

Restrictions on Adjunct Extraction: Microvariation in Mayan

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1 Introduction

- In this talk, we will discuss the reported, but rarely analyzed, restriction on *adjunct* extraction in Mayan (Dayley 1985 for Tz'utujil, Silberman 1995 and Henderson 2008 for Kaqchikel, Can Pixabaj 2015 for K'iche'). Observe that a locative adjunct cannot be fronted freely below in (b); contrast with (c), which shows that the extraction is licit if the *fronting particle* /wi/ appears immediately after the verb:¹

- (1) *Kaqchikel* [adapted from Henderson 2008]
- a. X-Ø-in-löq' pa k'ayb'al.
PRF-ABS3SG-ERG1SG-buy PREP market
'I bought it in the market.'
- b. *Pa k'ayb'al x-Ø-in-löq' <pa k'ayb'al>.
PREP market PRF-ABS3SG-ERG1SG-buy
'In the market I bought it.' [extraction restriction]
- c. Pa k'ayb'al x-Ø-in-löq' wi <pa k'ayb'al>.
PREP market PRF-ABS3SG-ERG1SG-buy WI
'In the market I bought it.' [fronting particle]

- In contrast, high adjuncts such as temporal adverbs do not trigger the fronting particle²:

- (2) *Kaqchikel* [adapted from Henderson 2008]
- Pa toq'a n-Ø-a-bän (*wi) ri qa-wäy (<pa toq'a>).
PREP night IPF-ABS3SG-ERG3SG-make WI DEM GEN1PL-food
Intended: 'At night you make our food.'

*Authors are listed alphabetically.

¹ABS: absolutive; ACC: accusative; ACT: active; APP: applicative; AF: agent focus; ASP: aspect; CLF: classifier; DET: determiner; DIR: directional; ERG: ergative; EXT: extraction; FOC: focus; FP: fronting particle; FV: final vowel; FUT: future; GEN: genitive; IPF: imperfective; INC: incompletive; LER: left-edge resumptive; M: masculine; NOM: nominative; PASS: passive; PL: plural; PREP: preposition; PRF: perfective; PST: past; SBJ: subject; SS: status suffix; RN: relational noun; SG: singular; SA: subject agreement; VN: verbal noun.

²Henderson concludes that temporal adverbs are high by showing that they always occur to the right of other adjuncts, a sign of structural superiority.

- Restrictions on extraction are common cross-linguistically and are usually associated with specific syntactic domains.
- (3) a. ISLANDS: Ross 1967, Chomsky 1977,1986, Boeckx 2003, among others (e.g. *Who did James see [Mary and <who>]?)
- b. SYNTACTIC ERGATIVITY: Coon et al 2014, Aldridge 2004, Polinsky 2016, Deal 2016, Douglas et.al. 2017, Aissen to appear, Sheehan to appear

Questions:

☞ Is the restriction on adjunct extraction related to transitivity (like syntactic ergativity is)?

ANSWER: no

☞ What is the nature of the fronting particle?

ANSWER: it is the **pronunciation of a lower copy**

☞ In what component of the grammar is the variation in adjunct extraction located?

ANSWER: we are dealing with macro and micro-variation at **PF**

Outline of this talk

2. New data
3. Competing analyses and predictions
4. The fronting particle in K'iche'
5. Locating Adjunct Extraction Variation in PF
6. Conclusions

2 New Data

- We investigated the distribution of the fronting particle in two dialects of Kaqchikel (Tecpán and Patzún) and one dialect of Tz'utujil (Santiago).³

³To our knowledge, the syntax of the Santiago dialect has not been documented in detail; available grammars of Tz'utujil describe the San Juan (Dayley 1985) or San Pedro (García Ixmatá 1997) dialects. We found that the Santiago dialect is very divergent from the reported varieties, and its entire grammar is deserving of further investigation

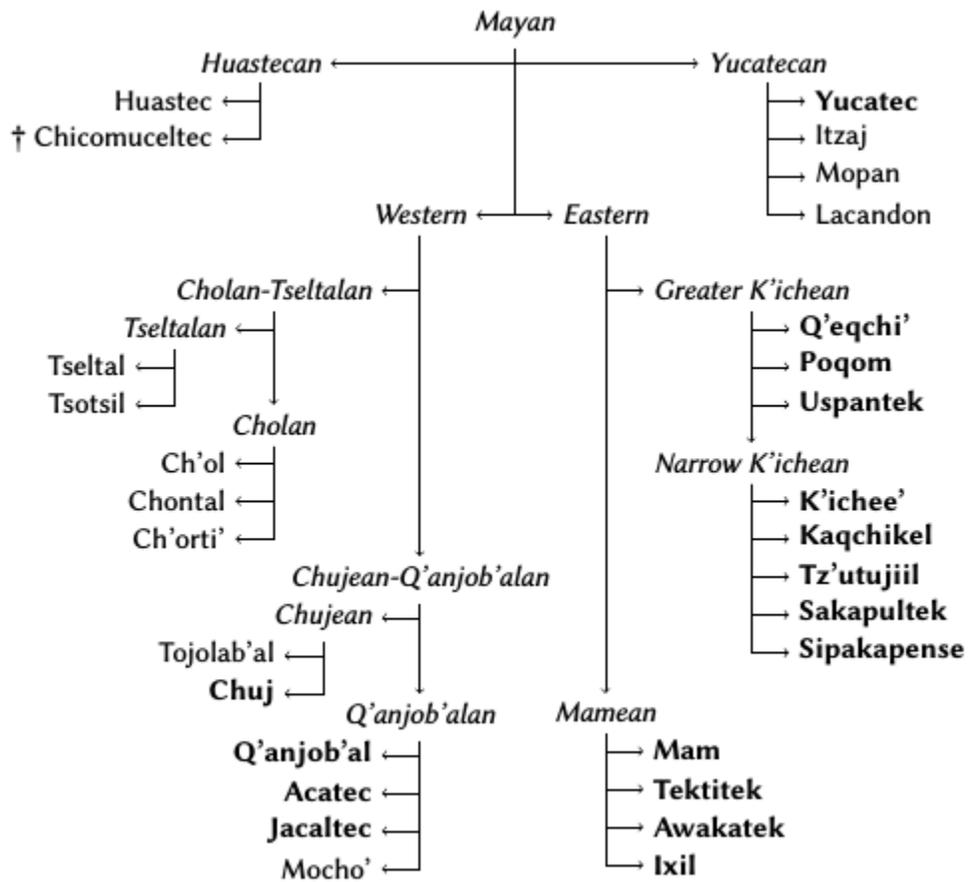


Figure 1: Mayan family (Velleman 2014)

2.1 Summary of results

- i. In **Tecpán Kaqchikel**, there is no fronting particle.
- ii. In **Patzún Kaqchikel**, the fronting particle is optional.
- iii. In **Santiago Tz'utujiil**, the fronting particle is obligatory.
- iv. The fronting particle cannot appear with an *in-situ* adjunct.

- *Wh*-extraction of a locative adjunct in an intransitive clause:

(4) *Tecpán Kaqchikel* → Free extraction of the adjunct, fronting particle is impossible

- a. Lolmaay x-Ø-tzopin ch-wa jay.
Lolmaay PRF-ABS3SG-jump PREP-GEN3SG.DIR house
'Lolmaay jumped in the garden.'
- b. *Akuchi'* x-Ø-tzopin ri Lolmaay <akuchi'>?
where PRF-ABS3SG-jump DET Lolmaay
'Where did Lolmaay jump?'
- c. **Akuchi'* x-Ø-tzopin wi ri Lolmaay <akuchi'>?
where PRF-ABS3SG-jump WI DET Lolmaay
Intended: 'Where did Lolmaay jump?'

(5) *Patzún Kaqchikel* → Fronting particle is optional

- a. Ri a Lu x-Ø-tzopin ch-wa jay.
DET CLF Lu PRF-ABS3SG-jump PREP-GEN3SG.DIR house
'Lu jumped in the garden.'
- b. *Akuchi'* x-Ø-tzopin a Lu <akuchi'>
where PRF-ABS3SG-jump CLF Lu
'Where did Lu jump?'
- c. *Akuchi'* x-Ø-tzopin wi a Lu <akuchi'>?
where PRF-ABS3SG.-jump WI CFL Lu
'Where did Lu jump?'

(6) *Santiago Tz'utijiil* → No free extraction of the adjunct, fronting particle is obligatory

- a. Axwan x-Ø-pa'ja ch-wech ru-jay.
Juan PRF-ABS3SG-fall PREP-GEN3SG.eye GEN.3SG-house
'Juan fell in the garden.'
- b. *B'ani'tz'ra'* x-Ø-paj=**wa** Axwan <b'ani'tz'ra'>?
where PRF-ABS3SG-fall=**WA** Juan
'Where did Juan fall?'
- c. **Bani'tz'ra'* x-Ø-pa'ja Axwan <b'ani'tz'ra'>?
where PRF-ABS3SG-fall Juan
Intended: 'Where did Juan fall?'

- The fronting particle cannot co-occur with an *in-situ* adjunct:⁴

(7) *Santiago Tz'utujil* → Fronting particle banned with *in-situ* adjunct

- Naq ru-k'in x-Ø-waa=*(wa) Yatrey <naq ru-k'in>?
 what GEN3SG-RN PRF-ABS3SG-eat=WA Yatrey
 'What did Andrea eat with?'
- X-Ø-waa ru-k'in ru-q'a.
 PRF-ABS3SG-eat GEN3SG-RN GEN3SG-hand
 'She ate with her HAND.'
- *X-Ø-waa=wa ru-k'in ru-q'a.
 PRF-ABS3SG-eat=WA GEN3SG-RN GEN3SG-hand
 Intended: 'She ate with her HAND.'

- To investigate the distribution of the fronting particle, we tested contexts that varied along the following variables:

1. Three types of A'-movement: focus fronting (new information, contrastive, exhaustive), *wh*-questions and relativization
2. Four different types of adjuncts: locatives, instrumentals, benefactives, comitatives
3. Both transitive and intransitive verbs

- Results

	Kaqchikel Tepán	Kaqchikel Patzún	Tz'utujil Santiago
V intransitive Locative	N/A	optional	obligatory
V intransitive Instrumental	N/A	optional	obligatory
V intransitive Comitative		N/A; optional	obligatory
V intransitive Benefactive		N/A; optional	obligatory
V transitive Locative		optional	obligatory
V transitive Instrumental		optional	obligatory
V transitive Comitative			obligatory
V transitive Benefactive			obligatory

⁴Note that this example shows that adjuncts can be focused *in-situ* in Santiago Tz'utujil, since they are felicitous as answers to an adjunct-oriented *wh*-question. This is also true of K'iche' (Leah Velleman p.c.), which we discuss later.

- A sample of data points for each type of adjunct is illustrated using instrumental extraction in each of the languages:

(8) *Tecpán Kaqchikel* → Focus of instrumental with intransitive verb

- a. **Choq'in** x-Ø-tzopin (*wi) ri Ixchel <choq'in>?
 with.what PRF-ABS3SG-jump WI DET Ixchel
 'What did Ixchel jump with?'
- b. **Rik'in** ri k'an x-Ø-tzopin (*wi) <rik'in-ri-k'an>.
 GEN3SG.RN DET rope PRF-ABS3SG-jump WI
 'Ixchel jumped with the ROPE.'⁵

(9) *Patzún Kaqchikel* → Wh-question of instrumental with transitive verb

- Chojq'in** x-Ø-u-kupij (wi) ri ru-wäch che' ri Ixchel <chojq'in>?
 with.what PRF-ABS3SG-ERG3SG-cut WI DET GEN3SG-eye tree DET Ixchel
 'What did Ixchel cut the fruit with?'

(10) *Santiago Tz'utujil* → Focus of instrumental with intransitive verb

- a. **Naq ru-k'in** x-Ø-waa=*(wa) Yatrey <naq-ruk'in>?
 what GEN3SG-RN PRF-ABS3SG-eat=WA Yatrey?
 'What did Andrea eat with?'
- b. **Ru-k'in** ru-q'a x-Ø-waa=*(wa) <ruk'inru-q'a>.
 GEN3SG-RN GEN3SG-hand PRF-ABS3SG-eat=WA
 'Andrea ate with her HAND.'

- Relativization of a comitative adjunct is observed for Santiago Tz'utujil below:

(11) *Santiago Tz'utujil* → Relativization of comitative with transitive verb

- Ru-k'in** x-Ø-Ø-chumij=*(wa) jk'omik Yatrey <ruk'in> jara'
 GEN3SG-RN PRF-ABS3SG-ERG3SG-prepare=WA sauce Yatrey COPULA
 ninmal.
 GEN1SG.MOTHER
 'The person Andrea prepared sauce with is my mother.'
 'Con quien preparó recado Andrea es mi madre' (Spanish)

- Benefactive extraction:

(12) *Patzún Kaqchikel* → Focus of benefactive with intransitive verb

- a. **Achoq ru-ma'** x-Ø-samäj (wi) ri Daniel <achoj-uma'>?
 WH GEN3SG-RN PRF-ABS3SG-work WI DET Daniel
 'Who did Daniel work for?'

⁵Robert Henderson asks us whether the unavailability of the fronting particle here could be related to a ban on having the fronting particle clause finally, similarly to certain status suffixes in Mayan that do not surface in such a position. However, the fronting particle is allowed clause finally in Patzún Kaqchikel and Santiago Tz'utujil, so a morphophonological requirement does not seem to be at play here. For instance, the sentence *Akuchi' yojwa' wi?* 'Where are we eating?' is allowed in Patzún Kaqchikel, even though the fronting particle is clause final.

- b. Xaxe' ru-ma' ri ru-cha ri Daniel x-Ø-samäj (wi)
 only GEN3SG-RN DET GEN3SG-aunts DET Daniel PRF-ABS3SG-work WI
 <xaxe' ruma' ri ru-cha>.

'Daniel worked only for his AUNTS.'

- (13) *Santiago Tz'utujil* → Wh-question of benefactive with intransitive verb
 Naq prub'i x-Ø-at-smoj=*(wa) atet <naq prub'i>?
 who PREP.GEN3SG.name PRF-ABS3SG-ERG2SG-work=WA you
 'Who did you work for?' (Literally: 'On whose name did you work?')

- We do not see an effect due to transitivity.
- What is the nature of the fronting particle?

3 Competing analyses and predictions

- Four hypotheses about the nature of the fronting particle:

- (14) a. ✗ it is an **applicative head**
 b. ✗ it is a **resumptive clitic**
 c. ✗ it is the **spell-out of the movement triggering head** (*wh*-agreement)
 d. ✓ it is the **pronunciation of a lower copy**

- Long distance extraction allows us to tease apart these hypotheses.

1. **Long-distance extraction** data from Patzún Kaqchikel show that **the applicative head** (14a) and **resumptive clitic** hypotheses (14b) are untenable.
2. Data related to island effects in Patzún Kaqchikel **do not support the resumptive clitic hypothesis** (14b).
3. Only the **movement triggering head** (14c) and **copy pronunciation** (14d) hypotheses are tenable given these diagnostics.
4. In the next subsection, we will argue that K'iche' data show that the **copy pronunciation** hypothesis seems to be correct for a unified analysis of the fronting particle in Mayan.

3.1 Applicative head hypothesis

- We can analyze the fronting particle as an applicative head (Baker 1988, Pykkänen 2002, a.o) that introduces an argument. Observe the examples below:

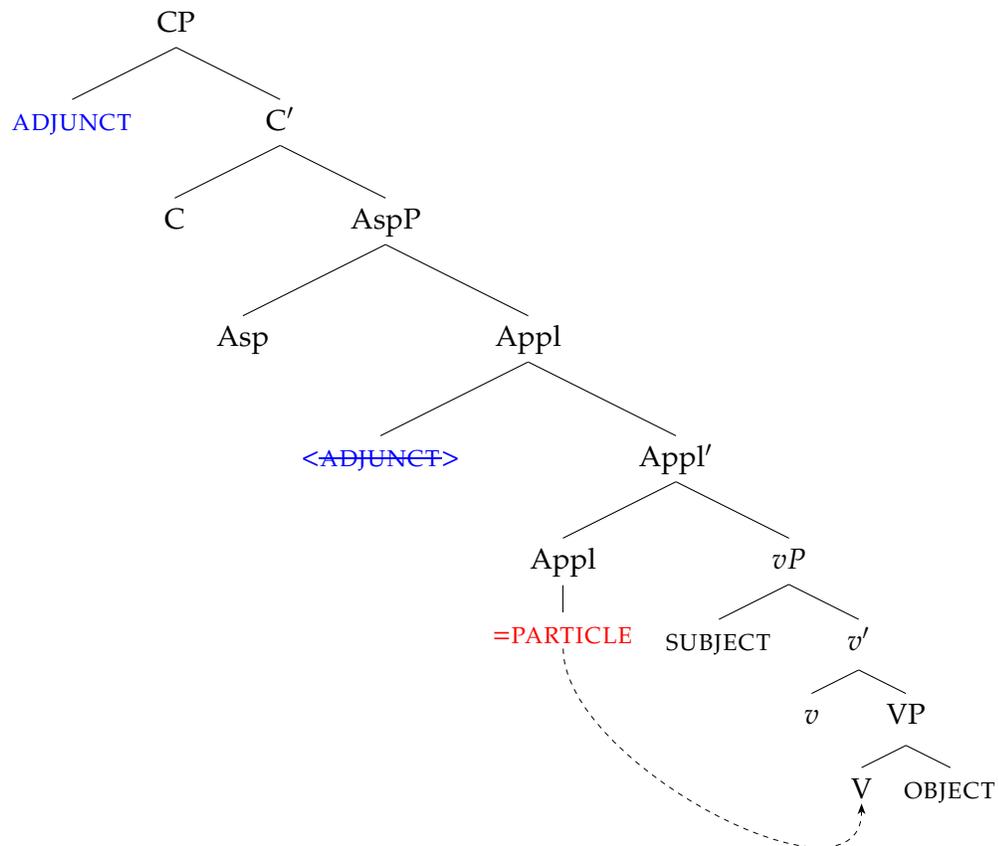
(15) *Chichewa* (Bantu)

[Baker 1988]

- a. Mavuto a-na-umba-a mtsuko.
Mavuto SA-PST-mold-ASP waterpot
'Mavuto molded the waterpot.'
- b. Mavuto a-na-umb-ir-a mpeni mtsuko.
Mavuto SA-PST-mold-APPL-ASP knife waterpot
'Mavuto molded the waterpot with a knife.'

- The applicative head would insert the adjunct higher and to the left of all other arguments; the other arguments would get "trapped" below the adjunct.
- This hypothesis can be implemented in different ways, but for our current purposes, we remain neutral.

(16)



 PREDICTION: With regards to long distance extraction (e.g. "Where did John say [that Mary ate the cake <where>]"), the **applicative head** hypothesis makes the prediction that the fronting particle will appear only in the embedded clause from which the adjunct is extracted.

- This prediction is wrong; in long-distance extraction, the fronting particle appears in both embedded and matrix clauses, as shown below:

(17) *Patzún Kaqchikel* - long distance extraction

- a. *Ankuchi* x-Ø-u-b'ij Maria [*<ankuchi>* chi x-Ø-u-tey
where PRF-ABS3SG-ERG3SG-say Maria that PRF-ABS3SG-ERG3SG-eat
 knaq Juan *<ankuchi>*?
 beans Juan
 'Where did Mary say that Juan ate the beans?' [no fronting particle]
- b. *Ankuchi* x-Ø-u-b'ij *wi* Maria [*<ankuchi>* chi
where PRF-ABS3SG-ERG3SG-say *wi* Maria that
 x-Ø-u-tey knaq Juan *<ankuchi>*?
 PRF-ABS3SG-ERG3SG-eat beans Juan
 'Where did Mary say that Juan ate the beans?' [fronting particle in matrix clause]
- c. *Ankuchi* x-Ø-u-b'ij Maria [*<ankuchi>* chi x-Ø-u-tey
where PRF-ABS3SG-ERG3SG-say Maria that PRF-ABS3SG-ERG3SG-eat
wi knaq Juan *<ankuchi>*?
wi beans Juan
 'Where did Mary say that Juan ate the beans?' [fronting particle in embedded clause]
- d. *Ankuchi* x-Ø-u-b'ij *wi* Maria [*<ankuchi>* chi
where PRF-ABS3SG-ERG3SG-say *wi* Maria that
 x-Ø-u-tey *wi* knaq Juan *<ankuchi>*?
 PRF-ABS3SG-ERG3SG-eat *wi* beans Juan
 'Where did Mary say that Juan ate the beans?' [multiple fronting particle]

- The **applicative head** hypothesis (14a) is untenable.

3.2 Resumptive clitic hypothesis

- Resumptive pronouns/clitics (Ross 1967, Chomsky 1977, Shlonsky 1992, Boeckx 2003, a.o.) appear in the position where an extracted element is generated.
- Resumptive clitics are pronoun-like and appear attached to some other, usually verbal element.

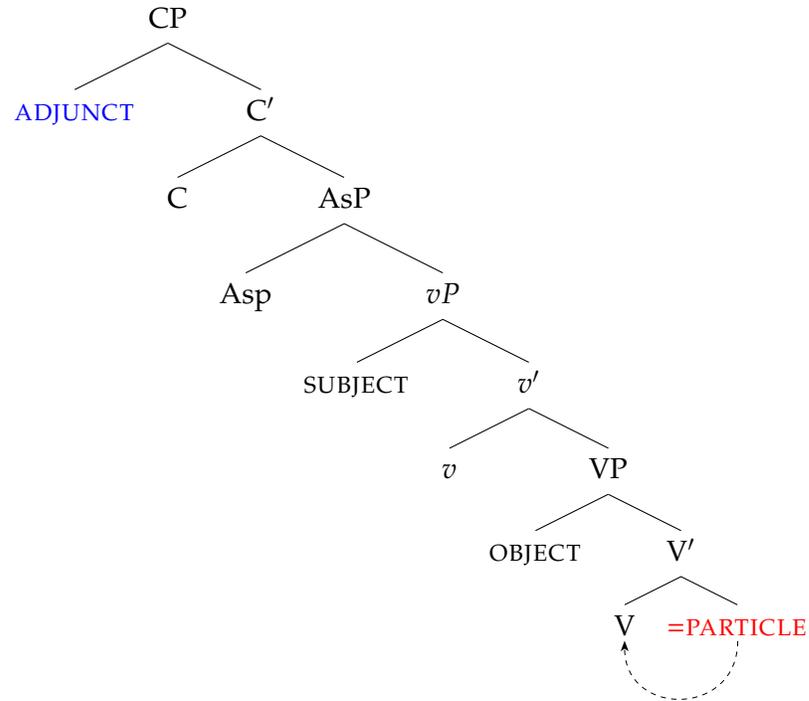
(18) *Modern Arabic* - gap strategy [From Alotaib & Borsley 2013]
 ?ayy-a T-tullaab-i qaabala l-qaa?id-u <?ayy-a T-tullaab-i>?
 which-ACC the-students-GEN met.3SG.M the-leader-NOM
 'Which of the students has the leader met?'

(19) *Modern Arabic* - resumptive clitic [From Alotaib & Borsley 2013]
 ?ayy-u T-tullaab-i qaabala-hum l-qaa?id-u <?ayy-a T-tullaab-i>?
 which-NOM the-students-GEN met.3SG.M-them the-leader-NOM
 'Which of the students has the leader met?'

- The resumptive pronoun occupies the base position of the adjunct.⁶

⁶There are different analyses of resumptive pronouns in the literature. This structure exemplifies an analysis of resumption that does not involve movement.

(20)



📖 PREDICTION: With regards to long distance extraction (e.g. "Where did John say [that Mary ate the cake <where>]"), the **resumptive clitic** hypothesis makes the prediction that the fronting particle will appear only in the embedded clause, from which the adjunct is extracted.

- This prediction is wrong here as well; remember that in long-distance extraction, the fronting particle appears in both embedded and matrix clauses, as shown below:

(21) *Patzún Kaqchikel* - long distance extraction

Ankuchi x-Ø-u-b'ij wi Maria [<ankuchi> chi x-Ø-u-tey wi
 where PRF-ABS3SG-ERG3SG-say WI Maria that PRF-ABS3SG-ERG3SG-eat WI
 knaq Juan <ankuchi>]?
 beans Juan
 'Where did Mary say that Juan ate the beans?'

- In languages such as Lebanese Arabic, resumptive pronouns can ameliorate island effects, as seen below.

(22) *Lebanese Arabic*

[Aoun and Choueiri (1996)]

fiskiina maʕ l-muʕriʒ yalli fallit laila ʔabl ma tʃuuf-*(o)
 talked.1P with the-director that left L. before see.3SF-*(him)
 'We talked to the director that Laila left before she saw him.'

☞ PREDICTION: The **resumptive clitic** hypothesis would be consistent with the amelioration of island effects.

- Data from Patzún Kaqchikel show that island effects are not ameliorated by the fronting particle, which is inconsistent with the resumptive clitic hypothesis.
- The data below show therefore that the fronting particle arises via movement.

(23) *Patzún Kaqchikel* - no amelioration of island effects

- a. Maria n-Ø-u-raj la ala' [ki x-Ø-tj-o knaq
 Maria IPF-ABS3SG-ERG3SG-love DET man that PRF-ABS3SG-eat-AF beans
 chwa jay].
 PREP.GEN3SG.RN house
 'Maria loves the man who ate beans in the garden.'
- b. *Ankuchi Maria n-Ø-u-raj (wi) la ala' [<ankuchi> ki
 where Maria IPF-ABS3SG-ERG3SG-love WI DET man that
 x-Ø-tj-o (wi) knaq <ankuchi>].
 PRF-ABS3SG-eat-AF WI beans
 Intended: 'Maria loves the man who ate beans where?'

- The resumptive clitic hypothesis (14b) is untenable.

3.3 Movement triggering head hypothesis

- The fronting particle can be analyzed as the spell-out of the X^0 that drives movement (Henderson 2008).
- Some languages have a dedicated morpheme that marks the displacement of elements to a focus position. The difference between the Mayan data and the examples below from Kuria would be which constituent the movement trigger attaches to; in Kuria to the displaced constituent itself, while in Mayan to the verbal stem.

(24) *Kuria* (Bantu) [Landman and Ranero to appear]

- a. Question: Where will Gati see the owl?
- b. N-ko mesa Gati umw-iti a-ra-maah-e <ko-mesa>.
 FOC-PREP table Gati 3-owl 3SA-FUT-see-FV
 'Gati will see the owl ON THE TABLE.'

- One way to analyze this is to say that the fronting particle is the spell out of a head in the CP layer bearing an EPP-feature and an Operator feature.⁷

⁷It is also possible to analyze the fronting particle as the spell out of a v^0 bearing the EPP feature.

(28) *Romani* [from McDaniel 1986 apud Nunes 2004]

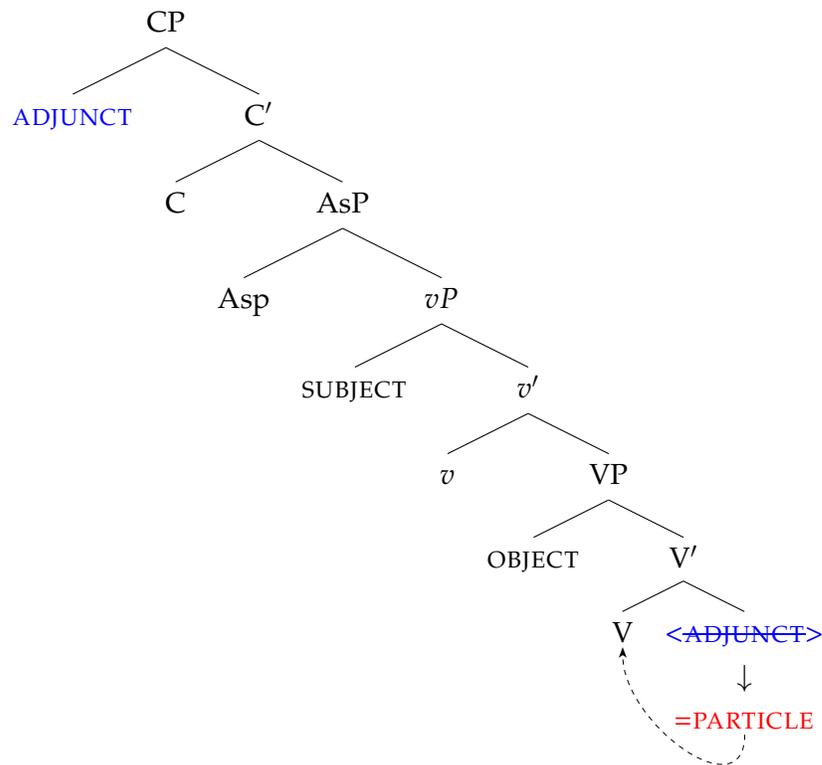
Kas misline *kas* o Demi'ri dikhlâ <*kas*>?
 whom you-think whom Demir saw
 'Who do you think Demir saw?'

(29) *Frisian* [from Hiemstra 1986 apud Nunes 2004]

Wêr tinke jo *wêr*'-t Jan wennet <*wêr*>?
 where think you where-that Jan lives
 'Where do you think that Jan lives?'

- Since fronting particles also appear in monoclausal structures, we assume that copies in base position can also be pronounced.⁸
- There are different ways to formulate this hypothesis. Let's do it as follows:

(30)



PREDICTION: With regards to long distance extraction (e.g. "Where did John say [that Mary ate the cake <where>]"), the **copy pronunciation** hypothesis makes the prediction that the fronting particle will appear in multiple clauses.

⁸Another hypothesis would be to say that fronting particles are the spell out of the traces in [Spec,vP] Chomsky 1986/1995/2000/2001, Legate 2003, Cozier 2004, van Urk, 2015 a.o. See also Den Dikken 2009, according to which the landing sites of successive cyclic movement are exclusively vP. The long distance extraction data we present from K'iche suggest this analysis would be on the wrong track.

- This prediction is borne out here too, see below one final time:

(31) *Patzún Kaqchikel* - long distance extraction
 Ankuchi x-Ø-u-b'ij wi Maria [<ankuchi> chi x-Ø-u-tey wi
 where PRF-ABS3SG-ERG3SG-say WI Maria that PRF-ABS3SG-ERG3SG-eat WI
 knaq Juan <ankuchi>]?
 beans Juan
 'Where did Mary say that Juan ate the beans?'

3.5 Summary - hypotheses & predictions

- Only the **movement triggering head** (14c) and **copy pronunciation** (14d) hypotheses are tenable.
- In the next section, we delve into K'iche' in order to tease apart these two hypotheses.
- We conclude the **copy pronunciation** hypothesis is correct for a unified analysis of the FP in Mayan.

4 The fronting particle in K'iche'

- K'iche' also has a fronting particle for adjunct extraction (Velleman 2014, Can Pixabaj 2015); observe the extraction of a locative adjunct below:

(32) *K'iche'* [Can Pixabaj 2015]
 Jawi x-Ø-u-pachi-j wi ub'i le ak'aal <jawi>?
 where PRF-ABS3SG-ERG3SG-push-CS WI DIR the child
 'Where did she push the child?'

- There is independent evidence in K'iche' that the examples we present involve movement; a locative phrase cannot be extracted from an adjunct:

(33) *K'iche'* [Can Pixabaj 2015]
 a. K-in-chakun-ik r-eech k-at-wa' pa tijob'al.
 INC-ABS1SG-work-SS GEN3SG-RN INC-ABS2SG-eat PREP school
 'I work so that you can eat at school.'
 b. *Jawi k-at-chak-un-ik r-eech k-at-wa' wi?
 where INC-ABS2SG-work-SS GEN3SG-RN INC-ABS2SG-eat WI
 Intended reading: 'What is the place such that you work there so that you can eat in that place?'⁹

- Long-distance extraction data from K'iche' show that the distribution of the fronting particle varies depending on the type/size of complement clause from which an adjunct is extracted.

⁹This island effect is not specific to adjunct extraction, since Can Pixabaj also shows that arguments cannot be extracted from adjuncts.

- If an adjunct is extracted from an embedded clause that contains a nominalized verb (marked with *-ik*, VN "verbal noun"), the fronting particle appears only in the main clause; this suggests that the fronting particle can only attach to verbs.

(34) *K'iche'* [Can Pixabaj 2015]
 Jawi x-Ø-a-taqchi'-j wi le ak'aal [ch-u-mool-ik ab'aj
 where PRF-ABS3SG-ERG3SG-force-ACT WI the child PREP-GEN3SG-gather.PASS-VN stone
 <jawi>]?

'Where did she force the boy's stone gathering?'¹⁰

- We now expand on the observation made by Can Pixabaj (2015) that the appearance of /wi/ is tied to the size of the CP layer.
- Embedded finite clauses, are divided into two groups: (i) ones with an overt complementizer and (ii) ones without an overt complementizer.
- Extraction from an embedded finite clause with an overt complementizer results in the fronting particle appearing on both the embedded verb and the matrix verb.

(35) *K'iche'* [Can Pixabaj 2015]
 Jawi x-Ø-ki-b'i-j wi [<jawi> chi k-e-'e wi <jawi>]?
 where PRF-ABS3SG-ERG3PL-say-ACT WI COMP IPF-ABS3PL-go WI
 'Where did they say that they would go?'

- Extraction from an embedded finite clause without a complementizer results in the fronting particle appearing only in the embedded clause.

(36) *K'iche'* [Can Pixabaj 2015]
 Jas r-uuk' k-Ø-aw-aa-j [k-Ø-a-choy wi le sii'
 WH GEN3SG-RN IPF-ABS3SG-ERG2SG-want-ACT IPF-ABS3SG-ERG2SG-cut WI the firewood
 <jas-ruuk'>]?

'With what do you want to cut the firewood?'

	Main verb	Complement Verb
Complement clause with C	wi	wi
Complement clause without C	-	wi
non-finite complement	wi	-

Adapted from Can Pixabaj 2015, p. 168

- These data help us distinguish between the **movement triggering head** and **copy pronunciation** hypotheses, both of which had been consistent so far with our results in Kaqchikel and Tz'utujil.

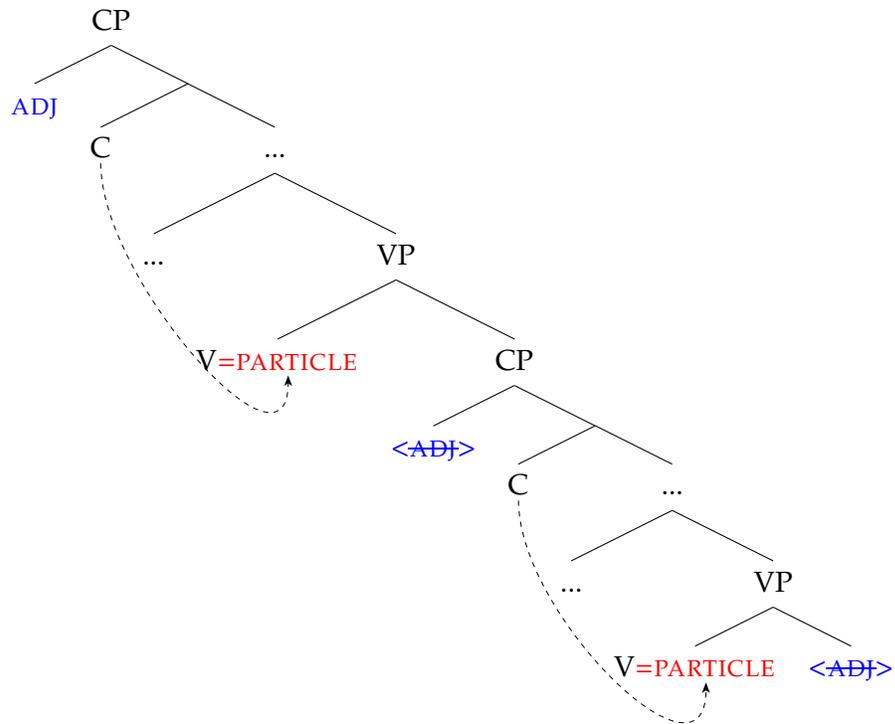
¹⁰We modified the translation to fit the analysis Can Pixabaj provides of the complement clause being a nominalization.

- The **movement triggering head** and the **copy pronunciation** hypotheses differ from each other regarding *where* the fronting particle is generated:

(37) *Movement triggering head hypothesis*

- a.  the head in the C domain that triggers movement of the adjunct to the CP domain is spelled-out as [wi]/[wa] and attaches downward to verb in the clause.

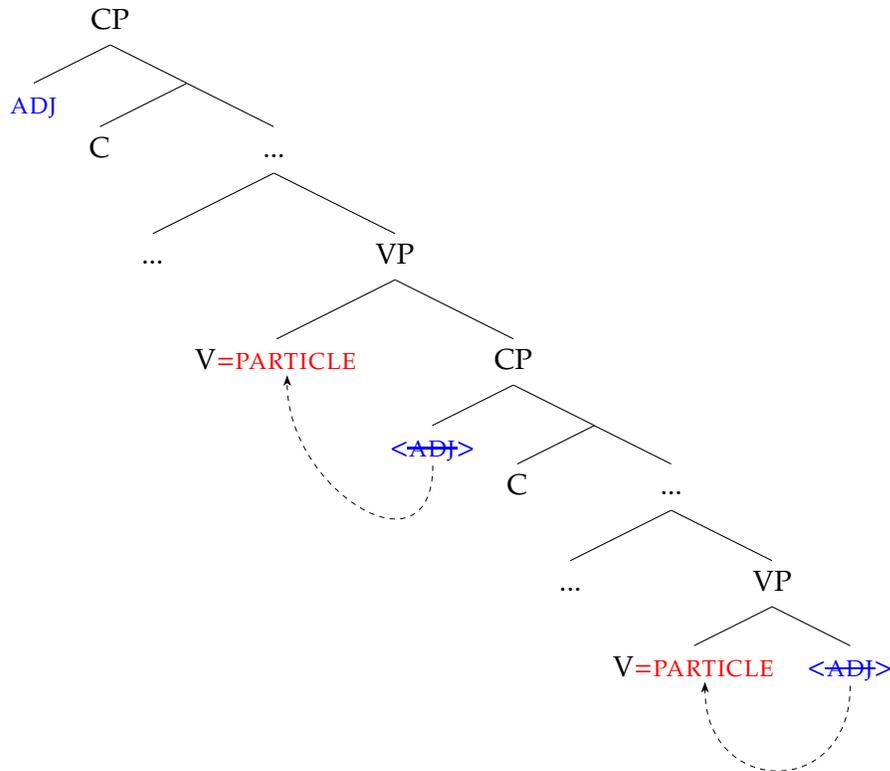
b.



(38) *Copy pronunciation hypothesis*

a.  adjunct copies are spelled out as [wi]/[wa] and attach upward to the nearest verb-like element.

b.



- Let us assume that the absence of the complementizer signals the absence of the CP layer.
- Crucially, the **copy pronunciation** hypothesis predicts that in the absence of a CP layer in the embedded clause, the fronting particle should not appear in the main clause
- In contrast, the **movement triggering head** hypothesis predicts that in the absence of a CP layer in the embedded clause, the fronting particle should appear in the main clause.
- Let us look back at the crucial data, where extraction occurs from an embedded clause lacking a CP layer:

(39) *K'iche'*

[Can Pixabaj 2015]

Jas r-uuk' k-Ø-aw-aaj [k-Ø-a-choy wi le sii'
 WH GEN3SG-RN IPF-ABS3SG-ERG2SG-want IPF-ABS3SG-ERG2SG-cut WI the firewood
 <jas r-uuk'>]?

'With what do you want to cut the firewood?'

- As we can see, the **copy pronunciation** hypothesis makes the correct prediction and the **movement triggering head** hypothesis makes the wrong prediction.

☞ The fronting particle is the overt **pronunciation of a movement copy** of an adjunct.

- Finally, notice that the verb *aa-j* "want-ACT" can select either a reduced clause or a CP with an overt complementizer.

(40) *K'iche'* [Can Pixabaj 2015]

- a. ka-Ø-w-aa-j [chi k-at-'ee-k]
 IPF-ABS3S.ERG1S-want-ACT COMP IPF-ABS2S-come-SS
 'I want you to go/I want that you go.'
- b. ka-Ø-w-aa-j [k-at-'ee-k]
 IPF-ABS3S-ERG1S-want-ACT IPF-ABS2S-go-SS
 'I want you to go/I would like you to go.'

- If our analysis is right, we predict that the fronting particle can appear in the matrix clause in a sentence like (b), with a complementizer, but not like (a), without a complementizer.
- This prediction is correct; observe below that /wi/ appears in both embedded and matrix clauses in a sentence where 'want' selects for a CP with an overt complementizer.

(41) *K'iche'* [Telma Can Pixabaj p.c.]

- a. *Jawi* k-Ø-ar-aa-j wi [*<jawi>* chi k-at-wa' wi *<jawi>*?
 where IPF-ABS3SG-ERG3SG-want-ACT WI COMP IPF-ABS2SG-eat WI
 'Where does he want you to eat?'

- b. *K'iche'* [Can Pixabaj 2015]
Jas r-uuk' k-Ø-aw-aa-j [k-Ø-a-choy wi le
 WH GEN3SG-RN IPF-ABS3SG-ERG2SG-want-ACT IPF-ABS3SG-ERG2SG-cut WI the
 sii' *<jas ruuk'>*?
 firewood
 'With what do you want to cut the firewood?'

5 Locating Adjunct Extraction Variation in PF

- How should we model the observed variation in adjunct extraction in in Mayan?
- We propose that the phenomenon is an instance of variation at PF (Berwick and Chomsky 2011; Boeckx 2016).
- Pronouncing all the links of an adjunct movement chain would result in a *linearization paradox* (Nunes 2004; Boskovic and Nunes 2007) that must be resolved by PF.
- Observe how English passivization exemplifies the core of the idea:

(42) *English* [Nunes 2004]

- a. [John [was [kissed <John>]]].
- b. John was kissed.
- c. *John was kissed John.

- Let us assume the copy theory of movement and that asymmetric c-command determines the linear order of terminals at PF (Linear Correspondence Axiom (LCA); Kayne 1994, Chomsky 1995, Nunes 2004).¹¹
- In (43)a, the head of the movement chain c-commands the copula 'was' and the copula 'was' c-commands the tail of the movement chain.
- (43)a cannot be linearized as (43)c because the copula 'was' cannot both precede and be preceded by 'John'.
- Further, the higher copy of 'John' c-commands the lower one, resulting in a linearization statement where 'John' would precede and follow itself.
- Deleting the tail of the movement chain solves the linearization paradox and (43)a is externalized as (43)b.¹²
- Crucially, multiple pronunciation of copies is attested in many languages.
- In the example below, an intermediate copy identical to the *wh*-word is pronounced:

(43) *German* [McDaniel 1986 apud Boskovic and Nunes 2007]

Wen denkst Du wen sie meint wen Harald liebt <wen>?
who think you who she believes who Harald loves
'Who do you think that she believes that Harald loves?'

- In some languages, the pronounced copies are not identical with the head of the movement chain.

(44) *Overijssel Dutch* [Barbiers et.al 2008]

Wat denk je wie ik gezien heb?
what think you who I seen have
'Who do you think I have seen?'

¹¹The problem of multiple copy realization and deletion of certain copies arises even if we assume other linearization procedures. We leave for future research the advantages of an LCA based approach versus others (Fox and Pesetsky 2005), including those that modify the LCA from its original formulation (for instance Sheehan 2013).

¹²Due to time considerations, I do not delve into the specifics of how PF decides which copies to delete. Nunes (2004) provides an account that capitalizes on the idea that deleting the foot of the chain is preferred because that copy has an unchecked feature that needs to be deleted at PF for the derivation to converge.

(45) *Seereer* [Baier 2014]

- a. Tam a xalaat-u yee *(maaga) ret-o <tam>?
where 3SBJ think-EXT C LER go-2SBJ.EXT
'Where does he think you went?'
- b. Maalo foog-uum ee ten Mataar a jaw-u <maalo>.
rice think-1SG.EXT C LER Mataar 3SBJ cook-EXT
'It's RICE that I think Mataar cooked.'

- Different approaches have been proposed to account for intermediate copy pronunciation. One influential analysis takes intermediate copies to fuse morphologically with the embedded C, rendering the copy invisible to the LCA (Nunes 2004).¹³
- Note however two crucial differences between the phenomenon in Mayan and what has been reported cross-linguistically.
- First, recall that we analyzed the fronting particle in K'ichean as the spell-out of the movement trace of an adjunct even in matrix clauses without any embedding.
- Copies in base position can therefore be pronounced in Mayan, in contrast to languages like Seereer, where intermediate copies are pronounced only in long-distance extraction.

(46) *Santiago Tz'utujil*

B'ani'tz'ra' x-Ø-paj=wa Axwan <b'ani'tz'ra'>?
where PRF-ABS3SG-fall=WA Juan
'Where did Juan fall?'

(47) *Seereer* [Baier 2014]

Xar Jegaan a jaw-'-u <xar>?
What Jegaan 3SBJ cook-PST-EXT
'What did Jegaan cook?'

- Second, copies of any complexity can be spelled out as the fronting particle in K'ichean, which contrasts with dialects of German where complex *wh*-phrases cannot be pronounced in multiple sites.¹⁴

(48) *Patzún Kaqchikel*

Xaxe' ru-ma' ri ru-cha ri Daniel x-Ø-samäj (wi)
only GEN3SG-RN DET GEN3SG-aunts DET Daniel PRF-ABS3SG-work WI
<xaxe' ruma' ri ru-cha>.

'Daniel worked only for his AUNTS.'

¹³Baier (2014) rejects this analysis for Seereer, since the intermediate copies and the complementizers pass all the diagnostics showing that they are independent words.

¹⁴In Seereer however, the copy of complex *wh*-phrases in long distance extraction *can* be pronounced; see Baier (2014: 10).

(49) *German* [McDaniel 1986 apud Boskovic and Nunes 2007]

**Wessen Buch* glaubst du *wessen Buch* Hans liest *<wessen Buch>*?
whose book think you *whose book* Hans reads
 Intended: 'Whose book do you think Hans is reading?'

- The inability of complex *wh*-phrases to appear as intermediate copies has been taken to be evidence that morphological fusion can only apply to simplex *wh*-phrases (Nunes 2004, Boskovic and Nunes 2007).¹⁵
- We propose that low adjunct copies in Mayan do not undergo fusion with embedded C.
- Instead, the PF component can avoid a linearization paradox by (i) *deleting* an offending copy (Tecpán Kaqchikel, Patzún Kaqchikel) or (ii) *transforming* an offending copy into a fronting particle, which cliticizes to the relevant host (Patzún Kaqchikel, Santiago Tz'utujiil, K'iche').
- Note that both strategies are available in Patzún Kaqchikel, leading to optionality in the pronunciation of the fronting particle.

(50) *Patzún Kaqchikel*

Ankuchi x-Ø-u-b'ij (wi) Maria [*<ankuchi>* chi
where PRF-ABS3SG-ERG3SG-say WI Maria that
 x-Ø-u-tey (wi) knaq Juan *<ankuchi>*?
 PRF-ABS3SG-ERG3SG-eat WI beans Juan
 'Where did Mary say that Juan ate the beans?'

(51) Output of Syntax *Linearization Paradox*

[CP *Ankuchi* [C ...*xub'ij*... [CP *<ankuchi>* [C⁰ *chi* [TP ... *<ankuchi>*]]]]]?

(52) PF Strategies to Resolve Paradox

- [CP *Ankuchi* [C ...*xub'ij*... [CP *<ankuchi>* [C⁰ *chi* [TP ... *<ankuchi>*]]]]]?
- [CP *Ankuchi* [C ... *xub'ij*... [CP *wi* [0 *chi* [TP ... *<ankuchi>*]]]]]?
- [CP *Ankuchi* [C ...*xub'ij*... [CP *<ankuchi>* [C⁰ *chi* [TP ... *wi*]]]]]?
- [CP *Ankuchi* [C ...*xub'ij*... [CP *wi* [0 *chi* [TP ... *wi*]]]]]?

- We conclude that this PF variation approach to adjunct fronting in K'ichean can capture the range of the phenomenon.

6 Conclusions

- We presented new data regarding A'-extraction (*wh*-questions, focus, relativization) of low adjuncts (locatives, instrumentals, benefactives, comitatives) in Tecpán Kaqchikel, Patzún

¹⁵It is however unclear to us whether this is simply a stipulation based on an intuition, or whether it is impossible to model fusion as applying to complex *wh*-phrases. For instance, we find the following passage from Boskovic and Nunes (2007: 54) perplexing: "As a rule, the more complex a constituent, the *less likely* it is for it to undergo fusion and become invisible to the LCA." (emphasis ours)

Kaqchikel, and Santiago Tz'utujil.

- We showed that there exists dialectal microvariation in Kaqchikel and Tz'utujil regarding the availability of a fronting particle upon adjunct extraction.
- We showed that the availability of the fronting particle is not conditioned by the type of verb used (intransitive versus transitive) in Kaqchikel and Tz'utujil.
- The fronting particle could be an applicative head (14a); a resumptive pronoun (14b); the overt realization of the movement triggering head (14c); the overt realization of a movement copy of the adjunct (14d).
- Long-distance extraction data show that the fronting particle is best analyzed as the pronunciation of a movement copy of an adjunct (14d).
- Finally, we showed how differences in adjunct extraction in K'ichean can be analyzed as variation at PF, which allows different strategies to resolve a linearization paradox.

NEXT STEPS

- Replicate in Santiago Tz'utujil all the long-distance extraction and island amelioration diagnostics.
- Replicate the K'iche' data in Kaqchikel and Santiago Tz'utujil.
- Investigate fronting particles in other Mayan languages; they have been reported for Q'eqchi' (Caz Cho 2000), Sakapulteko (Mó Isém 2007), Poqomam and Poqomchii' (Malchic et.al. 2000), Uspanteko (Can Pixabaj 2007), Sipakapense (Barrett 1999; Tema Bautista 2005), Tacana and Ostuncalco Mam (England 1989).
- There are two documented cases where there seems to be no movement, but the fronting particle appears nonetheless, for instance in predicate focus (Henderson 2008):

- (53) *Kaqchikel* [Henderson 2008, p.19]
- a. X-Ø-in-löq wi ri äk'.
PRF-ABS3S-ERG1S-buy WI DEM chicken
'I BOUGHT the chicken (I didn't steal it).'
- b. X-i-samäj wi.
PRF-ERG1S-work WI
'I WORKED (not anything else).'

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