Anti-locality and optimality in Kaqchikel Agent Focus

Michael Yoshitaka Erlewine, July 29, 2013

Many Mayan languages show a syntactically ergative extraction asymmetry whereby the $\overline{\text{A}}$-extraction of subjects of transitives requires special verbal morphology, known as *Agent Focus*. In this paper I investigate the syntax of Agent Focus in Kaqchikel, a Mayan language spoken in Guatemala. I argue that this extraction asymmetry in Kaqchikel is the result of a particular anti-locality constraint which bans movement which is *too close*. Support for this claim comes from new data on the distribution of Agent Focus in Kaqchikel which show this locality-sensitivity. The distribution and realization of Agent Focus will then be modeled using a system of ranked, violable constraints operating over competing derivations. This theoretical choice will be supported by details in the pattern of agreement in Agent Focus.

Keywords: Agent Focus, Mayan, ergativity, extraction asymmetries, anti-locality, ϕ-agreement, violable constraints

Contents

1 Introduction

It has been widely noted that $\overline{\text{A}}$-extraction of different arguments can be subject to different restrictions. In many cases, such extraction asymmetries identify subject positions as the locus of ideosyncratic behavior. This is observed in well-known cases such as English *that*-trace effects, the French *que/qui* alternation, the distribution of resumptive pronouns in Hebrew, among many others.

In a subset of Mayan languages, $\overline{\text{A}}$-extraction of subjects of transitive clauses triggers a change to that verb's morphology. This construction is called Agent Focus (AF) in the Mayan literature (Aissen 1999; Stiebels 2006; Norcliffe 2009; Coon et al. 2011; a.o.). AF is traditionally described as obligatory whenever the subject of a transitive clause is $\overline{\text{A}}$-extracted. In this paper I will discuss the distribution and derivation of the AF construction in Kaqchikel, a Mayan language of Guatemala.

Consider the basic transitive clause in (1). The verb "eat" is realized here as *xutëj*. When the subject of this transitive clause is extracted, as in the *wh*-question in (2), the verb must be realized in its AF-form, *xtjö*.[1] Verbal morphology in Mayan languages involve two agreement markers with an ergative / absolutive alignment, which I call Set A and Set B following the Mayan literature: in transitive clauses, Set B cross-references the object and Set A cross-references the subject; in intransitive clauses Set B cross-references the subject. AF verbs can be identified by the lack of a Set A agreement marker and the addition of an AF suffix, *-ö* or *-n*, which will always be in bold in this paper. The precise morphological realization of AF in Kaqchikel will be discussed in subsequent sections. (Here and throughout, subjects will be underlined where relevant.)

(1) **Basic transitive clause (VOS):**

Iwïr x-∅-u-tëj ri wäy ri a Juan.
Yesterday COM-B_{3sg}-A_{3sg}-eat the tortilla Juan

'Yesterday Juan ate the tortilla.'

(2) **Subject *wh*-question *requires AF*:**

Achike *x-∅-u-tëj / ✓x-∅-tj-**ö** ri wäy?
who COM-B_{3sg}-A_{3sg}-eat / COM-B_{3sg}-eat-**AF** the tortilla

'Who ate the tortilla?'

[1] Abbreviations used: A = Set A agreement, AF = Agent Focus, B = Set B agreement, COM = completive aspect, INC = incompletive aspect, FOC = focus marker, RC = relative clause marker, ∅ = empty string, for phonologically null morphemes. The aspectual terms "completive" and "incompletive" are used in the Mayan literature and are adopted here. The semantics of the aspectual system is not relevant to discussions here.

In contrast, an object *wh*-question also based on the transitive clause in (1) does not trigger AF:

(3) **Object *wh*-question does not trigger AF:**

Achike ✓x-∅-u-tëj / *x-∅-tj-**ö** ri a Juan?
what COM-B_{3sg}-A_{3sg}-eat / COM-B_{3sg}-eat-**AF** Juan

'What did Juan eat?'

Wh-movement is not the only trigger of AF. As we will see, all constructions involving $\overline{\text{A}}$-movement of the subject of a transitive verb can trigger AF on that verb.[2]

Why does AF appear in these cases where a transitive subject is extracted? I will argue that AF in Kaqchikel reflects a sensitivity to the *locality of movement* of a transitive subject, rather than a specific reaction to the extraction of a transitive subject. In particular, Kaqchikel has an anti-locality constraint that bans movement which is *too short*:

(4) **Spec-to-Spec Anti-Locality:**
$\overline{\text{A}}$-movement of a phrase from the Specifier of XP must cross a maximal projection other than XP.

I argue first that subjects of transitive verbs are required to be in a higher position in the clause than other types of arguments—Spec,TP. $\overline{\text{A}}$-movement of transitive subjects to the clausal periphery (from Spec,TP to Spec,CP) will be *too short*—a violation of Spec-to-Spec Anti-Locality (5a). In such situations a last-resort AF derivation is chosen, where the subject skips its normal Spec,TP position and instead moves directly from its base-generated position to Spec,CP.[3] $\overline{\text{A}}$-movement of other arguments begins from a position below Spec,TP, and thus is never in danger of triggering this anti-locality constraint.

(5) **Short $\overline{\text{A}}$-movement of transitive subjects triggers AF:**

a. * [$_{\text{CP}}$ subject C [$_{\text{TP}}$ ___ ... [$_{v\text{P}}$ ___ ... *violates Spec-to-Spec Anti-Locality!*

b. ✓[$_{\text{CP}}$ subject C [$_{\text{TP}}$ ... [$_{v\text{P}}$ ___ ... subject skips Spec,TP; triggers AF morphology

Evidence for this locality-sensitive view of Kaqchikel AF comes from new data where AF is not triggered even though a transitive subject has $\overline{\text{A}}$-moved (6). The intervening material makes the subject's movement from Spec,TP to Spec,CP no longer too short, and thus AF is not triggered.

[2]With the notable exception of topicalization, which will be discussed in a section 4.4.

[3]This "last-resort" nature of AF will be discussed in more detail and formally modeled in section 5.

(6) **Intervening material makes movement longer, obviating AF:**

✓[$_{CP}$ subject C [*...intervening material...* [$_{TP}$ ___ ... [$_{vP}$ ___ ... ⇒ no Agent Focus!

This analysis for the distribution of AF dovetails with my analysis for Kaqchikel clause structure and verbal agreement. In particular, I propose that Set A agreement morphology unambiguously expresses the ϕ-features of a DP in Spec,TP. In addition, Set B agreement is always available to cross-reference an argument of the verb. Movement to the Spec,TP subject position is not be triggered by an EPP feature, but rather by the desire to *maximally realize the ϕ-features of arguments on the verb*.

This constraint to maximize the ϕ-agreement with arguments will derive the pattern of morphological ergativity in Kaqchikel. In order to maximize ϕ-agreement in a transitive clause, one argument (the subject) will move to Spec,TP and be cross-referenced by Set A morphology and the object will be cross-referenced by Set B. However, in an intransitive verb, there is only one ϕ-agreement target. Agreement with the intransitive subject does not require movement, and therefore the intransitive subject stays *in-situ* and is cross-referenced by the Set B marker. An argument for this view of agreement will come later from the variable target of Set B agreement under AF.

At two points in this paper, we will see the effects of competition between two, independently-motivated constraints. First, we will see that in AF-triggering configurations, there is a conflict between Spec-to-Spec Anti-Locality and the constraint which maximizes ϕ-agreement. We will see that in AF clauses, the needs of Spec-to-Spec Anti-Locality win out over the need to maximize ϕ-agreement. Later, the pattern of agreement on AF verbs will motivate an additional constraint which enforces agreement with first- and second-person arguments. This causes the second conflict: I will then show that in certain configurations, the needs of this constraint to agree with first- and second-person arguments will win out over the needs of Spec-to-Spec Anti-Locality, causing a lack of AF in a context where AF is otherwise expected. Such interactions motivate modeling these constraints as violable and strictly ranked.

I begin in section 2 with a basic introduction to Kaqchikel verbal morphology and a survey of AF-triggering environments. The basic generalization will be that AF must be used when the subject of a transitive verb has been $\overline{\text{A}}$-extracted. In section 3 I will introduce new data on the distribution of AF in Kaqchikel which motivates the locality-sensitive view of AF. In section 4 I introduce my proposal. I will demonstrate how the proposal derives both the morphologically ergative agreement alignment of Kaqchikel and its syntactically ergative distribution of AF. In section 5 I will formally model my theory as a set of ranked, violable constraints operating over outputs of the derivational syntax, using the familiar tableau notation from Optimality Theory (Prince and Smolensky, 1993). In particular I will

look at the pattern of agreement on AF verbs and show how its behavior can be easily accounted for under this system. I also discuss the notion of "last-resort" in the grammar and argue that the behavior observed cannot be straightforwardly modeled using approaches which require designating AF as a "last-resort" operation. I conclude in section 6.

2 Basics of Kaqchikel Agent Focus

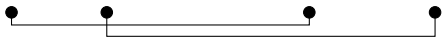
I begin this study with a description of the morphological realization of AF in Kaqchikel and the syntactic environments which trigger AF.[4]

2.1 The Kaqchikel verb

Verbal complexes in Kaqchikel are made up of an aspectual prefix, agreement markers, and finally the verbal stem (McKenna Brown et al., 2006). As noted above, there are two different series of agreement markers which I will call Set A and Set B, following previous literature on Mayan languages. The entire verbal complex forms a morphologically complex word, with certain phonological processes affecting its final realization (Kenstowicz, 2013).

(7) **Verb complexes in Kaqchikel:**

a. Full agreement transitive verb:
aspect – Set B – Set A – verb object subject



b. Intransitive verb:
aspect – Set B – verb subject

The fact that the same set of Set B morphemes is used to cross-reference the *object* in transitive verbs and the *subject* in intransitive verbs has led to the description of Kaqchikel, and Mayan languages more generally, as morphologically ergative. For example, the transitive verb in (8) below has a third-plural Set A morpheme cross-referencing the subject "they" and a second-singular Set B morpheme cross-referencing the object "you." The intransitive verb in (9) has one agreement morpheme, a second-singular Set B morpheme cross-referencing "you."[5] Notice that the same morpheme, *-a(t)-*, appears as the realization

[4]The precise morphological realization of AF and the syntactic constructions which trigger it differ across the various Mayan languages. Stiebels (2006) presents a cross-Mayan survey of these aspects of AF but Kaqchikel is not included in that study. This section thus also acts to contribute a missing data point in this cross-Mayan look at AF.

[5]Full paradigms for the agreement markers in this variety of Kaqchikel are given in Preminger (2011).

of second-singular agreement for the object in (8) and the subject in (9). (As Kaqchikel is a pro-drop language, both (8) and (9) can be stand-alone utterances.)

(8) X-at-ki-tz'ët.
COM-B_{2sg}-A_{3pl}-see
'They saw you.'

(9) X-a-wär.
COM-B_{2sg}-sleep
'You slept.'

The phenomenon of Agent Focus involves three simultaneous changes to the transitive verb's morphology: (a) the addition of an AF suffix, (b) the disappearance of the Set A slot, and (c) a change in the target of Set B agreement.

(10) **Agent Focus form of transitive verb:**
aspect – Set B – verb – AF suffix

In contrast to the Set B marker in full agreement transitive verbs, the Set B morpheme in AF verbs does not simply agree with the object. Consider the two subject clefts in (11), which are both AF clauses. In (11a), with a second-singular subject and third-singular object, the Set B morpheme shows second-singular agreement—that is, it looks like it is agreeing with the *subject*. However, in (11b), with a third-singular subject and a second-singular object, the verb still exhibits second-singular Set B agreement, which in this case must be through agreement with the *object*. In both cases, the verb must exhibit second-singular Set B agreement. This pattern is schematized in (12) below.

(11) **Examples of Set B agreement in AF**: (Preminger, 2011, exx 21–22)

a. Ja rat x-{at/*∅}-axa-**n** ri achin.
FOC you COM-{B_{2sg}/*B_{3sg}}-hear-**AF** the man
'It was YOU that heard the man.'

b. Ja ri achin x-{at/*∅}-axa-**n** rat.
FOC the man COM-{B_{2sg}/*B_{3sg}}-hear-**AF** you
'It was THE MAN that heard you.'

(12) **Agreement patterns in (11):**

a. subject$_{2sg}$ aspect – B_{2sg} – verb – **AF** object$_{3sg}$ (=11a)

b. subject$_{3sg}$ aspect – B_{2sg} – verb – **AF** object$_{2sg}$ (=11b)

Previous researchers have described this pattern of agreement as obeying the salience hierarchy in (13). That is, the Set B agreement on an AF verb will look at both its subject and its object and choose the ϕ-features of the argument which is higher on the hierarchy (13). This explains the pattern observed in (11): in both cases, the two arguments of the verb are second-singular and third-singular, and the second-singular argument is higher on the hierarchy. This pattern of agreement in AF verbs is observed in Kaqchikel (Preminger, 2011), as well as in the related Mayan languages of Tz'utujil, Sakapultek, Sipakapense, and K'iche' (Stiebels 2006, and references therein).

(13) **Salience hierarchy:** (Stiebels, 2006)
first/second-person > third-plural > third-singular

Details of the pattern of agreement realized under AF will become important in section 5.

2.2 AF-triggering constructions

There are four syntactic contexts which trigger AF in Kaqchikel: subject *wh*-questions, subject relative clauses, subject focus constructions, and subject existentials. Examples of each construction in both subject and object variants are given in (14–17). AF is limited to transitive verbs; intransitive verbs never undergo AF.

(14) ***Wh*-questions:**

a. Achike x-∅-tj-**ö** ri wäy?
who COM-B_{3sg}-eat-**AF** the tortilla
'Who ate the tortilla?' (=2b)

b. Achike x-∅-u-tëj ri a Juan?
what COM-B_{3sg}-A_{3sg}-eat Juan
'What did Juan eat?'

(15) **Relative clauses:**

a. [Ri xteni' (ri) x-oj-tz'et-**ö** roj] x-e-wär.
the girls RC COM-B_{1pl}-see-**AF** 1pl COM-B_{3pl}-sleep
'[The girls who saw us] slept'

b. [Ri xteni' (ri) x-e-qa-tz'ët roj] x-e-wär.
the girls RC COM-B_{3pl}-A_{1pl}-see 1pl COM-B_{3pl}-sleep
'[The girls that we saw] slept'

(16) **Focus constructions:**

a. Ja ri xta Maria x-∅-tz'et-**ö** rte' ri a Juan.
FOC Maria COM-B_{3sg}-see-**AF** mother Juan
'It was Maria who saw Juan's mother.'

b. Ja ri xta Maria x-∅-u-tz'ët rte' ri a Juan.
FOC Maria COM-B_{3sg}-A_{3sg}-see mother Juan
'It was Maria that Juan's mother saw.'

(17) **Argument existentials:**

a. K'o x-oj-tz'et-**ö** roj.
∃ COM-B_{1pl}-see-**AF** 1pl
'Someone saw us.'

b. K'o x-∅-qa-tz'ët roj.
∃ COM-B_{3sg}-A_{1pl}-see 1pl
'We saw someone.'

Each of the constructions above involve $\overline{\text{A}}$-movement of an argument to preverbal position. In each of the (a) examples in (14–17) above, where movement of the subject is involved, the AF form of the verb is required. Corresponding object-extractions (b) do not trigger AF. The generalization thus far, then—and the generalization presented in all prior literature on Mayan AF (Stiebels 2006; Norcliffe 2009; Coon et al. 2011; a.o.)—is that AF occurs if and only if the subject of a transitive verb is $\overline{\text{A}}$-moved.

2.3 Argument existentials

It's worth taking a moment to discuss examples such as (17a), which involve what I call argument existentials, particularly as the previous literature has overwhelmingly focused on *wh*-questions, focus constructions, and relative clauses as AF-triggering environments.[6] Kaqchikel has the existential operator *k'o* and negative existential *majun*.[7] While these items

[6]But note that similar existential constructions which trigger AF are also attested in Jakaltek (Grinevald Craig, 1979, fn. 8), K'iche' (Campbell, 2000, fn. 13), Poqomam (Dayley 1981, discussed in Stiebels 2006), Tzotzil (Aissen, 1999), Tz'utujil (Dayley 1985, fn. 8, discussed in Duncan 2003), and Yutacatec Maya (Tonhauser, 2003). However, some of these existential constructions in other Mayan languages may be a biclausal combination of an existential predicate taking a relative clause introduced by a relative pronoun or *wh*-word. We will see later this section that argument existential constructions in Kaqchikel do not underlyingly involve the formation of a relative clause.
See also Hedberg (1988) who observes that transitive subject existentials trigger AF in another variety of Kaqchikel.

[7]Note that Kaqchikel also has an existential predicate *k'o*, which is a different lexical item than the existential operator *k'o*. We can distinguish these two items by their inflection and lack thereof: the predicate *k'o* exhibits Set B agreement with its argument, but the argument existential *k'o* never shows agreement. Additionally, note that *majun* looks like the negation *ma* and the numeral *jun* 'one.' However, I argue that it is not compositional in the synchronic grammar: when the numeral 'one' is actually compositionally negated, it shows the irrealis

are commonly translated as indefinites such as "someone/something" and "noone/nothing," respectively, their behavior is different than other indefinites in Kaqchikel such as those introduced with the indefinite determiner *jun* "one." First, *k'o* and *majun* argument existentials must be in preverbal position:

(18) ***K'o, majun* must be in preverbal position:**

a. Baseline: *pastel* in post-verbal object position

Yïn x-∅-in-tëj ri/jun pastel.
I COM-B_{3sg}-A_{1sg}-eat the/one cake
'I ate the/a cake.'

b. ✓(Yïn) k'o pastel x-∅-in-tëj.
I ∃ cake COM-B_{3sg}-A_{1sg}-eat
'I ate some cake.'

c. ✓(Yïn) majun pastel x-∅-in-tëj.
I ∄ cake COM-B_{3sg}-A_{1sg}-eat
'I ate no cake.'

d. *(Yïn) x-∅-in-tëj k'o pastel.
I COM-B_{3sg}-A_{1sg}-eat ∃ cake

e. *(Yïn) x-∅-in-tëj majun pastel.
I COM-B_{3sg}-A_{1sg}-eat ∄ cake

Second, *k'o* and *majun* can move long-distance with scope consequences. In example (19a), the existential *k'o* controls the embedded verb's subject and therefore triggering the AF form. The existential is interpreted within the scope of the matrix clause "everyone thinks…" However, *k'o* can also surface in the matrix clause as in (19b), which introduces an interpretation where *k'o* takes scope over the matrix subject universal: there is a specific individual who everyone thinks will win.

(19) ***K'o, majun* can move long-distance, with scope consequences:**

a. Chekonojel n-∅-ki-b'ij chin k'o n-∅-chak-**ö** ri premio.
everyone INC-B_{3sg}-A_{3pl}-think that ∃ INC-B_{3sg}-win-**AF** the prize
✓'Everyone thinks that someone will win the prize' ✓∀ > ∃
'There is someone that everyone thinks will win the prize' # ∃ > ∀

b. K'o chekonojel n-∅-ki-b'ij chin ___ n-∅-chak-**ö** ri premio.
∃ everyone INC-B_{3sg}-A_{3pl}-think that INC-B_{3sg}-win-**AF** the prize
✓'Everyone thinks that someone will win the prize' ✓∀ > ∃
✓'There is someone that everyone thinks will win the prize' ✓∃ > ∀

I argue that these argument existentials *k'o* and *majun* obligatorily $\overline{\text{A}}$-move to be in a preverbal, scope-taking position. Island diagnostics support the idea that these operators involve $\overline{\text{A}}$-movement:

clitic *ta* which normally cooccurs with the negation *ma*. The use of *majun*, however, does not trigger the use of *ta*.

(20) **Relative clause island:**

a. Ri xta Maria n-∅-u-k'ul [ri achin ri k'o x-∅-u-tz'ët].
Maria INC-B_{3sg}-A_{3sg}-meet the man RI ∃ COM-B_{3sg}-A_{3sg}-see
'Maria will meet the man who saw something.'

b. * K'o n-∅-u-k'ul [ri achin ri x-∅-u-tz'ët] (ri xta Maria).
∃ INC-B_{3sg}-A_{3sg}-meet the man RI COM-B_{3sg}-A_{3sg}-see Maria
Intended: 'There's something$_i$ that Maria will meet the man who saw it$_i$.'

(21) **Adjunct island:**

a. Yïn x-∅-in-b'än jun pastel [rma k'o x-∅-loq'-**ö** ri
I COM-B_{3sg}-A_{1sg}-make one cake because ∃ COM-B_{3sg}-buy-**AF** the
jay].
house
'I made a cake because someone bought the house.'

b. * K'o x-∅-in-b'än jun pastel (yïn) [rma x-∅-loq'-**ö** ri
∃ COM-B_{3sg}-A_{1sg}-make one cake I because COM-B_{3sg}-buy-**AF** the
jay].
house
Intended: 'There's someone$_i$ that I made a cake because they$_i$ bought the house.'

Note that the island diagnostics in (20–21) only show that *long-distance* movement of the existential operator *k'o* and negative counterpart *majun* are necessarily $\overline{\text{A}}$-movement. This has not been shown for the local movement of *k'o*/*majun* to a preverbal position, as in (18). However, I argue that taking all *k'o*/*majun* movements to be $\overline{\text{A}}$-movement is the most theoretically parsimonious move. This affords the generalization that it is $\overline{\text{A}}$-operators and only $\overline{\text{A}}$-operators that cannot stay in a lower, theta position and instead obligatorily move to preverbal position; as well as the generalization that all the AF-triggering environments are those where a transitive subject has been $\overline{\text{A}}$-extracted.

3 Kaqchikel AF is locality-sensitive

In the previous section we surveyed the syntactic environments which trigger AF in Kaqchikel and observed that all of these constructions involve $\overline{\text{A}}$-movement of the transitive subject. In this section we will see that the distribution of AF in Kaqchikel is more complicated. I will show that $\overline{\text{A}}$-movement of a transitive subject is a necessary but not sufficient condition to trigger AF. When additional material is introduced between the verb and the landing site of subject movement, the subject extraction no longer triggers AF. I argue that this moti-

vates a *locality-sensitive view* of AF; that is, that the true trigger of AF is *movement that is too short*, a notion that will be formalized in the next section.

The two classes of transitive subject extraction are schematized in (22) below. The examples we've seen up until now are as in (22a), where the subject $\overline{\text{A}}$-movement is very short and thus triggers the AF verb form. The data in this section will add another pattern, schematized in (22b): in cases of subject-extractions which cross over additional material, *the need for AF disappears*. This contrast motivates the locality-based view: even though the subject is still being $\overline{\text{A}}$-extracted, *because this movement is now necessarily longer*, AF is not triggered.

(22) **Two classes of transitive subject extraction:**

a. [$_{\text{CP}}$ subject [$_{\text{TP}}$ t ...
↑—X—┘ ⇒ movement too short, Agent Focus required

b. [$_{\text{CP}}$ subject [*...intervening material...* [$_{\text{TP}}$ t ...
↑———————————┘
⇒ movement now long enough, no Agent Focus!

3.1 Intervening adverbs

I begin with the first class of motivating examples: the obviation of AF by intervening adverbs. Recall that in a simple subject *wh*-question (14a), repeated here as (23a), AF is required. In example (23b), the baseline example is modified with the adverb *kanqtzij* "actually" intervening between the fronted *wh*-word and the verb. In this case *the AF form of the verb is not required* and in fact cannot be used, as example (23c) shows.

(23) **Intervening adverbs can obviate AF:**

a. Baseline subject *wh*-question (14a repeated):

Achike x-∅-tj-**ö** ri wäy?
who COM-B_{3sg}-eat-**AF** the tortilla

'Who ate the tortilla?' (=14a)

b. Intervening adverb makes AF unnecessary:

Achike **kanqtzij** x-∅-u-tëj ri wäy?
who actually COM-B_{3sg}-A_{3sg}-eat the tortilla

'Who actually ate the tortilla?'

c. In fact, the AF form is now ungrammatical:

* Achike **kanqtzij** x-∅-tj-**ö** ri wäy?
who actually COM-B_{3sg}-eat-**AF** the tortilla

This obviation of AF occurs in other AF-triggering environments as well. The examples below involve the subject relative clause "the man who eats tortillas." In the baseline, (24a), we see that the verb "eat" must be in its AF form. In example (24b), the temporal modifier *nojel mul* "always" is inserted between the relative clause marker *ri* and the verb. The result is again a flip in the pattern of AF realization: AF is no longer required for the subject relative, and is in fact no longer grammatical.[8]

(24) **Intervening adverb in a subject relative clause:**

a. ri achin ri *n-∅-u-tëj / ✓n-∅-tj-**ö** wäy
the man RC NONPAST-B_{3sg}-A_{3sg}-eat / NONPAST-B_{3sg}-eat-**AF** tortilla
'the man who eats tortillas'

b. ri achin ri **nojel mul** ✓n-∅-u-tëj / *n-∅-tj-**ö** wäy
the man RC all time NONPAST-B_{3sg}-A_{3sg}-eat / NONPAST-B_{3sg}-eat-**AF** tortilla
'the man who always eats tortillas'

I propose that the contrast between the *wh*-questions in (23) and between the relative clauses in (24a–b) can be explained through a locality-sensitive view of AF. In (23a), movement of the subject *wh* was too short and thus the last-resort AF derivation was required to avoid this anti-locality violation. However, in (23b), the intervening adverb projects additional structure in the clause, allowing for movement of the subject *wh* to proceed without being too short, and therefore without resorting to an AF form. Similarly, the movement of the subject relative clause operator was too short in (24a), triggering AF, but was long enough in (24b) due to the addition of the intervening adverb.

3.2 Multiple extractions

The second class of motivating examples comes from clauses which involve multiple $\overline{\text{A}}$-extractions. In Kaqchikel, if a clause contains multiple arguments that require fronting to a preverbal position, all of them are fronted.[9] This results in clauses where multiple $\overline{\text{A}}$-operators are before the verb.

Consider the two examples in (25). Both are formed of transitive clauses where one argument is the *wh*-word *achike* and another is the argument existential *k'o*. Both have the same basic word order, "*achike k'o* verb." However, one verb is in its AF form and the other is not and this corresponds to a radical difference in interpretation.

[8] Many but not all preverbal adverbs have this effect. These do not form natural classes—for example, *aninäq* 'quickly' obviates AF in this way, but the synonym *jonamin* does not. At this point I have no generalization to offer regarding which adverbs are AF-obviating and which are not.

[9] With one exception: in matrix multiple *wh*-questions, only one *wh*-word fronts.

(25) **A minimal pair of multiple extractions:**

a. Achike k'o x-∅-tz'et-**ö**?
who ∃ COM-B_{3sg}-see-**AF**
✓ 'Who did someone see?'
* 'Who saw someone?'

b. Achike k'o x-∅-u-tz'ët?
who ∃ COM-B_{3sg}-A_{3sg}-see
* 'Who did someone see?'
✓ 'Who saw someone?'

Example (25a) is an object *wh*-question with a subject existential. The operator controlling the subject is thus the *k'o* in immediately preverbal position. The AF on the verb in (25a) is completely expected: the movement of the subject *k'o* to preverbal position triggered the AF.

Example (25b), on the other hand, contains a puzzle. Example (25b) is a subject *wh*-question with an object existential. Thus the operator controlling the subject is the *wh*-word *achike* which has been $\overline{\text{A}}$-moved to the beginning of the clause. Subject *wh*-questions normally trigger AF, as we have seen, but the verb in (25b) does not have AF. In fact, the AF on (25a) and the lack of AF on (25b) is the only difference on the surface between the two questions.

The pattern of AF in the examples in (25a,b) is explained under the locality-sensitive view of AF proposed here. In example (25a), the subject moves to immediately preverbal position, into the specifier of a maximal projection immediately above TP. This movement is too short and will require the last-resort AF derivation. The subsequent object movement to a higher specifier position does not affect the distance of the subject-movement. In example (25b), on the other hand, the object moves first to the lower preverbal position. The subject movement will then cross over the intervening object and will not be too short. The lack of AF in (25b) is thus expected under this view. The relevant structures for (25a,b) are schematized below.

(26) **Explaining the pattern of AF in multiple extractions:**

a. [$_{CP}$ object [$_{CP}$ subject [$_{TP}$ t ... [$_{vP}$ ... V t (=25a)

⇒ movement too short, Agent Focus required

b. [$_{CP}$ subject [$_{CP}$ object [$_{TP}$ t ... [$_{vP}$ ... V t (=25b)

⇒ movements long enough, no Agent Focus

Examples with other combinations of preverbal $\overline{\text{A}}$-operators all follow this pattern in (25): AF is required if the subject of the transitive verb has $\overline{\text{A}}$-moved to *immediately preverbal position* and AF is not used otherwise. Here below are additional examples which bare out this pattern.

(27) **Relative clause & *k'o* existential:**

a. ri achin ri [k'o x-∅-tj-**ö**]
the man RC ∃ COM-B_{3sg}-eat-**AF**
✓ 'The man who someone ate'
* 'The man who ate something'

b. ri achin ri [k'o x-∅-u-tëj]
the man RC ∃ COM-B_{3sg}-A_{3sg}-eat
* 'The man who someone ate'
✓ 'The man who ate something'

(28) ***Ja* focus & *k'o* existential:**

a. Ja yïn k'o x-i-tz'et-**ö**.
FOC me ∃ COM-B_{1sg}-see-**AF**
✓ 'It's me that someone saw.'
* 'It's me who saw someone.'

b. Ja yïn k'o x-∅-in-tz'ët.
FOC me ∃ COM-B_{3sg}-A_{1sg}-see
* 'It's me that someone saw.'
✓ 'It's me who saw someone.'

(29) ***K'o* & *k'o*:**

a. K'o k'o x-∅-tz'et-**ö**.
∃ ∃ COM-B_{3sg}-see-**AF**
✓ There's something that s.o. saw.
* Someone saw something.

b. K'o k'o x-∅-u-tz'ët.
∃ ∃ COM-B_{3sg}-A_{3sg}-see
* There's something that s.o. saw.
✓ Someone saw something.

(30) **Relative clause & *ja* focus:**

a. ri achin ri [ja ri xta Maria x-∅-tz'et-**ö**]
the man RC FOC Maria COM-B_{3sg}-see-**AF**
✓ 'the man who MARIA (but not others) saw'
* 'the man who saw MARIA (but not others)'

b. ri achin ri [ja ri xta Maria x-∅-u-tz'ët]
the man RC FOC Maria COM-B_{3sg}-A_{3sg}-see
* 'the man who MARIA (but not others) saw'
✓ 'the man who saw MARIA (but not others)'

Broadwell (2000) also presents one such pair, based on his work on the variety of Kaqchikel spoken in Patzicía.[10]

(31) ***Ja* focus & *man jun* negative existential:**

a. Ja ri wä'y man jun achi x-∅-tij-**o**.
FOC the tortilla ∄ person COM-B_{3sg}-eat-**AF**
'It's the TORTILLAS that nobody ate.' (Broadwell, 2000, ex. 46)

b. Ja ri a Ramón man jun wä'y x-∅-u-tij.
FOC Ramon ∄ tortilla COM-B_{3sg}-A_{3sg}-eat
'It was RAMÓN who ate no tortillas.' (Broadwell, 2000, ex. 44)

[10] Example (31) follows the orthography given in Broadwell (2000). Note that *man jun* in (31) is the non-existential operator in Patzicía Kaqchikel, corresponding to *majun* in the Patzún variety that I focus on here.

In all of the examples in (25–30), AF is required in order to interpret the immediately preverbal operator as the subject (a). If AF is not used (b), the operator which is not immediately preverbal is interpreted as the subject. This leads us to the generalization in (32).[11]

(32) **The Kaqchikel AF generalization:**
AF morphology occurs if and only if the subject moves to *immediately preverbal position*.

In all of the (b) examples in (25–30), the immediately preverbal operator was the direct object. However, the generalization in (32) is not limited to combinations of subjects and direct objects in preverbal position. Example (33a) is a baseline showing the obligatory AF in a subject-*wh* question using a ditransitive verb, 'send.' Example (33b) shows that when the indirect object is a *k'o* object existential and moved before the verb, AF is not used, as the subject is no longer in immediately preverbal position.

(33) **AF in ditransitive clauses:**

a. Achike *x-∅-u-täq / ✓x-∅-taq-**ö** ri sikibuj che jun uneq?
who COM-B_{3sg}-A_{3sg}-send / COM-B_{3sg}-send-**AF** the book to one man
'Who sent the book to a man?'

b. Achike k'o achoj che ✓x-∅-u-täq / *x-∅-taq-**ö** ri sikibuj?
who to someone COM-B_{3sg}-A_{3sg}-send / COM-B_{3sg}-send-**AF** the book
'Who sent the book to someone?'

I propose that AF is a response to movement that is *too short*. The generalization in (32) is then telling us that movement of a transitive subject to immediately preverbal position counts as "too short," triggering the AF form, while movement past another preverbal operator is not "too short."

It is important for this argument to show that, in those cases where AF is not used, the subject has indeed $\overline{\text{A}}$-moved instead of being base-generated high. For example, we could imagine two different derivations for example (29b): one where the subject *k'o* has indeed $\overline{\text{A}}$-moved across another preverbal operator (34a) and one where an existential *k'o* is base-generated in non-immediately-preverbal position and binds a null bound variable below (34b). If (34b) is the correct derivation, we would have an alternative explanation for the surprising lack of AF in such cases: we could say that AF truly tracks the $\overline{\text{A}}$-movement of the subject but the subject has not $\overline{\text{A}}$-moved in such cases.

[11] Broadwell (2000, appendix) also makes a similar observation in passing, citing the pair repeated here as (31): "In sentences with multiple foci, it is the closest focus that determines whether the actor focus form is used."

(34) **Two possible derivations for (29b):**

a. *$\overline{A}$-moving subject* k'o*:*

K'o k'o xutz'ët ___obj ___subj?

∃ ∃ saw

b. *Base-generating subject* k'o *high:*

K'o$_i$ k'o xutz'ët ___obj *pro*$_{subj,i}$?

∃ ∃ saw

I will show that in general there is no option to base-generate $\overline{A}$-operators in non-immediately-preverbal position and therefore the correct derivation of (29b) is (34a). Evidence will come from island-sensitivity. Example (35) shows that *k'o* in embedded clauses can move optionally to higher clauses, with scope consequences. Examples (36–37) show that such movement to non-immediately-preverbal position cannot cross syntactic islands.

(35) **Baseline: Long-distance movement of *k'o* to non-immediately-preverbal position**

a. K'o n-∅-noji-**n** [chin k'o yawa].
∃ INC-B$_{3sg}$-think-**AF** that ∃ sick
'Someone thinks that someone is sick.'

b. ✓ K'o k'o n-∅-noji-**n** [chin yawa].
∃ ∃ INC-B$_{3sg}$-think-**AF** that sick
'There is someone that someone thinks is sick.'

(36) **Movement to non-immediately-preverbal position is sensitive to relative clause islands:**

a. K'o x-∅-k'ul-**ö** [ri achin ri k'o x-∅-u-tz'ët].
∃ COM-B$_{3sg}$-meet-**AF** the man RC ∃ COM-B$_{3sg}$-A$_{3sg}$-see
'Someone met the man who saw s.t.'

b. * K'o k'o x-∅-k'ul-**ö** [ri achin ri x-∅-u-tz'ët].
∃ ∃ COM-B$_{3sg}$-meet–**AF** the man RC COM-B$_{3sg}$-A$_{3sg}$-see
'There's something$_i$ that someone met the man who saw it$_i$.'

(37) **Movement to non-immediately-preverbal position is sensitive to adjunct islands:**

a. K'o x-∅-b'an-**ö** jun pastel [rma k'o x-∅-loq'-**ö** ri jay].
∃ COM-B$_{3sg}$-make-**AF** a cake because ∃ COM-B$_{3sg}$-buy-**AF** the house
'Someone made a cake because someone bought the house.'

b. * K'o k'o x-∅-b'an-**ö** jun pastel [rma x-∅-loq'-**ö** ri jay].
∃ ∃ COM-B$_{3sg}$-make-**AF** a cake because COM-B$_{3sg}$-buy-**AF** the house
Intended: 'There's someone$_i$ that someone made a cake because they$_i$ bought the house.'

If $\overline{A}$-operators could be base-generated in non-immediately-preverbal positions, examples (36b) and (37b) should be grammatical. Therefore, $\overline{A}$-operators in non-immediately-preverbal position must have $\overline{A}$-moved from argument positions, making the examples

above strong support for the view that Kaqchikel AF is a response to movement which is *too short*, as reflected in the generalization in (32).

The pattern of AF realization observed with these multiple extraction constructions shows us again that $\overline{\text{A}}$-movement of a transitive subject is only a necessary but not a sufficient condition for AF. In particular, it is *shorter* movements of subjects which trigger AF, while *longer* movements of subjects do not yield AF. In the next section, I will formalize this locality condition on movement and give my proposal for AF in Kaqchikel.

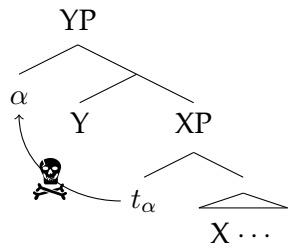
4 Proposal

The examples presented in the previous section motivate a locality-sensitive view of Kaqchikel AF. We saw that movement of transitive subjects across some intervening material does not trigger AF. AF is not responding to the movement of transitive subjects *per se*; it is instead responding to movement that is *too short*. I propose that $\overline{\text{A}}$-movement in Kaqchikel is subject to Spec-to-Spec Anti-Locality, repeated here from (4).

(38) **Spec-to-Spec Anti-Locality:**
$\overline{\text{A}}$-movement of a phrase from the Specifier of XP must cross a maximal projection other than XP.

(39) **Definition: crossing**
Movement from position α to position β *crosses* γ if and only if β c-commands γ but α does not c-command γ.

(40)



The schema in (40) illustrates the configuration which is banned. Movement of the specifier of XP to the specifier of YP crosses only the maximal projection XP, according to the definition of *crossing* stated in (39). This movement violates Spec-to-Spec Anti-Locality.

Bans against movement which is "too close" are not a new idea, though the formulation given here is distinct from other constraints proposed in the literature. Murasugi and Saito (1995), Saito and Murasugi (1999), and Bošković (1994, 1997) propose that a specifier of XP cannot be adjoined locally to that same XP. Similarly, Pesetsky and Torrego (2001) and Abels (2003) have motivated a ban on movement from a complement position of XP to the specifier of XP. Grohmann (2003) offers a different conception of anti-locality, where movement chains contained entirely within a single Domain of the clause (*v*P, TP, and CP) are banned, again enforcing a constraint against movements which are in some sense "too close."[12]

[12]This type of constraint which bans movement which is *too short* may seem to run counter to other pressures we observe in grammar, in particular to constraints such as Shortest Move (Chomsky, 1993). While I recognize

Central to the derivation of Kaqchikel clause structure is the verbal complex and the ϕ-agreement that it realizes. I propose that the realization of the verbal complex is sensitive to whether there is a DP in the Spec,TP position or not. In particular, I propose that Set A agreement is uniformly agreement with a DP in Spec,TP position, and the absence of Set A agreement indicates the absence of a DP in Spec,TP. Set B agreement realizes agreement with another argument of the verb. Thus in a transitive clause, the most ϕ-agreement can be realized on the verbal complex (realizing both Set A and Set B agreement) if an argument has moved to Spec,TP. Furthermore, I propose a constraint which prefers derivations which realize as much ϕ-agreement as possible (41).

(41) **Realize-ϕ:**
ϕ-agreement targets should be agreed with. ϕ-agreement through Set A markers and Set B markers counts equally.

The effect of this constraint (41) will be to trigger the movement of transitive subjects to move to Spec,TP, so that both Set A agreement with the subject and Set B agreement with the object is realized on the verb. In intransitive clauses, however, since the single core argument of the clause can be ϕ-agreed (as Set B agreement) with without moving to Spec,TP, economy leaves us with the subject staying in-situ. This will be the source of ergative behavior in my proposal, differentiating subjects of transitives from objects of transitives and subjects of intransitives. This approach to the source of ergativity will be discussed in further sections.

Subjects of transitive verbs are then uniquely in danger of violating Spec-to-Spec Anti-Locality because they are in a uniquely high, Spec,TP position in the clause. In situations where the constraints Spec-to-Spec Anti-Locality (4) and Realize-ϕ (41) cannot both be satisfied, AF occurs. In such situations, the subject will skip the Spec,TP position (thereby foregoing Set A agreement), resulting in the modified AF verb form to be produced, and satisfying Spec-to-Spec Anti-Locality through a longer movement step. Stated as violable

this tension in the theory, I believe the previous literature on various anti-locality constraints cited here, as well as the evidence from the locality-sensitive nature of extraction in Kaqchikel, motivate the use of such a constraint for $\overline{\text{A}}$-movement.

The Spec-to-Spec Anti-Locality constraint proposed here may have positive consequences outside of Kaqchikel as well. David Pesetsky (p.c.) notes that this constraint makes the prediction that if the heads X and Y in schema (40) are both phase heads, the configuration will be an island for extraction. The logic is as follows: as movement out of phases must proceed through their edge, movement out of (40) must necessarily stop at Spec,XP and Spec,YP. However, Spec-to-Spec Anti-Locality explicitly bans the movement from Spec,XP to Spec,YP. Thus this configuration is predicted to necessarily be an island. This configuration may indeed obtain under certain head-raising analyses of relative clauses (if the DP projection immediately dominates a CP) or with adjunct clauses (if a CP is adjoined at the vP level), which are both known islands for extraction.

In this paper I will not further speculate on the deeper motivations of Spec-to-Spec Anti-Locality, nor on whether or how its effects can be observed in other languages. Instead in this paper I will focus on motivating its use in the analysis of the distribution of AF in Kaqchikel.

constraints, I argue that Spec-to-Spec Anti-Locality outranks Realize-ϕ. In section 5, I will further discuss the interaction of these types of ranked, violable constraints, and formally model their behavior.

4.1 The derivation of Kaqchikel clause structure

I begin by describing the derivations of basic, non-AF clauses in Kaqchikel. I will first illustrate the derivation of a non-AF transitive clause.

In a transitive clause, the object is base-generated in the complement of V and the subject is base-generated in the specifier of vP (42a). T is merged and the subject is A-moved to Spec,TP (42b). This movement step will be the effect of Realize-ϕ (41), as will be discussed shortly. Note that Spec,vP and Spec,TP positions are both linearized as right specifiers, following Aissen (1992), deriving the basic VOS word order of Kaqchikel, but they are illustrated here attaching to the left.[13]

(42) **Derivation for transitive clauses:**

a. Base-generate both arguments in vP:
[$_{vP}$ subject v [$_{VP}$ V object]]

b. Merge T; subject moves to Spec,TP to feed ϕ-agreement of both arguments:
[$_{TP}$ subject T [$_{vP}$ ___ v [$_{VP}$ V object]]]
↑_____|

c. Head movement of V → v → T:
[$_{TP}$ subject T+v+V [$_{vP}$ ___ t_{v+V} [$_{VP}$ t_{V} object]]]
↑_____|↑_____| ⇒ "inflected verb – object – subject"

Head movement of V to v and then T results in realization of the entire verbal complex in T. The realization of the verbal complex will be sensitive to the presence of the subject DP in Spec,TP, resulting in a non-AF transitive verb form in (42c). I propose that this resulting verbal complex is subject to the morphological realization rules in (43):[14]

[13] Subject-initial word orders will be discussed in section 4.4.

[14] Tada (1993) observes a striking generalization across Mayan between the position of the absolutive (Set B) agreement marker and the existence of AF: with few exceptions, Mayan languages with Set B markers preceding the verbal root exhibit AF and Mayan languages with Set B markers following the verbal root do not. See Coon et al. (2011) for further discussion. Kaqchikel follows this generalization across Mayan, having its Set B marker before the verbal root and exhibiting AF.
My proposal here will not attempt to explain this correlation, describing the position of the Set B marker as simply part of the shape of the verbal complex in (43), and instead focusing on the Kaqchikel-internal distribution of AF.
It is not clear that this is a great problem for my analysis. As noted by Aldridge (2012), Tada's generalization does not hold outside of Mayan: in the Austronesian language family, there are languages with structurally higher and lower sources of absolutive which have a syntactically ergative extraction asymmetry similar to AF. (See Aldridge (2008) for discussion of both types of languages in Austronesian.) It is possible that the

(43) **The realization of the Kaqchikel verbal complex (T+v+V):**
Template: aspect – Set B – Set A – verbal root – (AF)

a. Set A: If there is a DP in Spec,TP, realize the Set A marker corresponding to the ϕ-features of that DP. Otherwise, realize no Set A marker.

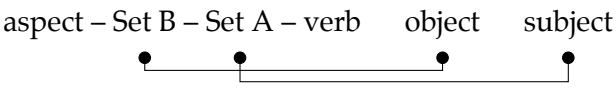
b. Set B: Realize the ϕ-features of an argument of the verb. If there are multiple active ϕ-feature targets, follow the salience hierarchy in (13).[15]

c. AF suffix: If the verb has an argument whose ϕ-features are not realized on the verb, realize the AF suffix.[16]

In derivation (42), the movement of the subject to Spec,TP is necessary to satisfy the Realize-ϕ constraint (41). As a transitive clause, there are two potential ϕ-agreement targets, the subject and the object. Without movement of an argument to Spec,TP, no Set A agreement would be realized and at most one of the arguments could be ϕ-agreed with, through Set B agreement. The Kaqchikel TP does not have a requirement that it have a specifier—instead, in regular transitive clause derivations (42), movement of the subject to Spec,TP occurs in order to maximize ϕ-agreement.[17,18]

The result is then a verb complex with two agreement markers: Set A unambiguously cross-referencing the subject in Spec,TP and Set B unambiguously cross-referencing the object below. This results in the desired pattern of agreement, repeated here from (7a):

(44) **Full agreement transitive verb:** (=7a)



For the purposes of ϕ-agreement, CPs will also behave as targets, with default third-singular ϕ-features. This results in derivations for transitive clauses with CP complements

correlation observed by Tada reflects a historical codevelopment between AF and the preverbal Set B markers, rather than a deep fact about the source of syntactic ergativity. See also Henderson et al. (2013) for evidence that AF in Mayan may not be a unified phenomenon.

[15]This reference to the salience hierarchy is used for the time being for convenience. The effect of this salience hierarchy on the choice of agreement target will be formally modeled in section 5.

[16]The realization of the AF suffix depends on the verb stem type: if the verb stem is *V*-final or *Vj*-final, the AF suffix is *-n* (in the latter case, replacing the final *-j* consonant) and is otherwise *-ö*.

[17] Note that this movement is made possible by a probe on T, which can probe down for a DP to attract to Spec,TP. The choice of whether this probing and movement will occur is determined by the system of ranked constraints, including Realize-ϕ, which we will discuss further below.
Because this movement is technically probe-driven, the subject is chosen for movement to Spec,TP in a transitive clause, rather than the object, as the subject is closer to the probe on T and probing cannot skip potential goals.

[18]This logic of movement triggered by Realize-ϕ applies on an abstract level of feature agreement. In particular, we note that the Set B marker has a morphological gap and is $\emptyset$ in its third-singular form. Because Realize-ϕ will still count the realization of third-singular Set B agreement, however, this logic of movement triggered by Realize-ϕ will not depend on the ϕ-features of the DPs involved.

in which the subject is cross-referenced using Set A morphology, not Set B, as we observe in (45). Therefore it must be the case that CPs participate in this Realize-ϕ calculus, otherwise we would predict CP-embedding transitive verbs (such as "think" in (45)) to be morphologically intransitive and realize no Set A agreement.[19]

(45) **Subjects of CP-embedding transitive verbs also agree via Set A, not Set B:**

Roj ✓n-**qa**-∅-b'ij / *n-∅-**oj**-b'ij [$_{CP}$ chin ...
we INC-**A**$_{1pl}$-B$_{3sg}$-think / INC-(A$_{3sg}$)-**B**$_{1pl}$-think that

'We think that...'

Now let's see what happens if the subject is an $\overline{\text{A}}$-operator—e.g. a *wh*-word, focused constituent, relative clause operator, or argument existential—which must move to the CP periphery to take scope. We first consider a derivation which builds on the standard derivation for transitive clauses in (42). $\overline{\text{A}}$-movement of the subject from Spec,TP to Spec,CP will be a violation of Spec-to-Spec Anti-Locality (46a).

(46) **Subject extraction with and without AF:**

a. Regular transitive clause derivation (42) and $\overline{\text{A}}$-movement of subject:
* [$_{CP}$ subject C [$_{TP}$ ___ T+v+V [$_{vP}$ ___ [$_{VP}$ object]]]
violates Spec-to-Spec Anti-Locality!

b. AF clause derivation, with no subject movement to Spec,TP:
✓[$_{CP}$ subject C [$_{TP}$ T+v+V [$_{vP}$ ___ [$_{VP}$ object]]]
⇒ "subject – AF verb – object"

This is a case where the two constraints of Spec-to-Spec Anti-Locality and Realize-ϕ conflict: Spec-to-Spec Anti-Locality does not allow an $\overline{\text{A}}$-movement from Spec,TP to Spec,CP, but if the subject does not pass through the intermediate Spec,TP position, the verb will only ϕ-agree with one of the two arguments.

AF in Kaqchikel shows us that the grammar prioritizes satisfaction of Spec-to-Spec Anti-Locality wins over the needs of Realize-ϕ. The subject will bypass Spec,TP and move directly from its Spec,vP theta-position to Spec,CP (46b). This movement of the subject to Spec,CP will not violate Spec-to-Spec Anti-Locality.[20] With no ϕ-agreement target in Spec,TP, the verbal complex will only show Set B agreement and spell out a modified status suffix, i.e. the AF suffix. As the AF verb only ϕ-agrees with one argument, Realize-ϕ will

[19]Note that Kaqchikel lacks ditransitives such as English *tell* which take both DP and CP internal arguments. Kaqchikel also lacks true ditransitives with two DP arguments, with verbs such as *send* instead having a DP direct object which is targeted by Set B agreement and a PP indirect object which is not ϕ-agreed with.

[20]Similar "skipping" strategies are surveyed cross-linguistically in Rizzi and Shlonsky (2007). See also Schneider-Zioga (2007) for a similar skipping derivation forced by an anti-locality constraint in Kinande.

be violated in this case. In section 5, I will present the interactions between these constraints using tableau notation. For the remainder of this section, however, I will use a ranking of Spec-to-Spec Anti-Locality over Realize-ϕ without explicit tableau comparisons.

Returning now to the derivation of subject extraction clauses, note that we could imagine an alternative derivation, where the subject skips Spec,TP, but the object instead moves to Spec,TP. The derivation is schematized in (47). According to the realization of the verbal complex proposed in (43), this derivation predicts a full agreement verb (no AF morphology) with Set A agreement with the object in Spec,TP and Set B agreement with the subject. The realization predicted for "Who did you see?" under this type of derivation is given in (48). Notice that the verb has a second singular Set A marker meant to cross-reference the *object* and a third singular Set B marker for the *subject*. It is ungrammatical with the intended meaning.

(47) **Impossible subject-extraction derivation:**
[$_{CP}$ subject C [$_{TP}$ object T+v+V [$_{vP}$ ___ [$_{VP}$ ___]]]
↑ ↑ ⌋ ⇒ "subject – inflected verb – object"

(48) Achike x-∅-a-tz'ët rat?
who COM-B$_{3sg}$-A$_{2sg}$-see you
* 'Who saw you?'
✓'Who did you see?'

This derivation in (47) is not considered because when T is merged and can probe for a DP to move to its specifier, the subject is necessarily the closer DP to the probe. See footnote 17 for more information.

4.2 Modeling ergativity

The Mayan languages have been consistently described as ergative in the literature, with ergative-absolutive agreement alignment and (for some) a syntactically ergative extraction asymmetry resulting in the distribution of AF studied here. In this subsection I will show how the system introduced above, notably with the constraints Spec-to-Spec Anti-Locality and Realize-ϕ, accounts for the ergative pattern of agreement alignment as well as the syntactically ergative distribution of AF.

In the previous subsection I showed how in simple transitive clauses, when the subject is $\overline{\text{A}}$-moved, the verb is realized in its AF form. I begin this subsection by considering the derivation of a transitive clause with non-subject extraction as in (49) below. Recall that $\overline{\text{A}}$-movement of non-subjects never triggers AF. In order to maximize ϕ-agreement, the subject will move to Spec,TP, as in the standard transitive clause derivation (42). Movement of a non-subject will necessarily cross multiple maximal projections and therefore satisfy

Spec-to-Spec Anti-Locality. This derivation satisfies both Spec-to-Spec Anti-Locality and Realize-ϕ. With the subject in Spec,TP, the full agreement (non-AF) form of the transitive verb will be spelled out.

(49) **Regular transitive clause derivation (42) with $\overline{\text{A}}$-movement of object:**
✓[$_{\text{CP}}$ object C [$_{\text{TP}}$ subject T+v+V [$_{v\text{P}}$ ___ [$_{\text{VP}}$ ___]]]
↑ ↑ ⇒ "object – inflected verb – subject"

Next we will turn to the derivation of intransitive clauses. The first property we will look at is the alignment of the agreement morphemes on the verb. Recall that, descriptively, the Set B morpheme cross-references the object of transitives and subjects of intransitives, and Set A cross-references the subject in transitive clauses.

Let's see how my proposal predicts Set B agreement with the subject of intransitives, and no Set A agreement on intransitive verbs. For our purposes unergative and unaccusative verbs will behave similarly; the derivation of an unergative clause is sketched below:

(50) **Derivation for (unergative) intransitive clauses:**

a. One argument base-generated in vP:
[$_{v\text{P}}$ subject v [$_{\text{VP}}$ V]]

b. Merge T; *no movement* to Spec,TP:
[$_{\text{TP}}$ T [$_{v\text{P}}$ subject v [$_{\text{VP}}$ V]]]

c. Head movement of V → v → T:
[$_{\text{TP}}$ T+v+V [$_{v\text{P}}$ subject $t_{\text{v+V}}$ [$_{\text{VP}}$ t_{V}]]] ⇒ "inflected verb – subject"
↑ ↑

The key step here is (50b), where the grammar chooses *not* to move the subject to Spec,TP. Recall that Spec,TP does not need to be filled in this system, but is instead able to host a specifier to better satisfy the constraint Realize-ϕ. In an intransitive clause, there is only one potential ϕ-agreement target, and it can be the target of Set B agreement without any movement. Therefore the subject in an intransitive clause will stay *in situ*, in a vP-internal position.

An alternative derivation where the subject moves to Spec,TP will trigger Set A agreement with the subject. However, this alternative derivation will satisfy the constraint Realize-ϕ just as much as the derivation in (50) without this movement step: in either case, one argument's (i.e. the only argument's) ϕ-features will be realized on the verb. Since this alternative derivation involves an additional movement step, it will be dispreferred by Economy considerations. (This Economy consideration will be formalized in section 5.) Thus, in intransitive clauses, the subject will be cross-referenced by Set B agreement, and no Set A agreement will be realized.

In other words, this system derives the ergative-absolutive pattern of agreement alignment on the verb simply through the desire to satisfy Realize-ϕ as economically as possible. In clauses with two ϕ-agreement targets (transitive clauses), one must move up to Spec,TP so both targets can be ϕ-agreed with. In clauses with only one ϕ-agreement target (intransitive clauses), the subject does not move as it can maximally Realize-ϕ without an extra movement step. Set B agreement agrees with the argument remaining in vP, which will be the object in a transitive clause and the subject in an intransitive clause—hence, realizing "absolutive" alignment.[21]

The other aspect of ergativity in Kaqchikel is of course the $\overline{\text{A}}$-extraction asymmetry observed in the distribution of AF. Only $\overline{\text{A}}$-extraction of subjects of transitive clauses triggers AF morphology. Consider a derivation with $\overline{\text{A}}$-extraction from an intransitive clause, below. We begin with the derivation of an intransitive clause, as in (50), where the subject does not move to Spec,TP, as argued above.

(51) **Subject extraction from an (unergative) intransitive clause:**

a. Derivation of an intransitive TP:
$[_{\text{TP}}$ T+v+V $[_{v\text{P}}$ subject $t_{\text{v+V}}$ $[_{\text{VP}}$ t_{V}]]]

b. $\overline{\text{A}}$-movement of the intransitive subject:
$\checkmark[_{\text{CP}}$ subject C $[_{\text{TP}}$ T+v+V $[_{v\text{P}}$ ___ $[_{\text{VP}}$]]] ⇒ "subject – inflected verb"

When the intransitive subject is $\overline{\text{A}}$-moved to preverbal position, it will move from within vP: from Spec,vP in the case of unergatives (51b) or from the complement of V in unaccusatives (not illustrated). Either way, this movement step will cross over both the vP and TP maximal projections, and therefore will always satisfy Spec-to-Spec Anti-Locality. The intransitive subject does not move through Spec,TP when it is extracted—doing so would introduce a violation of Spec-to-Spec Anti-Locality, as well as use an additional, unnecessary movement step, without satisfying Realize-ϕ any better than in (51).

[21] The effects of the constraint Realize-ϕ here are similar to a violable Case Filter (Grimshaw, 1997; de Hoop and Malchukov, 2008). I have chosen to state this constraint in terms of ϕ-agreement here as ϕ-agreement is clearly visible in Kaqchikel, whereas the assignment of Case is not. As in other Mayan languages, nominals in Kaqchikel do not show morphological case alternations.
The logic of this system is similar to the dependent case system of Marantz (1991), which models ergative case in an ergative/absolutive system and accusative case in a nominative/accusative system as "dependent" cases, whose occurance depends on the existence of a competitor in the same local domain. The proposal here applies a similar logic to ϕ-agreement instead of morphological case marking. The effects of this system are also similar to proposals which prohibit two structural case targets (Alexiadou and Anagnostopoulou, 2001, 2007) or two nodes which are categorically non-distinct (Richards, 2010) from both being in vP, which may lead to one of them vacating the vP.
An important theoretical question is whether this logic can also apply to the derivation of morphological and syntactic ergativity in other languages. I will leave this question open for future research.

This proposal thus derives the "syntactically ergative" basic distributional facts of AF—AF is triggered by $\overline{\text{A}}$-movement of transitive subjects but not other kinds of arguments—from the interaction of the constraints Spec-to-Spec Anti-Locality and Realize-ϕ. Kaqchikel does not have an EPP property, so the derived subject position in Spec,TP is only used as a means to maximally satisfy Realize-ϕ, and as a result makes the subjects of transitive verbs uniquely high in the clause. $\overline{\text{A}}$-movement of the subject of a transitive verb from Spec,TP to Spec,CP will be *too short*—a violation of Spec-to-Spec Anti-Locality—and instead in such cases the subject stays in-situ in Spec,vP and moves directly to Spec,CP, resulting in the AF form of the verb. Intransitive subjects and transitive objects are lower in the clause and thus their movement to Spec,CP never violates Spec-to-Spec Anti-Locality.

In this section I showed how the system of Kaqchikel clause structure proposed here derives both the morphologically ergative agreement alignment and syntactically ergative pattern of AF. AF is not a response to the movement of subjects of transitive verbs (ergative arguments) *per se*, but rather a strategy to avoid the violation of Spec-to-Spec Anti-Locality. This locality-sensitive view to AF was motivated in the previous section by data which showed cases where a transitive subject moves over intervening material, and thus does *not* trigger AF. In the next subsection, I will turn to the derivation of such data.

4.3 Deriving the full distribution of AF

In the remainder of this section I will demonstrate how this proposal derives the full pattern of Kaqchikel AF, including those cases where the subject of a transitive verb has $\overline{\text{A}}$-moved to a non-immediately-preverbal position and AF is not used. Such data was presented in section 3, and is the primary motivation for the idea that AF in Kaqchikel is *locality-sensitive*. The first case is the effect of certain preverbal adverbs which obviate the need for AF, schematized in (52). The second is the pattern of AF in multiple extraction constructions: if a transitive subject is moved to a preverbal position above another preverbal $\overline{\text{A}}$-operator, as schematized in (53), AF is not used.

(52) **No AF due to preverbal adverb:**
[$_{\text{CP}}$ subject [adverb [$_{\text{TP}}$ *t* ... V(***AF**)

(53) **No AF when moved over another operator:**
[$_{\text{CP}}$ subject [$_{\text{CP}}$ *op* [$_{\text{TP}}$ *t* ... V(***AF**)

We begin with the obviation of AF by intervening adverbs. Consider the derivation of a standard transitive TP (42), repeated below as (54), where the subject moves to Spec,TP. For

these adverbs which obviate AF, I follow the functional specifier approach of (Cinque 1999; a.o.), whereby a particular functional projection, AdvP, is projected above TP and hosts the adverb in its specifier. The complementizer is merged above this extended projection. The movement of the subject from Spec,TP to Spec,CP will not violate Spec-to-Spec Anti-Locality in this derivation, as it crosses both TP and AdvP. Therefore the AF derivation will not be used as it does not maximally satisfy the next constraint, Realize-ϕ, in contrast to the basic case without an intervening adverb, repeated below as (55):

(54) **Derivation for transitive clauses:** (=42)

a. Base-generate both arguments in vP:
[$_{vP}$ subject v [$_{VP}$ V object]]

b. Merge T; subject moves to Spec,TP to feed ϕ-agreement of both arguments:
[$_{TP}$ subject T [$_{vP}$ ___ v [$_{VP}$ V object]]]

c. Head movement of V $\rightarrow$ v $\rightarrow$ T:
[$_{TP}$ subject T+v+V [$_{vP}$ ___ t_{v+V} [$_{VP}$ t_{V} object]]]
$\Rightarrow$ "inflected verb – object – subject"

(55) **Subject extraction across AdvP satisfies Spec-to-Spec Anti-Locality:**
✓[$_{CP}$ subject C [$_{AdvP}$ adverb [$_{TP}$ ___ T+v+V [$_{vP}$ ___ [$_{VP}$ object]]] (cf 46a)

Next we turn to the pattern of AF in multiple extraction constructions. Recall that in examples (25–30), we saw that object-subject-verb word order required AF (the (a) examples) and subject-object-verb clauses did not trigger AF (the (b) examples). Here I will present derivations for these cases schematically. For both (a) and (b) cases we begin our consideration with the standard transitive clause derivation as in (54), where the subject moves to Spec,TP to maximally satisfy Realize-ϕ. I assume that multiple CP maximal projections will be projected in order to host the multiple $\overline{\text{A}}$-operators in the periphery, with one specifier per CP projection (Watanabe, 1992; Rizzi, 1997).[22] In the (a) examples, where the subject is in immediately preverbal position, the $\overline{\text{A}}$-movement of the subject from Spec,TP to Spec,CP will violate Spec-to-Spec Anti-Locality (56ai). Therefore the AF clause derivation will be used instead, with the subject skipping the Spec,TP position entirely, and triggering the AF verb form (56aii). The object will subsequently move to a higher Spec,CP position.

[22] I remain agnostic here as to whether the multiple CP-level projections are part of a split left periphery that contains multiple heads (Rizzi, 1997) or an extension of a single C head (Watanabe, 1992). This choice is not crucial to the analysis presented.

(56) **Explaining the pattern of AF in multiple extraction constructions:**

a. Subject in immediately preverbal position (25–30a):

i. * [$_{CP}$ object [$_{CP}$ subject [$_{TP}$ ___ T+v+V [$_{vP}$ ___ [$_{VP}$ ___]]]]]
violates S-to-S A-L!

ii. ✓ [$_{CP}$ object [$_{CP}$ subject [$_{TP}$ T+v+V [$_{vP}$ ___ [$_{VP}$ ___]]]]]
⇒ "O – S – AF verb"

b. Subject in non-immediately-preverbal position (25–30b):
✓[$_{CP}$ subject [$_{CP}$ object [$_{TP}$ ___ T+v+V [$_{vP}$ ___ [$_{VP}$ ___]]]]]
⇒ "S – O – non-AF verb"

In contrast, in (56b) the subject moves across another operator. The non-subject (here, object) will first move to Spec,CP above TP, and this movement step will satisfy Spec-to-Spec Anti-Locality, as all non-subject movements do (see 49). The subject will then move to a higher Spec,CP position. Recall that in such multiple extraction constructions, separate maximal projections are used for each of the preverbal $\overline{\text{A}}$-operators. As such, the $\overline{\text{A}}$-movement of the subject will cross both TP and the lower CP maximal projections, satisfying Spec-to-Spec Anti-Locality. The AF derivation is unnecessary, and the non-AF verb form better satisfies the constraint Realize-ϕ, so the non-AF verb form is used.

4.4 Subject-initial word orders as topicalization

In this section I discuss a potential counter-example to the distribution of AF discussed here, which I have summarized as occuring if and only if a transitive subject moves to *immediately preverbal* position (32). While VOS is the base word order in Kaqchikel, SVO order is possible *without Agent Focus* for subjects which are not one of the AF-triggering $\overline{\text{A}}$-operators.[23] An example is given in (57a) below. If AF is used instead, the interpretation changes so that the subject has exhaustive focus (57b).

(57) **An immediately preverbal subject without AF:**

a. Ri a Pedro x-∅-u-chäk ri premio.
Pedro COM-B_{3sg}-A_{3sg}-win the prize
'Pedro won the prize.'

b. (Ja) ri a Pedro x-∅-chak-**ö** ri premio.
FOC Pedro COM-B_{3sg}-win-**AF** the prize
'It's Pedro that won the prize.'

[23] Such subject initial word orders are common in this variety of Kaqchikel (Clemens, 2013), and in modern Kaqchikel more generally (England, 1991; García Matzar and Rodríguez Guaján, 1997). Other researchers, however, report that verb-initial orders are still very productive in at least some varieties of the language (Broadwell, 2000; McKenna Brown et al., 2006).

The SVO word order without Agent Focus as in example (57a) is, on the surface, problematic for the empirical generalization presented thus far regarding the distribution of AF: that AF is triggered if and only if the subject has moved to an *immediately preverbal position*. The important question is where exactly this pre-verbal subject is and, in particular, whether it is in the same position as those other immediately preverbal subjects which do require AF.

I propose that such SVO word order without AF is the result of subject topicalization. It has been proposed in Aissen (1992) that Mayan languages have a distinct Topic position above the position of other $\overline{\text{A}}$-operators. I propose that Kaqchikel too has a dedicated Topic position, which I will call the specifier of TopP, and that this position is necessarily *higher* than the Spec,CP position to which AF-triggering subjects move. Furthermore, I propose that a maximal projection of CP is always projected under TopP, even if there is no pronounced material in C or Spec,CP.

Subject $\overline{\text{A}}$-movement to this topic position will necessarily cross both TP and CP projections, satisfying Spec-to-Spec Anti-Locality (58). Therefore AF is not used. All AF-triggering $\overline{\text{A}}$-operators, on the other hand, move to the specifier of a (possibly split or recursive) CP.[24]

(58) **Subject movement to Spec,TopP does not trigger AF:**

$[_{TopP}$ subject $[_{\text{CP}}\ [_{\text{TP}}\ t$ ... $[_{v\text{P}}\ t\ v$ ...

$\Rightarrow$ does not violate Spec-to-Spec Anti-Locality

Under this proposal, we predict that if a clause has both a topic and an $\overline{\text{A}}$-operator, the topic will necessarily precede the $\overline{\text{A}}$-operator. Therefore immediately preverbal subjects which do not trigger AF (a topic, as in 57a) cannot cooccur with other preverbal $\overline{\text{A}}$-operators. This prediction is borne out.

(59) **Subject topics cannot come between the verb and an $\overline{\text{A}}$-operator:**

a. Preverbal subject in *wh*-question:

* Achike ri a Juan x-∅-u-tëj?
What Juan COM-B_{3sg}-A_{3sg}-eat
Intended: 'What did Juan eat?'

b. Preverbal subject in relative clause (Daeyoung Sohn, p.c.):[25]

* ri xten [ri ri a Juan x-∅-u-tz'ët]
the girl RC Juan COM-B_{3sg}-A_{3sg}-see
Intended: 'the girl that Juan saw'

[24]Based on my observation that only immediately preverbal subjects trigger AF, reported here in section 3.2, Clemens (2013) suggests a similar explanation for SVO word order clauses without AF. Clemens (2013) proposes that non-AF-triggering preverbal subjects are in a structurally higher position than preverbal $\overline{\text{A}}$-operators which do trigger AF. See Clemens (2013, sec. 4.1) for details.

For *ri a Juan* to be a preverbal topic in a question, my proposal predicts that it must come before the *wh*-word. This is indeed the attested word order:

(60) **Preverbal subject topic before *wh*-word:** (cf 59a)

Ri a Juan, achike x-∅-u-tëj?
Juan what COM-B_{3sg}-A_{3sg}-eat

'What did Juan eat?'

This analysis is crucially different from those which view the standard derived subject position (Spec,TP in the terms used here) as a left specifier and the source of preverbal subjects without AF (e.g. Aissen, 1992; Broadwell, 2000). Such an analysis does not accurately predict the limited distribution of preverbal subjects which do not trigger AF. Instead, in the proposal made here, both the subject's base position (Spec,*v*P) and derived position (Spec,TP) are right specifiers yielding VOS order; SVO order without AF is due exclusively to subject topicalization.

5 Modeling last-resort and its exceptions

The Agent Focus construction is a marked verb form as compared to the non-AF transitive verb form. In section 3 I motivated a new descriptive characterization for where AF is required in Kaqchikel: AF occurs when the subject of a transitive verb is $\overline{\text{A}}$-moved to immediately preverbal position. We have also seen that in contexts where AF is not required, AF is not available. That is, given a particular set of clausal material and fixing its intended interpretation, a transitive verb either must be in its AF form or cannot be in its AF form.[26] In this section I will explore the question of why AF is only possible when it is necessary.

The fact that AF cannot be used when it is not required has motivated its description as a *last-resort* strategy. Consider, for example, the approach taken by Ordóñez (1995); Coon et al. (2011); Assmann et al. (2013), who argue that when the subject is extracted from a

[25]This string does, however, have a possible parse as a subject relative with an exhaustive focus object (Daeyoung Sohn, p.c.):

(i) ri xten [ri (ja) ri a Juan x-∅-u-tz'ët]
the girl RC FOC Juan COM-B_{3sg}-A_{3sg}-see
≈ 'the girl who saw (only) JUAN'

This is expected by the analysis here, as focused constituents do not move to a topic position, and therefore can move within the scope of the relative clause operator. The movement of the object makes the subsequent movement of the subject relative clause operator not long enough, not violating Spec-to-Spec Anti-Locality and therefore not triggering AF.

[26]Note that this characterization does not extend to all Mayan languages with AF. For example, AF is optional in all triggering contexts in Poqomam and Poqomchi' (Stiebels, 2006).

transitive verb, there is then a problem with the absolutive Case-assignment for the object. For these authors, AF is the spellout of an absolutive Case-assigning head. Its insertion into a derivation, though, can only be used to rescue what would otherwise be an ungrammatical derivation. Without such a "last-resort" or "repair" designation on the AF construction, AF could overapply to transitive clauses where the subject has not moved to immediately preverbal position.[27]

5.1 Formalizing the system

In this paper I have described this "last-resort" nature as the result of an interaction between two ranked, violable constraints: Spec-to-Spec Anti-Locality and Realize-ϕ. In this section I will model these interactions using the formal tools of Optimality Theory (Prince and Smolensky, 1993).[28] Specifically, I will model competition between complete derivations in a candidate set, which are each converging derivations sharing the same input numeration and semantic interpretation. Candidates incur violations, indicated as stars in tableaus.[29] The most *optimal* candidate is the one which best satisfies the highest-ranked constraint where violation counts differ.[30]

I begin by formalizing the derivation of Kaqchikel structure motivated in section 4. In

[27] See in particular Ordóñez (1995) which uses Agent Focus in Jakaltek as an explicit argument for Chomsky's (1991) notion of "last-resort." Assmann et al. (2013, p. 404) also acknowledges this "repair strategy" question.

[28] There are two previous approaches to aspects of the distribution and realization of AF in an Optimality-Theoretic syntax framework.
Stiebels (2006) presents an an analysis in terms of Lexical Decomposition Grammar, where each argument in the input's Semantic Form is valued for certain features. Stated in terms of arguments having higher roles or lower roles ([±hr], [±lr]), its logic is similar to a dependent case theory à la Marantz (1991). This system, as stated in Stiebels (2006), is insensitive to the locality of movement involved, and therefore is unable to derive the pattern of AF documented here.
Preminger (2011, p. 98–100) offers a sketch for the agreement alignment on AF verbs in K'ichean, based primarily on Kaqchikel data, but does not attempt to derive the general distribution of AF at the same time. Ultimately in his discussion of K'ichean AF, he concludes that the AF agreement data which he considers do not clearly distinguish between a violable constraints model (OT) and a model of syntax where operations (such as probing) must attempt, even if they do not succeed.

[29] For this section, I will use the following reformulations for Spec-to-Spec Anti-Locality and Realize-ϕ which explicitly define their violation counts:

(1) **Spec-to-Spec Anti-Locality (SSAL):**
Assign one violation per $\overline{\text{A}}$-movement step which is too close, as defined in (4).

(2) **Realize-ϕ (Rϕ):**
Assign one violation per ϕ-agreement target whose ϕ-features are not realized on a verb.

Note that this formulation of *Realize-ϕ* is functionally equivalent to Stiebels's (2006) *Max(ϕ)* and Preminger's (2011) *HaveAgr*.

[30] As noted in Müller and Sternefeld (2001) and others, the consideration of transderivational constraints is certainly not incompatible with derivational syntax in the Minimalist tradition, and is not without precedent. See for example the notion of "reference set" in Chomsky (1995), which selects for converging derivations with the same input numeration. See also Fox (1995); Reinhart (1998) for examples of competition between derivations with identical semantic interpretations.

transitive clauses without $\overline{\text{A}}$-movement, Realize-ϕ will trigger movement of the subject to Spec,TP (61). This motivates the ranking of Realize-ϕ $\gg$ Stay, where *Stay* is a constraint which assigns violations to instances of movement (Grimshaw, 1997). Here I will use a variant of Stay which will only count instances of phrasal movement (62) and not illustrate the head-movement steps forming the verbal complex.

(61) **Transitive clause derivation (42/54):**

	Candidates	Realize-ϕ	Stay
☞	$[_{\text{TP}}$ S T+v+V $[_{v\text{P}}$ ___ $[_{\text{VP}}$ O]]] ⇒ "V O S," Set A = subject, Set B = object (42/54)		*
	$[_{\text{TP}}$ T+v+V $[_{v\text{P}}$ S $[_{\text{VP}}$ O]]] ⇒ "V O S," AF form, no Set A, Set B = subject	*! (object)	
	$[_{\text{TP}}$ T+v+V $[_{v\text{P}}$ S $[_{\text{VP}}$ O]]] ⇒ "V O S," AF form, no Set A, Set B = object	*! (subject)	

(62) **Stay** (based on Grimshaw, 1997):
Assign one violation per step in phrasal movement chains.

Now consider a transitive clause where the subject will be $\overline{\text{A}}$-moved to Spec,CP. If the subject had first moved to Spec,TP, as in the winning candidate in (61), the subsequent movement of the subject from Spec,TP to Spec,CP incurs a violation of Spec-to-Spec Anti-Locality (SSAL below). If instead the subject does not move through Spec,TP, we will satisfy Spec-to-Spec Anti-Locality at the expense of Realize-ϕ (Rϕ), and yield an AF verb form. Since AF is the attested form in this configuration, this motivates the ranking of Spec-to-Spec Anti-Locality $\gg$ Realize-ϕ, as discussed more informally in the previous section.

(63) **Transitive clause with $\overline{\text{A}}$-movement of subject (46):**

	Candidates	SSAL	Rϕ	Stay
	$[_{\text{CP}}$ S $[_{\text{TP}}$ ___ T+v+V $[_{v\text{P}}$ ___ $[_{\text{VP}}$ t_{V} O]]]] ⇒ "S V O," Set A = subject, Set B = object (46a)	*!		**
☞	$[_{\text{CP}}$ S $[_{\text{TP}}$ T+v+V $[_{v\text{P}}$ ___ $[_{\text{VP}}$ O]]]] ⇒ "S V O," AF form, no Set A, Set B = subject (46b)		* (O)	*
☞	$[_{\text{CP}}$ S $[_{\text{TP}}$ T+v+V $[_{v\text{P}}$ ___ $[_{\text{VP}}$ O]]]] ⇒ "S V O," AF form, no Set A, Set B = object (46b)		* (S)	*

The tableau above in (63) shows that in this situation, an AF form verb will be the most optimal candidate. However, at this level of abstraction, we cannot determine whether the

AF form with a Set B marker cross-referencing the subject or the object will be used.

In order to answer this question, in this section we will take a closer look at the pattern of agreement which is realized on AF verbs, based on the work of Preminger (2011) which also studies this same variety of Kaqchikel. Along the way, we will see that there are particular combination of ϕ-features which require the full transitive verb form instead of the AF form, even though the structure of the clause would otherwise predict that AF would be used. I argue that this interaction can be explained by the calculus of ranked, violable constraints presented here, but not by a system of syntactically marked "last-resort" or "repair" mechanisms.

5.2 An exception to the last-resort strategy

I will begin by reviewing the pattern of agreement on AF verbs. Recall that there is only one agreement slot on the AF verb: Set B (64). AF verbs do not have a Set A agreement slot, under my proposal because no DP occupies Spec,TP in such clauses. Since there is only one agreement slot and two ϕ-agreement targets in these clauses, only one target's ϕ-features will be realized.

(64) **Agent Focus form of transitive verb:** (=10)
aspect – Set B – verb – AF suffix

In non-AF contexts, the Set B marker is the agreement slot which can be described as "absolutive"-aligned: it cross-references the object in non-AF transitive clauses and the subject in intransitive clauses. However, its behavior on AF verbs is different. As we see in examples (11), repeated below as (65), the Set B marker on an AF verb can agree with either the subject or the object. The agreement pattern in these examples is schematized in (66) below.

(65) **Examples of Set B agreement in AF:** (=11) (Preminger, 2011, exx 21–22)

a. Ja rat x-{at/*∅}-axa-**n** ri achin.
FOC you COM-{B_{2sg}/*B_{3sg}}-hear-**AF** the man
'It was YOU that heard the man.'

b. Ja ri achin x-{at/*∅}-axa-**n** rat.
FOC the man COM-{B_{2sg}/*B_{3sg}}-hear-**AF** you
'It was THE MAN that heard you.'

(66) **Agreement patterns in (65):** (=12)

a. subject$_{2sg}$ aspect – B_{2sg} – verb – **AF** object$_{3sg}$ (=65a)

b. subject$_{3sg}$ aspect – B$_{2sg}$ – verb – **AF** object$_{2sg}$ (=65b)

This choice of ϕ-agreement target is determined by the ϕ-features on these arguments. In particular, previous researchers have introduced a *salience hierarchy* to describe the agreement on the AF verb form's Set B marker (67) (Stiebels, 2006, and references therein). The Set B marker on an AF verb must consider both its subject and its object and realize the ϕ-features of the argument which is higher on this hierarchy.

(67) **Salience hierarchy:** (=13) (Stiebels, 2006)
first/second-person > third-plural > third-singular

In order to model this interaction within the system proposed here, I propose the constraint *Realize-Participant*:[31,32]

(68) **Realize-Participant (RP):**
Assign one violation per participant (first- or second-person) ϕ-agreement target whose ϕ-features are not realized on a verb.

By introducing the constraint Realize-Participant, we are able to break the tie that we observed above in (63). Consider the tableau for (65a), with a second-singular subject and a third-singular object. Notice that we do not need to rank Realize-Participant relative to any of the other constraints considered in order to break this tie and yield the correct output. A comparison very similar to (65a), not illustrated here, also yields the second-singular Set B agreement for example (65b) which has a third-singular subject and a second-singular object, with the same constraint ranking.

(69) **2sg-subject/3sg-object transitive clause with $\overline{\text{A}}$-movement of subject (65a):**

[31] This constraint is equivalent to Preminger's (2011) *HaveAgrWith1/2*.

[32] Here I will abstract away from the preference to agree with third-plural arguments over third-singular ones. Formally, it suffices to introduce a similar constraint, *Realize-Plural*, which assigns violations for plural ϕ-agreement targets which are not agreed with. I will not discuss the effect of this constraint, however, as the preference for agreeing with third-plural arguments over third-singular arguments will not yield the interesting AF-overriding behavior which I will present with first- and second-person arguments below.

	Candidates	SSAL	Rϕ	Stay	RP
		strictly ranked			
	[$_{CP}$ S_{2sg} [$_{TP}$ ___ T+v+V [$_{vP}$ ___ [$_{VP}$ O_{3sg}]]]] ⇒ "S V O," Set A = 2sg (S), Set B = 3sg (O)	*!		**	
☞	[$_{CP}$ S_{2sg} [$_{TP}$ T+v+V [$_{vP}$ ___ [$_{VP}$ O_{3sg}]]]] ⇒ "S V O," AF form, no Set A, Set B = 2sg (S)		* (O)	*	
	[$_{CP}$ S_{2sg} [$_{TP}$ T+v+V [$_{vP}$ ___ [$_{VP}$ O_{3sg}]]]] ⇒ "S V O," AF form, no Set A, Set B = 3sg (O)		* (S)	*	*! (S)

Given this hierarchy effect which determines the agreement target of Set B morphology in AF, a natural question is *what happens when both arguments of the verb are first or second-person?* As noted by Preminger (2011), *in such cases in Kaqchikel, the verb simply stays in its non-AF form, agreeing with both arguments.* This is demonstrated by the subject cleft in (70). As we see, even though the subject cleft is an AF-triggering environment, the AF form of the verb cannot be used, regardless of the Set B agreement marker chosen. Instead, the full agreement transitive form of the verb must be used.

(70) **Subject cleft with 1sg-subject/2sg-object *grammatical without AF*:**

a. ✓ Ja yïn x-at-in-tzët rat.
FOC me COM-B_{2sg}-A_{1sg}-see you
'It was ME that saw you.'

b. * Ja yïn x-i-tz'et-**ö** rat.
FOC me COM-B_{1sg}-see-**AF** you

c. * Ja yïn x-a-tz'et-**ö** rat.
FOC me COM-B_{2sg}-see-**AF** you

Just to make sure that this is indeed the case, we see below that if either argument in (70) were changed to be third-person, the AF form must be used, with Set B cross-referencing the participant argument.

(71) **Subject cleft with 3sg-subject/2sg-object:**

a. ✓ Ja ri a Juan x-a-tz'et-**ö** rat.
FOC Juan COM-B_{2sg}-see-**AF** you
'It was JUAN that saw you.'

b. * Ja ri a Juan x-a-r-tz'ët rat.
FOC Juan COM-B_{2sg}-A_{3sg}-see you

(72) **Subject cleft with 1sg-subject/3sg-object:**

a. ✓ Ja yïn x-i-tz'et-**ö** ri a Juan.
FOC me COM-B_{1sg}-see-**AF** Juan
'It was ME that saw Juan.'

b. * Ja yïn x-∅-in-tz'ët ri a Juan.
FOC me COM-B_{3sg}-A_{1sg}-see Juan

Example (70), and other examples with other first- and second-person combinations not presented here for reasons of space, show us that, informally, the need of first- and second-person arguments to have their ϕ-features realized on the verb *overrides the effects of Spec-to-Spec Anti-Locality which otherwise predict the use of an AF verb form in this environment*.

In the violable-constraint-based formulation presented here, we can easily account for this behavior by ranking Realize-Participant above Spec-to-Spec Anti-Locality:

(73) **1sg-subject/2sg-object transitive clause with $\overline{\text{A}}$-movement of subject (70):**

	Candidates	RP	SSAL	Rϕ	Stay
☞	[$_{CP}$ S_{1sg} [$_{TP}$ ___ T+v+V [$_{vP}$ ___ [$_{VP}$ O_{2sg}]]]] ⇒ "S V O," Set A = 1sg (S), Set B = 2sg (O)		*		**
	[$_{CP}$ S_{1sg} [$_{TP}$ T+v+V [$_{vP}$ ___ [$_{VP}$ O_{2sg}]]]] ⇒ "S V O," AF form, no Set A, Set B = 1sg (S)	*! (O)		* (O)	*
	[$_{CP}$ S_{1sg} [$_{TP}$ T+v+V [$_{vP}$ ___ [$_{VP}$ O_{2sg}]]]] ⇒ "S V O," AF form, no Set A, Set B = 2sg (O)	*! (S)		* (S)	*

Using the Realize-Participant constraint which we independently motivated previously, we are able to straightforwardly account for this exceptional behavior with combinations of first- and second-person arguments. We have motivated the following constraint ranking: Realize-Participant ≫ Spec-to-Spec Anti-Locality ≫ Realize-ϕ ≫ Stay.

5.3 An argument for AF through optimality, not last-resort

I argue that this logic of the full distribution of AF in Kaqchikel reported here forms a strong argument against the view of AF as the result of a "last-resort" strategy. If the mechanism which results in AF is a "last-resort" variant of the derivation, this shows us that this "last-resort" itself has an exception. Stated in these terms, this phenomenon shows that there must be an *additional* strategy or repair, which is the *last-resort to a last-resort*. I have attempted to exemplify this process through the following decision tree for the use of the AF verb form:

(74) **A decision tree for AF as a last-resort operation:**

Q: Is the transitive verb's subject $\overline{\text{A}}$-moved to immediately preverbal position?

No: The normal transitive verb form will work.

Yes: There will be a problem with the derivation.

⇒ ***Last-resort!*** Invoke the AF "repair." The verb will now agree with only one argument.

Q: Can we agree with all participants?

Yes: No problem. Use AF.

No: ⇒ ***Last-resort to the last-resort!*** Somehow use the normal transitive verb form after all.

Particularly suspicious is the fact that the result of the *last-resort to the last-resort* is an output *identical* to what would have originally been derived if AF were not attempted at all. To see concretely why this is problematic for other accounts, I will return to the analysis of Ordóñez (1995), Coon et al. (2011), and Assmann et al. (2013). These papers propose that when the subject of transitive clauses are $\overline{\text{A}}$-extracted, the object is then unable to receive absolutive Case. The AF morphology is then the realization of a last-resort absolutive Case assigner. AF is obligatory in such cases, because the AF absolutive Case-assigner is a last-resort, and thus has been invoked because *there is no other way to rescue the structure*. However, if the arguments of the verb are such that both must be ϕ-agreed with, suddenly the non-AF form of the verb is used. This means that there must be another repair mechanism, the *last-resort to the last-resort*, which allows for absolutive Case to be assigned to the object *without* invoking the last-resort use of the AF absolutive Case assigner, for use in such cases. What could the source of this *last-resort to the last-resort* absolutive Case be? And crucially, why is this exceptional repair strategy not available in *all* cases where the object lacks absolutive Case? I will leave these questions open for the proponents of such Case-based analyses.

In this section I formalized my proposal for the distribution and realization of AF in Kaqchikel, using a system of violable constraints presented in familiar tableau notation. This builds on the previous sections where I discussed the basic interactions of the constraints Spec-to-Spec Anti-Locality and Realize-ϕ and used them to derive the basic morphological ergativity of Kaqchikel as well as the locality-sensitive distribution of AF. In this section I took a closer look at the realization of agreement on verbs in AF contexts. I presented a surprising pattern where AF morphology is suppressed in an otherwise AF-triggering context, in order to maximally satisfy the constraint Realize-ϕ. I argue that this interaction shows the need to model AF through a system of *ranked, violable constraints*, where a higher-ranked constraint can make what is otherwise a marked structure the optimal candidate.

Furthermore, I briefly discussed some recent Case-based approaches to AF in this section. In addition to not reflecting the generalization that AF is sensitive to the locality of extraction, as shown in previous sections, these Case-based approaches run into difficulty with the data presented here, in having to describe AF as a *last-resort*, while also adopting a *last-resort to the last-resort*.

6 Conclusion

In the study of the Mayan Agent Focus construction, previous researchers have assumed an exceptionless correlation between AF and the $\overline{\text{A}}$-extraction of a transitive subject (Aissen 1999; Stiebels 2006; Coon et al. 2011; a.o.). In this paper I present new data that shows that AF in Kaqchikel reflects a sensitivity to the *locality of movement*, rather than a response to the extraction of a transitive subject. This motivated the *Spec-to-Spec Anti-Locality* constraint, repeated below.

(75) **Spec-to-Spec Anti-Locality:** (=4)
$\overline{\text{A}}$-movement of a phrase from the Specifier of XP must cross a maximal projection other than XP.

I also proposed the constraint Realize-ϕ, repeated below, which is crucial to deriving the ergative properties in Kaqchikel.

(76) **Realize-ϕ:** (=41)
ϕ-agreement targets should be agreed with. ϕ-agreement through Set A markers and Set B markers counts equally.

The Kaqchikel verb can maximally express agreement with two core arguments, but only if one moves to Spec,TP. In transitive clauses, Realize-ϕ forces the movement of the subject to Spec,TP, yielding Set A agreement with the subject and Set B agreement with the object. In intransitive clauses, no movement of the subject takes place, as Realize-ϕ is already maximally satisfied by Set B agreement with the subject. This simple calculus derives the basic morphological ergativity of Kaqchikel.

The distribution and realization of the AF verb in Kaqchikel further reinforces this idea. Under this system the subjects of transitive clauses are predicted to be uniquely high in the clause—a prediction that is supported by binding evidence. This exceptionally high position for the subjects of transitives makes their movement uniquely in danger of violating the Spec-to-Spec Anti-Locality constraint. These two constraints together—critically ranked with Spec-to-Spec Anti-Locality above Realize-ϕ—can thus explain the "syntactically ergative" distribution of AF in Kaqchikel. Moreover, this system also derives the *full*

distribution of AF, where extraction of transitive subjects does *not* trigger AF if it can move through Spec,TP without violating Spec-to-Spec Anti-Locality.

In the final section I formalized the interactions of these constraints using a system of ranked, vioable constraints and showed how this system can effortlessly model exceptions to the standard behavior of agreement on AF verbs. I argued that other approaches to AF which must treat AF as a marked, "last-resort" operation face difficulty deriving such exceptional behavior.

References

Abels, Klaus. 2003. Successive cyclicity, anti-locality, and adposition stranding. Doctoral Dissertation, University of Connecticut.

Aissen, Judith. 1992. Topic and focus in Mayan. *Language* 68.

Aissen, Judith. 1999. Agent focus and inverse in Tzotzil. *Language* 75:451–485.

Aldridge, Edith Catherine. 2008. Generative approaches to ergativity. *Language and Linguistics Compass* 10.

Aldridge, Edith Catherine. 2012. Two types of ergativity and where they might come from. Presentation at Massachusetts Institute of Technology.

Alexiadou, Artemis, and Elena Anagnostopoulou. 2001. The subject in situ generalization, and the role of Case in driving computations. *Linguistic Inquiry* .

Alexiadou, Artemis, and Elena Anagnostopoulou. 2007. The subject-in-situ generalization revisited. In *Interfaces + recursion = language? Chomsky's minimalism and the view from syntax-semantics*.

Assmann, Anke, Doreen Georgi, Fabian Heck, Gereon Müller, and Philipp Weisser. 2013. Ergatives move too early: on an instance of opacity in syntax. In *Rule interaction in grammar*, ed. Fabian Heck and Anke Assmann, volume 90 of *Linguistische Arbeits Berichte*. Institut für Linguistik, Universität Leipzig.

Bošković, Željko. 1994. D-structure, θ-theory, and movement into θ-positions. *Linguistic Analysis* 24.

Bošković, Željko. 1997. *The syntax of nonfinite complementation: An economy approach*. MIT Press.

Broadwell, George Aaron. 2000. Word order and markedness in Kaqchikel. In *Proceedings of the LFG00 Conference*.

Campbell, Lyle. 2000. Valency-changing derivations in K'iche'. In *Changing valency: case studies in transitivity*.

Chomsky, Noam. 1991. Some notes on economy of derivation and representation. In *Principles and parameters in comparative grammar*. MIT Press.

Chomsky, Noam. 1993. A minimalist program for linguistic inquiry. In *The view from Building 20*, ed. Kenneth Hale and Samuel Jay Keyser. MIT Press.

Chomsky, Noam. 1995. *The minimalist program*. MIT Press.

Cinque, Guglielmo. 1999. *Adverbs and functional heads*. Oxford.

Clemens, Lauren Eby. 2013. Kaqchikel SVO: V2 in a V1 language. In *Studies in Kaqchikel grammar*. MIT Working Papers in Linguistics.

Coon, Jessica, Pedro Mateo Pedro, and Omer Preminger. 2011. The role of case in A-bar extraction asymmetries. Manuscript.

Dayley, Jon P. 1981. Voice and ergativity in Mayan languages. *Journal of Mayan Linguistics* 2:3–82.

Dayley, Jon P. 1985. *Tzutujil grammar*. University of California Press.

Duncan, Lachlan. 2003. The syntactic structure of Tz'utujil Maya. In *Proceedings of LFG03*.

England, Nora. 1991. Changes in basic word order in Mayan languages. *International Journal of American Linguistics* .

Fox, Danny. 1995. Economy and scope. *Natural Language Semantics* 3.

García Matzar, Pedro, and José Obispo Rodríguez Guaján. 1997. *Rukemik ri Kaqchikel chi': Gramática Kaqchikel*. Guatemala City: Cholsamaj.

Grimshaw, Jane. 1997. Projection, heads, and optimality. *Linguistic Inquiry* 373–422.

Grinevald Craig, Colette. 1979. The antipassive and Jacaltec. In *Papers in Mayan linguistics*, volume 7. Lucas Brothers.

Grohmann, Kleanthes K. 2003. *Prolific domains: On the anti-locality of movement dependencies*. John Benjamins.

Hedberg, Nancy. 1988. Discourse function, ergativity, and agreement in Cakchiquel Mayan. Manuscript, University of Minnesota.

Henderson, Robert, Jessica Coon, and Lisa Travis. 2013. Micro- and macro-parameters in Mayan syntactic ergativity. Presentation at *Towards a Theory of Syntactic Variation*, Bilbao.

de Hoop, Helen, and Andrej L. Malchukov. 2008. Case-marking strategies. *Linguistic Inquiry* .

Kenstowicz, Michael J. 2013. Realize morpheme in Kaqchikel. In *Studies in Kaqchikel grammar*. MIT Working Papers in Linguistics.

Marantz, Alec. 1991. Case and licensing. In *Proceedings of the Eighth ESCOL*.

McKenna Brown, R., Judith M. Maxwell, Walter E. Little, and Angelika Bauer. 2006. *La ütz awäch?: introduction to Kaqchikel Maya language*. University of Texas Press.

Müller, Gereon, and Wolfgang Sternefeld. 2001. The rise of competition in syntax: a synopsis. In *Competition in syntax*. Walter de Gruyter.

Murasugi, Keiko, and Mamoru Saito. 1995. Adjunction and cyclicity. In *Proceedings of WCCFL 13*, 302–317.

Norcliffe, Elisabeth. 2009. Head-marking in usage and grammar: a study of variation and change in Yucatec Maya. Doctoral Dissertation, Stanford University.

Ordóñez, Francisco. 1995. The antipassive in Jacaltec: a last resort strategy. In *Catalan working papers in linguistics 4/2*. Catalan Working Papers in Linguistics.

Pesetsky, David, and Esther Torrego. 2001. T-to-C movement: Causes and consequences. In *Ken Hale: A life in language*. MIT Press.

Preminger, Omer. 2011. Agreement as a fallible operation. Doctoral Dissertation, Massachusetts Institute of Technology.

Prince, Alan S., and Paul Smolensky. 1993. Optimality theory: Constraint interaction in generative grammar. MS, Rutgers University and University of Colorado.

Reinhart, Tanya. 1998. *Wh*-in-situ in the framework of the Minimalist Program. *Natural Language Semantics* 6.

Richards, Norvin Waldemar III. 2010. *Uttering trees*. MIT Press.

Rizzi, Luigi. 1997. The fine structure of the left periphery. In *Elements of grammar*, ed. Liliane Haegeman. Kluwer.

Rizzi, Luigi, and Ur Shlonsky. 2007. Strategies for subject extraction. In *Interfaces + recursion = language? Chomsky's minimalism and the view from syntax-semantics*, ed. Uli Sauerland and H.-M. Gärtner, volume 89 of *Studies in Generative Grammar*. Mouton de Gruyter.

Saito, Mamoru, and Keiko Murasugi. 1999. Subject predication within IP and DP. In *Beyond principles and parameters*. Springer.

Schneider-Zioga, Patricia. 2007. Anti-agreement, anti-locality, and minimality. *Natural Language & Linguistic Theory* 25:403–446.

Stiebels, Barbara. 2006. Agent focus in Mayan languages. *Natural Language & Linguistic Theory* 24:501–570.

Tada, Hiroaki. 1993. A / A-bar partition in derivation. Doctoral Dissertation, Massachusetts Institute of Technology.

Tonhauser, Judith. 2003. F-constructions in Yucatec Maya. In *Proceedings of SULA 2*.

Watanabe, Akira. 1992. Larsonian CP recursion, factive complements, and selection. In *Proceedings of NELS 23*.

Michael Yoshitaka Erlewine
Massachusetts Institute of Technology
77 Massachusetts Avenue 32-D808
Cambridge, MA 02139 USA
mitcho@mitcho.com