

## Tense and temporal remoteness in Chácobo (Pano)

Adam J.R. Tallman and Tammi Stout  
University of Texas at Austin

**Abstract:** This paper provides an analysis of the tense and aspect system of Chácobo. In the first part of the paper we show that Chácobo is a mixed tense language. Some clauses are obligatorily tensed, making a basic distinction between past and non-past. Secondly we consider whether Chácobo’s “graded tense” morphemes should be analyzed as temporal remoteness morphemes (TRMs), following Cable’s (2013) analysis of “graded tense” in Gikūyū (Bantu). We show that this analysis applies to Chácobo to a certain extent but with some interesting typological differences: (i) presuppositional strength is not straightforwardly negatively correlated with temporal distance in Chácobo; (ii) the relationship between eventuality time and topic time is not clearly part of the presuppositional context of “graded tense” morphemes in Chácobo.

**Keywords:** tense, aspect, maximize presupposition, graded tense, temporal adverbs

### 1 Introduction

Cross-linguistically languages vary in terms of how they encode temporal reference. The better studied cases include those like English, where every finite clause is marked obligatorily for tense, either past or non-past. A number of recent studies have focused on how time is encoded in languages that lack tense. In such cases temporal reference is encoded through a mix of aspect, temporal adverbs and discourse context (Bonhemeyer 2009; Lin 2006; Bittner 2005; Tonhauser 2011; Mucha 2012). However, very few formal semantic studies (cf. Cable 2013; Mucha 2015) have addressed languages that are purported to encode beyond the binary (or perhaps ternary, if future and present are distinguished) tense systems of most European languages. These languages are said to display “graded tense” systems, where tense locates an event or reference time before or after the utterance time, but also distinguishes various grades of temporal distance from the utterance time. Such systems are apparently not rare cross-linguistically (Dahl 1985; Comrie 1985). In some geographic regions, such as the Amazon, they appear to be quite common (Mueller 2013).

Studies of the Amazonian Panoan languages make reference to “definite tenses” (Valenzuela 2003: 285–290), or “metrical tense” (Fleck 2013: 23) that encode a variety of degrees of temporal distance beyond just the past or present tense. These morphemes are not only referred to as tenses by Panoanists across the board (Fleck 2003; Valenzuela 2003; Zariquiey 2011), but are also categorized as such in typological surveys of South America (Mueller 2013). From a typological perspective they seem to fall under the category of “graded tense” (Dahl 1985; Comrie 1985). The southern Panoan language, Chácobo distinguishes up to nine grades of temporal distance, if one includes the lack of a graded tense morpheme as one of the distinctions (which normally encodes hodiernal time). The full paradigm is exemplified in (1).

- (1) a. *haba=ní=ki*<sup>1</sup>  
 run=REMPST=DEC(SF):PST  
 ‘He ran (one year or more ago).’
- b. *haba=yamít=ki*  
 run=DISPST=DEC(SF):PST  
 ‘He ran (one week or more ago, but not more than one year).’
- c. *haba=?itá=ki*  
 run=RECPST=DEC(SF):PST  
 ‘He ran (between four days ago and yesterday.)’
- d. *haba=yá=ki*  
 run=REC:PERF=DEC(SF):PST  
 ‘He had/has already run.’
- e. *habá=Ø=ki*  
 run=NULL=DEC(SF):PST  
 ‘He ran (today or at some other unknown time).’
- f. *habá=Ø=ki*  
 run=NULL=DEC(SR):NONPST  
 ‘He is running (now/ today)’
- g. *haba=farí=ki*  
 run=CRAS=DEC(SR):NONPST  
 ‘He is running tomorrow.’
- h. *haba=ší=ki*  
 run=REMFUT=DEC(SR):NONPST  
 ‘He will run (at some remote point in the future).’

For expositional purposes, and in order to distinguish such morphemes from tense and temporal adverbials, we will depart from current Panoan practice and refer to such morphemes as temporal distance morphemes (TDMs) (following Tallman [*in progress*]). From a language internal perspective such morphemes are easily distinguishable from temporal adverbs in that they are bound (they cannot function as an utterance by themselves [Bloomfield 1933]). For instance, if Caco arrived recently, and the consultant is asked when Caco arrived, =?itá ‘recently’ is not an appropriate response (cf. Mucha 2013 for this criterion applied to graded tense in Medumba). Still, it is not clear given the semantics of these morphemes, and given the fact that in Chácobo, in contrast to the tense enclitics =*ki* ‘past’ and =*ki* ‘non-past’, TDMs are optional (see (1) above),

---

<sup>1</sup> The following glosses are used in this paper; ASRT= ‘assertive’; BENEF= ‘benefactive’; CAUS= ‘causative’; CONJ= ‘conjunctural’; CRAS= ‘crasternal’; DEC= ‘declarative’; DF= ‘different subject’; DISPST ‘distant past time’; EPEN= ‘epenthetic case’; ERG= ‘ergative’; GEN= ‘genitive’; IPV= ‘imperfective’; ITR= ‘intransitive’; NECES= ‘necessity’; NMLZ= ‘nominalization’; NONPST= ‘nonpast’; NRP= ‘near past time’; P2= ‘second position constituent marker’; PERF= ‘perfect’; PFV= perfective’; PL= plural; POSS= ‘possibility’; PST= ‘past’; RECPST= ‘recent past time’; REL= ‘relative clause marker’; REMPST= ‘remote past time’; REMFUT= ‘remote future’; SF= ‘subject flexible’; SR= ‘subject rigid’; SS= ‘same subject’; SUB= ‘subordinate’; TELIC= ‘telic perfective’; TR= ‘transitive’; VBLZ= ‘verbalizer’.

why such enclitics could not be described as temporal adverbs, albeit bound ones. Furthermore, formal semantic studies have not been undertaken on the tense aspect systems of any Panoan language to date, raising the question as to whether “graded tense” morphemes in these languages encode tense distinctions in any of the accepted theoretical senses (e.g. Klein 1994, 2007).

In a recent paper, Cable (2013) undertook a detailed investigation of graded tense morphemes in Gĩkũyũ, a Bantu language spoken in Kenya. He refers to these morphemes as “Temporal Remoteness Morphemes” (henceforth TRMs), distinguishing them from both tense and temporal adverbs.

...the prefixes traditionally labeled as ‘tenses’ in Gĩkũyũ... occupy an intriguing middle ground between tenses (in the preferred sense) and temporal frame adverbials such as *today, yesterday, tomorrow*, etc. (Cable 2013: 221)

In this paper we argue that the same is true of the TDMs in Chácobo. We also argue, however, that TDMs in Chácobo are distinct from the TRMs of Gĩkũyũ in terms of their presuppositional organization and the temporal relations they encode.

Section 2 provides an overview of Cable’s (2013) arguments concerning TRMs in Gĩkũyũ. Section 3 provides a very brief discussion of the methodology and data used in this study. In Section 4 we show that Chácobo is a tensed language, an analysis we contrast with an aspectual analysis which is suggested by glosses present in some descriptive works (e.g. Zingg 1998; Córdoba *et al.* 2012). Section 5 describes TDMs in Chácobo, assessing the extent to which they are similar to TRMs in Cable’s (2013) sense. Section 6 discusses future research and some typological implications of this study.

## 2 Temporal remoteness morphemes

### 2.1 The Kleinian framework

In order to review Cable’s (2013) analysis of TRMs, one needs to contextualize it with respect to his theoretical framework. Cable (2013) adopts a Kleinian approach (Klein 1992, 1994, 2009) in his analysis of Gĩkũyũ. In this approach tense and aspect are defined as follows.

- (2) **i. Tense** is a relation between topic time (TT) and utterance time (UT).  
**ii. Aspect** is a relation between topic time (TT) and eventuality time (ET).

Topic time refers to “the time talked about” (Klein 2009: 8) or “the time for which a claim is made” (Klein 1992: 525). For Klein (1992) perfective aspect is a case where ET is in TT and imperfective aspect is where TT is in ET. Klein (1994:131) argues that the Reichenbachian notions of relative tense reference time (Reichenbach 1947; Comrie 1985) are not needed after one adopts the concept of topic time. The perfect and the relative tense are, in fact, aspectual categories, since they encode that TT occurs after ET, and do not make reference to temporal relation between TT and UT (as true tense does). A basic illustration of the difference between tense and aspect is illustrated with the English examples below.

- |     |                              |          |         |
|-----|------------------------------|----------|---------|
| (3) |                              | Tense    | Aspect  |
| a.  | Chris had been in York       | TT < UT  | TT < ET |
| b.  | Chris has been in York       | TU in TT | TT < ET |
| c.  | Chris will have been in York | TT > UT  | TT < ET |



the event directly relevant to the purposes of the conversational exchange" (Cable 2013: 250). A comparison with adverbs reveals more clearly why the Specificity Principle cannot be subsumed under the Gricean maxim of quantity. The use of adverbs is governed by Gricean principles and, in contrast to TRMs, speakers do not require them in the context Cable (2013) provides. For instance, in the following example, the sentence is felicitous with or without the temporal frame adverbs *ira* 'yesterday' or *ira hwainĩ* 'yesterday evening'. In contrast the near past TRM is obligatory in the context.

(7) *Context where the event must have happened sometime between yesterday and today.*

Mwangi nĩ-a-ra-end-aga kũ-thi-a New York  
 Mwangi ASRT-3SGS-NRP-want-PST.IPFV INF-go-FV New York

(ira) / (ira hwainĩ)  
 (yesterday)/ (yesterday evening)

'Mwangi wanted to go to New York (yesterday/yesterday evening)...' (but his flight was cancelled). (Cable 2013: 251)

Cable (2013) argues that the SP can be subsumed under "Maximize Presupposition" (MP) (Heim 1991; Sauerland 2008). Roughly, MP states that when there is a choice between two sentences which have logically equivalent truth conditions, a speaker will always use the one which is presuppositionally stronger. The classic case of an MP effect is with determiners. Examples (8a) and (8b) are logically equivalent, however only the former is a pragmatically felicitous sentence of English, because it is presuppositionally stronger.

- (8) a. The sun came up  
 b. #A sun came up

Cable (2013) argues that the TRM SP is a type of MP effect (cf. Mucha 2015 for discussion of MP effects in another Bantu language). Since MP effects provide evidence for presuppositional status, Cable (2013) concludes that TRMs in Gĩkũyũ are presuppositional, like tense, but unlike temporal adverbs.

However, Cable (2013) argues that TRMs are distinct from tense in terms of the temporal relation they encode. Unlike tense, which encodes a relation between TT and UT, Cable argues that TRMs encode a relation between ET and TT, which is more similar to an aspectual relation in a Kleinian framework. The main evidence for this is the behavior of TRMs in perfect constructions. An example from Gĩkũyũ is provided in (9). The near past TRM in the example below encodes the temporal distance between the topic time set up by the adverbial clause in the current past. If the near past TRM encoded the relation between UT and TT, Mwangi's arrival could be construed as occurring on the same day of the arrival of the referents of the first person plural rather than the day before.

- (9) rĩria tũ-Ø-kiny-ire gwake, Mwangi nĩ-a-ra-thi-ĩ-te  
 when 1PLS-CUR-arrive-P.PRV his Mwangi ASRT-3SGS-NRP-go-PERF  
 'When we arrived at his (house) Mwangi had already left (yesterday)' (Cable 2013: 269)

For Cable (2013), such examples show that TRMs encode a relation between ET and TT in their presuppositional content. Following Cable's (2013) arguments, a typological breakdown of the types of temporal markers is provided in **Table 1**.

**Table 1** Typology of temporal markers

	Relates UT and TT	Relates ET and TT	Presuppositional
Temporal Adverbs	✓	✓	✗
Tense	✓	✗	✓
TRMs	✗	✓	✓

In this paper, we are concerned with which category TDMs in Chácobo fall into according to this typology. We suggest that the typology must be even more fine grained to account for the Chácobo data, since, while the language displays *MP* effects, these effects show a distinct presuppositional structure from TRMs in Gikūyū. The next section provides some methodological background for the current study.

### 3 Data and methodology

This study is based on approximately 16 months of original fieldwork inside the Chacobo-Pacahuara Original Communitarian Language (Tierra Comunitaria de Origen [henceforth TCO]) and outside in Riberalta by one of the co-authors (Adam Tallman). The analysis is based on approximately 16 hours of transcribed and translated texts (~17,000 sentences) collected by the co-author and 1000s of sentences from elicitation. Context-induced elicitation was used (following Matthewson 2004, *inter alia*) in order to test specific hypotheses regarding the semantics of tense and TRMs in Chácobo. These tests were performed with two literate speakers of Chácobo in Riberalta. The ages of the speaker are approximately 50 and 40 years of age respectively. One of the consultants (Caco Moreno) teaches the language to non-Chácobo in Riberalta and the other consultant (Miguel Chavez) is a native language school teacher who works in the Chácobo TCO. These consultants speak the same dialect of Chácobo. The contexts for the more controlled elicitation sessions followed Cable (2013) as much as possible, except for some cases where the co-author altered the context to make it more culturally appropriate from the standpoint of the Chácobo.

### 4 Tense and aspect in Chácobo

This section provides a brief overview of Chácobo's tense and aspect system. The section is necessary in order to provide the grammatical context of TDMs in Chácobo, and because current descriptions provide incorrect analyses or, at best, misleading glosses for the tense morphemes (e.g. Zingg 1998; Córdoba et al. 2012). For a fuller description of the tense-aspect system of Chácobo, the reader should consult Tallman (*in progress*).

All verbal predicates contain a clause-type/rank morpheme. All clause-type/rank (CT/R) morphemes encode clause-type (declarative, interrogative, imperative) and clause rank (main, subordinate). These morphemes can encode tense, aspect, associated motion, evidentiality and modality. Most, though not all, clauses are tensed in Chácobo. For instance, a clause that has the CT/R morpheme =*imani* 'declarative, conjectural' is tenseless as in (10). This paper will be concerned with the analysis of tensed clauses, which have clause-type/rank morphemes which also encode a tense relation as in (10b) and (10c).

- (10) a. haba=*ima?*ini      hóni  
run=*DEC(SR):CONJ* man  
'The man could be running/run.'



Furthermore, verb roots that encode completion, such as *kíyo* ‘to finish, to kill’ are compatible with the non-past enclitic *=ki* ‘declarative non-past’, showing that this morpheme does not entail incompletive semantics.

Rather than encoding aspectual categories, *=ki* and *=ki* encode past and non-past declarative sentences respectively. A clause marked by *=ki* encodes that TT precedes UT, and one marked with *=ki* encodes that UT is concurrent with or occurs before TT. Notice that past time TDMs are only compatible with *=ki* and not *=ki*, as shown in (14).

- (14) *bama=ʔita* {*=ki*/*\*=ki*}  
 harvest=RECPST {=DEC(SR):NONPST/*\*=DEC(SF):PST*}  
 ‘He harvests/harvested yesterday.’

TDMs that encode that an event occurred after the topic time are incompatible with the past tense, but occur with the non-past.

- (15) *bama=fari* {*\*=ki*/*=ki*}  
 harvest=CRAS {*\*=DEC(SF):PST=DEC(SR):NONPST*}  
 ‘Tomorrow he will (have) finish(ed) harvesting.’

Adverbial phrases that encode a past event are incompatible with the non-past.<sup>3</sup>

- (16) *\*bari*      *ka=ʔita=ʔa=ka*                      *báma=ki*  
 day/sun    go=RECPST=NMLZ(SF):PST=REL      harvest=DEC(SF):NONPST  
 ‘He was going to harvest yesterday (lit. the day that went recently).’

## 5 Temporal distance morphemes in Chácobo

In this section we provide an analysis of TDMs in Chácobo. Here, we are concerned with whether TDMs are TRMs in Cable’s (2013) sense. Given Cable’s (2013) analysis we consider two questions; (i) do TDMs display Specificity or *MP* effects (Section 5.1)? (ii) Do TDMs encode a tense relation (between UT and TT) or an aspectual relation (between ET and TT) (Section 5.2)? In this discussion we will restrict our analysis to past time TDMs for reasons of space. Future research will investigate the semantics of future time TDMs.

### 5.1 Specificity or MP effects

The most striking aspect of TDMs that distinguishes them from temporal frame adverbs is that they are repeated throughout discourse redundantly. An example of the remote past TDM repeated throughout a string of discourse is provided below. The remote past *=ní* is used for most myths and folk legends as well as events that took place approximately a year ago.

- (17) a. *aʃina hawí bakí =tsi kía ha ko-ma=ní=ki*  
 Ashina 3SG:GEN child =P2 REPORT 3 be.born-CAUS=**REMPST**=DEC(SF):PST  
 ‘Ashina gave birth to his child (it is said).’

<sup>3</sup> Such adverbial phrases, which are partially idiomatic, are the closest thing Chácobo appears to have to a temporal frame adverb.

- b. hawí bakí paki=kí =tsi kiá aḡiná paʔití  
 3SG:GEN child fall=DF:TR:PST =P2 REPORT Ashina:ERG jar  
 ni-ma=ni=kí  
 stand-CAUS=REMPST=DEC(SF):PST  
 ‘When her child was coming out, Ashina put it in a jar/container.’

An example of the distant past TDM repeated throughout discourse redundantly is given in (18). The author of a narrative recounts a conversation between two women concerning a Siriono. The events described took place a few weeks from the topic time.

- (18) a. haa kokó=ʔi ha ka=yamít=kí  
 yes hunt=SS:ITR 3 go=DISTPST=DEC(SF):PST  
 ‘Yes, he went hunting.’
- b. haa ka=kí =tsi i tsóboko aḡi=yamít=kí  
 yes go=DR:TR:PST =P2 1SG naked bathe=DISTPST=DEC(SF):PST  
 habí=tsi tsoboko aḡi=ʔai tsaya=ʔaí  
 surely=P2 naked bathe=NMLZ:IPV see=INTER:NONPST  
 ‘Yes, when he went to hunt, I bathed naked just like one normally bathes naked.’

The following text describes an event, which took place one day earlier from the speech time. In this case =ʔita the recent past enclitic is used throughout.

- (19) a. hariapari=tsi adan yá i ʃani=ʔitá=kí  
 first=P2 Adam COMIT 1SG think=RECPST=DEC(SF):PST  
 ‘Firstly I was thinking of going out with Adam.’
- b. naa despues de clase a las dos y media toa adan yá  
 DEM1 after class at two thirty DEM2 Adam COMIT  
 no ka=ʔitá=kí sani=tan=ai=na  
 1PL go=RECPST=DEC(SF):PST fish=GO=NMLZ:IPV=SUB  
 ‘After class at two thirty we went with Adam to fish.’
- c. hariaparí taita boca ki naa ho=ʔitá=kí  
 firstly Taita Boca DAT DEM1 come=RECPST=DEC(SF):PST  
 ‘Firstly we arrived at Taita Boca’s.’

In none of the contexts above is the time of the event important to what is being described. The behavior of TDMs is thus unlike temporal frame adverbs, because the latter do not repeat throughout discourse. If an eventuality takes place the same day as the speech time speakers will not use any TDM throughout the discourse as in the following example, where a Chácobo woman describes what she did the same day as the speech act.

- (20) a. ha=tsi i-a=rí pi=Ø=kí  
 then 1SG-EPEN=TOO eat=NULL=DEC(SF):PST  
 ‘Then, I ate as well.’

- b. pi=ʔá            hini    namina=ʔá=ka    i    boti=Ø=ki  
 eat=NMLZ:PST    chicha    thicken=NMLZ:PST    1SG    descend=NULL=DEC(SF):PST  
 ‘After I ate, I lowered the chicha that had thickened.’
- c. ha-tó            bita=şó            i-a=rí            náka~    náka=Ø=ki  
 3PL-ACC    COMIT=PA:A    1SG-ACC=TOO    IPV~    chew=NULL=DEC(SF):PST  
 tsimo=kana    ha=Ø=ki  
 darken=GO:IPV    3SG=NULL=DEC(SF):PST  
 ‘With them I was chewing (on the yucca) as well, while it got darker.’      (chapac\_1154)

As we will see the absence of a TDM is also used in cases where a speaker does not know when an event occurred or does not wish to provide details for when an event occurred. Given that the absence of a TDM is a logical possibility in Chácobo, the obligatoriness of TDMs in the discourse contexts above might be accounted for by positing that they are presuppositional. Redundant repetition throughout discourse could be seen as a type of *MP* effect.

In order to further test this hypothesis we applied the felicity tests for Cable’s (2013) TRMs to TDMs in Chácobo. TDMs in Chácobo display *Specificity/MP* effects in contexts similar to Cable’s (2013). An example of this is provided below. In the following example, for instance, the speaker prefers the distant past time TDM =*yamit* ‘a long time ago’. The speaker comments that a lack of a TDM in this context implies that the speaker cannot remember when he last saw Gere, and the other TDMs are considered infelicitous in this context.

(21) *Context where speaker has strong reason to believe that the event took place in the last few months, but does not know whether when in that time period.* Situation: You haven’t seen Gere in months. You see that he has a new motorcycle, and you call your wife. Your wife asks you how Gere is, and you want to tell her that Gere bought a new motorcycle. You have strong reason to believe the motorcycle was bought a few weeks ago.

- a. moto            paşa    hirí            kopi=**yamit**=ki  
 motorcycle new    Gere:ERG    buy=**DISPST**=DEC(SF):PST  
 ‘Gere bought a new motor cycle (weeks/months ago)’  
*Judgment: Felicitous in this context.*

- b. #moto            paşa    hirí            kopi=Ø=ki  
 motorcycle new    Gere:ERG    buy=NULL=DEC(SF):PST  
 ‘Gere bought a new motor cycle.’  
*Judgment: Infelicitous in this context, unless the speaker cannot remember when he last saw Gere.*

If the situation changes such that the speaker has not seen Gere in a few days, then the recent past is felicitous. In such situations the speaker comments it would be more appropriate not use a TDM at all, since it is just as possible that the purchase could have been on the same day as the speech act. Neither the remote past nor the distant past are considered felicitous in this context.

(22) *Context where speaker has strong reason to believe that the event took place either today or yesterday, but does not know which day.* Situation: You haven’t seen Gere in days. You see that he has a new motorcycle, and you call your wife. Your wife asks you how Gere is, and

you want to tell her that Gere bought a new motorcycle. You have strong reason to believe the motorcycle was bought a few weeks ago.

- a. moto paša hirí kopi=?ita=ki  
 motorcycle new Gere:ERG buy=RECPST=DEC(SF):PST  
 ‘Gere bought a new motor cycle (yesterday)’

*Judgment: Felicitous in this context. The speaker suspects that the motorcycle was bought yesterday, the most probably scenerio.*

- b. moto paša hirí kopi=Ø=ki  
 motorcycle new Gere:ERG buy=NULL=DEC(SF):PST  
 ‘Gere bought a new motor cycle (today)’

*Judgment: Felicitous in this context, as long as the speaker is unsure whether the motorcycle might have been bought today.*

As previously mentioned, when a speaker does not know when an event took place, they will not use any TDM at all. Thus both (21) and (22), could be understood as implying speaker ignorance regarding when the event took place. When Caco Moreno is asked when the event took place for null TDM constructions he comments ‘today or I don’t know when’. Notice that this is in contrast to Gikūyū where speaker ignorance (or presuppositional weakness) was associated with the temporally most distance TDM. The fact that the remote past *does not* imply speaker ignorance in Chácobo as it does in Gikūyū is reinforced from the example in (23), where a construction without a TDM is the most felicitous.

In this example, the remote past TDM is not felicitous, even though the speaker is ignorant regarding the time the event took place. The consultant judges that the use of the remote past time =*ní* would only be felicitous if the speaker was trying to deceive the store owners, assuming the speaker thought they didn’t know when the motorcycle was bought.

This example shows that the remote past time =*ní* is presuppositionally stronger than a null TDM. Since a null TDM is also used in hodiernal contexts, Cable’s (2013) analysis of Gikūyū where presuppositional weakness is associated with greater temporal distance does not straightforwardly hold for Chácobo. A possible explanations for this will be discussed in the conclusion.

(23) *Context where the speaker does not have any evidence regarding when an event took place.*

Situation: Your brother in law gave you a motorcycle. You don’t know when he bought it, but it recently broke. However, you know that the store from where you bought the motorcycle has a policy whereby they can fix a motorcycle for free for one year after the motorcycle has been bought. You want the store owners to fix your motorcycle for free, but you do not know if they can because you do not know when your brother in law bought the motorcycle. Only the owners have this information.

- #nia=ka no?ó raisi moto kopi=ni=ki  
 here=REL 1SG:GEN bro.in.law:ERG motorcycle buy=REMPST=DEC(SF):PST  
 i=baş hia-wa=tí mitsa ni ma-to  
 1SG=BENEF good-VBLZ:TR=NMLZ:PURP POSS INTER 2PL-EPEN

‘My brother in law bought a motor cycle from here, would you (pl) be able to fix it for me?’

*Judgement: Infelicitous except where the speaker has evidence that the purchase took place a year or more ago, or is trying to convey that he has this information, for example, in a case where he suspects the owners do not have this information.*

## 5.2 Temporal relations under the perfect

The behavior of TDMs in discourse might suggest that they relate TT to UT. At the very least, it seems as if the text excerpts given in (17), (18) and (19) are compatible with such an interpretation. However, evidence from clauses which receive perfect interpretations complicate such a claim. Recall, that the perfect construction was used by Cable (2013) to argue that TRMs in Gikũyũ, code a relation between ET and TT, rather than TT and UT.

In Chácobo any clause can receive a type of perfect interpretation (following the different perfect meanings listed in Matthewson et al. [2015]; Matthewson [2016]). It is outside of the scope of this paper to provide a full description of the perfect in Chácobo, however, we discuss one strategy for encoding the perfect that is relevant in light of Cable's (2013) ideas about the aspectual semantics of TRMs.

In Chácobo in-sequence eventualities are encoded by using the same TDM throughout the discourse, as can be seen from the text examples above. Out-of-sequence events (in Givón's 2001 terminology) are coded by switching the TDM from that of the TDM used in the discourse context. An example of the TDM switch strategy is provided in (24). The speaker is recounting a folk tale and thus the discourse context is in the remote past. The TDM of the discourse context is the remote past =*ní* as can be seen in (24). After the speaker quotes one of the protagonists in the story in (24), he gives a sentence with a past perfect interpretation in (24) using the TDM switch strategy.

Even though the eventuality described in (24) occurred before the eventuality described in (24), a more recent TDM is used. The reason for this is that (24) receives a perfect in the past interpretation. This example can only be understood if in this example the TDM encodes the temporal distance between the topic time (in the remote past) and the eventuality time. This is similar to Cable's (2013) case except that in Chácobo, there is no dedicated perfect morpheme that is not in paradigmatic contrast with the TDMs (cf. Tallman *in progress*; Stout and Tallman *in progress* for details on the perfect in Chácobo). For more examples of TDM switches, the reader should consult Tallman (*in progress*).

- (24) a. *í=ki*                      *óṣi*                      *tsiki=tan=nó*                      =*tsi*                      *kiá*  
 be=DEC(SF):PST                      moon/month                      leave=GO:DF=TEMP =P2                      REPORT  
*hawí*                      *náabo*                      *ka=ní=ki*  
 3SG:GEN                      family                      go=REMPST=DEC(SF):PST  
 '–Ready– (one of them said), the moment that the new moon came out, his family went.'
- b. *pápa*                      *ka=?ita=?á*                      *hís=i*                      *bo=tíṣo*  
 father                      go=RECPST=NMLZ:PST                      see=SS                      go:PL/TR=NECES  
 '–We should go see where our father has gone (recently)– (one of them said)'
- c. *náama*                      *pí*                      *ḡinó*                      *mani=yó=ka=?itá=ki*  
 already                      anx                      monkey                      transform=TELIC/ALL=3PL=RECPST=DEC(SF):PST  
 'But he (their father) had already completely (his whole body) transformed into a monkey (recently)'

TT to UT temporal relations are impossible in TDM switch contexts. Such cases show that TDMs modify the temporal distance between ET and TT in at least some clauses and cannot be straightforwardly seen as tense morphemes in Klein's sense. However, if such morphemes always encoded the temporal distance between TT and ET, it is unclear why the use of a TDM would not just give a perfect interpretation every time. In discourse contexts where a speaker describes in-

sequence eventualities, TDMs are used throughout, and as long as there is no TDM switch there is no perfect interpretation. One interpretation of this is that the precise temporal relation that a TDM encodes is variable, and that it is more accurate to describe TDMs as *modifying* a temporal relation, rather than encoding one directly. Which temporal relation a TDM modifies may vary according to discourse context.

## 6 Conclusions and future research

TDMs are plausibly TRMs in Cable's (2013) sense if by this we mean that they occupy an intriguing middle ground between tense and temporal adverbs. They are not straightforwardly temporal adverbs because they display *MP* effects, providing evidence that they are presuppositional like tense.<sup>4</sup> They are not straightforwardly tenses, at least in a Kleinian sense, because there are at least some discourse contexts where they relate TT to ET or modify the temporal relation between TT and ET.

In contrast to Gĩkũyũ, however, in Chácobo the remote past is not the presuppositionally weakest "graded tense" marker. Rather, in Chácobo, no TDM is used at all in contexts of speaker ignorance. Related to this issue, the association that Cable (2013) notes between presuppositional weakness and temporal distance in Gĩkũyũ does not hold straightforwardly in Chácobo. The absence of a TDM expresses hodiernal *or* speaker ignorance, the exact opposite of the pattern found in Gĩkũyũ. A possible explanation for this difference might lie in morphosyntactic differences between the two languages. In Gĩkũyũ TRMs are morphologically obligatory, but in the Chácobo system the null TDM could be interpreted as demonstrating that TDMs are optional. The hodiernal interpretation could be a default interpretation for cases where no TDM is present, even if the semantics of a lack of a TDM is actually presuppositionally weakest. Furthermore, it should be pointed out that it is not entirely clear that the ET-TT relation of TDMs is part of the presuppositional context of these morphemes. The temporal distance aspect of these morphemes is governed by *MP*. However, since the temporal relation, which TDMs modify vary according to context, the temporal relation aspect of them maybe governed by implicature. Contextualizing TDMs with respect to a more complete understanding of the perfect aspect in Chácobo may reveal that the ET-TT temporal relation is limited to perfect clauses. Finally, it should be pointed out that more tests are required using a wider variety of contexts with different levels of speaker knowledge at different time spans in order to tease out the precise semantics of TDMs.

## 7 References

- Bittner, M. (2005). Future discourse in a tenseless language. *Journal of Semantics*, 22, 339–387.
- Bloomfield, L. (1933). *Language*. New York: Holt.
- Bohnmeyer, J. (2009). Temporal anaphora in a tenseless language. In K. Wolfgang, & L. P. (Eds.), *The Expression of Time in Language* (pp. 83–128). Berlin: Mouton de Gruyter.
- Cable, S. (2013). Beyond the past, present and future: towards the semantics of 'graded tense' in Gĩkũyũ. *Natural Language Semantics*, 21, 219–276.
- Comrie, B. (1985). *Tense*. Cambridge: Cambridge University Press.

---

<sup>4</sup> If one rejects Cable's (2013) analysis whereby the Specificity Principle should be accounted for using Maximize Presupposition. Then at the very least we can say that TDMs in Chácobo display Specificity effects, which still distinguishes them from temporal frame adverbs.

- Córdoba, L. (2008). *Parentesco en Femenino: Género, Alianza y Organización Social entre los Chacobo de la Amazonía Boliviana*. University of Buenos Aires.
- Córdoba, L., Valenzuela, P. M., & Villar, D. (2012). Pano meridional. In M. Crevels, Muysken, & Pieter (Eds.), *Lenguas de Bolivia: Tomo II Amazonía* (pp. 27–70). La Paz: Plural.
- Dahl, Ö. (1985). *Tense and Aspect systems*. Oxford: Blackwell.
- Fleck, D. (2003). *A Grammar of Matses*. Rice University.
- Fleck, D. (2013). *Panoan languages and linguistics*. Washington: American Museum Natural History Anthropological Papers.
- Fleck, D. W. (2007). Evidentiality and Double Tense in Matses. *Language*, 83(3), 589–614.
- Klein, W. (1992). The Present Perfect Puzzle. *Language*, 68(3), 525–552.
- Klein, W. (1994). *Time in Language*. London: Routledge.
- Klein, W. (2009). How time is encoded. In W. Klein, & L. P. (Eds.), *The expression of time* (pp. 39–82). Berlin: Mouton de Gruyter.
- Lin, J. (2006). Time in a Language without Tense: the case of Chinese. *Journal of Semantics*, 23, 1–53.
- Mucha, A. (2015). *Temporal Interpretation and Cross-Linguistic Variation*. PhD, University of Potsdam.
- Mueller, N. (2013). *Tense, Aspect, Modality, and Evidentiality Marking in South American Indigenous Languages*. Amsterdam: Netherlands Graduate School of Linguistics.
- Partee, B. (1984). Nominal and temporal anaphora. *Linguistics and Philosophy*, 7, 243–286.
- Sauerland, U. (2008). Implicated presuppositions. In A. Steube (Ed.), *Sentence and context: Language, context, and cognition*. Berlin: Mouton de Gruyter.
- Stout, T., & Tallman, A. (in progress). Temporal distance and the perfect in Chácobo (Pano). *Proceedings of Semantics of Underrepresented Languages of the Americas*.
- Tallman, A. J. (in progress). *A Grammar of Chácobo with comparative notes on Pacahuara*. University of Texas at Austin.
- Tonhauser, J. (2011). Temporal reference in Paraguayan Guaraní, a tenseless language. *Linguistics and Philosophy*, 34, 257–303.
- Valenzuela, P. M. (2003). *Transitivity in Shipibo-Konibo Grammar*. University of Oregon.
- Zariquiey, R.-B. (2011). *A grammar of Kashibo-Kakataibo*. RCLT.
- Zingg, P. (1998). *Diccionario Chacobo-Castellano*. La Paz: Viceministerio de Educación Inicial, primaria y secundaria.
- Bittner, M. (2005). Future discourse in a tenseless language. *Journal of Semantics*, 22, 339–387.
- Bloomfield, L. (1933). *Language*. New York: Holt.
- Bohnenmeyer, J. (2009). Temporal anaphora in a tenseless language. In K. Wolfgang, & L. P. (Eds.), *The Expression of Time in Language* (pp. 83–128). Berlin: Mouton de Gruyter.

- Cable, S. (2013). Beyond the past, present and future: towards the semantics of ‘graded tense’ in Gĩkũyũ. *Natural Language Semantics*, 21, 219–276.
- Comrie, B. (1985). *Tense*. Cambridge: Cambridge University Press.
- Córdoba, L. (2008). *Parentesco en Femenino: Género, Alianza y Organización Social entre los Chacobo de la Amazonía Boliviana*. University of Buenos Aires.
- Córdoba, L., Valenzuela, P. M., & Villar, D. (2012). Pano meridional. In M. Crevels, Muysken, & Pieter (Eds.), *Lenguas de Bolivia: Tomo II Amazonía* (pp. 27–70). la Paz: Plural.
- Dahl, Ö. (1985). *Tense and Aspect systems*. Oxford: Blackwell.
- Fleck, D. (2003). *A Grammar of Matses*. Rice University.
- Fleck, D. (2013). *Panoan languages and linguistics*. Washington: American Museum Natural History Anthropological Papers.
- Fleck, D. W. (2007). Evidentiality and Double Tense in Matses. *Language*, 83(3), 589–614.
- Klein, W. (1992). The Present Perfect Puzzle. *Language*, 68(3), 525–552.
- Klein, W. (1994). *Time in Language*. London: Routledge.
- Klein, W. (2009). How time is encoded. In W. Klein, & L. P. (Eds.), *The expression of time* (pp. 39–82). Berlin: Mouton de Gruyter.
- Lin, J. (2006). Time in a Language without Tense: the case of Chinese. *Journal of Semantics*, 23, 1–53.
- Mucha, A. (2015). *Temporal Interpretation and Cross-Linguistic Variation*. PhD, University of Potsdam.
- Mueller, N. (2013). *Tense, Aspect, Modality, and Evidentiality Marking in South American Indigenous Languages*. Amsterdam: Netherlands Graduate School of Linguistics.
- Partee, B. (1984). Nominal and temporal anaphora. *Linguistics and Philosophy*, 7, 243–286.
- Sauerland, U. (2008). Implicated presuppositions. In A. Steube (Ed.), *Sentence and context: Language, context, and cognition*. Berlin: Mouton de Gruyter.
- Tallman, A. J. (in progress). *A Grammar of Chácobo with comparative notes on Pacahuara*. University of Texas at Austin.
- Tonhauser, J. (2011). Temporal reference in Paraguayan Guaraní, a tenseless language. *Linguistics and Philosophy*, 34, 257–303.
- Valenzuela, P. M. (2003). *Transitivity in Shipibo-Konibo Grammar*. University of Oregon.
- Zariquiey, R.-B. (2011). *A grammar of Kashibo-Kakataibo*. RCLT.
- Zingg, P. (1998). *Diccionario Chacobo-Castellano*. La Paz: Viceministerio de Educación Inicial, primaria y secundaria.