The composition of stativity in Chuj[*]

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SUMMARY

Chuj, like other Mayan languages, has a class of positional roots that encode notions of shape and configuration, as well a number of other properties which are lexicalized as adjectives in languages like English or Spanish (Haviland, 1994; Henderson, 2017; Knowles, 1984; Martin, 1977; Santíz Gómez, 2009, among others). In Chuj, positional roots form stative predicate stems with the suffix *-an*, but unlike in other Mayan languages, *-an* stems may not appear alone in stative predicate constructions. Instead, they must be further modified by directionals or reduplication. Here we focus on the directional constructions, arguing that directionals contribute the necessary event argument to the positional predicate construction.

RÉSUMÉ

Le chuj, comme d'autres langues mayas, possède une classe de racines positionnelles qui codifient des notions de forme, de configuration et d'autres propriétés lexicalisées comme adjectifs dans d'autres langues comme l'anglais et l'espagnol (Haviland, 1994; Henderson, 2017; Knowles, 1984; Martin, 1977; Santíz Gómez, 2009, parmi d'autres). En chuj, les racines positionnelles forment des troncs prédicatifs d'état portant le suffixe *-an*, mais, contrairement aux autres langues mayas, les troncs prédicatifs avec *-an* ne peuvent être utilisés seuls pour former des constructions prédicatives d'état. Au contraire, ils doivent être modifiés davantage par des particules directionnelles ou par de la réduplication. Dans ce présent travail, nous nous concentrons sur les constructions directionnelles, démontrant que les directionnels contribuent l'argument d'éventualité nécessaire pour les constructions prédicatives positionnelles.

1 INTRODUCTION

Chuj, like other Mayan languages, has a class of positional roots that encode notions of shape and configuration, as well a number of other properties which are lexicalized as adjectives in languages like English or Spanish (Haviland, 1994; Henderson, 2017; Knowles, 1984; Martin, 1977; Santíz Gómez, 2009, among others). While positional roots do not directly correspond to any surface lexical category, they can be derived into a variety of different surface stem forms through the addition of morphology. The citation category for positionals is usually taken to be a stative or so-called "non-verbal" predicate (NVP) form. In Chuj, NVPs are formed from positional roots by means of the suffix -*an*. However, Chuj differs from many other Mayan languages in that these positional-based stative stems (*nhojan* in (1)) cannot simply combine with the subject (*nok' tz'i'*) to form a non-verbal predicate construction. Compare the ungrammatical Chuj form in (1) with the Kaqchikel form in (2). Throughout Mayan, non-verbal predicates like these do not appear with an overt copula and are identifiable by a lack of TAM morphology.[1]

(1) *Nhoj-an   nok' tz'i'.
     crouched-STAT CLF dog
     Intended: 'The dog is crouched (down).'   Chuj

(2) Tis-ïl   ri   tz'i'.
     crouched-STAT DET dog
     'The dog is crouched down.'   Kaqchikel

Instead, Chuj requires the positional stative predicate to appear with one of a set of "directionals", as in (3), or to be reduplicated, as in (4). In what follows, we refer to these constructions as POS-DIR and POS-REDUP, respectively.

(3) Nhoj-an   **em**   nok' tz'i'.
     crouched-STAT DIR.down CLF dog
     'The dog is crouched down.'   ("POS-DIR")

(4) Nhoj-an   **nhoj-an**   nok' tz'i'.
     crouched-STAT crouched-STAT CLF dog
     'The dog is crouched down (permanently, e.g. due to a malformation).'   ("POS-REDUP")

Furthermore, note that this property is peculiar to stative stems formed from positional roots. The suffix -*an* may also attach to transitive roots to create a stative stem, as in (5). Here, no directional is required.

(5) Pak-**an**   ch'anh hu'um.
     fold-STAT CLF   paper
     'The papers are folded.'

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[1] Examples in this paper, unless otherwise attributed, come from the authors' fieldnotes. Abbreviations used in glosses are as follows: A – "Set A" (ergative/possessive); B "Set B" (absolutive); CLF – classifier; DEM – demonstrative; DET – determiner; DIR – directional; IPFV – imperfective; INTS – intensifier; IV – intransitive verb suffix; P – plural; PFV – perfective; S – singular; STAT – stative suffix; TAM – tense, aspect, mode; TOP – topic.

These data immediately raise a series of questions about the interface between semantics and morphosyntax. First, what is the *-an* stative marking doing in positional constructions in Chuj if it is not sufficient for deploying the positional in a non-verbal predicate construction? Second, what are the effects of reduplication and directional marking that allow stative-marked positionals to be used in non-verbal predicate constructions? Finally, we already see from translations in (3) and (4) an apparent semantic difference between the two kinds of positional stative constructions. We would like to understand how this semantic difference emerges from the morphological differences between the two constructions.

In the analysis that follows, we will focus on the directional construction (3), leaving the reduplication construction in (4) for future work. We will argue that the meaning of positional clauses like (3) follows from the interaction between the underlying meaning of the positional root and the verb-like meaning contributed by the directional. We offer a proposal for how this interaction licenses the appearance of the positional in the non-verbal predicate construction.

2   STATES

In this section, we show that the semantic contrast between the two constructions in (3) and (4) above reduces to the contrast noted in Maienborn 2007 (and subsequent work) between Davidsonian and Kimian states. More specifically, while positional stative predicates combined with directionals (POS-DIR) denote Davidsonian states, the reduplicated positional constructions (POS-REDUP) denote Kimian states. We first provide the linguistic diagnostics established in Maienborn 2007 for identifying Davidsonian states, showing that POS-DIRs conform to all of them. We then argue that the POS-REDUP constructions should be considered as Kimian state expressions, given that they pattern with many of the identifying properties usually associated with such expressions.

Maienborn (2007, 110) provides a definition of Davidsonian eventualities as "particular spatiotemporal entities with functionally integrated participants". Additionally, she proposes the following set of diagnostics as characterizing Davidsonian eventualities:

(6)   **Linguistic diagnostics for Davidsonian eventualities** (Maienborn, 2007)
   a.   Eventuality expressions can serve as infinitival complements of perception verbs.
   b.   Eventuality expressions combine with both locative and temporal modifiers.
   c.   Eventuality expressions combine with manner adverbials, instrumentals, comitatives.

While POS-DIR constructions conform to all of the Davidsonian eventuality diagnostics, reduplicated positional constructions do not. This contrast can be seen when these sequences (in square brackets below) appear as complements to perception verbs (7) as well as when they are combined with locative modifiers (8), temporal modifiers (9), or manner adverbials (10).

(7)   a.   Ix-w-il   [ch'ob'-an ek'   ] s-ti'.
            PFV-A1S-see   open-STAT DIR.pass   A3S-mouth
            'I saw her mouth open.'
      b.   *Ix-w-il   [ch'ob'-an ch'ob'-an] lum chen.
            PFV-A1S-see   open-STAT open-STAT   CLF pot
            Intended: 'I saw the pot (being) open.'

(8)   a.   [Nhoj-an   em   ] nok' tz'i' s-ti'   te' pat.
            crouched-STAT DIR.down   CLF dog A3-front CLF house
            'The dog is crouched down in front of the house.'
      b.   *[Nhoj-an   nhoj-an   ] nok' tz'i' s-ti'   te' pat.
            crouched-STAT crouched-STAT   CLF dog A3-front CLF house
            Intended: 'The dog is crouched down (due to malformation) in front of the house.'

(9)   a.   Nhoj-an   em   nok' tz'i' ewi.
           crouched-STAT DIR.down CLF dog yesterday
           'The dog was crouched down yesterday.'
      b.   *Nhoj-an   nhoj-an   nok' tz'i' ewi.
           crouched-STAT crouched-STAT CLF dog yesterday
           Intended: 'The dog was crouched down (due to malformation) yesterday.'

(10)   a.   K'ub'eltak [nhoj-an   em   ] nok' tz'i'.
           hidden   crouched-STAT DIR.down   CLF dog.
           'The dog is crouched down hidden.'
      b.   *K'ub'eltak [nhoj-an   nhoj-an   ] nok' tz'i'.
           hidden   crouched-STAT crouched-STAT   CLF dog
           Intended: 'The dog is crouched down (due to malformation) hidden.'

As shown in the above examples, POS-DIR constructions fit all of the criteria of Davidsonian eventualities. We thus conclude that such constructions should be interpreted as Davidsonian states. On the contrary, examples (7b), (8b), (9b), and (10b) demonstrate that POS-REDUP constructions do not conform to any of the diagnostics for Davidsonian eventualities.

Contrary to Davidsonian eventualities, Kimian states lack an inherent spatial dimension and consist of more abstract entities (Maienborn, 2007). Prototypical verbs associated with Kimian states include verbs like *know*, *weigh*, *cost*, as well as copular constructions. Maienborn (2007, 113) offers the following formal definition:

(11)   *Kimian states:* K-states are abstract objects for the exemplification of a property *P* at a holder *x* and a time *t*.

In addition, consider the diagnostics below, said to characterize the properties associated with K-states (Maienborn, 2007):

(12)   **Linguistic diagnostics for Kimian States** (Maienborn, 2007, 113)
      a.   K-state expressions cannot serve as infinitival complements of perception verbs and do not combine with locative modifiers, manner adverbials and further participant expressions.
      b.   K-state expressions combine with temporal modifiers.
      c.   K-state expressions are accessible for anaphoric reference.

The POS-REDUP constructions in Chuj perfectly abide by two of the three diagnostics estab-

lished in Maienborn (2007), specifically, the diagnostics (12a) and (12c). The POS-REDUP construction is not allowed to serve as the complement of a perception verb, as shown in example (7b) above, and cannot be combined with either locative modifiers or manner adverbials (see examples (8b) and (10b)). Furthermore, the reduplicated positional construction is accessible for anaphoric reference, as shown in (13).

(13)   Nhoj-an   nhoj-an   nok' tz'i'. **Ha jun tik**,   tz-in-te-kus-i.
        crouched-STAT crouched-STAT CLF dog. TOP one DEM, IPFV-B1S-INTS-sad-IV
        'The dog is crouched (due to malformation). This makes me very sad.'

As shown in example (13), it is possible to refer back to the permanently-crouched state of the dog with the use of an anaphoric expression such as *ha jun tik*, 'this one', suggesting that the reduplicated positional construction does indeed refer to a Kimian state.

A final note must be made about the diagnostic in (12b), which states that Kimian state expressions may be combined with temporal modifiers. In Chuj, the POS-REDUP constructions do not seem to conform to this diagnostic, as observed in example (9b). However, building on the analysis by Maienborn (2005) of Spanish verbs *ser* and *estar*, 'to be', which argues that these both involve Kimian states, we tentatively propose that the reason POS-REDUP constructions are not allowed with temporal modifiers is due to competition with the POS-DIR constructions. More specifically, Maienborn (2005) argues that *ser* is neutral with respect to temporal topic situations. This contrasts with *estar*, whose distribution is restricted to specific topic situations, thus giving rise to the intuition that copula constructions with *estar* presuppose temporariness (see also Klein 1994). The contrast between *ser* and *estar* thus reduces to basic pragmatic principles. We suggest that a similar competition carries over to the POS-DIR and POS-REDUP constructions in Chuj. Crucially, because POS-DIR constructions are restricted to specific topic situations, and POS-REDUP constructions carry no such restriction, the temporary interpretation for the reduplicated positional constructions is pragmatically blocked.

3   THE SYNTAX OF DIRECTIONALS

Before understanding the semantic contribution directionals make to the POS-DIR constructions introduced above, a general introduction to directionals is needed. Directionals in Chuj accompany a main predicate and specify the direction, motion, or orientation of the absolutive argument: a transitive object (14a) or intransitive subject (14b). As Maxwell (1987) notes, main verb-plus-directional combinations in Chuj are often translatable into verb-plus-particle sequences in English.

(14)   a.   Ix-in-jul   **k'e'**   nok' pelota.
              PFV-A1S-throw DIR.up CLF ball
              'I threw the ball **up**.'
        b.   Ix-b'ey   **el**   winh unin.
              PFV-walk DIR.out CLF   child
              'The boy walked **out**.'

In Maxwell's words, directionals "serve to orient the action in space, to show movement to or from a

deictic center, or location at that center" (Maxwell, 1987, 496). As in many other Mayan languages, Chuj directionals come from the class of intransitive verbs of motion, shown in (15).

(15)

ROOT	INTRANSITIVE	DIRECTIONAL
b'at	'to go'	'away'
em	'to descend'	'down'
ek'	'to pass by'	'around' / default
el	'to exit'	'out'
hul	'to come (here)'	'toward'
och	'to enter'	'in'
kan	'to stay'	'stable'
kot	'to come'	'nearing'
k'e'	'to ascend'	'up'
k'och	'to arrive'	'arriving'

All of the directionals in (15) also function independently as intransitive matrix verbs. Compare the intransitive/directional root *el* 'exit' in (16a) with the intransitive non-directional *way* 'sleep' in (16b). Both appear here with the TAM and person/number inflection expected for eventive intransitive predicates, and both take the phrase-final intransitive "status suffix" *-i*. (We illustrate here only with the perfective aspect for reasons of space, but directionals also behave with other intransitive roots in other environments, for example in showing a split in person marking in the progressive, and appearing with the irrealis *-ok* in the prospective; see Coon and Carolan 2017).

(16) a. Ix-ach-**el**-i.
          PFV-B2S-exit-IV
          'You left.'
      b. Ix-ach-**way**-i.
          PFV-B2S-sleep-IV
          'You slept.'

In their role as directionals, the roots in (15) follow a main verb. The main verb may be an eventive intransitive verb, as in (14b), a non-verbal predicate as in (3) above, or a transitive verb as in (14a) above and (17) below. Importantly, the example in (17) illustrates that regardless of the transitivity of the main verb, the directional appears with the intransitive status suffix *-i* (which is nonetheless always dropped in a non-phrase-final position, as with a post-verbal object in (14a) above).

(17) Tas ix-a-jul   **k'e'**-i?
      what PFV-A2S-throw DIR.up-IV
      'What did you throw up?'

As the examples thus far illustrate, regardless of the transitivity of the main predicate, the main and directional predicates *share the absolutive argument*: the single argument of the intransitive directional, and either the transitive object or intransitive subject of the matrix predicate. While the directional is not specified independently for TAM or person/number morphology, it does retain the

status suffix characteristic of eventive verbal forms: *-i*.

Though directionals have been described as post-verbal particles in Chuj (e.g. Maxwell 1987), given that all directionals are identical to intransitive verbs and inflect as such, we propose that the directional directly selects the internal argument with which it combines. We set aside as a topic for future work the way in which the directional combines with the main, inflected predicate. Transitive verbs in Chuj show different stem-final morphology depending on whether they are finite or nonfinite, but intransitive predicates consistently appear with the suffix *-i* in both matrix and nonfinite forms (Coon and Carolan, 2017). One option is thus that directionals are indeed non-finite embedded constructions. Another possibility is that these constructions belong to the class of *Serial Verb Constructions* (SVCs). SVCs involve two predicates within a single clause, neither of which is embedded, which share a logical argument; see e.g. Baker 1989; Collins 1997; Hiraiwa and Bodomo 2008. Though these works vary in how SVCs should be represented, what is common to all three is that the "shared argument" (or a pronominal form of it) is directly selected by both verbs. This will be important to the semantic proposal below.

4   POSITIONAL STATIVE PREDICATES AT THE SYNTAX-SEMANTICS INTERFACE

The syntactic facts of the previous section, namely that directionals are verbs and share an argument with the expression they modify, provide the scaffolding required to offer truth-conditions for the POS-DIR construction. First, because directionals are intransitive verbs of motion, they have an event argument and take the individual argument as a theme. This is illustrated in (18).

(18)   *directional* $\rightsquigarrow \lambda x \lambda e[\text{DIR}(e) \wedge \text{THEME}(e, x)]$

Second, because directionals share their individual argument with their co-verbs, and because positional stative predicates are bare predicates of individuals, they can clearly coordinate on the argument the directional takes as theme. Example (19) presents a first-pass schema for POS-DIR constructions along these lines.

(19)   (to be modified)
         positional + directional $\rightsquigarrow \lambda x \lambda e[\text{DIR}(e) \wedge \text{THEME}(e, x) \wedge \text{POS}(x)]$

This definition is likely too unrestrictive, but already this analysis makes the correct predictions about distribution of the POS-DIR construction. The crucial point is that after being fed its individual argument, the POS-DIR construction in (20) will denote a predicate of events, as in (21).

(20)   Nhoj-an   em   nok' tz'i'.
         crouched-STAT   DIR.down   CLF   dog
         'The dog is crouched down.'   (POS-DIR)

(21) $\lambda e[\text{DOWN}(e) \wedge \text{THEME}(e, \iota x[\text{DOG}(x)]) \wedge \text{CROUCH}(\iota x[\text{DOG}(x)])]$
         "Predicate true of events that are downward, and which have the dog as its theme, and the dog is crouched."

The fact that the POS-DIR construction is a predicate of events means that it is available for mod-

ification by event modifiers. In particular, events are instantiated in both space and time, and so accept the full set of possible modifiers, unlike predicates of Kimian states. We see in (22)–(23), for instance, that the oblique (i.e. relational noun phrase) *sti' te' pat* 'in front of the house' can be treated as a Davidsonian event modifier targeting the event argument the directional introduces.

(22)   [Nhoj-an   em   ] nok' tz'i' s-ti'   te' pat.
        crouched-STAT DIR.down   CLF dog A3-front CLF house
        'The dog is crouched down in front of the house.'

(23) $\exists e[\text{DOWN}(e) \wedge \text{THEME}(e, \iota x[\text{DOG}(x)]) \wedge \text{CROUCH}(\iota x[\text{DOG}(x)]) \wedge$
        $\text{LOC}(e, \text{FRONT}(\iota x[\text{HOUSE}(x)])))]$
        "There is an event that is downward, and the theme of the event is the dog, and the dog is crouched, and the location of the event is in front of the house."

We now have an analysis of the function of directionals. Bare positional stative predicates (*-an* forms) cannot be used in the non-verbal predicate construction because they have no eventuality argument. Directionals can come to the rescue because: (i) they involve event predication, and so have an eventuality argument, and (ii) directionals can combine with other verbs to share their individual argument, as seen in section 3. Thus, directionals can combine with positional stative predicates, sharing an individual argument, but result is an expression with an event argument that can appear in the non-verbal predicate construction. Non-verbal predicates with an eventive semantics are precisely the Davidsonian state constructions identified by Maienborn 2007.

Having resolved the question of how directionals support positionals in their stative use, we can now look more deeply at the meanings of positional stative constructions themselves. Consider again the interpretative difference between the POS-DIR and POS-REDUP constructions from (3) and (4) above. Only in the former is the argument interpreted as temporarily acquiring the positional property. Currently, though, the schema in (19) is too weak. It explains why the POS-DIR has the distribution of a Davidsonian stative, but it is semantically consistent with the positional property being an individual-level property of the argument in question. The actual truth conditions have the argument assuming the position at the culmination of the directional event. To do this, we borrow a trick from Dowty (1979, 140). Because the POS-DIR construction is an achievement, it thus involves Davidson's BECOME operator.

(24)   BECOME
        $\text{BECOME}_t(\phi)$ is true at a (minimal) time interval t at whose initial bound $\neg\phi$ holds and at whose final bound ϕ holds.

We can now say that in a non-verbal predicate construction, a directional like *em* 'DIR.down' (under its default reading), requires its single argument to acquire the property over the course of the directional event. The result is that when the non-verbal predicate construction involves a positional, the property acquired is that provided by the position, as in (25).

(25)   (final)
        positional + directional ⤳
        $\lambda x \lambda e[\text{DIR}(e) \wedge \text{THEME}(e, x) \wedge \text{BECOME}_{\tau(e)}(\text{POS}(x))]$

An example like the following is now not only consistent with various kinds of eventive modifiers, but the raw truth conditions are satisfactory.

(26)   Nhoj-an   em   nok' tz'i'.
        crouched-STAT DIR.down CLF dog
        'The dog is crouched down.'   (POS-DIR)

(27) $\exists e[\text{DOWN}(e) \wedge \text{THEME}(e, \iota x[\text{DOG}(x)]) \wedge \text{BECOME}_{\tau(e)}(\text{CROUCH}(\iota x[\text{DOG}(x)]))]$
        "There is an event that is downward, and the theme of the event is the dog, and the dog becomes crouched over the course of the event."

5   CONCLUSION

The account explains why positional stative stem forms cannot be used predicatively, what the directional does to resolve the issue, and how truth conditions of the resulting POS+DIR construction differ from the POS+REDUP construction. A remaining puzzle concerns the function of *-an* in positional stative predications. While our proposal is straightforward, it leads to intriguing questions about the structure of stative predication across Mayan, and so is an appropriate place to conclude.

Recall that *-an* can affix to both transitive and positional roots, as in (28) and (29), but only the former can be then used as non-verbal predicates without further modification.

(28)   Pak-**an**   ch'anh hu'um.
        fold-STAT CLF   paper
        'The papers are folded.'

(29)   *Nhoj-**an**   nok' tz'i'.
        crouched-STAT CLF dog
        Intended: 'The dog is crouched (down).'

This already shows that, at least in Chuj, the NVP-forming suffix *-an* does not in and of itself have the effect of deriving predicates of states. Otherwise, the positional stative predicate would not require reduplication or directional modification. Instead, we propose that *-an* has at least two functions. First, it imposes a particular argument structure; specifically, it creates stems with a single, internal argument. Second, it creates a stem form which has the ability to be modified by directionals. For us, this second property is most important. We have seen that directionals are able to share their event argument with positionals, but they are only able to do so because of *an*-derivation. Note that *an*-derived transitive verbs permit directional modification in the non-verbal predicate construction, but root adjectives like *al* 'heavy' in (31), for instance, do not.

(30)   Pak-an   ek'   te' xila.
        fold-STAT DIR.around CLF chair
        'The chair is folded.'

(31)   *Al-in   em-i.
        heavy-B1S DIR.down-IV
        intended: 'I'm weighed down.'

At this point we must set aside as a topic for future work the question of what permits *-an* predicates as in (30), but not root adjectival predicates as in (31), to combine with directionals—e.g. whether this is due to a particular category or selectional restriction, to structure, or semantics. What is clear is that the positional stative predicate in Chuj thus does not itself encode stative semantics, but rather has the effect of deriving stems that may then be modified by directionals. It is the directional that has the semantic effect. By virtue of being verbal, and thus having an event argument, the directional can share it with the positional stem, allowing the resulting complex form to be used in stative predication.

This fact in itself is interesting from a cross-Mayan and cross-linguistic perspective. In many Mayan languages, the cognate of *-an* is sufficient to allow positionals to be used as non-verbal predicates (see e.g. the Kaqchikel form in (2) above). This raises the question of whether, in these languages, this morpheme has a different semantic effect. If not, and if we want a unified account of positionals, we seem to have to posit covert morphology having the semantic effect of reduplication in these languages. Knowing that a language like Chuj exists thus sharpens the questions that need to be asked about how positional stative predication works in Mayan.

REFERENCES

Baker, M. C. (1989). Object sharing and projection in serial verb constructions. *Linguistic Inquiry*, 20(4):513–553.

Collins, C. (1997). Argument sharing in serial verb constructions. *Linguistic Inquiry*, 28(3):461–497.

Coon, J. and Carolan, E. (2017). Nominalization and the structure of progressives in Chuj Mayan. *Glossa*, 2(1):1–35.

Dowty, D. R. (1979). *Word meaning and Montague grammar: The semantics of verbs and times in generative semantics and in Montague's PTQ*, volume 7. Springer Science & Business Media.

Haviland, J. B. (1994). "Te xa setel xulem" [The buzzards were circling]: Categories of verbal roots in (Zinacantec) Tzotzil. *Linguistics*, 32(4-5):691–742.

Henderson, R. (2017). The roots of measurement. Ms. University of Arizona.

Hiraiwa, K. and Bodomo, A. (2008). Object-sharing as symmetric sharing: predicate clefting and serial verbs in Dàgáárè. *Natural Langauge and Linguistic Theory*, 26(4):795–832.

Klein, W. (1994). *Time in Language*. Routledge, New York.

Knowles, S. M. (1984). Chontal Mayan positionals. *Journal of Mayan Linguistics*, 4(2):7–33.

Maienborn, C. (2005). A discourse-based account of Spanish *ser/estar*. *Linguistics*, 43-1:155–180.

Maienborn, C. (2007). On Davidsonian and Kimian states. In Comorovski, I. and von Heusinger, K., editors, *Existence: Semantics and Syntax*, pages 107–130. Springer.

Martin, L. (1977). *Positional roots in Kanjobal (Mayan)*. PhD thesis, University of Florida, Florida.

Maxwell, J. (1987). Some aspects of Chuj discourse. *Anthropological Linguistics*, 29(4):489–506.

Santíz Gómez, R. (2009). Raíces posicionales en tseltal de Oxchuc. Master's thesis, CIESAS, México.