…Because the present tense and the immediate past tense both contain the suffix *-om*, pitch height and pitch location are the only features distinguishing some of their forms.” (pg. 382)

Three aspects, referred to as neutral, completive, and progressive.

-The completive is often translated using perfect constructions in English

-The progressive is translated using the progressive in English

The two non-neutral aspects can co-occur on the same verb, so it might be better to think of two binaries with all four combinations attested:

(12) One way of conceptualizing Derrick-Mescua’s (1980) aspect system

|  |  |  |
| --- | --- | --- |
|  | -progressive | +progressive |
| -completive | neutral | progressive |
| +completive | completive | progressive-completive |

There are prohibitions on certain tense-aspect combinations, some of which DM80 mentions explicitly and others of which might be interpreted from paradigmatic gaps in the data:

(13) Prohibitions stated in or inferred from DM80

(a) No examples of progressive in the distant future

(b) “It is not clear whether the above completive forms should be considered as present or immediate past. They have been called present because the prominent [stressed] syllable precedes the stem boundary [penultimate]. However, this means that there are no examples of neutral past 1 forms.” (pg. 384)

(c) The only progressive-completive examples are in the present/past 1

(d) “There are no examples to date of progressive aspect in the past 2 or past 4 tenses.” (pg. 389)

(14) A table summarizing the above restrictions:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | neut | compl | prog | compl-prog |
| remote future |  |  | \* (a) | \* (c) |
| immediate future |  |  |  | \* (c) |
| present |  |  |  | (c) |
| past 1 | \* (b) |  |  |
| past 2 |  |  | \* (d) | \* (c) |
| past 3 |  |  |  | \* (c) |
| past 4 |  |  | \* (d) | \* (c) |

## 3.2. Forms

(15) DM80’s phonological forms for aspect in the present tense (pg. 383):

(a) **progressive** “progressive is indicated by nasalization on the prominent [stressed] syllable, by the suffix *-onka*, or by both these means.”

(b) **completive** “Either a *high* pitch on the prominent [stressed] syllable, the suffix [infix] *-i:p-* or both of these indicate the completive aspect.

This description gives a suprasegmental and segmental allomorph for each aspect, with any verb able to occur with either (or with both)

(16) Aspectual allomorphy in DM80

|  |  |  |
| --- | --- | --- |
|  | suprasegmental | segmental |
| compl | [High] | i:p |
| prog | [nasal] | ka |

(17) Forms of the completive (three-line glosses are mine)

(a) hi:ˈč**ó**hmilih

hi:ča -om **-High** -h -li

see -aux **-perf** -p3 -1s.erg

‘I looked at it (a week ago)’

(completive past 3)

(b) ill**i:p**ĩ́:

illi **-i:p-** -ĩ́:

die **-perf-** -p2

‘He died (yesterday)’

(completive past 2)

(c) honˈč**í:p**om

honči **-i:p- -High** -om

stop **-perf- -perf** -aux

‘She’s stopped’

(completive present/past 1)

Stress assignment is described as being determined by the tense and aspect combination:

(18) Stress assignment (Derrick-Mescua, 1980:381)

|  |  |  |  |
| --- | --- | --- | --- |
|  | completive | neutral | progressive |
| future | final | final | ? (no examples) |
| present | **penult** | **penult** | **penult** |
| past | final | **penult** | final |

(19) I made a similar table for tone

|  |  |  |  |
| --- | --- | --- | --- |
|  | completive | neutral | progressive |
| future | H | H | ? (no examples) |
| present | **H** | **M** | **M** |
| past | H | **M** | H |

Any segments? Not for present or past 1.

“Future one is indicated by the *-á:-* suffix and future by high pitch on the [final] stem vowel and the *laka* suffix. The prominent syllable has *high* pitch and follows the stem boundary. There are two forms of the immediate future, one with the *-om-* suffix and one without”

(pg. 384-385)

“The suffixes *-i-*, *-h-*, and *-kta-* …realize past two, past three, and past four, respectively” (pg. 387)

Finally, if we treat *onka* as *om* ‘aux’ + *ka* ‘prog’, then *om* seems obligatory[[6]](#footnote-6) for the past 1, past 3, and present, and is allowed to occur on the immediate future (whereas it’s \* with the distant future, past 2).

## 3.3. Summary

(20) Attested forms for each cell in the T-A paradigm (in

DM80)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | compl | neut | prog | prog-compl |
| fut2 | final H  oral  -i:p-Vla:ka  -i:p-Vla: | final H  oral  -V:laka  -V:la: | ? | ? |
| fut1 | final H  oral  -a:m  -i:p-a:m | final H  oral  -a:m  -a:-om  -a: | final H  oral  -:onka | ? |
| pres | penult H  oral  -om  -i:p-om | penult M  oral  -om | penult M  nasal  -om  -onka | penult H  nasal  -om  -i:p-om |
| p1 | final H  oral  -om | ? | final H  either  -om  -onka |
| p2 | final H  oral  -ĩ:  -i:p-ĩ: | penult M  oral  -ĩ: | ? | ? |
| p3 | final H/∅?[[7]](#footnote-7)  oral  -ohm  -ihp- | penult M  oral  -ohm | final H  oral  -ohnka | ? |
| p4 | final H  ?  -ĩ:-kta | penult M  oral  -ĩ:-kta  -kta | ? | ? |

# 4. Boynton’s (1982) account

Boynton’s account (pages 85-112) deviates from Derrick-Mescua’s both empirically and analytically.

## 4.1. Empirical differences from DM80 (and their resolutions)

(21, 25, 27, and 28) are important, the others are more formalities.

**(21) DM80: *onka* is a progressive suffix**

**B82: *onka* is an auxiliary for sonic verbs, is**

**unrelated to TAM[[8]](#footnote-8)**

Boynton (1982:87) says that

“Derrick-Mescua…argues that it [*onka*] is a progressive aspect marker. However, it is not a stem-forming suffix as all aspect markers are [referring to what we would say is a level of prosodic structure]. West…calls it a secondary root and says that it indicates that the verb action occurs noisily. In free text the suffix usually occurs on ‘noisy’ verbs such as: ‘call’, ‘talk’, ‘say’. However it is possible to elicit it occurring on verbs like ‘eat’ or ‘see’.”

(22) Proposed definitions for *onka*:

(a) (DM80) ‘progressive’

(b) (DM80:420) ‘make a repetitive noise, keep doing’

(c) (West, B82) ‘do noisily’

(d) (B82) ‘say’

A problem for Boynton’s generalization is that DM80 features at least two examples with verbs that don’t seem related to noise, oral actions, or seeing.

(23) (a) atāła -tì: -onka

know -neg -prog

‘She doesn’t know’ (DM80:404)

(b) nō:ł -ōt áyy -onk -ò

who -nom go -prog -Q

‘Who was that?’ (DM80:414)

Does it have to be a progressive marker then?

A hint from Choctaw (Muskogean): cognate verb *kachi* ‘say, make like’

*Kachi* is used as a verb of speech, but also to create onomatopoeia, or manner verbs:

(24) (a) onomat: *chamaakachi*

chama -kachi

ring! -say

‘to ring, to make a ringing sound’

(b) manner: *pilhiimakaachi*

pilhim -a -kachi

bend -intr -say

‘to stumble, to shuffle, walk zig-zagging,

move drunkenly’

The extension from ‘say’ to a more general ‘make like’ maybe explains the use of *onka* with verbs that don’t relate to noise, and why it could extend to a more general meaning of protracted action.

**(25) DM80: the past 2 suffix is always stressed except**

**in forms for ‘be cold’, in which case it**

**lacks both stress and high tone. Long**

**vowel.**

**B82: the past two suffix is always stressed and**

**high. No examples of ‘be cold’. Short**

**vowel.**

(26) Examples of different forms of the past 2 in DM80

(a) hi:ˈč**ĩ́:**li

hi:ča **-ĩ:** **-High** -li

see **-p2** **-perf** -1s.erg

‘I saw it a while ago’

(b) ān kaˈbā:lo:t**ĩ:**

an- kaba -li -o:ti **-ĩ:**

1s.dat- cold -trans -aux? **-p2**

‘I was cold yesterday’

Not particularly satisfying, but the ‘cold’ forms in both dissertations are odd. I suspect *o:ti* is some kind of auxiliary, but otherwise must assume there’s some structural issue that is unapparent to me.

**(27) DM80: *om* appears (mostly) obligatory with the**

**immediate future, present, past 1, and**

**past 3**

**B82: *om* can’t appear on the ‘distant’ tenses,**

**but seems far less obligatory elsewhere**

I will assume that *om* never occurs on the past 2, future 2, or past 4, but that it is not obligatory anywhere else either.

**(28) DM80: remote future allomorphs -*la:* and *-laka***

**are in free variation**

**B82: *-la:* is used with the first person singular**

***-li* and *-la:ka* (with a long vowel) is used**

**elsewhere. They are ordered differently**

**relative to the ergative clitics.**

I think the real differences here is probably just that Boynton is only focusing on the ergative markers. She doesn’t explicitly say which allomorph occurs when the subject is marked absolutively, so I’m going to assume DM80’s account here.

(29) (a) počkaˈlá:liš

počka **-la: -li** -š

feel **-fut2 -1s.erg** -dec

‘I shall feel it’

(b) počkičkaˈlá:kaš

počka **-ička -la:ka** -š

feel **-2s.erg -fut2** -dec

‘you’ll feel it’

There remains the issue of the surface form of the distant future: DM80 has *laka* while B82 has *la:ka*, and in DM80 the tone occurs on the syllable preceding the suffix, while B82 has the tone on the /la:/.

(30) (a) DM80:385 hi:č**á:laka**

‘she’ll see’

(b) B82:106 počkičk**aˈlá:kaš**

‘you’ll feel it’

I will assume B82 is correct about the tone location, and that DM80 is correct about the length (though neither of those decisions will matter a ton).

(31) Distant future allomorphs

(a) before *-li*: /ˈla:/

(b) elsewhere: /ˈlaka/

**(32) DM80: the past three infix is *-h-***

**B82: the past three infix is *-h-* unless it would**

**create an illegal cluster (which includes**

**/čhk/ but not /hnk/ or /mhp/?), in which**

**case it’s *-hayh* instead.**

DM80 only gives five examples of the past three, all of which put the infix between a vowel and consonant, so there are no opportunities for triple clusters to occur.

**(33) DM80: past 4 is *-kta***

**B82: the underlying form is *-kta*, but in casual**

**speech often just *-ta***

Forms in both dissertations are presented hyphenated for (sort of) morpheme boundaries, suggesting some degree of abstraction from surface forms already. Thus, we could imagine that DM80 always using <kta> for the past 4 is a decision to focus on the underlying form.

**(34) DM80: No forms with past 2 and second person**

**plural subject**

**B82: *-ĩ́* ‘p2’+ *ačka* ‘2p.erg’ contracts to *-ã́čka***

This just seems like an empirical gap in DM80.

## 4.2. Analytical differences from DM80

**(35) DM80: All past 2 and future tense forms have a**

**high tone because that is part of the forms**

**of those tenses. It is unclear why there are**

**no neutral past 1 forms**

**B82: The past 1 and 2 are “redundantly”**

**marked for perfective aspect, “Neutral**

**and progressive aspects do not occur in**

**the future tenses.” (pg. 103)[[9]](#footnote-9)**

-In DM80 they occur in neutral or completed (and the immediate future in the progressive)

-In B82 they can only occur in the perfective

However, in both grammars, they always have final stress and a high tone (which is why B82 assumes they are always perfective).

So then why does DM80 believe there are neutral forms?

For her, these are distinguished from the completive forms because they lack the infix *-i:p-*. But they still have the stress and tone of a perfective form.

Regarding *why* they always have a High tone, I will assume that the future tenses can only be licensed by perfective aspect, but that they can also occur with progressive or completive aspect.[[10]](#footnote-10)

-unlike B82, I assume that there genuinely are perfective semantics in future forms.

“Some investigators (West 1974a, Booker 1980) consider *-á:(h)* to be an inceptive aspect marker rather than future tense…” (B82:104-105)

The perfective is (in Reichenbachian terms): E ⊏ R

-“the interval of the reference is outside of the interval of the event time”

This makes sense if the reference time is the present: any event which does not begin “now” or before “now” will have this relationship.

-indicate something that will be true in the future but is not currently (maybe the source of West’s “inceptive” analysis)

The default interpretation of ‘perfective’ cross-linguistically seems to be in relation to the past, i.e. whether the event will have reached some sort of conclusion or endpoint prior to the reference time.

-So it’s neat that we can have it in both directions depending on the tense

This analysis obviously makes a prediction that speakers will not use the future tenses to describe events which are also currently true at the time of speech, e.g. *I’ll (still) be a PhD student next year.*

(36) DM80: progressive, neutral, and **completive** aspect

B82: progressive, neutral, **completive, and**

**perfective** aspect

(37) Aspect markers

[High] *-i:p-* [nasal]  *-(on)ka*

(a) DM80: perf **perf** prog **prog**

(b) B82: perf **compl** prog **(aux)**

The reason that a verb can have both a High tone and *-i:p-* in Boynton’s analysis is that these are simply two different aspects (perfective and completive) co-occuring, and not that this is optional redundant marking of the completive.

This analysis dramatically reduces the amount of free variation in the system, but makes for an odd paradigm.

-each aspect can occur on its own, and progressive can occur with both the perfective and completive (but these last two cannot co-occur), giving six possible aspect combinations.

-more gaps than DM80[[11]](#footnote-11)

(38) Tabulated paradigm gaps based on the description and forms in Boynton (1982:89-108)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | neut | perf | prog | compl | perf-prog | prog-compl |
| fut2 | \* | ✓ | \* | ? | \* | \* |
| fut1 | \* | ✓ | \* | ? | \* | \* |
| pres | ✓ | ✓ | ✓ | ✓ | ? | ✓ |
| p1 | \* | ✓ | \* | ? | ✓ | \* |
| p2 | \* | ✓ | \* | ✓ | ? | \* |
| p3 | ✓ | ✓ | ? | ✓ | ? | ? |
| p4 | ✓ | ✓ | ? | ✓ | ? | ? |

# 5. Fresh analysis

K25 if you will.

To begin, we will try to avoid thinking paradigmatically, i.e. treating each tense-aspect combination as a unique, salient form. Each combination should be just that: a tense morpheme and an aspect morpheme.

-establish a linear order of those morphemes

-reanalyze the meaning and corresponding projection of others

## 5.1. Establishing some concatenative structure

### 5.1.1. Order of affixes

If we want to treat the tense and aspect morphemes as discrete morphemes rather than points on the axes of paradigm table, we should determine the order of affixation for those morphemes.

Focusing just on the segmental ones atm (so ignore the perfective /High/, progressive /nasal/, and present tense).

(39) *-ka,-li >> -i:p-* čawˈlí:pom

čaw **-li -i:p-** -H -om

draw **-trans -compl** -perf -aux

‘he wrote’

*-ka,-li* >> *-i:p-*

(40) *-i:p- >> a:(ho)* illi:ˈpá:m

*-a:(ho) >> om* illi **-i:p-** -H **-a:** **-om**

die **-compl-** -perf **-fut1** **-aux**

‘He's (in the process of) dying’

*-ka,-li* >> *-i:p-* >> *-a:(ho)* >> *-om*

(41) *om >>* (erg)[[12]](#footnote-12) imˈpómi:ka

impa **-om** -H **-i:ka**

eat **-aux** -perf **-1p.erg**

*-ka,-li* >> *-i:p-* >> *-a:(ho)* >> *-om* >> -(erg)

(42) (erg) *>> la(:/ka)* počkičkaˈlá:kaš

počka **-ička** -H **-laka** -š

feel **-2s.erg** -perf **-fut2** -dec

‘You’ll feel it’

*-ka,-li* >> *-i:p-* >> *-a:(ho)* >> *-om* >> -(erg) >> *-la(:/ka)*

(43) *la:/laka >> li* čī:hi:čalá:li

či:- hi:ča -H **-la: -li**

2s.abs- see -perf **-fut2 -1s.erg**

‘I’ll see you/goodbye’

*-ka,-li* >> *-i:p-* >> *-a:(ho)* >> *-om* >> -(erg) >> *-la(:/ka)* >> *-li*

(44) *li >> kta* ˈhī:čiliktaš

hi:ča **-li -kta** -s

see **-1s.erg -p4** -dec

‘I looked at it a long time ago’

(45) *i:p >> ĩ́(:)* oˈmi:pĩ́li

omi **-i:p- -ĩ́** -li

do **-compl -p2** -1s.erg

‘I made’

(46) *ĩ́(:) >> icka* imˈpã́čka

impa **-ĩ́(:) -ačka**

eat **-p2 -2p.erg**

‘yall ate’

The infix *-h-* ‘past 3’ varies in whether it follows the main verb or the auxiliary verb *om* (when *om* appears, which is not always the case).

(47) Variable location of *-h-*

(a) before *om* ˈīmhpomačkaš

impa **-h- -om** -ačka -s

eat **-p3- -aux** -2p.erg -dec

‘yall ate’

(b) after *om* hi:čóhmi

hi:ča **-om -h-**

see **-aux -p3-**

‘She looked at it a week ago’

When on the main verb, we also see *-h-* ‘past 3’ inside of the infix *-i:p-* ‘completive’.

(48) hakˈlīhpik

hakli **-i:p- -h-** -ik

hear **-compl- -p3-** -sr:ss

‘to have heard’

In (49) below, I present a summary of the order of affixes demonstrated by the examples above.

-It is unclear where the past 2 fits into this because it never occurs with any auxiliary verbs (including *om*). It occurs somewhere between *-i:p-* ‘completive’ and the ergative markers. Given no contrary evidence, I have put it in the same slot as the future 1 and past 3.

(49) A summary of the order of segmental affixes (ignoring co-restrictions)

*ka/li* *i:p a:(ho), ĩ́(:), h om* *h* *la(:/ka)* *kta*

trans compl fut1, p2, p3 aux p3 fut2 p4

If we tentatively assign category names to each slot, this gives us the following affix ordering and boundary location:

(50)

*ka/li* *i:p a:(ho), ĩ́(:), h om* *h* *la(:/ka)* *kta*

trans compl fut1, p2, p3 aux p3 fut2 p4

Voice Asp T v T T T

In the next subsection I propose two re-analyses that will complete this model.

## 5.2. Two re-analyses that will make this structure less convoluted

### 5.2.1. Past 4 *-kta* is an evidential marker

The distribution of the past 4 suffix *-kta* is noteworthy in several ways:

**It can occur with the bare form of the verb, but also on a verb that already has a past 2 suffix.**

(51) (a) liˈmā:kičkaktaš

lima:ka -ička -kta -s

swallow -2s.erg -p4 -dec

‘you swallowed a long time ago’

(b) hi:ˈčĩ́:kta

hi:ča **-ĩ́: -kta**

see **-p2 -p4**

‘he saw it before’

**It follows the first person singular suffix *-li*, while all other tense markers precede *-li***

(52) hi:ˈčĩ́:liktawa

hi:ča -ĩ́ **-li -kta** -wa

see -p2 **-1s.erg -p4** -hsay

‘I looked at it a long time ago’

**In the Kashihta Legend[[13]](#footnote-13) it almost always occurs with the ‘inferential’ suffix *-wa***

The ‘inferential’ -*wa*: “With this suffix the speaker indicates that she expects that what she says is true but that she does not have personal knowledge of it.” (Boynton, 1982:147)

**Proposal:** past 4 *-kta* marks evidentiality, specifically that an event was ‘not directly observed’

-lack of clear knowledge explains why limited use of ‘true’ tenses: just past or present[[14]](#footnote-14)

Johnson (2022) shows that evidentiality is incorporated into the tense system of Mvskoke Creek, with three of the four past tenses encoding “direct evidence” and the fourth, the most distant, being unspecified for evidentiality (yielding the implication of indirect evidence when used with events not in the remote past[[15]](#footnote-15))

In my proposal here tense and evidentiality are not so intimately bound together, but I believe the confusability of (maximally) remote past and lack of direct evidence is relevant.

What’s “direct evidence?”

-“When the speaker's perceptual field and the spatio-temporal trace of the event overlap, what results is a situation where the speaker perceives the event directly.” (Johnson, 2022:97)

“According to Faller (2004), an evidential-tense can make use of three possible relations between the P−trace and the e−trace:

1) partial direct evidence - the P−trace overlaps with part of the e−trace,

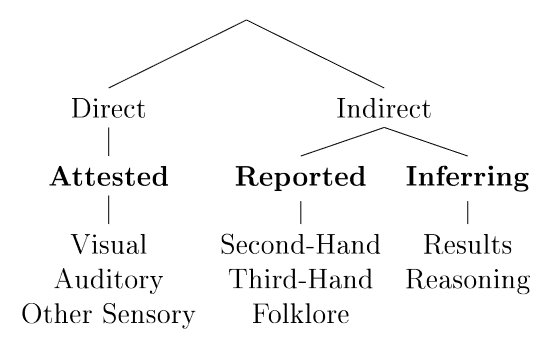
2) total direct evidence - the e−trace is contained in the P−trace, and

3) indirect evidence - there is no overlap between the two traces.

The Cuzco Quechua evidential-tense -sqa is compatible with both direct and indirect evidence because it simply requires that the P−trace does not entirely contain the e−trace.”

Initial typology of *indirect* evidence:

(53) Specific semantics of the evidentiality: Evidence types from Willett (1988)



The past 4 is actually used for ‘indirect’ evidence,[[16]](#footnote-16) and *-wa* is for reported indirect evidence specifically, hence its noticeable use in “Folklore” contexts.

### 5.2.3. There is no past 1

Let’s look again at the past 1 and present tense forms from DM80.

(54) DM80 present and past 1 forms (v. 1)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | compl | neut | prog | prog-compl |
| present | penult H oral  -om  -i:p-om | penult M oral  -om | penult M nasal  -om  -onka | penult H nasal  -om  -i:p-om |
| past 1 | final H oral  -om | ? | final H either  -om  -onka |

And then let’s:

-adjust for B82’s version of aspect marking

-assume Boynton is right in past 1 requiring the perfective

-remove *onka* + oral vowel (DM80’s alternative form of the progressive)

(55) DM80 present and past 1 forms (v. 2)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | neut | perf | compl | prog | prog-perf | prog-compl |
| pres | penult  M  oral  -om | penult  H  oral  -om | penult  ()  oral  -i:p-om | penult  M  nasal  -om | penult  H  nasal  -om | penult  ()  nasal  -i:p-om |
| p1 | \* | final  H  oral  -om | \* | \* | final  H  nasal  -om | \* |

Now let’s take out the cells that don’t have past 1 forms.

(56) DM80 present and past 1 forms (v. 3)

|  |  |  |
| --- | --- | --- |
|  | perf | prog-perf |
| present | penult  H  oral  -om | penult  H  nasal  -om |
| past 1 | final  H  oral  -om | final  H  either  -om |

We can see now that the only difference between DM80’s present and past 1 is the stress location.

And we find something similar if we look at B82’s account:

(57) Boynton (1982)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | neut | perf | prog | compl | prog-perf | prog-compl |
| pres | penult  M  oral | **penult**  H  oral | penult  M  nas | penult  M  oral  -i:p- | ? | penult  M  nasal  -i:p- |
| p1 | \* | **final**  H  oral | \* | \* | final  H  oral | ? |

The only aspect for which the present and past 1 tenses differ is the perfective, and once again the only difference is stress location.

To summarize the facts:

-both grammars only give past 1 examples of it with *om*

-in B82 the past 1 and present tenses have almost complementary distributions re aspect

-the only difference in their phonological forms is where the stress occurs[[17]](#footnote-17)

-“Notice that the adverbial /hi:mankon/ is used with both present and past one forms.” (DM80:387)

“It is not clear whether the above completive forms should be considered as present or immediate past. They have been called present because the prominent syllable precedes the stem boundary [penultimate stress]. However, this means that there are no examples of neutral past one forms.”

(DM80:384)

**PROPOSAL!**

-Past 1 is just an alternative form of the perfective present tense

-the present tense is marked null /∅/

-perfective aspect can be marked on the main verb, or on *om*, in a sort of periphrastic construction

-the perfective is normally just a floating High tone that docks onto the stressed syllable (which is determined independently), but there is an allomorph conditioned by the present which specifies a trochaic foot template along with the High tone.

(58) VI rules for the perfective

H

|

Asp[perf] ⬄ ˈσ σ # / \_⁀T[pres]

Asp[perf] ⬄ [High]

But the stress appears to be final in the “periphrastic” forms?

To address this, I propose a prosodically specified underlying form.

-*om* is clearly related to the frequently used verb[[18]](#footnote-18) *omi* ‘do, make’, what if we treated them as synchronically the same?

-underlying form /o.m/ with the /m/ as the onset of an “empty-headed” syllable (Köhnlein, 2018)

-but in *surface* forms in Mikasuki you can’t have syllables without vowels

In (59.a) /m/ is able to resyllabify as a coda of the final syllable (at some point after stress assignment).

But in (59.b) neither \*/om.kta/ nor \*/omk.ta/ are phonotactically acceptable, so epenthesis is necessary to create a grammatical form.

(59) Different resolution strategies in different contexts

(a) hi:ˈčóm

hi:ča o.m -H

see do perf

‘she has just looked at it’

(can resyllabify)

(b) ˈomikta

o.m -∅ -kta

do -pres -past4

‘she did it (long ago)’

(no way to resyllabify, must epenthesize)

Some sleight of hand happening here- you need stress assignment to occur *before* resyllabification.

(60) (a)

A close-up of a paper

AI-generated content may be incorrect.

(b)

A close-up of a paper

AI-generated content may be incorrect.

## 5.3. Stress assignment, phonological forms for the TA affixes

One remarkable generalization in the distribution of stress (in addition to its restriction to penultimate or final location) is that for 252 of the 256 forms in the data (98.4%), stress falls on the syllable containing the left edge of the tense morpheme.

This is in spite of tense suffixes being variable distances from the right edge of the lower complement *and* the right edge of the word.

For this reason, I propose underlying forms for the tense suffixes in which all except for the present tense have lexical stress on their left-most syllable.

-Default stress is penultimate, so if no lexical stress is introduced, a present tense form will be spelled out with stress there.

(61) Phonological forms

(a) auxiliary verbs

(i) √DO ⬄ /o.m/

(ii) √ACT.LIKE ⬄ /onka/

(b) aspect

(ii) [compl] ⬄ /i:p/

(iii) [prog] ⬄ /[nasal]/

(iv) [perf] ⬄ /[High]/

(c) tense

(i) future 2 ⬄ /ˈla:/

/ˈlaka/

(ii) future 1 ⬄ /ˈa:/

(iii) present ⬄ /∅/

(iv) past 2 ⬄ /ˈĩ́:/

(v) past 3 ⬄ /ˈhayh/

/ˈh/

(d) evidentials

(i) [indirect] ⬄ /kta/

(ii) [hearsay] ⬄ /wa/

See Appendix B for description of the points of insertion for the infixes.

# 6. The morphosyntax of graded tense

Previous work on languages with graded tense has focused on treating this phenomenon in the semantics (Bochnak and Klecha, 2015, Johnson, 2022). With such an analysis, each past tense, for example, would be a single self-contained morpheme.

But this raises a question about morphosyntactic representations: what is the featural structure that yields the graded tense semantics?

## 6.1. A brief sketch of three possible options

### 6.1.1. More features

The simplest solution is to simply add to the inventory of universal synsem features: the most recent past corresponds to a [past1/precedence1] feature, the next most recent to a past2, etc.

-arranged in a dependency structure

-would probably need five

This feels a little janky if we think about the semantics of graded tense [in Reichenbachian terms]:

(62) Many features

[past1] ⬄ R1 ≺ S

[past2] ⬄ R2 ≺ (R1 ≺ S)

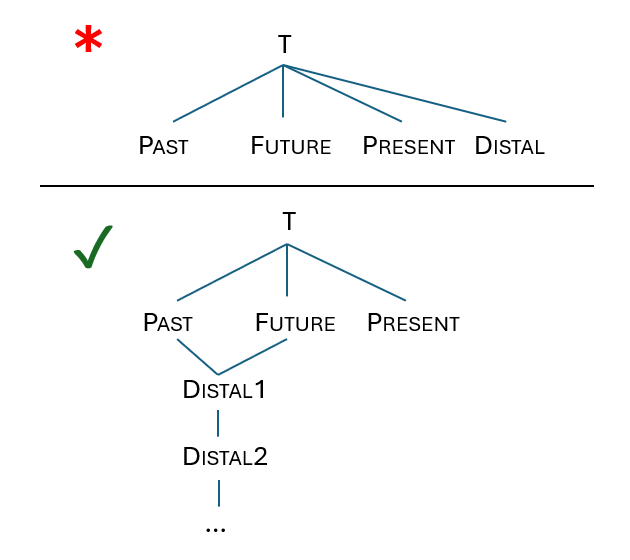
[past3] ⬄ R3 ≺ (R2 ≺ (R1 ≺ S))

Maybe more importantly, you would either have to do this for both the past *and* future, or propose a chain of ‘distal’ features instead

-the distal feature feels weird because the present->past 1 distance doesn’t seem related to the present->future 1 distance

-need a dependency structure in which both past and future convene/allow for the distal features? (otherwise you would expect ‘distal present’ to be a possible feature combination)

(63) Feature geometry with ‘distals’



### 6.1.2. Distant tenses are roots

Going with an intuition that a specifically past tense on a verb may be underlyingly isomorphic to something like *I went yesterday to the store* or *Yesterday I went to the store* in English.[[19]](#footnote-19)

The difference is just that the phonological form of the temporal adverb is a bit unusual.

Pros: maybe fits nicely with the pronominal nature of tense

Cons: how does this work with the permitted stretching/squeezing of the temporal ranges[[20]](#footnote-20)

-i.e. it seems that, cross-linguistically, graded tenses can be described in terms of objective temporal ranges (“from a few moments ago to yesterday evening”), but that simultaneously they can be stretched contextually, with their true boundaries only defined relative to one another.

A couple different ways we might do this:

-T heads contain a [•p•] feature, are always null, VI rules like this

(64) √RECENTLY ⬄ ˈĩ́

√A.WHILE.AGO ⬄ h

T[past]  ⬄ ∅

-recent tenses are T-heads, distant tenses are fusions of those T-heads and adjunct PPs

-(I’ve thought of a bunch of possible implementations, would love to hear recommendations from other folks.)

### 6.1.3. Multiple TPs

A way of both

-getting the ‘relative’ interval intuition above

-not adding to the universal feature inventory

Say that there are multiple TPs, stacking on top of each other to push the distance in time further away.

If we take a basic Reichenbachian view of the past:

(65) R ≺ S

then we can imagine repeating that operation

-establishing a new reference point as the point in time when past 1 events occur

-indicating that this event occurs some time before that

The reason that increasing numbers of past tenses is increasingly rare (as in most languages have one or two, some have three, and four or more is rare[[21]](#footnote-21)) can be because of the growing cognitive burden of each successive TP, which allows for there not to be a hard limit on their number, just a tendency.

Additionally, the composition of distant past and distant future are the same operation, but not fixed to one another the way that they would have to be with the chain of [distal] features.

**A piece of tenuous phonological evidence:**

(66) Choctaw past tenses:

(a)-tok ‘past tense’

(b) -ttook ‘distant past tense’

One could treat the phonological similarity between these two suffixes as a vestige of diachrony, and that the two are synchronically unrelated, or one could imagine underlying forms like the following:

(67) Alternative forms for the Choctaw past tense:

(a) /tok/ ⬄ past

(b) /CCVVC/ ⬄ distant past

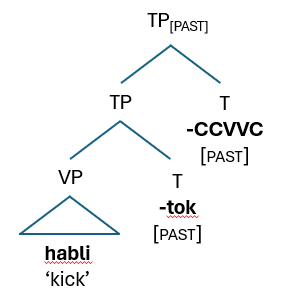
Here the distant past is formed from the past tense, and the past tense suffix *-tok* is mapped onto the template that actually instantiates the distant past tense.

Then, the difference between recent and distant pasts is the result of the number of TP projections, rather than unique features. So we restate the VI rules in (X) as:

(68) (a) [past] ⬄ CCVVC / [past]⁀ \_

(b) [past] ⬄ tok

(69) Syntax tree for *hablittook* ‘he kicked it (long ago)’

****

A problem with this analysis is that we might expect more languages to look like Choctaw, with the difference surface forms being clearly related. But most languages, e.g. Mikasuki, have unrelated phonological forms.

## 6.2. Completing the Mikasuki analysis with multiple TPs

Assume the multiple TPs for a moment. What can this do for Mikasuki?

Consider the distribution of ‘proximal’ versus ‘remote’ tenses:

(70)

|  |  |  |
| --- | --- | --- |
|  | p2, fut1 | p3, fut2 |
| monoclausal/lower clause of two | ✓ | ✓ |
| higher clause of two | \* | ✓ |

Let’s assume each of the five tenses is composed of the following TP structures:

(71) Tpres = present Tpres + Tpres = (‘double’) present

Tpast = recent past Tpast + Tpast = distant past

Tfut = near future Tfut + Tfut = distant future

If the lower clause has to be a TP, then the only options for tense marking at the top of a biclausal construction are those in the right column:

-the ‘double present’, the distant past, and the distant future.

The lower clause can have either one or two TPs, so the distant tenses can occur in monoclausal constructions.

Final caveat: we see the future 1 and lower-clause-past-3 occur with *om*, so it must be possible to get a bi-clausal, proximal tense.

-Future and past can license present in the higher clause, but not each other, and present can only license a repetition of itself:

(72) (a) future 1:

ipˈtá:hom

iptV -H -a:h -om -∅

snow -perf -fut1 -aux -pres

‘it’s going to snow’

(b) lower clause past 3:

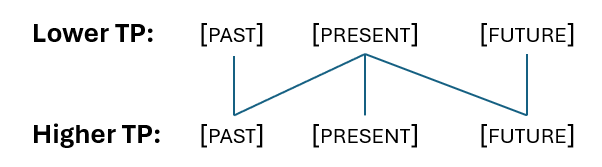
ˈīmhpomačkaš

impa -h- -om -ačka -∅ -s

eat -p3- -aux -2p.erg -pres -dec

‘you all ate’

(73)

****

### 6.2.1. One kink in Fusion

For directly adjacent tense projections, a simple Fusion rule accounts for the distribution of vocabulary items.

(74) či:hi:čaˈlá:li

či:- hi:ča -H -la: -li

2s.abs- see -perf -fut2 -1s.erg

‘I’ll see you, goodbye’

A diagram of a business strategy

AI-generated content may be incorrect.

(see Appendix A for the Agree bit)

But one weird situation: past 3 in matrix *om* clauses. Is the tense of both clauses ‘past’?

(75) kaba:ˈlóhmička

kaba:li -H **-om -h-** -ička

bite -perf **-aux -p3-** -2s.erg

‘you bit it (once) a week ago’

A diagram of a flowchart

AI-generated content may be incorrect.

Instead, probably more like this:

A diagram of a voice message

AI-generated content may be incorrect.

### 6.2.2. A final note

This analysis doesn’t explain why some tenses can’t occur with *om*, but I’ll point out that *om* is allowed to occur with the present and one past and one future tense, and is prohibited from occurring with the other past and other future tense. The only problem is the difference in whether it’s allowed with the near or remote:

(76) When is *om* allowed?

|  |  |  |  |
| --- | --- | --- | --- |
|  | **present** | **past** | **future** |
| **near** |  | \* |  |
| **remote** |  | \* |

# 7. Conclusion

We had two goals:

**(a) come up with a cleaner analysis of Mikasuki tense and aspect**

-resolve some of the empirical discrepancies between DM80 and B82, flesh out some of the

-specifically to propose discrete phonological forms corresponding to individual tenses or individual aspects

**(b) discuss the pros and cons of different options for morphosyntactic representations of graded tense (prior to their semantic interpretation)**

In the full analysis for Mikasuki I went with the multiple TPs option in order to help explain the distribution of certain tenses within biclausal verbal constructions, but this then presented some unique hurdles.

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# Appendix A. The distant future allomorphy (*-la:* and *-laka*)

Agree!

First person singular agreement is /-ˈla:/, if the T[fut] phi features are valued any other way you get /-ˈlaka/.

(77) (a)

A diagram of a business strategy

AI-generated content may be incorrect.

(b)

A diagram of a voice

AI-generated content may be incorrect.

# Appendix B. Points of insertion for infixes

Just for the sake of completeness- we have three TA infixes, where are they inserted?

(78) Three Mikasuki infixes

(a) *-i:p-* ‘completive’

(b) *-h-* ‘past 3’

(c) *-hayh-* ‘past 3’

In addition to the surprising allomorphy of the past 3, the two are also inserted in slightly different places:

(79) (a) past 3 ⬄ h / V\_V#

(b) past 3 ⬄ hayh / σ\_σ#

(X.a) is in the context of the vowel tier, i.e. *-h-* is inserted immediately after the penultimate vowel, while the *-hayh-* is inserted in between the penultimate and final syllables.

(80) (a) hakˈl**īhpi**k

hakli -i:p- -h- -k

hear -compl- -past3 -sr:ss

‘to have heard’

(b) po**čˈhāyhk**i:kaš

počka -hayh- -i:ka -š

feel -past3- -1p.erg -dec

Finally, *-i:p-* is inserted before the final vowel of the stem:

(81) completive ⬄ i:p / \_V#

# Appendix C. Note on diachrony

The Mikasuki tense and aspect morphemes appear to have cognates in Mvskoke Creek (its closest relative in the Muskogean family), but these cognates do not have the same meanings. This is in spite of both languages having progressive and perfective aspect markers, as well as graded tense systems (I’ve argued three for Mikasuki, Martin, 2011 and Johnson, 2022 argue four for modern Mvskoke).

(82) Cognate tense and aspect markers in Mikasuki and Mvskoke Creek

Mikasuki Mvskoke Creek

(a) -ĩ́ ‘past 2’ -ánk ‘past 2’

(b) -h- ‘past 3’ -h- ‘perf’[[22]](#footnote-22)

(c) -(k)ta ‘past 4’ -i:ta ‘past 5’

(d) [High] ‘perf’ [High][Low] ‘perf’

(e) [nasal] ‘prog’ [nasal] ‘prog’

(f) -i:p- ‘compl’ -i:p- ‘perf’

The most significant phonological change is the past 2 morphemes, while the most significant semantic changes here are the infixes *-h-* and *-i:p-*.

1. Abbreviations used in this handout: XXX [↑](#footnote-ref-1)
2. Thanks to Finn Amber, everybody at the Yale Phonologroup (Jason Shaw, Natalie Weber, Mike Stern, Manasvi Chaturvedi, Alessandra Pintado-Urbanc), and Chris Geissler [↑](#footnote-ref-2)
3. languages vary on whether their graded tenses express nested or purely sequential intervals of time [↑](#footnote-ref-3)
4. I know yall probably aren’t big Oxford comma fans here, so I’m sorry about that. The practice was just really deeply ingrained in me as a child and I only discovered that some people don’t use it in my early twenties. [↑](#footnote-ref-4)
5. pg. 382 has an example of past 1 with ‘six days ago’, suggesting that if there are absolutely established intervals for each tense (as opposed to each one being defined exclusively relative to one another), they can be stretched/shifted significantly in the right contexts. [↑](#footnote-ref-5)
6. As in all of DM80’s examples include it [↑](#footnote-ref-6)
7. pg. 388 [↑](#footnote-ref-7)
8. The empirical difference, then, is that Boynton claims that *onka* only occurs with predicates related to producing sound (or *hi:ca* ‘see’). [↑](#footnote-ref-8)
9. It’s not clear whether Boynton is claiming the future and past 1 tenses necessarily have perfective semantics or if the mandatory co-occurrence is purely morphological and would not necessarily be interpreted perfectively. [↑](#footnote-ref-9)
10. One implication: B82 gives no other examples of perfective-completive forms, suggesting that the two can’t occur together (I mentioned this above), but if we treat the future forms as containing the perfective, this generalization is no longer the case, removing one unexplained prohibition. [↑](#footnote-ref-10)
11. This could also be because Boynton provides less data, but it’s difficult to be sure because she is not always clear about which gaps are the result of marked combinations of tense and aspect, and which are just unattested forms (or at least not reproduced in the dissertation). [↑](#footnote-ref-11)
12. using ‘(erg)’ in Section 5.1. to refer to all the ergative clitics except for *-li* ‘1s’. [↑](#footnote-ref-12)
13. A retelling of the origin story of a southeastern tribe (possibly the Koasati) during the sixteenth or seventeenth century, but recorded more than a lifetime after the events described. [↑](#footnote-ref-13)
14. Many people (Broadwell, 2006, Katenkamp and Amber, 2025, etc. have argued that the ‘present’ tense in other Muskogean languages is actually a generic tense, i.e. it specifies that an event occurred at some time in the relevant world(s), but gives no information about the relationship between the reference point and event interval. [↑](#footnote-ref-14)
15. i.e. events outside the temporal interval of the second most remote past tense [↑](#footnote-ref-15)
16. What about the examples of the past 4 with the first person? Johnson (2022) discusses scenarios in which somebody has done something or experienced something but forgotten, and uses certain evidential forms to indicate this when discussing their rediscovery. [↑](#footnote-ref-16)
17. while all other tenses seem to be distinguished by some segmental content- which isn’t damning on its own but does distinguish the present/past 1 relationship. [↑](#footnote-ref-17)
18. This verbs shows up across the family, cf. the Choctaw interjection *omi̱* ‘That’s true!/It is so!/You’re welcome’ and Creek copula *ometv* ‘to be’ [↑](#footnote-ref-18)
19. Hamida Demirdache and Myriam Uribe-Etxebarria have written a lot about this sort of thing, but I’m not yet super familiar with their work. [↑](#footnote-ref-19)
20. Though this might not actually be a huge problem considering the contextual stretchiness of many temporal adverbs, e.g. *Recently in the geological history of South Dakota,…* versus *Recently the university administration has…* [↑](#footnote-ref-20)
21. I’m not sure that anybody has done a legitimate survey of this, I’m mainly just basing this off of what I know. 19th century Mvskoke Creek is the only language I have ever heard of with five past tenses. [↑](#footnote-ref-21)
22. Used in the formation of the past 1 (Johnson, 2022) [↑](#footnote-ref-22)