

# A Mayan temporal puzzle\*

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## 1. Introduction

- Mayan languages have been claimed to lack tense morphology; temporal interpretation is instead said to be guided by grammatical aspect (see e.g., Larsen 1988 for K'iche', Vázquez Álvarez 2002 for Chol, Bohnemeyer 2002 for Yucatec Maya, Coon 2016 for an overview, a.o.)
- In this talk, I contribute to the discussion of how temporal information is encoded in Mayan languages by examining the distribution and interpretation of the tense/aspect (TA) markers *x-* and *k-* in K'iche' (1), traditionally glossed as perfective and imperfective (or completive and incompletive), respectively<sup>1</sup>

(1) a. **X**-in-b'in-ik  
TA1-B1SG-walk-SS  
'I walked'

b. **K**-in-b'in-ik.  
TA2-B1SG-walk-SS  
'I am walking'

- I will conclude that, in K'iche', these affixes mark (past and non-past) tense rather than grammatical aspect
- In addition to bettering our understanding of Mayan temporal systems, the findings I will report bear on phenomena such as TA concord in certain types of complement clauses, as well as on the ways we think about TA morphology (or lack thereof) in deverbal elements such as participles and deverbal nouns

### 1.1. Outline

- §2 A theoretical overview of Tense and Aspect in the Reichenbachian framework (Reichenbach 1947) & the main predictions of this framework ⇒ useful in determining what information we are manipulating
- §3 A brief overview of K'iche' morphosyntax & a discussion of previous work on Mayan that has motivated the view that these languages lack Tense
- §4 Testing the predictions from section 2, as well as other diagnostics based on robust cross-linguistic tendencies; I show that the K'iche' prefixes *x-* and *k-* behave like exponents of past and non-past tense, respectively, rather than as exponents of grammatical aspect
- §5 Some data that seems to contradict the conclusion from §4; I argue that the contradiction is only apparent
- §6 Some case studies of where the Tense/Aspect distinction matters for our analyses of other phenomena
- §7 Conclusion

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<sup>1</sup> Abbreviations in glosses are as follows: 1, 2, 3 = 1st, 2nd, 3rd person, A = set A marker (ergative), AUX = auxiliary, B = set B marker (absolutive), DET = determiner, EXS = existential, PL = plural, POS = positional, PASS = passive, PERF = perfect, PRED = non-verbal predicate, PREP = preposition, PRFV = perfective, RN = relational noun, SG = singular, SS = status suffix, TA1 = tense/aspect marker 1 (traditionally perfective), TA2 = tense/aspect marker 2 (traditionally imperfective), VTD = derived transitive verb

## 2. Tense & Aspect (& Tenseless languages)

- We can conceptualize Tense and Aspect in the framework of Reichenbach (1947) and Klein (1994), among others, assuming a threefold distinction between event time (ET), reference time (RT) and utterance time (UT), defined in (2)

(2) a. ET: the time at which the event denoted by the main predicate takes place

b. RT: the time for which the speaker makes a claim

c. UT: the time at which the sentence is uttered

### 2.1 Tense

- Tense is understood as expressing a relation between RT and UT; more specifically, Tense locates RT with respect to UT
- For example, the time for which the speaker makes the claim in (3a), namely *at two o'clock*, is situated prior to UT; past tense is used to encode the anteriority of RT with respect to UT
- (3b) gives a schematic representation of the present, past, and future tense in these basic terms
- Following the pronominal approach to Tense (Partee 1973, Kratzer 1998), we can assume that tense morphemes introduce presuppositions which restrict the reference of the RT variable
- In (3c), I give Kratzer's denotation of the past tense, which, I will argue, corresponds to the interpretation of the K'iche' TA marker *x-*
- Based on (3c), we can model the non-past in (3d), which I will argue is the correct denotation for the TA marker *k-* in K'iche'

(3) a. John ate beans at two o'clock.

b. RT = UT (present); RT\_UT (past); UT\_RT (future)

c.  $[[\text{past}]]^{\text{g},c}$  is only defined if  $c$  provides an interval  $t$  that precedes  $t_0$ . If defined, then  $[[\text{past}]]^{\text{g},c} = t$ .

d.  $[[\text{non-past}]]^{\text{g},c}$  is only defined if  $c$  provides an interval  $t$  such that no part of  $t$  precedes  $t_0$ . If defined,  $[[\text{non-past}]]^{\text{g},c} = t$ .

### 2.2 Aspect

- Grammatical aspect expresses a relation between ET and RT
- The running time of the event denoted by the imperfective predicate in (4a) properly includes the reference time *this afternoon* ( $\text{RT} \subseteq \text{ET}$ )
- On the other hand, the perfective predicate in (4b) states that the running time of the event *John read a book* is properly included in RT ( $\text{ET} \subseteq \text{RT}$ )
- These ideas are formalized in Kratzer 1998 (4c-d), for whom aspectual heads are operators that map properties of events onto properties of times (and tense morphemes introduce presuppositions restricting the reference of the RT variable)
- In (4e), I give Kratzer's denotation for the perfect aspect ( $\text{ET\_RT}$ ), which will become relevant in our later discussion

(4) a. John was reading a book this afternoon.

b. John read a book this afternoon.

c. *imperfective*:  $\lambda P_{(l,(s,t))}. \lambda ti. \lambda ws. \exists eI(t \subseteq \text{time}(e) \ \& \ P(e)(w) = 1)$  (Kratzer 1998:107)

d. *perfective*:  $\lambda P_{(l,(s,t))}. \lambda ti. \lambda ws. \exists eI(\text{time}(e) \subseteq t \ \& \ P(e)(w) = 1)$

e. *perfect*:  $\lambda P_{(l,(s,t))}. \lambda ti. \lambda ws. \exists eI(\text{time}(e) < t \ \& \ P(e)(w) = 1)$

## 2.3 Predictions

- The main takeaway from this discussion is that, since Tense (in main clauses) is always oriented with respect to UT, it is deictic, while Aspect is non-deictic; this helps us make predictions about the behavior we expect from tense markers versus aspectual markers
- **Main prediction:** If a language is tenseless and only has aspectual marking, the location of RT—and hence ET—should not necessarily be restricted with respect to UT, modulo independent constraints of particular aspectual values (e.g., the resistance of the perfective to present interpretations)<sup>2</sup>
- For example, it should be possible for a tenseless perfective predicate to denote containment within a RT that is not UT; this should not be possible if the marker on said predicate is a past tense marker, because past tense encodes anteriority with respect to UT
- Assuming that the adverb *still* and its equivalents in other languages require that an eventuality hold at a given RT (e.g., Doherty 1973, König 1977, Abraham 1980, Michaelis 1993), we expect it to be compatible with the marker *x-* if *x-* is an exponent of past tense, but not if it expones perfective aspect
- This is because our theory of aspect states that perfective predicates denote events that are properly contained in the RT, and will therefore not hold at (the end of) RT
- *Some further cross-linguistic tendencies:* (i) individual level predicates seem to resist imperfective marking; (ii) perfective-marked telic predicates do not combine with *for an hour*-type adverbials, while imperfective-marked predicates do not combine with *in an hour*-type adverbials<sup>3</sup>

## 2.4 Tenseless languages

- Some languages without overt tense morphology have been shown to have free (contextually determined) temporal reference
- We can divide languages without overt tense morphology into two broad classes: those with an obligatory marker for future interpretations (e.g. St’át’imcets, Matthewson 2006; Hausa, Mucha 2012, 2013; Paraguayan Guaraní, Tonhauser 2011), and those without (e.g., Navajo, Smith et al. 2003, 2007; Mandarin Chinese, Lin 2003, 2006, 2010)
- The fact that unmarked sentences in the former languages cannot express future meanings has prompted the idea that such superficially tenseless languages in fact contain a phonologically null (non-future) tense morpheme (Matthewson 2006)

<sup>2</sup> UT *is*, however, the default RT, so contextual manipulation is usually needed to get speakers to accept non-default RTs.

<sup>3</sup> This is where alternative theories of aspect may be better at predicting the phenomena we observe. For example, for Iatridou, Anagnostopoulou & Izvorski 2001/2012, perfective aspect asserts the culmination of an event. They write “*For*-adverbials are durative, which means that the predicate they modify must be homogenous/have the subinterval property. It follows that *for*-adverbials cannot appear when a telic eventuality is asserted to culminate because of the distinguished final subinterval of culmination (Iatridou, Anagnostopoulou & Izvorski 2001/2012, fn. 30).”

- In this respect, K'iche' patterns with Navajo and Mandarin Chinese in that sentences with the marker *k-* can quite freely be interpreted either in the present or in the future (5)

(5) a. K- $\emptyset$ -opan      Ixno'j pa r-ochoch    kamik / chwe'q.  
 TAM2-B3SG-come Ixno'j in A3SG-home now    tomorrow  
 'Ixno'j is coming home now / will come home tomorrow'

b. K- $\emptyset$ -kam      ri    tz'i kamik / chwe'q  
 TAM2-B3SG-die DET dog now    tomorrow  
 'The dog is dying now / will die tomorrow'

- If we can maintain that the prefixes *k-* and *x-* are aspectual, this would make K'iche' a good candidate for a truly tenseless language; I will instead argue that *k-* is a non-past tense marker, so nothing special will need to be said about (5)

### 3. K'iche' morphosyntax & previous work on Mayan TA

- K'iche' (K'ichean, Mayan) is spoken by over a million people in the highlands of Guatemala
- There are at least 5 distinct areas where K'iche' is spoken; most of the data presented here comes from the dialect of Santa Lucía Utatlán, Sololá
- K'iche is a morphologically ergative language; as illustrated in (6a), subjects of intransitive verbs trigger the same (absolutive, B) marking as objects of transitives, to the exclusion of subjects of transitive verbs, which trigger ergative (A) marking

(6) a.

Set A (ergative)	Set B (absolutive)
S—Vtr	O—Vtr
	S—Vitr

b.

nominative	accusative
S—Vtr	O—Vtr
S—Vitr	

- K'iche' is a head marking language; B markers precede A markers (7):

(7) a. Ixk'at k- $\emptyset$ -b'in-ik.  
 Ixk'at TA2-B3SG-walk-SS  
 'Ixk'at is walking'

b. Ixk'at x- $\emptyset$ -u-tij      ri    aj.  
 Ixk'at TA1-B3SG-A3SG-eat DET elote  
 'Ixk'at ate the elote'

- Very little work has been done on K'iche' TA markers and their equivalents in other Mayan languages; although there seems to be a consensus among Mayanists that Mayan languages are tenseless, and that the prefixes *x-* and *k-* or their equivalents are aspectual, this is far more often stated or assumed than argued for
- A notable exception is Bohnmeyer 2002, which discusses time reference in Yucatec Maya at considerable length, and shows that its temporal system is very complex, with over 15 "aspectual/modal" markers (see Bohnmeyer 2002:4)
- However, Yucatec Maya and K'iche' are not closely related, and the temporal system of K'iche' seems to be much more streamlined with 6 tense/aspect/mood markers (Larsen 1988, Sis Iboy & López Ixcoy 2004): *x-*, *k-*, *ch-* (imperative), *j-* (directional imperative), *ma-* (admonitive), and the auxiliary verb *tajin*, used to mark the progressive

- The only data I am aware of that is given in support of treating the markers *x-* and *k-* in K'iche' as aspectual, and not tense, markers is in (8), adapted from Larsen 1988:163; I will return to it in section 4

- (8) a. K- $\emptyset$ -chakun-ik aree ri x-in-ok uloq.  
 TA2-B3SG-work-SS when TA1-B1SG-enter hither  
 'S/he was working when I came in'
- b. Wachanim k- $\emptyset$ -chakun-ik.  
 now TA2-B3SG-work-SS  
 'S/he is working now'
- c. K- $\emptyset$ -chakun chwe'q.  
 TA2-B3SG-work tomorrow  
 'S/he will work tomorrow'

#### 4. K'iche' as a tensed language

##### 4.1 Restrictions on RT

- Note first that, if *k-* is a non-past tense marker, nothing further needs to be said about (8b-c)
- In (9), we see that *k-* is incompatible with past time adverbs and *x-* with future time adverbs (present reference would be independently excluded if *x-* was a perfective marker)
- *X-* is incompatible with future RTs even more generally (10a), cf. (8a); in the closely related Kaqchikel, similar examples are apparently grammatical (10b) (note, however, the Kaqchikel prospective marker)

- (9) a. \*K- $\emptyset$ -kam ri tz'i iwir.  
 TA2-B3SG-die DET dog yesterday  
*intended:* 'Yesterday, the dog was dying'
- b. \*Iwir k-in-b'in-ik.  
 yesterday TA2-B1SG-walk-SS  
*intended:* 'Yesterday, I was walking'
- c. \*X- $\emptyset$ -kam ri tz'i chwe'q.  
 TA1-B3SG-die DET dog tomorrow  
*intended:* 'Tomorrow, the dog will die'
- d. \*Chwe'q x-in-b'in-ik.  
 tomorrow TA1-B1SG-walk-SS  
*intended:* 'Tomorrow, I will walk'

- (10) a. \*Are chi' k- $\emptyset$ -opan Ixno'j pa r-ochoch chwe'q, Ixk'at x- $\emptyset$ -u-tij ri aj.  
 when TA2-B3SG-come Ixno'j in A3SG-home tomorrow Ixk'at TA1-B3SG-A3SG-eat DET elote  
*intended:* 'When Ixno'j comes home tomorrow, Ixk'at will eat the elote'
- b. Täq xt- $\emptyset$ -apon Ma Cornelio pa r-ochoch, Ya Esperanza x- $\emptyset$ -way-in.  
 when PROSP-B3SG-come CLF Cornelio PREP A3SG-house CLF Esperanza TA1-B3SG-eat-AP  
 'When Don Cornelio gets home, Dona Esperanza will have eaten.' (adapted from Baron 2017:6)

##### 4.2 *Na* 'still'

- Recall that *still* imposes a restriction that the situation denoted by the relevant predicate must hold at RT

- Perfective and perfect predicates will clash with this requirement because the running time of a perfective predicate is properly contained in RT and the running time of a perfect predicate precedes RT, and will therefore not hold at (the end of) RT (11a-b)<sup>4</sup>

(11) a. \*At two o'clock, John (has) still read the book.

b. \*U dva, Jovan je i dalje pro-čitao knjigu. (Serbo-Croatian)  
 at two Jovan AUX still PRFV-read book

- *X-* can freely co-occur with *na* 'still' (12a-c) even though *K'iche*' predicates marked for perfect cannot (12d)

(12) a. Ri ak'al x-∅-u-koj na ri to'q junab'ir.  
 DET boy TA1-B3SG-A3SG-use still DET diapers last-year  
 'The boy was still using diapers last year'

b. Ri ak'al x-∅-u-sik'ij na ri wuj iwir.  
 DET boy TA1-B3SG-A3SG-read still DET book yesterday  
 'The boy was still reading the book yesterday'

c. Are chi' x-∅-opan Ixno'j pa r-ochoch, x-∅-in-tij na ri aj.  
 when TA1-B3SG-come Ixno'j in A3SG-home TAM1-B3SG-A3SG still DET elote  
 'When Ixno'j came home, I was still eating the elote'

d. Are chi' x-∅-opan Ixno'j pa r-ochoch, Ixk'at tij-taj-inaq (\*na) chi le aj r-umal.  
 when TA1-B3SG-come Ixno'j in A3SG-home Ixk'at eat-PASS-PERF still PART DET elote A3SG-RN  
*intended*: 'When Ixno'j came home, Ixk'at had still eaten the elote'

### 4.3. *In/for an hour-type* adverbials

- With telic predicates, perfective-marked verbs are possible with *in an hour-type* adverbials, but not with *for an hour-type* adverbials (13a); imperfective-marked predicates show the opposite pattern (13b)

(13) a. Marija je pro-čitala knjigu \*(za) dva sata. (Serbo-Croatian)  
 Mary AUX PRFV-read book in two hours  
 'Mary read the book in two hours'

b. Marija je čitala knjigu \*(za) dva sata.  
 Mary AUX read.IMPF book in two hours  
 'Mary read the book for two hours'

- *X-* is compatible with *for an hour-type* adverbials, suggesting that it is not a perfective marker (14)
- *K-* is compatible with *in an hour-type* adverbials, suggesting that it is not an imperfective marker (15)

(14) a. Ixno'j x-∅-u-sik'ij le wuj xa keb' kajb'al.  
 Ixn'oj TA1-B3SG-A3SG-read DET book just two hour  
 'Ixno'j read the book for two hours'

b. Ixno'j x-∅-u-sik'ij le wuj pa keb' kajb'al.  
 Ixn'oj TA1-B3SG-A3SG-read DET book in two hour  
 'Ixno'j read the book in two hours'

<sup>4</sup> The English example also has the irrelevant concessive reading of *still*, which the reader is asked to ignore.

- (15) a. Are chi' k- $\emptyset$ -opan ri Lu' pa r-ochoch, Gilda k- $\emptyset$ -ub'an ri wa xa keb' kajb'al.  
 when TA2-B3SG-come DET Pedro in A3SG-home Gilda TA2-B3SG-make DET food just two hour  
 'When Pedro comes home, Gilda will make the food for two hours'
- b. Are chi' k- $\emptyset$ -opan ri Lu' pa r-ochoch, Gilda k- $\emptyset$ -ub'an ri wa **pa keb' kajb'al**.  
 when TA2-B3SG-come DET Pedro in A3SG-home Gilda TA2-B3SG-make DET food in two hour  
 'When Pedro comes home, Gilda will make the food in two hours'

#### 4.4. Individual-level predicates

- One reason to think that the K'iche' prefixes *k-* and *x-* are aspectual is that the most frequently used individual-level predicates are not compatible with them (16a-b)
- (17) a. Ri r-ati't Ixno'j (\*x-)/ (\*k-) **k'o** jun r-al.  
 DET A3SG-grandmother Ixno'j TA1 TA2 EXS one A3SG-child  
 'Ixno'j's grandmother has one child'
- b. Ri w-ati't (\*x-)/ (\*k-) **r-eta'm** ri ojer tzij.  
 DET A3SG-grandmother TA1 TA2 A3SG-know DET before word  
 'My grandmother knows the stories of before'
- However, there seems to be some evidence that the incompatibility of *x-* and *k-* with the predicates in (16a-b) has nothing to do with their stativity, but rather with the fact that they are not verbs at all; non-verbal predicates in K'iche' do not carry TA marking and there is no verbal copula
  - For starters, several authors have noted that, in addition to the status suffix (*-ik*),<sup>5</sup> the existential *k'o* takes positional inflection (*-l-*) in clause-final position (18a) (Sis Iboy & López Ixcoy 2004, Duncan 2010, Pye 2010); cf. the uncontroversial positional in (18b)
  - The existential *k'o* (*lik*) marks person like other non-verbal predicates (nouns, adjectives, numbers and positionals), namely as a clitic separate from the root, and it has no TA marking (18c-d). Verbs, on the other hand, obligatorily carry a TA marker, followed by (a) person affix(es), as we have seen

- (18) a. Keb' n-ub'i'  $\emptyset$  k'o-**l-ik**.  
 two A1SG-name B3SG EXS-POS-SS  
 'I have two names'
- b. Ri ja  $\emptyset$  tz'api-**l-ik**.  
 DET house B3SG closed-POS-SS  
 'The house is closed'
- c. **E** k'o waral  
 B3PL EXS here  
 'They are here'
- d. **E** räx / Maya' winäq / oxib' / q'oy-ol-ik.  
 B3PL green Maya person three lie\_down-POS-SS  
 'They are green/ Mayan people / three / lying down'

- The predicate *eta'm* 'know' in (17b) is also a non-verbal predicate
- To see this, consider (19), with the derived transitive verb *eta'maj* 'learn' (derived transitive verbs are transitive verbs "derived from other parts of speech such as intransitive verbs, nouns, positionals, adjectives" (Sis Iboy & López Ixcoy 2004, my translation))

<sup>5</sup> The status suffix only appears when *k'o* is at the end of an intonational phrase, hence its absence in (17a)

- Under the reasonable assumption that the transitive verb *eta'maj* 'learn' in (19) is derived from the predicate *et'am* 'know' in (17b), *et'am* cannot be considered a verb
- The reason is that the suffix *-aj* only attaches to intransitive verbs, and intransitive verbs always carry B (absolutive) marking, never A (ergative) marking, unlike *et'am* in (17b)
- One type of predicate that consistently carries A marking and has a complement (but does not have TA marking) are so-called relational nouns, and *et'am* may well be one

(19) Ri ak'al **k-Ø-r-eta'm-aj** k-Ø-b'in r-uk' jun b'ineb'al  
 DET boy TAM2-B3SG-A3SG-know-VTD TAM2-B3SG-walk A3SG-RN one walker  
 'The boy is learning to walk with a walker'

- Finding individual level predicates that are verbal is challenging for a number of reasons, including (i) the use of *k'o* in conjunction with other elements to derive predicates like 'contain', 'consist', 'belong', etc; (ii) the absence of a verbal copula
  - I was able to find one verbal individual level predicate, shown in (20); the verb *ch'obik* 'know/understand' in (20c) obligatorily takes a TA marker, and generally behaves like an ordinary transitive K'iche' verb
- (20) **K-Ø-u-ch'ob'o** Kaqchikel / jas ri u-b'i ri u-nan.  
 TAM2-B3SG-A3SG-know Kaqchikel what DET A3SG-name DET A3SG-mother  
 'S/he knows Kaqchikel / what his/her mother's name is'
- If we thought that *k-* was an imperfective marker, it would be difficult to explain its compatibility with *ch'obik*; under the view that *k-* is a non-past tense marker, nothing special needs to be said about (20)

#### 4.5 Interim conclusion

- I have presented evidence that the K'iche' prefixes *x-* and *k-* are not aspectual markers, and that they instead mark past and non-past tense, respectively
- The proposed denotations are given in (21)

(21) a.  $[[\text{past}]]^{\text{g,c}}$  is only defined if *c* provides an interval *t* that precedes  $t_0$ . If defined, then  $[[\text{past}]]^{\text{g,c}} = t$ .  
 b.  $[[\text{non-past}]]^{\text{g,c}}$  is only defined if *c* provides an interval *t* such that no part of *t* precedes  $t_0$ . If defined,  $[[\text{non-past}]]^{\text{g,c}} = t$ .

#### 5. Past time reference with *k*-marking?

- Recall Larsen's (1988) examples given in (8), repeated here as (22)

(22) a. K-Ø-chakun-ik aree ri x-in-ok uloq.  
 TA2-B3SG-work-SS when TA1-B1SG-enter hither  
 'S/he was working when I came in'

b. Wachanim k-Ø-chakun-ik.  
 now TA2-B3SG-work-SS  
 'S/he is working now'

c. K-Ø-chakun chwe'q.  
 TA2-B3SG-work tomorrow  
 'S/he will work tomorrow'



- We have already noted that simple past time adverbs cannot take the place of the temporal clause in (22a)
- However, once temporal clauses come into play, the data gets even messier— *k-* can have past time reference, both in the temporal clause *and in the matrix clause* (23)<sup>6</sup>

(23) a. Iwir      **k-∅-chakun** Ixno'j      are chi' **x-in-ok**      uloq.  
 yesterday TA2-B3SG-work Ixno'j when TA1-B3SG-enter hither  
 'Yesterday, Ixno'j was working when I came in'

b. Are chi' **k-in-sik'ij**      le wuj, le w-ixoqil **k-∅-u-b'an**      le qa-rikil.  
 when TA2-B1SG-read DET book DET A1SG-wife TA2-B3SG-A3SG-make DET A1PL-food  
 'While I was reading the book, my wife was making our food'

- **The paradox:**

(24) Are chi' **k-in-sik'ij**      le wuj, le w-ixoqil **k-∅-u-b'an**      le qa-rikil.  
 when TA2-B1SG-read DET book DET A1SG-wife TA2-B3SG- A3SG -make DET A1PL-food

- I. 'While I **was reading** the book, my wife **was making** our food'      PAST IMPERFECTIVE  
 II. 'When I **read** the book, my wife **will make** our food'      FUTURE PERFECTIVE  
 III. 'While I read the book, my wife will be making our food'

- On the face of it, (24) and its kin look bad for both the aspectual analysis and the tense analysis, since it seems like *k-* can be interpreted as both perfective and imperfective, and as both past and future
- Possible solution: historical present in (23), (24) and similar examples
- In English, also, it is not really possible to use the historical present for isolated sentences like (25a), which is parallel to (9b); (25b), which is parallel to (23b), is much better

(25) a. \*Yesterday, I'm sitting in my office.  
 b. Yesterday, I'm sitting in my office when Justin comes in and...

## 6. Complement clauses: tense or aspect concord?

- Some verbs require the verbs in their complement to bear the same TA marker
- One such verb is the CP-complement-taking verb *ilik* 'see', if it is interpreted as a verb of direct perception (26); (26) "would be appropriate in a context where I see you speaking (for instance, where I perceive your mouth moving and/or you are addressing some people)" (Can Pixabaj 2015:181)

(26) X-∅-inw-il-o      chi x-at-ch'aaw-ik.  
 TA1-B3SG-A1SG-see-SS COMP TA1-B2SG-speak-SS  
 'I saw you speak'

(adapted from Can Pixabaj 2015:181)

- Can Pixabaj writes:

"The reason that aspect must match in direct perception clauses is that the time of the matrix clause event and the time of the complement clause event must be the same. In Noonan's [2007] terms, the complement of a direct perception predicate has determined/dependent time reference (DTR)."

- While the reference to Noonan is justified, it seems quite implausible that the event times of the two predicates must match exactly

<sup>6</sup> It is not possible to shift the RT with *x-* in this way; *x-* still cannot have future time reference, cf. (10).

- If the English translation tells us anything, it should be possible to modify the matrix predicate by an adverbial like “at 5 pm”; this should still tell us nothing about the event of speaking, which could have gone on for an indefinite amount of time before and after the seeing event
- What seems more likely is that this is a case of tense concord: if the RT of the matrix clause precedes UT, then so must the RT of the complement clause *in order to get the interpretation in (26)*
- In fact, the verb *ilik* has another meaning, namely ‘realize’, and in this case there is no TA matching
- In other words, it is the **meaning** of the direct perception predicate of seeing that forces the tense concord in (26) *and* allows for a partial overlap interpretation
- Furthermore, almost all verbs that take finite complements without complementizers impose their TA marking on their dependents (27); some other examples are *kowinik* ‘be able’, *xi’jib* ‘fear’ and *q’i* ‘endure’

(27) a. X-ø-w-aaj                      x-in-’ee-k.  
 TA1-B3SG-A1SG-want TA1-B1SG-go-SS  
 ‘I wanted/accepted to go’

b. K-ø-w-aaj                      k-at-’ee-k.  
 TA2-B3SG-A1SG-want TA2-B2SG-go-SS  
 ‘I want/would like you to go’

(adapted from Can Pixabaj 2015:185-6)

- Here especially, it is unclear why the verb would impose a semantic restriction on the *aspect* of the complement (cf. *I wanted to be laying on the beach*)
- It seems more likely that verbs like *aaj* ‘want’ would impose restrictions on the tense of their complement; ways to test this?

## 7. Conclusion

- I have presented evidence that the K’iche’ prefixes *x-* and *k-* mark past and non-past tense
- This contrasts with what has been claimed in the literature so far, namely that these are aspectual markers, and challenges the widespread view that all Mayan languages are tenseless
- We saw some indications that the same prefixes in the closely related language Kaqchikel may indeed be aspectual (this issue merits further research)
- We also saw some potential consequences of this line of research in other areas of the grammar

## 8. References

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