Headless Relative Clauses in Chuj

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Abstract
This paper explores various types of headless relative clause constructions in Chuj, a Mayan language spoken in Huehuetenango, Guatemala and Chiapas, Mexico by 45,000 to 70,000 speakers (Piedrasanta, 2009). The main focus is free relative clauses; Chuj features three: maximal free relative clauses, existential free relative clauses, and free-choice free relative clauses. I follow Caponigro (2003, 2004) and Kotek and Erlewine (2016) in positing that maximal free relative clauses and existential free relative clauses are structurally identical at their core, and that the difference in their interpretations is a consequence of the elements that each kind combines with. Toward the end of the paper, I also show that Chuj features a rich inventory of strategies to form other types of headless relative clauses. These include headless relative clauses introduced by both a wh-word and determiners [+Wh, +Det], those introduced only by determiner [-Wh, +Det], and those that are formed with neither a wh-word nor a determiner [-Wh, -Det].

1. Introduction and basic features of Chuj

Chuj belongs to the Q'anjob'alan branch of the Mayan language family, and is closely related to Q'anjob'al, a language also discussed in this volume (see Mateo Toledo). It is spoken by 45,000 to 70,000 speakers in the department of Huehuetenango, Guatemala and in the state of Chiapas, Mexico (Piedrasanta, 2009). Unless otherwise indicated, all data in this paper come from two sources: elicitation with speakers of the San Mateo Ixtatán and Nentón dialects of Chuj, and a corpus of several hours worth of transcribed audio and video narratives. The corpus is stored and available in the *Archive of Indigenous Languages of Latin America*, under the collection *Chuj Oral Tradition* (Mateo Pedro and Coon 2017). Examples from the corpus are marked with "txt".

1.1 Verb phrase and basic clause structure

Chuj is verb initial in neutral discourse. The San Mateo Ixtatán and Nentón variants have basic VOS word order, while the San Sebastián Coatán variant features VSO word order (Maxwell 1982). Examples of the San Mateo variant are provided below – (1) features an intransitive verb with basic VS order, whereas (2) is a transitive sentence with basic VOS order.[1]

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[1] The abbreviations in the glosses follow the Leipzig Glossing Conventions, with the following Chuj or Mayan-specific exceptions: A – Set A (ergative, possessive); ABST – abstractive; B – Set B (absolutive); DTV – derived transitive status suffix; DUB – dubitative; EPEN – epenthesis; EXT – existential; FR – free relative; HUM – human; IV – intransitive status suffix; N.CLF – noun classifier; NUM.CLF – numeral classifier; PREP – preposition; PROSP – prospective; PV – topic/focus marker on preverbal arguments; RC – relative clause; REP – reportative; STAT – stative suffix; SUB – subordinate clause suffix; SUF – unanalyzed suffix; TV – transitive status suffix. Glosses and translations in Chuj taken from other sources are in some cases modified for consistency. Spanish to English translations are my own.

(1)　Ix-kot　　　nok'　wakax.
　　PFV-arrive　N.CLF　cow
　　'The cows arrived.'　　　　　　　　　　　　　　　　　　　　　　　　　　　　(txt)

(2)　Ix-y-il　　　waj　Xun　ix　　Malin.
　　PFV-A3-see　N.CLF　Xun　N.CLF　Malin
　　'Malin saw John.'　　　　　　　　　　　　　　　　　　　　　　(Buenrostro 2013, 57a)

As is common in Mayan languages, topicalized and focused constituents appear pre-verbally (Aissen 1992), and SVO order is thus frequent (see Bielig 2015). Both topicalized and focused elements are preceded by *ha*, but topics may be distinguished from focused elements because of the way each is realized. While topics trigger the presence of a resumptive classifier, *winh* in (3a), focused elements do not, as in (3b).

(3)　a.　*Topicalization*
　　　　[**Ha　waj　Petul**]　ix-y-il　　　***(winh)**　jun　ix　　ix.
　　　　　PV　N.CLF　Petul　PFV-A3-see　　N.CLF　　one　N.CLF　woman
　　　　'As for Petul, he saw a woman.'　　　　　　　　　　　　　(Bielig 2015, 3)

　　b.　*Focus*
　　　　[**Ha　waj　Petul**]　ix-il-**an**　　jun　ix　　ix.
　　　　　PV　N.CLF　Petul　PFV-see-AF　one　N.CLF　woman
　　　　'It was Petul who saw a woman.'　　　　　　　　　　　　(Bielig 2015, 2)

The examples in (3) also show that focused transitive subjects trigger the presence of Agent Focus morphology in the verb stem, as illustrated by the presence of *-an* in example (3b) (see Stiebels 2006 and Coon et al. 2014 on Agent Focus in Mayan languages), which is not present with topics like (3a). As will be shown in the following sections, Agent Focus morphology is also triggered by transitive *wh*-subjects, and in constructions with relativized transitive subjects.

　　A fully inflected verb stem may consist of, in order of appearance, tense-aspect marking (TAM), absolutive and ergative person marking, a limited class of adverbial elements, the root, derivational morphology, and a "status suffix", discussed below. Example (4) illustrates this order, and an example of a verb stem is shown in (5).

(4)　TAM − SET B (ABS) − SET A (ERG) − ADV − root − DERIV − STATUS SUFFIX

(5)　Ix-ach-in-te-chel-ej.
　　PFV-B2SG-A1SG-INTS-hug-DTV
　　'I hugged you a lot.'

Like other Mayan languages, Chuj generally shows an ergative-absolutive pattern of alignment observed via head-marking on the predicate. Following the tradition in Mayan linguistics, ergative morphemes are referred to as "Set A", also used to cross-reference possessors, whereas absolutive is referred to as "Set B". Set A and Set B morphology is provided in Table 1 below.

Table 1: Set A and Set B morphology in Chuj[2]

	Set A (ERG + POSS)		Set B (ABS)
	Pre-C	Pre-V	
1SG	(h)in-	w-	(h)in-
2SG	(h)a-	(h)-	(h)ach-
3SG	s-	y-	Ø-
1PL	ko-	k-	(h)onh-
2PL	(h)e-	(h)ey-	(h)ex-
3PL	s-	y-	Ø-

Chuj has four main aspect markers, provided in Table 2 (see Carolan 2015 on the relevance of tense in Chuj). While perfective, imperfective, and prospective are marked with prefixes on the verb stem, progressive is marked with the use of a predicate triggering an ergative split, which Coon and Carolan (2017) attribute to a possessed nominalized verb stem (see also Comrie 1978; Larsen and Norman 1979; Robertson 1980; Bricker 1981; Kaufman 1990 and Zavala 2017 on this construction in Mayan languages). The progressive predicate exhibits phonological variation, appearing either as *lan, wan, lananh,* or *leman* depending on the variant (Buenrostro 2004).

Table 2: Tense-Aspect Marking in Chuj

Aspect	Marker
Perfective	*ix-*
Imperfective	*tz-*
Prospective	*ol-*
Progressive	*lan / wan / lananh / leman*

While all intransitive stems in Chuj are suffixed with the intransitive status suffix *-i*, transitive stems are divided into two types: root transitives are suffixed with a partially harmonic vowel *-V'*, whereas derived transitive stems are suffixed with *-ej* (Coon to appear). Both *-i* and *-V'* are only pronounced when appearing at the edge of a prosodic phrase (Hopkins, 1967). Examples of underived intransitive and transitive root stems are provided below:

(6) Wach ix-in-wa'-**i**.
      well   PFV-B1S-eat-IV
      'I ate well.'

(7) Ix-ach-in-chel-**a'**.
      PFV-B2S-A1S-hug-TV
      'I hugged you.'

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[2] The grapheme "h" is written word-initially and signals the absence of glottal stop insertion, otherwise expected on vowel-initial forms.

As in other Mayan languages, any lexical element may appear as a stative "non-verbal" predicate, in which case the predicate does not appear with a TAM marker. Examples are provided with the existential predicate *ay* 'there is' in (8), and with the bare nominal root in (9).

(8)　**Ay** jun nok' tz'i' t'atik.
　　 EXT one N.CLF dog here.
　　 'There's a dog here.'

(9)　**Winak** hin.
　　 man B1S
　　 'I'm a man.'

1.2 Noun phrase
Most noun phrases in Chuj are introduced by at least one of a set of determiner-like elements, including noun classifiers, the indefinites *jun* or *juntzanh*, or demonstratives. The maximal extension of the noun phrase is provided in (10).

(10)　 Q > NUM.CLF > PL > N.CLF > SET A (POSS) > ADJ > N > RC > DEM

In order of appearance, noun phrases can be formed of quantifiers, followed by numeral classifiers, plural marking (for humans only), noun classifiers, Set A possessive marking, adjectives, the noun stem, relative clauses, and demonstratives.[3] Three examples illustrating these elements are provided below.

(11)　Ha [DP **winh chanh winak]** Matin s-b'i' winh.
　　 PV N.CLF tall man Matin A3-name N.CLF
　　 'The skinny man is called Matin.'

(12)　Tz-y-al ko-ti' [DP **cha-wanh heb' winh y-une' ix Malin]**.
　　 IPFV-A3-speak A1PL-language two-NUM.CLF PL.HUM N.CLF A3-child N.CLF Malin
　　 'Malin's two boys speak Chuj.'

(13)　K'ank'an [DP **masanil k'en walab' ix-in-man chi]**.
　　 yellow all.of N.CLF plates PFV-A1SG-buy DEM
　　 'Those three plates that I bought are yellow'

A key characteristic of the Chuj noun phrase is its rich system of nominal classification, also a property of other Q'anjob'alan languages (Hopkins, 2012). In example (12), a total of three morphemes classify the noun *une'* 'child'. First is the numeral classifier *-wanh*, which categorizes the noun as animate. Chuj features two numeral classifiers; *-wanh* appears before animate nouns, while *-e'* before inanimate nouns. Numeral classifiers are obligatory with Mayan-based numerals above 1. Second is the plural marker *heb'*, which marks plurality for humans only and is obligatory

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[3] Note that adjectives sometimes appear in a post-nominal position in Chuj (Maxwell 1976). Coon (2018) proposes that these are actually relative clauses with a null head and copula.

with all human nouns that are pluralized.[4] Third is the noun classifier *winh*, which classifies the noun in (12) as masculine. There are about 16 noun classifiers (with some inter-speaker variation), which classify nouns according to physical or social attributes. However, note that some nouns cannot be classified with a noun classifier, including body part terms, abstract nouns (e.g. 'strength', 'love'), and nouns denoting objects made of materials that have been newly integrated in the Chuj vocabulary (e.g. objects made of plastic). All three types of classifying morphemes, namely numeral classifiers, the plural marker for humans, and noun classifiers are relevant for the content of this paper, as they participate in the formation of relative clauses.

   Distinctions in definiteness and specificity in Chuj will be relevant to the discussion of different types of headless relatives below. Noun classifiers have frequently been associated with definiteness and referentiality in previous work on Q'anjob'alan languages (see e.g. Craig 1986; Buenrostro et al. 1989; Zavala 2000). In recent work, I showed that the combinations of morphemes on the left side of Table 3 result in the interpretations on the right side of Table 3 (Royer 2018).

Table 3: Referential configurations in Chuj

DP	Result
INDF + N	*Indefinite*
INDF + N.CLF + N	*Specific indefinite*
N.CLF + N	*Unique/maximal definite*
N.CLF + N + DEM / TOP + N.CLF + N	*Anaphoric definite*

Though the view of noun classifiers as definite determiners appears to be challenged by the fact that they may co-occur with indefinites, as shown in Table 3, I maintain that noun classifiers are *unique* definite determiners at their core. In Royer 2018, I argue that noun classifiers, as unique definite determiners, may combine with indefinite quantifiers to restrict their domain to a singleton set, resulting in a specific interpretation of the indefinite (see Schwarzschild 2002 on singleton indefinites). Under this view, it follows that whenever a noun classifier appears alone with a noun, the result is a unique or maximal definite.[5] An example with context is provided in (14):

(14) Context: *You're at Matal's house and you hear snoring sounds. You know she lives with one dog, but you can't imagine how these sounds could possibly come from the dog! You ask her where these sounds come from, and she replies:*
   Tz-way   **nok**'   tz'i'   t'a-chi.
   IPFV-sleep N.CLF dog   PREP-DEM
   'The dog sleeps there.'

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[4] Kotek and Erlewine (to appear) report that human-denoting nouns may appear without the plural marker, while still having a plural reading (see example (98a) and (99a) of their paper). However, speakers I have consulted reject this judgment.
[5] There is an exception to this. When appearing in the scope of an existential quantifier, noun classifiers that appear alone with a noun may have an indefinite plural interpretation (except nouns that denote humans which require the human plural marker). Further note that (i) cannot have a singular interpretation. Such an interpretation is only available in presence of *jun*, as in *Ay **jun** nok' tz'i' t'atik* 'there's a dog here'.

   (i)   Ay   nok'   tz'i'   t'atik.
        EXT N.CLF dog   here
        'There are dogs here.'

To form anaphoric definites, noun classifiers are either combined with the distal demonstrative *chi* or appear as preverbal topics, as illustrated in the dialogue in (15).

(15) a. Ay jun nok' tz'i' t'a-tik.
        EXT one N.CLF dog   PREP-DEM
        'There's a dog here.'

      b. Fido s-b'i'   [nok'   tz'i **#(chi)**]. / [**Ha** nok'   tz'i'] Fido s-b'i'   nok'.
         Fido A3-name N.CLF dog DEM   PV   N.CLF dog   Fido A3-name N.CLF
         'The dog's name is Fido.'

While singular indefinite arguments are introduced with *jun* 'a/one', plural indefinite arguments appear with *juntzanh* 'some' (Domingo Pascual 2007). An example of an indefinite with *jun* with appropriate context is provided in (16). *Jun* and *juntzanh* may also optionally combine with noun classifiers, forcing a specific 'wide-scope' interpretation (see Royer 2018).

(16) Context: *I just arrived in a village for the first time, and I'm looking for a place to put my mattress and sleeping bag. I ask my host whether I can put my mattress in a corner. I'm not aware that there were dogs around, but my host replies that I can't, because…*
      Tz-way   *(**jun**) (nok') tz'i' t'achi.
      IPFV-sleep   one N.CLF dog   there
      'A dog sleeps there.'

Though *jun* and *juntzanh* are commonly described as indefinite determiners in Q'anjob'alan languages (see e.g. Domingo Pascual 2007; Mateo Toledo 2017), their underlying semantics remains to be further studied. Zavala (2000), on related Akatek, describes *jun* not as an indefinite, but as a *singulative*. This is based on the fact that these morphemes are also used in definite environments, in which case they specify number on nouns that would not otherwise be marked for this feature. An example is (17), where the choice of *jun* or *juntzanh* within a definite DP disambiguates between singular and plural readings of the noun.

(17) *Ha* **jun** / **juntzanh** nok' tz'i' lan s-wa'-an b'at   ha-tek   nok'.
     PV one / some   N.CLF dog PROG A3-eat-SUB DIR.go A2SG-food N.CLF
     'The dog/dogs is/are eating your food.'

Chuj features two demonstratives, proximal *tik* and distal *chi*. Both always appear at the extreme right edge of nominal phrases. Demonstratives also play an important role in the formation of headed and headless relative clauses, as will become clear in the following sections. For an example of a demonstrative construction, see (13) above.

   Finally, note that noun classifiers may also appear alone (without an overt nominal), in which case they have been described as anaphoric pronouns (see e.g. Craig 1977; Zavala 2000; Mateo Toledo 2017, and Royer 2017). An example is provided in (18).

(18) Tz-way   **nok'**.
      IPFV-sleep N.CLF
      'He (the dog) is sleeping.'

2. Interrogative clauses in Chuj

In this section I introduce Chuj's wh-expressions (i.e., simple wh-words and complex wh-phrases), provided in Table 4, and describe how they behave in interrogative constructions.

Table 4: Wh-expressions in Chuj[6]

WHO	mach
WHAT	tas
WHEN	b'ak'inh
WHERE	b'aj / b'ajt'il / ajt'il
HOW	tas TAM-aj / tas (TAM)-A-utej
WHY	tas yuj
WHICH (+ N)	mach[7]
WHAT + N	tas N-*Vl*
HOW MUCH (+N)	jantak
HOW MANY (+N)	jantak / jay+NUM.CLF

Before moving on to the structure of wh-constructions, note the following details about the wh-expressions in Table 4. First notice that there are three possible variants of the locative wh-word, namely *b'aj*, *b'ajt'il* and *ajt'il* (in this paper, I refer to the three as *b'ajt'il*). All can be used interchangeably with no difference in semantic interpretation. Second, though *tas yuj* 'why' is a frozen form, it is diachronically decomposable as two words: *tas* 'what', and a relational noun *-uj* 'for/because' with third person Set A marking *y-*. Third, note that the wh-quantifier *jay* 'how many' obligatorily surfaces with a numeral classifier and is only possible with count nouns, whereas *jantak* 'how much/how many' does not take a numeral classifier and may combine with both count and mass nouns. Fourth, notice that *how* interrogative clauses are formed with *tas* 'what' combined with one of the following two options with no apparent difference in meaning: (i) *TAM-aj,* a combination of imperfective aspect and the intransitive root *aj* 'to stay'; and (ii) *TAM-Set.A-utej*, a fully inflected form of the verb *utej* 'to do'. Finally, the wh-expression *mach* may refer to either WHO or WHICH. Further details about this distinction and how to diagnose it are provided at the end of this section.

Turning to wh-interrogative clauses, some examples of matrix ones are provided below with *tas* 'what'*,* *b'ajt'il* 'where', and *b'ak'inh* 'where'.

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[6] Note that the plural marker *-tak* may suffix to most wh-words to form plural readings (e.g. *tastak* 'what.PL', *machtak* 'which.PL' and *b'ajtak* 'where.PL'), not represented here for simplicity.

[7] Another form, *chajt'il* 'which', is cited in the literature (see e.g. Domingo Pascual 2007). However, very few instances of this form were found in the corpus and, though consultants I worked with did accept wh-questions with *chajt'il*, they did not naturally produce them.

(19) **Tas**   tz-a-k'ul-ej?
     WHAT   IPFV-A2SG-do-DTV
     'What are you doing?'   (txt)

(20) **B'ajt'il / b'aj / ajt'il** tz-s-man   k'apak heb'   winh?
     WHERE   IPFV-A3-buy   clothes PL.HUM N.CLF
     'Where did they buy clothes?'   (txt)

(21) **B'ak'inh** ol-ach-jaw=ok?
     WHEN   PROSP-B2SG-arrive=IRR
     'When will you arrive?'

As can be observed in the above examples, Chuj wh-words in interrogative constructions are fronted to a pre-verbal position. Multiple fronted wh-expressions are not possible, as illustrated in example (22).

(22) *__Mach__   **tas**   ix-bo'-an-i?
      WHO   WHAT   PFV-do-AF-IV
       Intended: 'Who did what?'

Recall from example (3b) above that focused transitive subjects trigger Agent Focus morphology in the verb stem. The same is true for transitive wh-subjects, as shown in example (23):

(23) **Mach** ix-in-il-**an**-i?
     WHO   PFV-B1SG-see-AF-IV
     'Who saw me?'   (Kotek and Erlewine to appear, 12c)

Chuj is a pied-piping with inversion language, meaning that when pied-piped, morphemes get inverted with respect to their canonical order with the wh-word.[8] To better illustrate, first consider example (24) which shows that in its regular position, the inflected relational noun *yet'* precedes the NP *winh huktak* 'your brother':

(24) Ix-in-b'at   [**y-et'**   winh   h-uktak   ].
     PFV-B1SG-go   A3-with N.CLF A2SG-brother
     'I left with your brother.'

Now consider (25) below. After being pied-piped, the relational noun *yet'* now follows *mach* 'who', contrary to its standard order.

(25) **Mach y-et'**   ay-ek'   winh   ha-mam?
     WHO   A3-with EXT-DIR.pass N.CLF A2SG-father?
     'Who is your father with?'   (Buenrostro 2009, 42)

As is the case in at least some other Mayan languages (see Mateo Toledo this volume and Vázquez Álvarez and Coon this volume), wh-words *in situ* cannot have an interrogative meaning in Chuj,

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[8] This feature of Chuj is reflected in the wh-expression *tas yuj*, decomposable as *tas* 'what' and the relational noun Set.A-*uj*.

as shown by the ungrammaticality of the first translation in (26).[9] However, contrary to other Mayan languages, some wh-words (e.g. *tas, mach,* and *b'ajt'il*) can appear in a post-verbal position as wh-indefinites. This option is demonstrated in the only appropriate translation of (26), and in (27).

(26) Ix-k-il   **tas**.
     PFV-A1PL-see   WHAT
     *'We saw what?'
     'We saw something(s).'   (contrast with Kotek and Erlewine to appear, 30a)

(27) Ix-w-il   **mach.**
     PFV-A1SG-see WHO
     'I saw someone.'

Note, however, that the same wh-words that appear to be allowed as wh-indefinites can also behave like nominals. For example, *tas* also means 'thing' in Chuj. In this case, this wh-word behaves like a noun in its ability to combine with pre-verbal marking, determiners, possessive marking, and demonstratives, as illustrated in (28).

(28) Ha jun   hin-**tas**   tik   chuklaj.
     PV   one   A1SG-thing DEM   bad
     'This thing of mine is bad/doesn't work.'

Though post-verbal *mach* is more restricted (many speakers reject its use with classifiers and demonstratives), it may also appear after determiners like *jun* 'a/one' and *juntzanh* 'some', although there is apparent speaker variation with the overall acceptability of *mach* as a wh-indefinite (Kotek and Erlewine (2016) claim that *mach* can never be a wh-indefinite). An example is provided in (29). This difference in distribution and judgments between *tas* and *mach* may be indicative of different processes of grammaticalization.

(29) Ix-w-il   **jun mach.**
     PFV-A1SG-see one   person
     'I saw a person.'

Finally, the wh-expressions for 'who' and 'which' are morphologically identical in Chuj, giving rise to possible ambiguities. On the one hand, *mach* is sometimes used to pick out human individuals, in which case it cannot combine with a nominal domain, as in (23) above. On the other hand, *mach* may also be used as WHICH, in which case it optionally combines with a nominal domain. If no nominal domain is present, then an ambiguity potentially arises – without a nominal domain, (30) could also mean '*who* will you bring?'.

(30) **Mach** (libro) ol-h-ik'   kot-i?
     WHICH book   PROSP-A2SG-bring   DIR.arrive-IV
     'Which (book) will you bring?'

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[9] Kotek and Erlewine (2016) list the 'echo question' translation of (26) as possible. I was unable to replicate this reading.

Interestingly, *tas* 'what' may also combine with a nominal domain, in which case it triggers the presence of a harmonic -*Vl* suffix on the noun, glossed as an 'abstractive' suffix in previous work (see e.g. Buenrostro 2009). This construction does not allow for the presence of any D-level material in the noun phrase, including noun classifiers and demonstratives, as illustrated in the example below:[10]

(31) **Tas** (*ch'anh) libro'-*(al) (*tik) ix-a-man-a'?
     WHAT N.CLF   book-ABS   DEM PFV-A2SG-buy-TV
     'What book did you buy?'

There is no restriction with respect to which wh-expressions may appear in an embedded interrogative clause in Chuj, and wh-expressions in these constructions behave like their matrix counterparts. Like matrix wh-interrogative clauses, wh-words in embedded interrogative clauses are obligatorily fronted to the left periphery of their clause:

(32) Yowalil   k-ojtak   [**tas**   juntzanh yanhal   tz-och-i   ].
     obligatory A1PL-know   WHAT some   medicine IPFV-enter-IV
     'It's obligatory that we know what medicine to use/inject.'   (txt)

(33) Ix-sat   hin-k'o'ol   [**b'ak'inh** ix-ach-b'at-i.]
     PFV-forget A1S-stomach   WHEN   PFV-B2S-go-IV
     'I forgot when you came.'

3. Headed Relative Clauses in Chuj

Before discussing headless relatives, I introduce *headed relative clauses*. Headed RCs in Chuj are externally-headed, with the head always appearing in a position preceding the relative clause. As in other Mayan languages, Chuj does not possess any independent marker of relativization (exceptions include Ch'ol and Chontal, see Martínez Cruz 2007, Osorio May 2016 and Vázquez Álvarez and Coon this volume). Two strategies are employed to form headed RCs: (i) a gap strategy[11] and (ii) a relative pronoun strategy, both of which are commonly used in other Mayan languages (see e.g. Gutiérrez-Bravo 2012 on Yucatec Mayan and Guarcax González 2016 on Kaqchikel). The list of relative pronouns and their availability for use in strategy (ii) is provided in Table 5, and the two strategies are discussed in turn immediately below.

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[10] The difference between (30) and (31) is interesting for the semantics of wh-expressions. Both *mach* 'which' and *tas* 'what' may take nominal domains, but only *tas* requires and allows the abstractive -*Vl* suffix. This may be indicating a core semantic difference between 'which' and 'what' expressions, in that the former is inherently d-linked while the latter is not (Pesetsky 1987); I leave this as a topic for future work.

[11] By "gap strategy", I refer to HRCs that are not introduced with an overt relative pronoun. Crucially, this label should not be interpreted as a claim that HRCs that do use the relative pronoun strategy lack a syntactic "gap".

Table 5: Wh-expressions used as relative pronouns in Chuj

WHO	*mach
WHAT	*tas
WHEN	*b'ak'inh ; *b'ajt'il* is used instead
WHERE	✓ b'ajt'il
HOW	✓ tas TAM-aj / tas (TAM)-A-utej
WHY	✓ tas yuj
WHICH (+ N)	✓ mach
WHAT + N	*tas N-*Vl*
HOW MUCH/MANY (+N)	✓ jantak, ✓ jay-NUM.CLF

The wh-words WHAT and WHO may not be used as relative pronouns in Chuj, and a "gap" strategy must instead be employed. In the example in (34), the relativized noun *anh trago* 'the drink' immediately precedes the relative clause and a gap, represented as "___", appears in the argument position; *tas* may not appear.

(34) Ha t'a Mejiko tz-kot [anh trago **(*tas)** [tz-y-uk' ___ anima' chi]].
    PV PREP Mexico IPFV-come N.CLF drink WHAT IPFV-A3-drink people DEM
    'That drink that the people drink comes from Mexico.' (txt)

Similarly, the wh-word for WHO, *mach*, cannot be used as a relative pronoun (though see subsection 3.2 for the difference between *mach* 'who' and *mach* 'which'). An example is provided below:

(35) Context: *Only one man has been crying.*
    Ix-in-chel [winh winak **(*mach)** lan y-ok'-i ___].
    PFV-A1SG-hug N.CLF man WHO PROG A3-cry-IV
    'I hugged the man who was crying.'

The gap strategy can also be used with most headed RCs that use the relative pronoun strategy, as we will see next. In headed RCs, relative pronouns appear at the edge of relative clauses, immediately following the head noun. Most wh-expressions can serve as relative pronouns, the only exceptions being *tas* (including *tas + -Vl), mach* (WHO), as shown above , and *b'ak'inh*.

    Locative headed RCs are the only type of headed RC that *must* use the relative pronoun strategy. Any of the variants of *b'ajt'il* can work as a relative pronoun with no significant difference in meaning, as shown in (36).

(36) Chakchak   te'   pat   [*(**b'aj/b'ajt'il/ajt'il**)   ix-in-aj-i   ].
     red   N.CLF   house   WHERE   PFV-B1SG-be.born-IV
     'The house where I was born is red.'

The remaining wh-expressions can serve as relative pronouns in headed RCs, though the gap strategy is also available for all of these, as indicated by the optionality of the relative pronoun in each construction. Examples of *tas TAM-aj, tas yuj,* and the wh-quantifiers are provided in examples (37) to (39) below.

(37) Ay forma [(**tas tz'aj**)   tz'an-j-i   atz'am y-uj   heb'].[12]
     EXT way   HOW   cook-PASS-IV N.CLF   A3-by   PL.HUM
     'There's a way that they cook salt.'   (txt)

(38) Ha jun   yuj   tik   [(**tas yuj**)   ix-ach-xit'   ek'   t'a   Mejiko] te-chuklaj.
     PV one   reason DEM   WHY   PFV-B2SG-go DIR.pass PREP Mexico INTS-bad
     'The reason why you went to Mexico is bad.'

(39) Ix-jaw   masanil anima' [(**jantak / jay-wanh**) ix-w-aw-t-ej   ] chi.
     PFV-come   all   people   HOW.MANY   PFV-A1SG-call-SUF-DTV DEM
     'All the people that I invited came.'

Though *b'ak'inh* cannot serve as a relative pronoun, temporal headed RCs can be introduced by any of the variants of *b'ajt'il*. The gap strategy is also available.

(40) Ay-nhej jun s-k'uh-al   [(**b'ajt'il**) / (***b'ak'inh**) tz-y-ak'   k'inh chi   heb'   ].
     EXT-only one A3-day-NMLZ   WHERE   WHEN   IPFV-A3-do party DEM PL.HUM
     'There is only one day when they celebrate their birthday.'   (txt)

Recall from section 2 that *mach* can be used as both WHO and WHICH in Chuj. As Table 5 shows, only the WHICH reading of *mach* is possible as a relative pronoun. The distinction between the two readings of *mach* can be made explicit if we take into consideration the partitive nature of WHICH, namely that the entity that is referred to by WHICH must be interpreted as a subset of a larger contextually salient set (see Pesetsky 1987 on d-linking and Comorosvki 1996 on partitivity). On the other hand, WHO is neither connected to partitivity nor must it refer to a contextually salient set of entities. We thus expect contexts that disallow a partitive reading to disallow WHICH readings, but not WHO readings. To illustrate, consider the following example:

(41) Context: *Xun only has one child, it's a boy, and both the speaker and hearer know this. We are only talking about this boy without comparing him to any other child.*
     Ha winh unin [(**#mach**) ix-s-k'ib-tz-it-ej   waj Xun] te-junk'o'olal winh.
     PV N.CLF child WHO   PFV-A3-grow-CAUS-SUF-DTV N.CLF Xun INTS-happy   N.CLF
     'The child who Xun raised is happy.'

The context in (41) forces an interpretation in which *mach* must refer to WHO, because it is clear that there is only one salient boy in the context.

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[12] The wh-expression *tas TAM-Set.A-utej* is interchangeable as a relative pronoun with *tas TAM-aj* in this example.

On the other hand, when it is salient from context that more than one boy is involved, then the presence of the relative pronoun is felicitous. Consider the following context and example:

(42) Context: *Xun is a teacher and he has 20 boys in his class. They all have been equally behaving badly. Xun chooses one boy to scold in front of the class, to give all kids a lesson.*
Ha winh unin [**(mach)** ix-s-tum-ej   waj Xun] te-kus-nak   winh.
PV N.CLF boy   WHICH   PFV-A3-scold-DTV N.CLF Xun   INTS-sad-STAT N.CLF
'The boy that John scolded is sad.'

In this context, a partitive reading is available – the entity referred to by *mach* forms part of a larger contextually salient set of boys. The use of *mach*, though optional, is therefore allowed.

Finally, note that *mach* can sometimes co-occur with a noun classifier to form a headed RC. An example is provided in (43), where *mach* co-occurs with *nok'*, the classifier for animals.

(43) Ix-w-il   [nok'   tz'i' [**mach nok'** te-jelanh tz-jinhw-i] tik   ].
PFV-A1SG-see N.CLF dog   WHICH N.CLF INTS-fast IPFV-run-IV   DEM
'I saw the dog that runs fast.'

4. Headless Relative Clauses in Chuj

In this section, I describe Chuj *headless relative clauses* (*HRCs*). Though the main focus of the paper is on free relative clauses (headless relative clauses introduced with a wh-element and no head of any kind), other types of headless relative clauses are also described at the end. In section 4.1, I describe three kinds of free relative clauses: maximal free relatives, existential free relatives, and free-choice free relatives. In section 4.2, I move on to other types of headless relative clauses, including headless relative clauses introduced by determiners; those introduced by both a determiner and a wh-word; and those formed of neither a wh-word nor a determiner.

4.1. Headless Relative Clauses introduced by wh-words: Free Relative Clauses

Here, I show that Chuj features three types of *free relative clauses* (*FRs*): maximal FRs, existential FRs, and free-choice FRs. I survey all wh-expressions allowed in each type and conclude that most wh-expressions can appear in FRs, with some minor variation depending on what type of FR is being used. I follow Caponigro (2003, 2004) and Kotek and Erlewine (2016) in positing that maximal FRs and existential FRs are structurally identical at their core and that their different interpretations are a consequence of the elements each construction combines with.

4.1.1. Maximal Free Relative Clauses in Chuj

Maximal FRs (*Max-FRs*) in Chuj appear with almost all wh-expressions, the only exception being *b'ak'inh* 'when', also not allowed with headed RCs. The list of wh-expressions heading Max-FRs is presented in Table 6.

Table 6: Distribution of wh-expressions in Max-FRs in Chuj

WHO	✓ mach
WHAT	✓ tas
WHEN	*b'ak'inh
WHERE	✓ b'ajt'il
HOW	✓ tas TAM-aj / (TAM)-A-utej
WHY	% tas yuj
WHICH (+ N)	✓ mach
WHAT + N	✓ tas N-*Vl*
HOW MUCH/MANY (+N)	✓ jantak, ✓ jay-NUM.CLF

Examples (44) to (51) show examples of each wh-expression allowed in Max-FRs. Note that though some of the English translations appear as headed RCs, all Chuj examples are FRs.

(44) Ix-onh-lolon   y-et'   [**mach** tz-'al-an   Kanjob'al].
     PFV-B1PL-speak A3-with   WHO   IPFV-speak-AF Q'anjob'al
     'We spoke with (the person) who speaks Q'anjob'al.'

(45) H-il-nab'   wal   [**tas**   ix-s-b'o'   kan   heb'   winh   tik   ]!
     A2SG-see-SUF   much   WHAT PFV-A3-make DIR.arrive PL.HUM N.CLF DEM
     'Look at what they did!'   (txt)

(46) Ix-in-xit'   ek'   [**b'aj/b'ajt'il/ajt'il** aj-nak   hach].
     PFV-A1SG-go DIR.pass   WHERE   be.born-STAT B2SG
     'I went to where you were born.'

(47) Ol-in-b'o'-o'   [**tas tz'aj / tas tz-h-utej** ha-b'o'-an-i   ].
     PROSP-A1SG-make-TV   HOW   A2SG-make-SUB-IV
     'I'll make it the way you make it.'

(48) %Ix-onh-tzewaj-i [**tas yuj** ix-y-al   heb'   t'a-y-onh   ].
     PFV-B2SG-laugh-IV   WHY   PFV-A3-say PL.HUM PREP-EPEN-B1PL
     'We laughed about the reason they gave to us.'

(49) Ix-in-man   [**mach** ix-cha'   ha-k'o'ol   ].
     PFV-A1SG-buy WHICH PFV-please A2SG-stomach
     'I bought which(ever) one you liked.'

(50) Ix-cha'   hin-k'o'ol   [**tas   lum-al**   ix-a-man-a'   ].
     PFV-please A1SG-stomach   WHAT land-ABS PFV-A2SG-bought-TV
     'I like the land you bought.'

(51) Ol-in-tz'anh   [**jantak / jay-e'** ix-in-man-a'   ].
     PROS-A1SG-cook   HOW.MANY   PFV-A1SG-buy-TV
     'I'll cook the amount I bought.'

Example (48) is marked with "%" because it receives varying judgments, from absolutely grammatical to not so good. This might be due to competition with the noun *yuj* 'reason', which could replace *tas yuj* above, which would result in a headed RC with gapping.

    The only wh-word that is not allowed to serve as a relative pronoun in Max-FRs is *b'ak'inh* 'when', and, contrary to headed RCs, *b'ajt'il* cannot be used as a relative pronoun to substitute for WHEN. Instead, speakers use either *ha*, which is usually used as a topic/focus marker, or *yik'*, a relational noun meaning 'for'. The usage of both these morphemes at the same time is also possible, as in *hayik'*. An example is provided (52).[13]

(52) Ha-chi   tz-k'ul-ej   heb'   winh   [**ha/*b'aj /*b'ak'inh** ix-w-il-an
     PV-DEM   IPFV-do-DTV PL.HUM N.CLF   PV/WHERE/WHEN   PFV-A1SG-see-SUB
     el-ta].
     DIR.leave-SUF
      'This is what they were doing when I discovered it.'   (txt)

The examples above show that Max-FRs may appear as objects (e.g. (51)) or as complements to relational nouns (e.g. (46)), but Max-FRs can also be found in different syntactic positions, including as the subjects of transitive (53) and intransitive (54) verbs and as indirect objects (55).

(53) Ix-s-man   jun te'   onh   [**mach** tz-al-an   Kanjob'al   ].
     PFV-A3-buy one N.CLF avocado WHO   PFV-speak-AF   Q'anjob'al
     'The person who speaks Q'anjob'al bought an avocado.'

(54) Ix-k'a' b'at-i   [**tas**   ix-a-man-a'   ].
     PFV-rot DIR.go-IV   WHAT PFV-A2SG-buy-TV
     'What you bought has rotted.'

(55) Ix-w-ak'   k'en tumin   t'a   [**mach** ix-kan-an   k'e'en].
     PFV-A1SG-give N.CLF dinero PREP   WHO   PFV-ask.for-AF N.CLF
     'I gave the money to (the person) who asked for it.'

Also note that the relative pronoun *b'ajt'il* can appear in positions otherwise occupied by both PPs and NPs. While (56) features an example of *b'aj* introducing a PP argument, (57) shows one in which *b'aj* introduces an NP subject argument.

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[13] Speakers agree that *ha* in (52) could be replaced by either *yik'* alone or *hayik'* together, without any obvious consequences with respect to the meaning of the utterance.

(56) Ix-in-xit'   ek'   [FR **b'aj**   ay   hach] / [PP   t'a   San Mateo]
     PFV-A1SG-go DIR.pass   WHERE   EXT   B2SG   PREP   San Mateo
     'I went [where you live] / [to San Mateo].'

(57) Te-wach [FR **b'aj**   ay   hach] / [NP   San Mateo]
     INTS-good   WHERE   EXT   B2SG   San Mateo
     '[Where you live] / [San Mateo] is nice.'

Semantically, Max-FRs in Chuj behave like definite/maximal DPs. A semantic environment that demonstrates the definite/maximal interpretation of Max-FRs is ellipsis. To illustrate, let us first consider the contrast between elided definite and indefinite NPs. When the antecedent NP of an elided NP is definite, then the elided NP must be co-referential to the antecedent NP. This may be observed in example (59), considering the contexts in (58), where the only possible interpretation is one in which Malin spoke to the same elder as Xun.

(58) Context A (coreferential): *Xun and Malin spoke with the same elder.*
     Context B (non-coreferential): *Xun and Malin spoke with different elders.*

(59) Context A: ✓, Conext B: *
     Ha waj   Xun ix-lolon   winh y-et'   **winh** icham. Pax ix   Malin.
     PV N.CLF Xun PFV-speak N.CLF A3-with N.CLF elder   Also N.CLF Malin
     'Xun spoke with an elder. Malin did so also.'

This restriction is not present in antecedent clauses that contain indefinite NPs. This is demonstrated in (60), again considering the contexts in (58), where the utterance is felicitous even when the elided NP refers to a different elder than the one John saw.

(60) Context A: ✓, Context B: ✓
     Ha waj   Xun ix-lolon   winh y-et'   **jun winh** icham. Pax ix   Malin.
     PV N.CLF Xun PFV-speak N.CLF A3-with one N.CLF elder   Also N.CLF Malin
     'Xun spoke with an elder. Malin did so also.'

When replacing the relevant antecedent NP above with a FR, we observe that Max-FRs act like definite NPs and not like indefinite NPs. Consider context (61) and example (62). For the utterance to be felicitous, the elided NP, whichever person Malin saw, must be the same person Xun saw, as was the case with the definite NP.

(61) Context A (coreferential): *Xun and Malin spoke to the same person who speaks Q'anjob'al.*
     Context B (non-coreferential): *Xun and Malin spoke to different people who both speak Q'anjob'al.*

(62) Context A: ✓, Context B: *
     Ha waj   Xun ix-lolon   winh y-et'   [**mach** tz'-al-an   Kanjob'al].   Pax
     PV N.CLF Xun PV-speak   N.CLF A3-with WHO   IPFV-speak-AF Q'anjob'al   also
     ix   Malin.
     N.CLF Malin
     'Xun spoke with (the person) who speaks Q'anjob'al. Malin did so also.'

The maximality of Chuj Max-FRs is also illustrated in example (63) below. During elicitation, consultants were asked to judge an utterance in a context where the addressee, who we know knows all of the people who lied, must indicate to the speaker who lied. If the addressee knows that four people lied, but only points to one person, then consultants agree that the addressee is not following instructions, emphasizing the maximality condition on Max-FRs.

(63) Ch'ox   t'a-y-in   [**mach**-(tak) ix-'es-an-i   ]!
      indicate PREP-EPEN-B1SG   WHO-PL   PFV-lie-AF-IV
      'Show me who lied!'

Structurally, Max-FRs in Chuj are similar to regular questions, allowing almost all wh-words, which appear at the left edge of the FR. They require no special morphology and exhibit no restrictions on tense-aspect and/or person marking.

    I follow Kotek and Erlewine (2016) in positing that Max-FRs in Chuj are CPs at their core (see also Vázquez Álvarez and Coon this volume on the Mayan language Ch'ol). According to these authors, Max-FRs have a covert (ι) D-layer resulting in an argument of type *e* (Caponigro 2003). The proposed structure is represented below.

(64) Ix-in-s-mak'   [DP ι [CP **mach**   ix-hul   ek'-i   ]].
      PFV-B1SG-A3-hit   WHO   PFV-came   DIR.pass-IV
      'The person who came hit me.'   (Kotek and Erlewine 2016, 36)

4.1.2. Existential Free Relative Clauses in Chuj

Existential FRs (*Ex-FRs*) in Chuj appear embedded under specific types of predicates, including non-verbal existential predicates like *ay* 'there is', certain quantificational predicates, and dynamic verbs such as *say* 'to look for' (see Grosu 2004 on dynamic verbs).

    The parallel structure between the Max-FRs in the preceding section and the Ex-FRs examined here can be clearly seen with the predicate *ay*, which participates in the formation of a variety of different clauses, including existentials (65a), locatives (65b) and possessives (65c). Note that in Chuj, locatives like (67b) are distinguished from existentials like (67a) in requiring a directional particle after the predicate (Elias 2018).

(65) a. *Existential*
         Ay heb'   ix   ix   t'a   pat.
         EXT PL.HUM N.CLF woman PREP house
         'There are women in the house.'   (Elias 2018, 27)

      b. *Locative*
         Ay *(ek')   heb'   ix   ix   t'a   pat.
         EXT DIR.pass PL.HUM N.CLF woman PREP house
         'The women are in the house.'   (Elias 2018, 28)

c. *Possessive*

   Ay jun winh   hin-kumpare.
   EXT one N.CLF   A1SG-compadre
   'I have a compadre.'   (txt)

Existential clauses, as in (65a), are cross-linguistically known to disallow definite arguments (Milsark 1974; Freeze 1992). In the pair in (68) below, surface-identical FR strings appear in both the existential and locative constructions. As expected, the use of an FR in existential constructions requires an indefinite interpretation (i.e. an Ex-FR, not a Max-FR). Locative clauses, on the other hand, do *not* restrict their arguments to indefinites, and a Max-FR interpretation arises in (66b).

(66) a. Ay   [**tas**   tz-ko-chi'-a   t'a   y-ib'an   te'   mexa].
        EXT   WHAT IPFV-A1PL-eat-TV PREP A3-on   N.CLF table
        'There's something to eat on the table.' / not 'What we (will) eat is on the table.'

     b. Ay   *ek'*   [**tas**   tz-ko-chi-a'   t'a   yib'an   te'   mexa].
        EXT   DIR.pass   WHAT IPFV-A1PL-eat-TV PREP A3-on   N.CLF table
        'What we (will) eat is on the table.' / not 'There's something to eat on the table.'

Table 7 shows a list of wh-words that serve as relative pronouns in Ex-FRs. The wh-words that cannot function as relative pronouns in Ex-FRs are *b'ak'inh* 'when', *tas N-Vl* 'what + N', and *mach* 'which (+ N)' (not to be confused with *mach* 'who').

Table 7: Distribution of wh-expressions in Ex-FRs in Chuj

WHO	✓ mach
WHAT	✓ tas
WHEN	*b'ak'inh; b'aj or b'ajt'il used instead.
WHERE	✓ b'ajt'il
HOW	✓ tas TAM-aj / tas (TAM)-A-utej
WHY	% tas yuj
WHICH (+ N)	* mach
WHAT + N	* tas N-*Vl*
HOW MUCH/MANY (+N)	✓ jantak, ✓ jay-NUM.CLF

Examples of wh-expressions used as relative pronouns in Ex-FRs are provided in (67) to (72). All Ex-FRs in these examples are complements to the existential predicate *ay*, and the lack of a

directional particle following the predicate guarantees their existential status. Head nouns were added to English translations for translation purposes only. Note that a question was added prior to example (72) to clarify the context in which this utterance would be felicitous.

(67)   Ay [**mach** tz'-och   s-k'o'ol   t'a-y-onh   ].
           EXT   WHO   IPFV-leave A3-stomach PREP-EPEN-B1PL
           'Someone/some people hate(s) us.'   (txt)

(68)   Ay [**tas**   ix-in-man-a'   ].
           EXT   WHAT PFV-A1SG-buy-TV
           'We bought something'   (Kotek and Erlewine to appear, 70)

(69)   Ay [**b'aj**   mas te'-ay=xo   kontrol   ].
           EXT   WHERE more INTS-EXT=still control
           'Some places have more control.'   (txt)

(70)   Ay [**tas tz'aj/tzkutej** ko-b'o'-an   ixim   wa'il].
           EXT   HOW   A1PL-make-SUB N.CLF tortilla
           'There's (a way) how to make tortillas.'

(71)   % Ay [**tas yuj** ix-in-kot-i   ].
             EXT   WHY   PFV-B1SG-come-IV
           'There's (some reason) why I came.'

(72)   Tas ay ko-man-an-i? ('what is there to buy?')
           Ay [**jay-e'**   onh   ], [ay **jantak**   keneya   ]…[14]
           EXT HOW.MANY-NUM.CLF avocado   EXT HOW.MUCH/MANY bananas
           'There's some amount of avocado, some (bigger) amount of bananas…'

As was the case with Max-FRs, *tas yuj* 'why' receives varying judgments regarding its acceptability in Ex-FRs. Again, I suggest that this variation might be due to competition with the noun *yuj* 'reason' – (71) could be in competition with (73) below, which is not a free relative but a regular HR with a gap:

(73)   Ay **yuj**   ix-in-kot-i.
           EXT reason   PFV-B1SG-come-IV
           'There's a reason I came.'

Though the temporal wh-word *b'ak'inh* cannot be used in Ex-FRs, the wh-word for WHERE, *b'ajt'il*, may again replace it, as demonstrated in (74). In fact, *ay b'aj* is frequently used in natural discourse to mean both 'sometimes' and 'some places'.

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[14] As the translation indicates, free relatives with the wh-quantifiers *jantak* and *jay-NUM.CLF* appear to lead to different inferences with respect to quantity. While the use of *jay-NUM.CLF* leads to an inference of low quantity, the use of *jantak* leads to one of high quantity.

(74)   Ay [**b'aj / *b'ak'inh** tz-ko-nub'   ko-ti'   ].
        EXT   WHERE / WHEN   IPFV-A1PL-unite A1PL-mouth
        'Sometimes we close our mouth.'   (txt)

Note that when *tas* appears with a nominal domain, it cannot appear in an Ex-FR, as also pointed out in Kotek and Erlewine to appear:

(75)   *Ay [**tas**   **lu'um-(al)**   ix-in-man-a'   ].
          EXT   WHAT   land-ABST   PFV-A1SG-buy-TV
          Intended: 'We bought some land.'

In addition, *mach* 'which (+N)', not to be confused with the *mach* for WHO, is illicit in Ex-FR constructions, as shown by the ungrammaticality of (76):

(76)   *Ay [**mach**   **(lu'um)** ix-in-man-a'   ].
          EXT   WHICH   land   PFV-A1SG-buy-TV
          Intended: 'We bought something (some land).'

Ex-FRs are also introduced by predicates other than the existential quantifier *ay*, including the negated existential *malaj* (77), other predicates with existential force such as *ch'ok* 'other' (78), quantifiers with a predicative function like *tzijtum* 'many' (79), and dynamic verbs such as *say* 'to look for' (80) (Kotek and Erlewine to appear).

(77)   **Malaj**   [**tas**   tz-ko-chi-a'   ].
        NEG.EXT   WHAT IPFV-A1PL-eat-TV
        'We don't have anything to eat.'   (txt)

(78)   **Ch'ok [b'aj**   tz-in-man   te'].
        other   WHERE IPFV-A1SG-buy   N.CLF
        'I buy it (the wood) somewhere else.'   (txt)

(79)   **Tzijtum** [**b'aj**   tz-onh-ek'-i   ].
        many   WHERE IPFV-B1PL-pass-IV
        'We go to many places.'   (txt)

(80)   Ix-s-**say**   winh [**tas**   ix-y-ab'lej   ].
        PFV-A3-look.for N.CLF   WHAT PFV-A3-sample.food
        'He looked for something to eat.'   (txt)

Many other quantificational predicates and dynamic verbs may embed Ex-FRs, including *aj* 'to be born', *ojtakel* 'to find', *chax* 'to be found', *masel* 'every', *jab'* 'little', etc. (see Kotek and Erlewine to appear for more examples).

Ex-FRs behave like wh-questions, feature no restriction on tense-aspect or person marking, and do not require irrealis morphology. Structurally, I follow Kotek and Erlewine (2016) in positing that, just like Max-FRs, Ex-FRs are CPs with fronted wh-words. Contrary to Max-FRs, which are proposed in Kotek and Erlewine (2016) and section 4.1.1 above to involve an additional (ι) D-

layer resulting in an argument of type *e*, existential FRs must remain of type *<e,t>*, which explains their limited distribution to only predicates that allow CP complements of type *<e,t>*.

4.1.3. Free Choice Free Relative Clauses in Chuj

Chuj features a free-choice item, *yalnhej-wh,* which is also described in Kotek and Erlewine to appear. Though Kotek and Erlewine treat *yalnhej* as one segment synchronically, Buenrostro (2009) decomposes *yalnhej* as two separate morphemes: *yal,* an ability modal, and the clitic *nhej* 'only'.[15] I adopt Buenrostro's convention in this paper. Isolated examples of *yal* and *nhej* are found below:

(81) Tz-**yal** hin-noxw-i.
      IPFV-can A1SG-swim-IV
      'I can swim.'   (Buenrostro 2009, 218)

(82) Ay=**nhej** jun s-k'u'-al   b'ajt'il tz-y-ak'   k'inh chi.
      EXT=only one A3-day-NMLZ WHERE IPFV-A3-do party DEM
      'There's only one day when they party.'   (txt)

Yalnhej may combine with a FR, the result being a *free choice FR* (*FC-FR*), as in (83). It may also appear alone or combine directly with wh-words and nominals, as demonstrated in example (84) and (85).

(83) Ol-in-b'at=ok   **yal=nhej** [**b'aj**   ol-ach-b'at=ok   ].
      PROSP-B1SG-go=IRR can=only   WHERE PROSP-B2SG-go=IRR
      'I'll go wherever you go.'

(84) Ol-w-awt-ej   [**yal=nhej** **tas**   ].[16]
      PROSP-A1SG-read-DTV   can=only WHAT
      'I'll read anything / whatever.'   (Kotek and Erlewine to appear, 40)

(85) [**Yal**=xo=**nhej**   **tas**   te'-al   ] tz'-och-i.
        can=already=only WHAT wood-ABST IPFV-enter-IV
        'Any stick can be used.'   (txt)

Almost all wh-expressions in Chuj may combine with *yalnhej* to form a FC-FR, except for *tas yuj* 'why'. Interestingly, *b'ak'inh* may behave as a relative pronoun when combining with *yalnhej*, which is not possible with any of the other relativization constructions discussed in this paper. Table 8 shows the list of the possible wh-words in FC-FRs.

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[15] An analysis of *yalnhej* as a unique morpheme does not capture the fact that it may be interrupted by clitics like *xo* 'already' and *to* 'still', see example (85).
[16] Another possibility is that wh-words in this position could be grammaticalized nouns.

Table 8: Distribution of wh-expressions in FC-FRs in Chuj

WHO	✓ mach
WHAT	✓ tas
WHEN	✓ b'ak'inh
WHERE	✓ b'ajt'il
HOW	✓ tas TAM-aj / tas (TAM)-A-utej
WHY	* tas yuj
WHICH (+ N)	✓ mach
WHAT + N	✓ tas N-*Vl*
HOW MUCH/MANY (+N)	✓ jantak, ✓ jay-NUM.CLF

Examples containing each of the possible wh-words in FC-FRs are provided in (86) to (92), with the exception of *b'ajt'il,* already provided in (83) above.

(86)   [**Yal=nhej**   **mach** tz-jaw-i   ]   ol-in-och   y-et'ok.
           can=only   WHO   IPFV-come-IV   PROSP-B1SG-enter   A3-with
           'I will help whoever comes.'   (Kotek and Erlewine, to appear)

(87)   Ol-in-man-a'   [**yal=nhej**   **tas**   ol-a-man-a'   ].
           PROSP-A1SG-buy-TV   can=only   WHAT   PROSP-A2SG-buy-TV
           'I will buy whatever you buy.'

(88)   Ix-say   winh [**yal=nhej**   **tas tz'aj**   y-al-an   winh t'a-y   ix   ].
           PFV-look.for N.CLF   can=only   HOW   A3-speak-SUB N.CLF PREP-EPEN   N.CLF
           'I looked for whatever (way) to speak with her.'

(89)   Ol-in-b'at=ok   [**yal=nhej**   **b'ak'inh**   ol-ach-b'at=ok   ].
           PROSP-B1SG-go=IRR   can=only   WHEN   PROS-B2SG-go=IRR
           'I'll go whenever you go.'

(90)   [**Yal=nhej**   **mach** libro]   ix-in-sik'l-ej.
           an=only   WHICH   book   PFV-A1SG-choose-DTV
           'I chose whichever book.'

(91)   [**Yal=nhej**   **tas**   libro'-al   ] ix-in-sik'l-ej.
           an=only   WHAT   book-ABST   PFV-A1SG-choose-DTV
           'I chose whatever book.'

(92)   Ol-in-tup   [**yal=nhej   jantak**   s-tojol].
        PROS-A1SG-pay   can=only   HOW.MUCH   A3-cost
        'I'll pay whatever (amount) it costs.'

As for *tas yuj*, it cannot combine with *yalnhej* to form a FC-FR. This is illustrated by the ungrammaticality of (93).

(93)   *Ix-say   winh [**yal=nhej   tas yuj** s-lolon   y-et'   ix   ].
        PFV-look.for   N.CLF   can=only   WHY   A3-speak A3-with N.CLF
        Intended: 'He looked for whatever reason to speak with her.'

FC-FRs conform to the findings of cross-linguistic work on FC-FRs in triggering both *ignorance* and *indifference* readings (Dayal 1997, von Fintel 2000). For example, given a context which forces the ignorance reading, speakers judge FC-FRs with *yalnhej* as felicitous, as shown in (94).

(94)   Context: *It smells really good and I know it is because you're cooking. I can't see what it*
        is, nor can I figure out what it is just by its smell. I tell you:
        [**Yal=nhej   tas**   lan ha-tz'anh-an-i   ] te-wach   s-jab'.
         can=only   WHAT PROG A2SG-cook-SUB-IV INTS-good A3-smell
        'Whatever you're cooking smells really good.'   (ignorance reading)

Chuj FC-FRs are also felicitous in contexts that trigger *indifference* readings, as in (95). In this case, the ignorance reading is blocked – John knew what he had with him, he was just indifferent about what it was.

(95)   Context: *John is telling the story about when he was out of money on a trip and had to*
        cook whatever he found, regardless of what is was.
        Ix-in-tz'anh-a'   [**yal=nhej** tas   ay-ek'   t'a-y-in   ].
        PFV-A1SG-cook-TV can=only   WHAT EXT-DIR.pass PREP-EPEN-B1SG
        'I cooked whatever I had with me.'   (indifference reading)

In sum, Chuj features a free-choice item, *yalnhej*, which, despite appearing in other non-relativized structures, has the capacity of combining with relative clauses, the result being a FC-FR. Both *ignorance* and *indifference* readings are possible with Chuj FC-FRs.

4.1.4. Conclusion
A summary of possible wh-expressions in headed RCs, Max-FRs, Ex-FRs, and FC-FRs is provided in Table 6. Much of the observed variation has to do with headed RCs versus FRs. While headed RCs allow neither *tas* nor *mach* (WHO) as relative pronouns, these relative pronouns are acceptable in all three types of FRs. One puzzling point of variation is with *b'ak'inh*, which is almost never allowed as a relative pronoun, except when occuring with FC-FRs. There also appears to be variation in the acceptability of *tas yuj* as a relative pronoun, with considerable discrepancy in speaker judgments. Finally, observe that the distribution of wh-words in Ex-FRs is more limited than in Max-FRs and FC-FRs. While the wh-words *mach* (WHICH (+N)) and *tas N-Vl* (WHAT + N) are possible with the latter two, they are not possible with the former.

	Headed RC	Max-FR	Ex-FR	FC-FR
WHO (*mach*)	*	✓	✓	✓
WHAT (*tas*)	*	✓	✓	✓
WHEN (*b'ak'inh*)	*	*	*	✓
WHERE (*b'ajt'il*)	✓	✓	✓	✓
HOW (*tas TAM-aj / tas (TAM)-A-utej*)	✓	✓	✓	✓
WHY (*tas yuj*)	✓	%	%	*
WHICH (+N) (*mach*)	✓	✓	*	✓
WHAT + N (*tas N-Vl*)	*	✓	*	✓
HOW MUCH/MANY (+N) (*jantak / jay-NUM.CLF*)	✓	✓	✓	✓

4.2. Other headless relative clauses

In the previous section, a specific type of HRC was described: FRs, i.e., headless relative clauses that are introduced with wh-expressions. There are, however, other possibilities for the formation of HRCs, as is the case with other Mayan languages (see AnderBois and Chan Dzul this volume on Yucatec Maya and Vázquez Álvarez and Coon this volume on Ch'ol). One possibility is that they be introduced by the determiner-like elements discussed in section 2 above, including noun classifiers, demonstratives, quantifiers or by any combination of these elements. I refer to these as "[-Wh, +Det] HRCs" and discuss them in section 4.2.1. Chuj may also form HRCs which include both a determiner and a wh-word, which I refer to as "[+Wh, +Det] HRCs", and discuss them in section 4.2.2. Finally, HRCs can arise without being introduced by either determiners or wh-words. I refer to these as "[-Wh, -Det] HRCs" and introduce them in section 4.2.3.

4.2.1 [-Wh, +Det] HRCs

HRCs in Chuj appear with a number of determiner-like elements including demonstratives, noun classifiers, the plural marker *heb'*, and any quantifier (including *jun* and *juntzanh*). Examples of all of these possibilities are provided in (96) to (99).

(96)   Tz-cha   hin-k'o'ol   [ix-a-man   **chi**].
        IPFV-please A1SG-stomach PFV-A2GS-buy   DEM
        'I like the one you bought.'   (demonstrative)

(97) Tz-cha hin-k'o'ol [**lum** ix-a-man-a'].
IPFV-please A1SG-stomach N.CLF PFV-A2SG-buy-TV
'I like the one (pot) you bought.' (classifier)

(98) [**Heb'** ix-jaw-i] te-junk'o'olal heb'.
PL.HUM PFV-come-IV INTS-happy PL.HUM
'Those who came are happy.' (plural marker)

(99) Y-el-ta [**jun** s-kuch-an COMAR].
A3-go.out-SUF one A3-name-STAT COMAR
'What is called COMAR came out.'[17] (*jun*) (txt)

These elements may co-occur, as with regular noun phrases, leading to the same referential distinctions established in Table 3 above. An example is provided in (100), where a noun classifier and a demonstrative co-occur. Another example is provided in (101), where, similarly, the numeral *jun* and a noun classifier co-occur.

(100) Ha winhaj Xun [**winh** k'oj-an em **chi**].
PV N.CLF Xun N.CLF sit-STAT DIR.down DEM
'Xun is the one that is sitting.' (Buenrostro 2009, 155)

(101) Ix-cha' hin-k'o'ol [**jun winh** ix-hul-ek' ewi].
PFV-please A1SG-stomach one N.CLF PFV-come-DIR.pass yesterday
'I like the one who came yesterday.'

4.2.2 [+Wh, +Det] HRCs
Demonstratives, noun classifiers, and the plural marker may also combine with a wh-word to introduce HRCs. For instance, consider the naturally occurring example in (102), which features a headless relative formed of a wh-word, a noun classifier, and a demonstrative.

(102) [**Mach winh** niwan tz'-uk'-an **chi**], ha toton jun niwan jom chi tz-
WHO N.CLF big IPFV-drink-AF DEM PV DISC one big jom DEM IPFV-
kot t'a winh.
arrive PREP N.CLF
'The one who drinks a lot, we give him a big *jom*.' (txt)

Another example is (103), which shows that all three determiners may appear and combine together with a wh-word in a headless relative, though none of them are obligatory.

(103) Ix-onh-lolon-i y-et' [**mach (heb') (ix)** [tz'-al-an Kanjob'al] **(chi)**].
PFV-B1PL-speak-IV A3-with WHO PL.HUM N.CLF IPFV-speak-AF Q'anjob'al DEM
'We spoke with (the people) who speak Q'anjob'al.'

---

[17] COMAR (*Comisión Mexicana de Ayuda a Refugiados*) is a governmental refugee organisation in Mexico.

Examples (101) and (102) behave as expected given the way in which referential distinctions are established in Chuj (see Table 3 from Section 1.2 above). That is, the only possible interpretation of a headless relative appearing with a noun classifier and/or a demonstrative is one that is definite (or maximal).

Kotek and Erlewine (to appear) also argue that *jun* (and by implication *juntzanh*) may combine with a wh-word to introduce a headless relative, resulting in what they describe as a special type of indefinite free relative (see section 5.4 of their paper on "*jun free relatives*"):

(104)   Ix-w-il   **jun** mach ix-hul   ek'-i.
        PFV-A1SG-see   one WHO   PFV-come   DIR.pass-IV
        'I saw (a/*the person) who came.'   (Kotek and Erlewine to appear, 103)

According to these authors, (104) minimally contrasts with the utterance with a free relative in (104), which obligatorily leads to a maximal interpretation.

(105)   Ix-w-il   [**mach**   ix-hul   ek'-i   ].
        PFV-A1SG-see   WHO   PFV-come   DIR.pass-IV
        'I saw (the person) who came.'   (Kotek and Erlewine to appear, 105)

Kotek and Erlewine further note that the contrast between (104) and (105) complicates the classification of HRCs. Under their analysis, HRCs with *jun* are semantically indefinite, a property of Ex-FRs, but are not restricted to any particular predicate, a property of Max-FRs.

However, there is reason to believe that the complement of the verb in (103) is not a *headless* relative, but rather a *headed* relative clause. Recall from example (29) of section 2 above that *mach* can also serve as a noun meaning 'person' in Chuj. I therefore propose that the utterance in (103) contains a relative clause headed with *jun mach* 'a person'.[18] This account not only simplifies the classification of headless relatives in Chuj (since under this analysis, there is no special type of free relative), but also explains why *jun* cannot combine with other determiners in the formation of [+Wh, +Det] HRCs.[19] For example, though indefinite *jun* regularly combines with a noun classifier to introduce nouns, it cannot co-occur with the noun classifier *winh* in the formation of headless relatives:

(106)   Ix-w-il   **jun** mach [**(*winh)** ix-hul   ek'-i   ].
        PFV-A1SG-see   one WHO   N.CLF   PFV-come   DIR.pass-IV
        'I saw (a/*the person) who came.'

Future work should help to verify the predictions that follow from this analysis. For example, if this analysis is correct, (103) should be disliked by speakers who reject the use of *mach* as a noun, and wh-expressions that do not also function as nouns (e.g. *jantak)* should not appear in this position.

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[18] As already mentioned in section 2, *mach* is more restricted than *tas* insofar as it is often rejected with other determiners (noun classifiers and demonstratives). This is problematic for the analysis of *jun mach* 'a person' as the head of an RC (I thank Roberto Zavala for pointing this out). One possibility is that *jun mach* has grammaticalized not as a nominal, but as an indefinite pronoun (like English 'someone'). In this case, the relative clause is still headed by the indefinite pronoun and the incompatibility of *jun mach* with other (definite) determiners is expected.

[19] This account also explains why speakers translate utterances like (103) as "there is a person" rather than "there is someone", a fact that is also noted in Kotek and Erlewine (see consultant comment in example (100) of their paper).

4.2.3 [-Wh, -Det] HRCs

When in the scope of existential predicates, HRCs that lack both a relative pronoun and a determiner can also arise. This is the case in example (107) below.

(107)   Ay [ix-in-man-a'   ].
         EXT PFV-A1SG-buy-TV
         'I bought (things) / I went buying' (lit. There is that I bought.)

Other environments do not allow this option, including predicates like *say* 'to look for', which usually select for Ex-FRs, as shown in examples (108) and (109). The fact that [-Wh, -Det] HRCs are only possible with existential predicates is shared with at least Yucatec Maya, as described in AnderBois and Chan Dzul this volume.

(108)   Ix-cha'   hin-k'o'ol   [*(tas)   ix-a-b'o'-o'   ].
         PFV-please A1SG-stomach   WHAT   PFV-A2SG-make-TV
         Intended: 'I like what you made.'

(109)   Lan   hin-say-an   [*(tas)   ol-in-man-a'   ].
         PROG   A1SG-look.for-DEP WHAT   PROSP-A1SG-buy-TV
         'I'm looking for something to buy.'

Future investigation should attempt to establish the structure of utterances like (107) and whether they truly are headless relatives rather than headed RCs with a null or omitted head.

5. Conclusion

This paper surveyed different types of relative clause constructions in Chuj. This included headed relative clauses, and a variety of different headless relative clause constructions. The main focus was on free relative caluses. I showed that Chuj possesses three kinds of FRs: Max-FRs, Ex-FRs, and FC-FRs. I followed Kotek and Erlewine (2016) on Chuj and Caponigro (2003, 2004) more generally in positing that Max-FRs and Ex-FRs are CPs at their core, and that they minimally differ in terms of their distribution: while Ex-FRs are selected by a limited set of existential predicates and remain of semantic type $<e,t>$, Max-FRs have an extra covert DP layer, resulting in an argument of type e. Finally, I also demonstrated that, apart from free relatives ([+Wh, -Det] HRCs), Chuj possesses three different types of HRCs: [-Wh, +Det] HRCs, [+Wh, +Det] HRCs, and [-Wh, -Det] HRCs.

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