# A reanalysis of tense in Chuj (Mayan)

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**Abstract**. In this paper, I provide a reanalysis of Chuj's tense/aspect system. Carolan argues that Chuj is a tensed language, using data from two markers, *ix* and ∅, that she analyzes as marking perfective aspect and recent and distant past tense, respectively. Using original data collected via semantic fieldwork methods, I show that these two markers can be used with multiple temporal references, indicating that they encode only aspectual information, not tense. I analyze them as recent and remote perfect markers, marking the relationship and the distance between topic time and event time. These findings show that previous descriptions of tense and aspect in Chuj are insufficient, calling for further study to create a more complete understanding of the semantics of verbal markers. Additionally, it is more likely that Chuj is a tenseless language, but future research should seek to confirm this.

**Keywords**. TAM; tenselessness; Mayan; semantics; indigenous language; morphosemantics

**1. Introduction**. This paper provides initial evidence that Chuj, a Mayan language, is tenseless, challenging Carolan's (2015) previous tensed analysis. I evaluate previous descriptions of Chuj's TAM system and the data and methods employed, leading me to determine that a reanalysis is necessary. Following a neo-Reichenbachian framework (Reichenbach 1947; Klein 1994) and using original data, I show that two of the preverbal inflectional markers in Chuj, *x* and ∅, previously referred to as aspect markers, tense/aspect markers, or TAM markers, only encode aspect and not tense. The examples in (1) illustrate these two markers in use[1].

(1)  a. X=in=jawi[2].
      X=B1S=arrive
      'I arrived.'

    b. (∅)  Jaw=in     ewi.
       ∅    arrive=B1S   yesterday
       'I arrived yesterday.'

Tense and aspect have generally not received much attention in Chuj; grammars differ in their descriptions and labels of verbal morphology (Hopkins 1967; Maxwell 1982; Royer et al. 2022), and they do not provide in-depth semantic analyses of these markers. There is one previous paper that focuses on tense and aspect in Chuj (Carolan 2015), which claims that Chuj is a tensed language due to a remoteness distinction. However, as I will discuss in section 5, a remoteness distinction is not sufficient evidence to argue that a language is tensed. In this paper, I will use more rigorous methods, based on semantic fieldwork methodology (e.g., Bochnak &

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[1] This paper follows the Leipzig Glossing Rules, with the following additions and modifications:

| | | | | |
|---|---|---|---|---|
| A: Set A (ergative) | B: Set B (absolutive) | CNFL: Counterfactual | CONJ: Conjunction | P: Plural |
| PREP: Preposition | PRON: Pronoun | S: Singular | STAT: Status suffix | |

[2] Examples from Mayan are written in Standard Mayan Orthography, established by the *Academia de Lenguas Mayas de Guatemala*. The letter 'h' indicates the lack of a prevocalic glottal stop at the beginning of a word. The following are IPA equivalences for sounds present in Chuj that are not the same in both systems:

b': /p'/ or /ɓ/    ch: /tʃ/   j: /x/   nh: /ŋ/   tz: /ts/   x: /ʃ/   y: /j/   ': /ʔ/

Matthewson 2020; Bochnak & Matthewson 2020; Bohnemeyer 2023, a. o.), to determine whether Chuj verbal markers encode tense.

TAM morphology in Mayan languages is generally labelled for its aspectual features (e.g. perfective/imperfective markers) (Aissen, England & Zavala 2017), leading to the assumption that Mayan languages mark aspect on verbs and not tense. Tenseless analyses have been proposed for languages such as Kallaalisut (Bittner 2005), Paraguayan Guaraní (Tonhauser 2011), and the Mayan languages Kaqchikel (Stout 2019), Yucatec (Bohnemeyer 2002), and Q'eqchi' (DeChicchis 1996), among others, but more work is required to better understand tenseless systems and the extent of tenselessness cross-linguistically. On the other hand, Bešlin (2022) reanalyzed K'iche' (Mayan) as a tensed language, meaning that further work is needed to understand the extent of tense and tenselessness within the Mayan family as well.

In the next section, I provide a background on Chuj and review its basic morphosyntactic properties. Section 3 briefly describes my data source and methods. Section 4 goes over the theoretical approach I adopt. Section 5 outlines and evaluates previous descriptions of TAM markers in Chuj. In section 6, I discuss two of Chuj's verbal markers, *x* and $\emptyset$, and demonstrate that they do not encode tense information. Section 7 concludes the paper.

**2. The Chuj language**. Chuj is a Mayan language of the Q'anjob'alan branch (ISO 639:cac), considered endangered in UNESCO's World Atlas of Languages (*Endangered/Unsafe*). Chuj is split into two dialects: San Mateo Ixtatán (SMI) and San Sebastián Coatán (SSC). SMI Chuj is spoken in the towns San Mateo Ixtatán and Nentón in Huehuetenango, Guatemala, and in Chiapas, Mexico. SSC, which this paper focuses on, is spoken in the municipality of San Sebastián Coatán, Huehuetenango, Guatemala. There are diaspora communities of speakers of both dialects throughout North America, including in states such as Indiana. It is important to note that significant differences have been found between the two dialects (Maxwell 1982; Lett 2021); thus, the findings presented in this paper may not represent the TAM system of SMI Chuj.

There are 91,400 people of Chuj ethnicity, 58,600 speakers of Chuj in Guatemala, and 3,520 in Mexico, according to the 2019 and 2020 censuses, respectively (Eberhard, Simons & Fennig 2024). The population of San Sebastián Coatán, the only municipality where SSC is spoken, is about 26,000. While there are not statistics on Chuj speakers in the US due to the undocumented status of many, National Geographic (Kaplan 2021) estimated that there are 2,000 speakers in Seymour, Indiana.

2.1. BASIC CHUJ STRUCTURE. Unmarked word order in SSC Chuj is VSO (England 1991; Maxwell 1982). Chuj is an ergative-absolutive language, meaning that the agent of transitive verbs is marked with ergative markers, while the subject of intransitive verbs and the object of transi-tive verbs are both marked with absolutive markers. Most Mayan languages are ergative-absolutive or split ergative (Aissen, England & Zavala 2017).

The verbal complex of a Chuj transitive verb consists of what is labelled an aspect marker, an absolutive object clitic, an ergative subject agreement marker, a verb root, and a status suffix. This basic structure is shown in the template in (2) and illustrated in (3). Note that in Mayan linguistics, ergative markers are referred to as set A and absolutive markers as set B (Aissen, England & Zavala 2017).

(2)    Aspect=Set B=Set A-Root-Status

(3)    Tz=in=pech-a.
       TZ=B1S=A2P-chase-STAT
       'You chase me.'

Example (3) shows a declarative sentence in Chuj. The first morpheme, *tz*, has been described as an imperfective aspect marker. Next, the set B marker *in* marks a 1SG object. Then, the set A marker *ey* marks subject-verb agreement for 2PL. The aspect and person markers are followed by the verb root *pech* ('chase'). Lastly, the verb root is followed by a status suffix, which is typically a vowel, in this case *a*. Status suffixes generally appear after verb roots when the verb is sentence final, and they vary depending on whether the verb is intransitive, root transitive, or derived transitive[3].

**3. Data**. All data is my own and comes from speakers of SSC Chuj, unless otherwise noted. Data was collected through translation and acceptability judgement tasks. In the former, consultants were asked to translate utterances from Spanish to Chuj and from Chuj to Spanish. In the acceptability judgement tasks, a context was presented to the consultant in Spanish, then a sentence in Chuj was presented. The consultant was asked if the sentence in Chuj was an appropriate response to the context. These are some of the methods generally used in semantic fieldwork (e.g., Bochnak & Matthewson 2020; Bohnemeyer 2023).

**4. Tense and aspect semantics**. This paper adopts a Neo-Reichenbachian framework (Reichenbach 1947; Klein 1994), in which temporal reference is defined as the relationship between topic time (TT), the time an utterance is about, and utterance time (UT). (Absolute) tense is the morphological expression of temporal reference and is generally divided into three categories:

- Past: locates TT before UT
- Present: locates TT as overlapping with UT
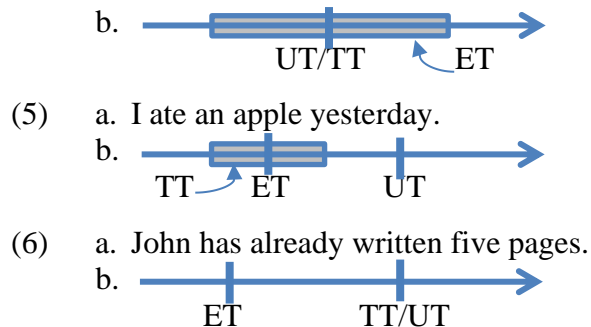- Future: locates TT after UT

Aspect is the relation of TT to eventuality time (ET), also known as event time or situation time (TSit) (Klein 1994). The following are the main categories of aspect:

- Imperfective/progressive: TT is within ET
- Perfective: ET overlaps with or is within TT
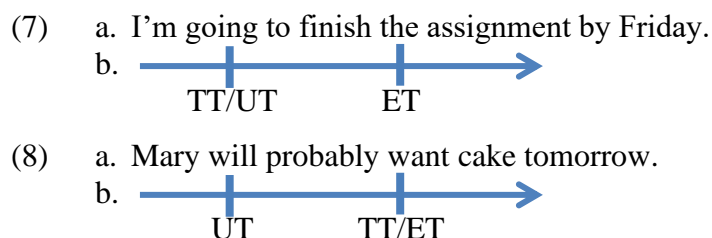- Prospective: ET after TT
- Perfect: TT after ET

I will now illustrate this by discussing some examples. In (4), *is* is in present tense, locating TT at UT. (*Is) running* is in the progressive aspect, locating TT within ET, the time of Mary's running a marathon, which is indicated by the gray bar in (4). In (5), *ate* is in the simple past, generally interpreted with perfective aspect in English, locating the ET, my eating an apple, within the TT, constrained by the adverbial *yesterday*. The past tense locates TT before UT. (6) describes a past event that is still relevant to the present, and thus TT overlaps with UT. The perfect aspect, formed with *have* in English, locates ET, John's writing five pages, before TT. TT is located at UT in (6), indicating that the event of writing five pages in the past results in a state of having written five pages in the present.

(4)     a. Mary is running a marathon right now.

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[3] In Mayan linguistics, derived transitives refer to transitive verbs derived from a noun using a derivational affix, such as *kolt-ej* 'help' in Chuj, while root transitives refer to transitive verbs whose root is a verb, such as *pech* 'chase'. Each class of verbs patterns differently in morphological processes such as status suffixation (Coon 2016).

b.         UT/TT    ET

(5)    a. I ate an apple yesterday.
       b.    TT   ET     UT

(6)    a. John has already written five pages.
       b.    ET       TT/UT

In example (7), the *be going to* construction, which conveys prospective aspect in English, describes a plan that the speaker currently has. *Is* is in present tense, locating TT at UT. The prospective aspect locates ET, the speaker's finishing the assignment, after TT. In (8), *will* marks future tense, locating TT, *tomorrow*, after UT.

(7)    a. I'm going to finish the assignment by Friday.
       b.    TT/UT      ET

(8)    a. Mary will probably want cake tomorrow.
       b.    UT      TT/ET

**5. Previous descriptions of tense/aspect markers in Chuj**. In this section, I will review previous descriptions of TAM markers in Chuj. Hopkins (1967) found six morphemes that he called 'tense-aspect markers', which are shown in Table 1 below. The only markers labelled with tense terminology are *ol*, the future marker, and *wan/wal*, which Hopkins states are used to express an event in progress in a non-future time. He does not explain these markers in any more detail, and thus it is unclear what the difference is between *ix*, the completive, and *Ø*, the perfective, as these two terms are typically used interchangeably (Aissen, England & Zavala 2017).

| Tense/aspect | Marker |
|---|---|
| incompletive | *tz* |
| completive | *ix* |
| perfective | *Ø* |
| durative | *x* |
| **future** | *ol* |
| (**non-future**) progressive | *wan/wal* |

Table 1. Tense and aspect markers in SMI Chuj (Hopkins 1967)

The data Hopkins presented comes from texts and translation tasks; see (9) for two pieces of data he provided in his discussion of tense and aspect. If this data came from a text, the context is not provided, and there is no negative evidence. Additionally, only simple sentences are present, without adverbials or adjunct clauses that could provide more evidence of the semantic contribution of these markers. These methods are useful for the creation of initial descriptive grammars, but they are insufficient for understanding the precise meanings encoded in individual morphemes. According to Tonhauser & Matthewson (2015), empirical evidence in semantics should consist of contextualized positive examples, negative examples, and minimal pairs. Both positive and negative evidence is necessary to fully narrow down the truth conditional contribution of an

element. The context is necessary in research in semantics because it establishes the discourse prior to an utterance, which is one potential source of the topic time or temporal reference (e.g., Tonhauser 2015; Bohnemeyer 2009). The context thus ensures that a stimulus is interpreted as intended by the researcher. When the consultant is not provided with a context in which to judge an utterance, the consultant will come up with their own context, taking this out of the researcher's control.

(9)   a. Ix-in-p'at-i                           b.  (∅)     Hach=p'at-i

        COMPL-B1-go-STAT                    PFV     B2=go-STAT

        'I went (a while ago).'                'You went.'   (Hopkins 1967: 59-60)

Maxwell (1982) describes nine morphemes, which she also calls tense-aspect markers, using data from both dialects of Chuj. As shown in Table 2, her labels of these markers are a bit different from those provided by Hopkins (1967); for instance, she labels *wan* as the past incompletive, while Hopkins defined it as the non-future progressive. While incompletive and progressive aspects have some overlap, as they are generally understood as locating TT within ET, the problem lies in the conflicting tense labels and the lack of precise definitions of these terms. Additionally, Maxwell did not find the durative *x*, but rather defines *wal* as the durative, also labelled as a non-future progressive by Hopkins. Notably, several markers are labelled with tense terminology in Maxwell's description, such as the present incompletive *tz-*.

| Tense/aspect | Marker | |
|---|---|---|
| | SMI | SSC |
| **present** incompletive | tz- | tz- |
| **past** completive | ix- | x- |
| recent **past** completive | ∅ | ∅ |
| **future** | ol- | oj- |
| **past** incompletive | wan- | wan- |
| durative | wal- | wal- |
| perfect completive | -nak | -nak |

Table 2. Tense and aspect markers in Chuj (Maxwell 1982)

Similar to Hopkins (1967), Maxwell's data comes from translation and is presented without contexts or negative evidence (see (10)). These examples are also simple sentences. Note that while this data shows that these markers are compatible with past temporal reference, they do not show that they encode past tense, as the labels provided in Table 2 suggest.

(10)  a. Ix-hach-b'ey-i                     b.  Hach-b'ey-i

        PST.COMPL-2-walk-STAT          2-walk-STAT

        'You walked.'                'You just walked.'   (Maxwell 1982: 127)

In the only study focused on tense and aspect in Chuj, Carolan (2015) argues that the morphemes described previously in grammars combine tense and aspect, using evidence from a remoteness distinction in the past tense (see Table 3). She concluded that the null marker that Maxwell defines as the recent past completive marks distant past tense and perfective aspect, and *ix* marks recent past tense and perfective aspect. She does not discuss the semantics of the other three markers.

| Tense/aspect | Marker |
|---|---|
| imperfective | tz |
| recent **past** perfective | ix |
| distant **past** perfective | ∅ |
| prospective | ol |
| progressive | lan |

Table 3. Tense and aspect markers in SMI Chuj (Carolan 2015)

Carolan (2015: 36) stated that she used elicitation from French to Chuj, as well as grammat-icality judgements of constructed sentences in Chuj to collect data. However, the contexts were not provided in the paper, making it difficult to replicate her findings. Some of the evidence Car-olan (2015: 45-46) used to argue for a tensed analysis of Chuj is shown in (11) and (12) below. Carolan argued that *ix* and ∅ must encode past tense because they are both incompatible with the future adverbial *k'ik'an* 'tomorrow' (see (11) and (12)). Carolan states that *ix* is incompatible with *ewi* 'yesterday' because it marks a hodiernal past, and ∅ is incompatible with *k'inb'al tik* 'this morning' because it marks a pre-hodiernal past. The adverbials at the end of each sentence may have been meant to establish the topic time. However, adverbials do not always mark TT and may sometimes mark ET instead (e.g., Matthewson, Todorovic & Schwan 2022). Addition-ally, when the TT has not been established in the discourse, the default TT of main clauses is generally UT (Tonhauser 2015). We can thus assume that the TT of the utterances in (11) and (12) is UT, leading consultants to interpret them with present temporal reference. This may ex-plain why sentences such as (11) were deemed unacceptable when presented without context. These examples can be considered initial evidence that *ix* and ∅ mark a remoteness distinction, but they are insufficient to propose a tensed analysis of the two markers.

(11) a. ∅-ko-chel-ach       ewi.                b. *∅-ko-chel-ach k'inb'al        tik.
       ∅-A1P-hug-B2S       yesterday            ∅-A1P-hug-B2S morning        DEM
       'We hugged you yesterday.'               Intended: 'We hugged you this morning.'
    c. *∅-ko-chel-ach       k'ik'an.
       ∅-A1P-hug-B2S       tomorrow
       Intended: 'We will hug you tomorrow.' (SMI Chuj; Carolan 2015: 45)

(12) a. *Ix-ach-ko-chel       ewi.                b. Ix-ach-ko-chel       k'inb'al       tik.
       IX-B2S-A1P-hug       yesterday            IX-B2S-A1P-hug       morning       DEM
       Intended: 'We hugged you yesterday.'       'We hugged you this morning.'
    c. *Ix-ach-ko-chel       k'ik'an.
       IX-B2S-A1P-hug       tomorrow
       Intended: 'We will hug you tomorrow.' (SMI Chuj; Carolan 2015: 45-46)

Stout (2019) provides further evidence that a context is needed to fully understand the dis-tribution of TAM markers in her paper on tense in Kaqchikel. In (13), Stout presented the consultant with an uncontextualized utterance using the perfective marker *x*, and the consultant only accepted the utterance with a present temporal reference interpretation, not with a future temporal reference interpretation. The perfective aspect generally refers to completed events, leading to a default past interpretation. In (14), an utterance marked with perfective aspect was presented to a consultant along with a context (Stout 2019: 1184-1185). In this case, the utter-ance was deemed acceptable with future temporal reference, providing further evidence of the importance of context in determining whether a language is tensed.

(13) **X**-i-jote'       ch-u-wi      jun juyu.
PFV-B1S-ascend   PRE-A3S-RN   one  mountain
'I climbed a mountain/#I will have climbed a mountain.' (Kaqchikel; Stout 2019: 1184)

(14) Context: You and a friend are planning a party for 9 o'clock that night. Your mother is baking the cake for the party, and your friend is worried that she won't be there with the cake in time. You tell her:                     (Kaqchikel; Stout 2019: 1185)
Pa  taq   a    las   8   chaq'a  wakamï,   **x**-ø-pï          yan  un-te'.
PRE when PREP  DET   8   night   now/today PFV-B3S-arrive  PAR  A1S-mother
'By 8 o'clock tonight, my mother will have already arrived.'

It is also important to note that the mere existence of a remoteness distinction in a language is insufficient evidence to claim that a language is tensed; Bohnemeyer (2002) provides a tenseless analysis of Yucatec despite exhibiting a recent and remote past distinction, meaning that these two phenomena are not mutually exclusive. Instead, he claims that the graded tense markers in Yucatec express the relationship as well as the distance between topic time (TT) and situation time (ET). This is shown in (15)-(17) below. The immediate past marker *táan* locates TT immediately after ET, represented by the gray bar in (15). The recent past marker *sáam* (16) requires a larger distance between TT and ET, and the remote past marker *úuch* (17) requires an even larger distance. More importantly, these markers do not relate TT to UT, and therefore the sentences in (15)-(17) can be interpreted with any temporal reference.

(15) Immediate past (Yucatec; Bohnemeyer 2002: 9)
a. **Táan**   in    xok-ik          le           periyòodiko-o'.
IMM     A1S  read-INC(B3S)     DEF         newspaper-D2
'I have/had/will have just read the paper.'
b.
ET      TT

(16) Recent past (Yucatec; Bohnemeyer 2002: 9)
a. **Sáam**   in    xok-Ø           le           periyòodiko-o'.
REC     A1S  read(SUBJ)(B3S)  DEF         newspaper-D2
'I read/had read/will have read the paper a while ago.'
b.
ET      TT

(17) Remote past (Yucatec; Bohnemeyer 2002: 9)
a. **Úuch**   in    xok-Ø           le           periyòodiko-o'.
REM     A1S  read(SUBJ)(B3S)  DEF         newspaper-D2
'I read/had read/will have read the paper a long time ago.'
b.
ET                 TT

It is clear that further study is necessary in order to provide a precise semantics of Chuj markers and to determine whether they express tense and modal information, or just aspect, like the tenseless aspect markers found in the Mayan languages Yucatec (Bohnemeyer 2002), Q'eqchi (DeChicchis 1996), and Kaqchikel (Stout 2019).

**6. Initial evidence towards a tenseless analysis of Chuj.** In this section, I will discuss my data on the two markers Carolan (2015) examined in her paper, *x* and Ø, which she labelled recent

past perfective and distant past perfective, respectively. I demonstrate that these two markers can be used with multiple temporal references, challenging Carolan's tensed analysis of Chuj and presenting initial evidence in favor of tenselessness.

6.1. THE MARKER *X*. Carolan (2015) labelled *x*, the SSC equivalent of *ix*, a recent past perfective marker in her tensed analysis of Chuj. Example **Error! Reference source not found.** shows *x* describing a past event. It is unclear whether this clause is best analyzed as a past perfective or a present perfect. Under the past perfective analysis, shown in (18), the adverbial *yesterday* provided to the speaker in the context constrains the TT, and the event of going out occurs within this topic time, which corresponds to a perfective aspect. The TT is before UT, meaning that this clause has past temporal reference. Under the present perfect analysis, shown in (18), *yesterday* modifies ET, and TT is located at UT.

(18)  a. Context: What did you do yesterday?
      **X**=in=eli.
      x=B1S=go.out
      'I went out.'

   b. 


      TT    ET        UT

   c. 


      ET       TT/UT
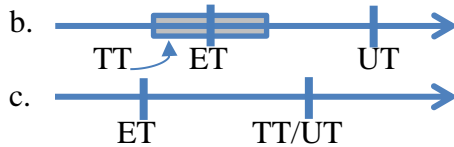
   Next, (19) shows *x* used with future temporal reference. *X* is used in both clauses in this sentence, but I will focus on the first clause, marked with brackets. The TT of this clause is constrained by the when-clause *yik ya xajawi'* 'when you come', and *x* locates ET as anterior to TT. This is further shown in (20), in which I asked the consultant if the same sentence can be uttered if the speaker will finish after their brother arrives. The speaker did not accept the sentence marked with *x* but did accept it marked with *oj*, previously labelled a prospective marker (e.g., Carolan 2015; Royer et al. 2022). This shows that *x* is explicitly marking anteriority, providing evidence that it marks perfect aspect. While it is still unclear whether *x* marks perfective aspect, it is not unusual for a language to conflate perfect and perfective aspects into one expression, as this has been observed in languages such as Portuguese (Bertrand et al. 2022) and Atayal (Austronesian) (Chen 2017).

(19)  Future temporal reference
      Context: You told your brother you need to put together some furniture. He's arriving at your house tonight, so he asked you if you need any help.
      a. Ma'ay,  [to  **x**=lajw    in-b'oni]    yik  ya    x=a-jawi'.
         no        COMP X =finish  A1S-do       when ADV   X=A2S-come
         'No, I will have finished when you come. (I will finish before you come)'
      b. 


         UT        ET        TT

(20)  a. Oj=lajw=ok      in-b'oni    yik        ya          x=a-jawi'.
         OJ=finish=IRR   A1S-do      when       ADV         X=A2S-come
         'I will finish when you come. (I will finish after you come.)'
      b. #**X**=lajw     in-b'oni yik    ya          x=a-jawi'.
         X=finish    A1S-do   when   ADV         X=A2S-come
         Intended: 'I will finish when you come. (I will finish after you come.)'

It is important to distinguish perfect aspect from relative past tense, as the two are semantically similar in that they both locate one time interval as anterior to another. According to Bohnemeyer (2014), while perfect aspect locates ET as before TT, a relative past tense locates TT as before a perspective time (TPersp), which is equivalent to UT in the case of absolute tenses. This is seen in Japanese -*ta*, as well as the English perfect construction (*have* + past participle), which can express a perfect aspect or a relative past tense when used with past tense, shown in (21) and (22), respectively. In (21), the adverbial *at six o'clock* modifies the TT, meaning that Bill arrived before six o'clock, and in (22), it modifies ET, meaning that Bill arrived right at six o'clock. The perfect aspect thus expresses that the event occurred at some point before TT. The relative past tense, on the other hand, locates an event in the past with respect to another past time in (22), since it expresses a past-in-the-past. Because the TSit of Bill's arriving fully overlaps with TT in (22), the clause has a perfective aspect. Example (25), which I will discuss in the following subsection, provides evidence that *x* is more adequately analyzed as an aspect marker rather than a relative past tense marker.

(21) Past perfect (Comrie 1976: 56)
    a. **Bill had arrived at six o'clock**. I arrived at six sharp, and he was already half done with this meal, so he must have gotten there a lot earlier.
    b.
        ET     TT     UT

(22) Relative past/Past-in-the-past (Comrie 1976: 56)
    a. **Bill had arrived at six o'clock** and had left again at seven. The inspector did not get there until eight.
    b.
        TT/ET    TPersp  UT

6.2. THE MARKER ∅. I will now discuss the null marker, labelled a distant past perfective by Carolan (2015). Example (23) shows the null marker describing a past event. I analyze this sentence as a present perfect; *ewi* 'yesterday' is modifying ET, which is located before TT. Next, (23) shows that *x* cannot be used in this sentence in the same context, demonstrating the remoteness distinction expressed by the two markers. *X* is unacceptable because there is too much distance between ET, constrained by *ewi* 'yesterday', and TT, located at UT. Next, (24) shows that ∅ is unacceptable when ET is too close to TT, while *x* is acceptable in this context. In this set of examples, the event of arriving occurs on the same day as UT, while in (23), UT occurs before the day of TT. These initial pieces of data suggest that *x* is used for completed events occurring on the same day as TT, and ∅ is used for completed events occurring the day before TT or earlier, confirming Carolan's (2015) analysis of *x* as hodiernal and ∅ as pre-hodiernal. However, my data shows that the relationship between TT and ET is hodiernal and pre-hodiernal, not the relationship between TT and UT, as Carolan proposed.

(23) Context: You moved to Alabama yesterday. Your friend asked you when you arrived there.
    a. (∅)  Jaw=in          ewi.       b. #**X**=in=jaw   ewi.
       ∅     come=B1S       yesterday      X=B1S=come  yesterday
       'I arrived yesterday.'            Intended: 'I arrived yesterday.'
    c.
        ET       TT/UT
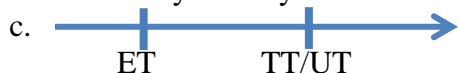
(24) Context: You just arrived in Alabama. Your mom wanted you to let her know when you arrived, so you call her and tell her.

    a. #(Ø̶ ) Jaw=in.                          b. X=in=jawi.
       Ø     come=b1s                             X=B1S=come.
       Intended: 'I (just) arrived.'              'I (just) arrived.'

    c.



       ET   TT/UT

Example (25) demonstrates the null marker used with future temporal reference. In this example, the *when*-clause *ayti sk'ochi o'e ab'il* 'when 5 years pass' constrains the TT of the main clause *to (Ø ) lajw inb'onok ayti* 'I will have finished building'. Note that in (25), the same clause can be expressed with *x*. This is because the distance between ET and TT is vague, as there is no indication of the exact moment when the finishing building occurred. This provides further evidence that Ø and *x* can mark perfect aspect, which only locates an event as anterior to a TT without asserting when the event occurred (Bohnemeyer 2014).

(25) Future temporal reference
    Context: Will you start building your house in 5 years?
    a. Ma'ay,  [to   (Ø̲)  lajw   in-b'on=ok]   ayti    s-k'ochi    o'e      ab'il.
       no        COMP Ø    finish  A1S-do=IRR    when  A3S-arrive  five      year
       'No, I will have finished building (it) when 5 years pass.'
    b. Ma'ay,  [to=x             **x**=lajw  in-b'on=ok]   ayti    s-k'ochi    o'e     ab'il.
       no        COMP=already   x=finish  A1S-do=IRR    when  A3S-arrive  five    year
       'No, I will have already finished building (it) when 5 years pass.'
    c.



      UT       ET      TT

Based on the data I have collected so far, *x* is best analyzed as a recent perfect aspect marker and Ø as a remote perfect. Both markers locate ET before TT, but *x* locates ET on the same day as TT, and Ø locates ET before the day of TT. Both markers can be used with multiple temporal references, indicating that they do not encode tense information. This finding challenges Carolan's (2015) analysis of these markers as encoding past tense and her data showing that they are incompatible with future temporal reference. This additionally provides further evidence that a remoteness distinction is not sufficient evidence to claim that a language is tensed; similarly to Yucatec (Bohnemeyer 2002), these markers encode the relationship between TT and ET as well as the distance between them.

**7. Conclusions**. In sum, I have provided an initial reexamination of tensed analyses in Chuj; Carolan (2015) argued that Chuj is a tensed language based on her analysis of , *ix* and Ø, however, my data shows that these two markers can be used with multiple temporal references. This provides evidence that they do not encode the relationship between TT and UT (tense), and they are thus best analyzed as only encoding aspectual information. My data shows that previous work on tense and aspect in Chuj is insufficient, and further work is necessary to fully understand the semantic contributions of Chuj's verbal markers. This paper contributes to the documentation of Chuj and the understanding of tenselessness, both within the Mayan family and cross-linguistically.

While my data makes it clear that *x* and Ø can be used with multiple temporal references, future research should confirm whether these morphemes can mark perfective aspect or only

perfect aspect. Next, future work should investigate whether Chuj's other verbal markers encode tense and seek to provide semantic analyses of these markers (see Table 4). My preliminary data confirms that *wan* marks progressive aspect, as previously described, and it can be used with present (26), past (27), and future temporal reference (28), providing further evidence in favor of a tenseless analysis of Chuj.

| Aspect | Marker | |
|---|---|---|
| | SMI | SSC |
| imperfective | tz | tz |
| recent perfect | ix | x |
| distant perfect | Ø | Ø |
| prospective | ol | oj |
| progressive | lan | wan |

Table 4. Aspect markers in Chuj (Carolan 2015; Lett 2021; Royer et al. 2022)

(26) Present temporal reference
Context: Your cousin calls and asks what your mom is doing.
a. To    **wan**  s-b'on    tas  k'uxu.
   COMP  WAN  A3S-make  DET  food
   'She is cooking.'
b.

   UT/TT    ET

(27) Past temporal reference
Context: What were you doing five minutes ago?
a. To    **wan**  in-b'on    tas  k'uxu.
   COMP  WAN  A1S-make  DET  food
   'I was cooking.'
b.

   TT    ET  UT

(28) Future temporal reference
Context: Your cousin told you he will arrive at your house at 5, but you will be working at 5.
a. **Wan**    in-munjnh    a    hora    cha.
   WAN    A1S-work    PREP    time    DEM
   'I will be working at that time.'
b.

   UT    TT    ET

Lastly, future work should examine temporal and aspectual reference in embedded clauses, which will contribute to the overall understanding of verbal markers and the expression of time in Chuj.

# References

Aissen, Judith, Nora C. England & Roberto Zavala (eds.). 2017. *The Mayan languages* (Routledge Language Family Series). London ; New York: Routledge/Taylor & Francis Group.

Bertrand, Anne, Yurika Aonuki, Sihwei Chen, Henry Davis, Joash Gambarage, Laura Griffin, Marianne Huijsmans, et al. 2022. Nobody's Perfect. *Languages* 7(2). 148. https://doi.org/10.3390/languages7020148.

Bešlin, Maša. 2022. Reanalyzing K'iche' as a Tensed Language. *Proceedings of the 24th Workshop on American Indigenous Languages*.

Bittner, Maria. 2005. Future Discourse in a Tenseless Language. *Journal of Semantics* 22(4). 339–387. https://doi.org/10.1093/jos/ffh029.

Bochnak, M. Ryan & Lisa Matthewson. 2020. Techniques in Complex Semantic Fieldwork. *Annual Review of Linguistics* 6(1). 261–283. https://doi.org/10.1146/annurev-linguistics-011619-030452.

Bohnemeyer, Jürgen. 2002. *The grammar of time reference in Yukatek Maya* (LINCOM Studies in Native American Linguistics 44). Muenchen: LINCOM Europa.

Bohnemeyer, Jürgen. 2009. Temporal anaphora in a tenseless language. In Wolfgang Klein & Ping Li (eds.), *The Expression of Time*, 83–128. Mouton de Gruyter. https://doi.org/10.1515/9783110199031.83.

Bohnemeyer, Jürgen. 2014. Aspect vs. relative tense: the case reopened. *Natural Language & Linguistic Theory* 32(3). 917–954. https://doi.org/10.1007/s11049-013-9210-z.

Bohnemeyer, Jürgen. 2023. Elicitation and documentation of tense and aspect. In Peter Jenks & Lev Michael (eds.), *Key topics in language documentation and description. Language Documentation & Conservation Special Publication no. 26*, 59–98. Honolulu: University of Hawai'i Press.

Carolan, Elizabeth. 2015. An Exploration of Tense in Chuj. (Ed.) Marc Pomerleau & Eve-Marie Gendron-Pontbriand. *Revue de l'édition 2014 de VocUM*.

Chen, Sihwei. 2017. Bundling perfective and perfect: The Atayal wal. *GLOW in Asia* 11. 65–78.

Comrie, Bernard. 1976. *Aspect: an introduction to the study of verbal aspect and related problems* (Cambridge Textbooks in Linguistics). Cambridge ; New York: Cambridge University Press.

Coon, Jessica. 2016. Unergatives, antipassives, and roots in Chuj. *Memorias del VII Congreso de Idiomas Indígenas de Latinoamérica*.

DeChicchis, Joseph. 1996. Aspect in Q'eqchi' Mayan. *Folia Linguistica* 30(1–2). https://doi.org/10.1515/flin.1996.30.1-2.59.

Eberhard, David M., Gary F. Simons & Charles D. Fennig (eds.). 2024. *Ethnologue: Languages of the World*. Twenty-fifth edition. Dallas, Texas: SIL International. http://www.ethnologue.com.

England, Nora C. 1991. Changes in Basic Word Order in Mayan Languages. *International Journal of American Linguistics* 57(4). 446–486. https://doi.org/10.1086/ijal.57.4.3519735.

Hopkins, Nicholas. 1967. The Chuj Language. *University of Chicago, PhD dissertation*.

Kaplan, Emily. 2021. A Guatemalan town remakes itself in Indiana. *National Geographic*. https://www.nationalgeographic.com/culture/article/a-guatemalan-town-remakes-itself-in-indiana.

Klein, Wolfgang. 1994. *Time in language* (Germanic Linguistics). London ; New York: Routledge.

Lett, Seaira. 2021. Syntax and Morphology of San Sebastián Coatán Chuj, a Mayan Language of Guatemala. *Emory Undergraduate Research Journal* XVII. 56–71.

Matthewson, Lisa, Neda Todorovic & Michael David Schwan. 2022. Future time reference and viewpoint aspect: Evidence from Gitksan. *Glossa: a journal of general linguistics* 7(1). https://doi.org/10.16995/glossa.6341.

Maxwell, Judith. 1982. *How to talk to people who talk chekel "different": The Chuj (Mayan) solution*. University of Chicago, PhD dissertation.

Reichenbach, Hans. 1947. *Elements of Symbolic Logic*. Berkeley: University of California Press.

Royer, Justin, Pedro Mateo Pedro, Elizabeth Carolan, Jessica Coon & Matal Torres. 2022. Atz'am k'ik' atz'am: The Story of Xuwan and a Grammatical Sketch of Chuj. *Tlalocan* 27(1). 215–286. https://doi.org/10.19130/iifl.tlalocan.2022.1.8725X15.

Stout, Tammi. 2019. Let's talk about the future: An investigation of temporal reference in Kaqchikel. *Proceedings of Sinn und Bedeutung* 21(2). 1177–1194.

Tonhauser, Judith. 2011. Temporal reference in Paraguayan Guaraní, a tenseless language. *Linguistics and Philosophy* 34(3). 257–303. https://doi.org/10.1007/s10988-011-9097-2.

Tonhauser, Judith. 2015. Cross-Linguistic Temporal Reference. *Annual Review of Linguistics* 1(1). 129–154. https://doi.org/10.1146/annurev-linguist-030514-124923.

Tonhauser, Judith & Lisa Matthewson. 2015. Empirical evidence in research on meaning. In. https://api.semanticscholar.org/CorpusID:199554347.