言語研究（*Gengo Kenkyu*）**156**: 25–45（2019）　doi: 10.11435/gengo.156.0_25

Two Routes to the Mayan VOS: From the View of Kaqchikel

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Abstract: There are two major proposals regarding how to derive the VOS word order in the Mayan family. One is a right-specifier analysis, according to which specifiers of lexical categories are located to the right of the heads and the subject occupies a right-specifier. The other is a predicate fronting analysis, in which *v*P is preposed across the subject. Comparing two Mayan languages, Chol and Kaqchikel, this paper argues that Kaqchikel reaches VOS via a right-specifier route rather than a predicate fronting route, and suggests a possibility of extending the right-specifier analysis to Chol VOS sentences.*

Key words: Chol, Kaqchikel, right-specifier, predicate fronting

1. Introduction

Languages differ in the order in which the subject (S), the object (O) and the verb (V) are aligned. For example, in declarative sentences with a nominal subject and object, the unmarked or "basic" word order is SVO in English and SOV in Japanese, with the subject preceding the object. However, many Mayan languages exhibit the basic VOS word order with the subject following the object. There are two major proposals regarding how to derive the VOS order in the Mayan family. One is the right-specifier analysis by Aissen (1992), according to which specifiers of lexical categories are located to the right of the heads and the subject occupies a right-specifier. The other is the predicate fronting analysis by Coon (2010), in which *v*P is preposed across the subject. Comparing two Mayan languages, Chol and Kaqchikel, we argue that the right-specifier analysis is more suitable

* We are immensely grateful to Lolmay Pedro García Matzar, Juan Esteban Ajsivinac Sián, and Filiberto Patal Majzul for providing us with the Kaqchikel data reported in this paper. We are equally indebted to Yoshiho Yasugi for helping us create and analyze relevant Kaqchikel sentences and to Kensuke Takita for sharing with us his idea on linearization. We would also like to thank the audiences at the Keio-Nanzan Workshop on Minimalist Syntax (June 8th, 2019) and two anonymous reviewers for their invaluable comments and suggestions. All remaining errors are of course our own. This work was supported in part by JSPS KAKENHI Grant Numbers 15H02603, 19H05589 (PI: Masatoshi Koizumi).

for Kaqchikel, and then suggest the possibility of extending the right-specifier analysis to Chol VOS sentences with a few parametric differences between these languages.

2. Kaqchikel and Mayan languages

The Mayan family is comprised of about 30 languages primarily spoken in Guatemala, Mexico, and Belize (for a recent overview of Mayan linguistics, see Coon (2016) and the other articles in the same issue of *Language and Linguistics Compass*). Kaqchikel is a language of the K'ichean branch of the Mayan family.

(1) Possible Classifications of Mayan Languages
- a. **Huastecan**: Wastek, Chicomuceltec [extinct]
- b. **Yukatekan**: Yukatek, Lakantun; Itza', Mopan
- c. **Greater Tseltalan**:
  - i **Cholan**: Ch'orti', Cholti [extinct], Chontal, Chol
  - ii **Tseltalan**: Tzotzil, Tseltal
- d. **Greater Q'anjob'alan**:
  - i **Chujean**: Tojolabal, Chuj
  - ii **Q'anjob'alan**: Mocho (Motocintlec); Jakaltek, Akatek, Q'uanjob'al
- e. **K'ichean-Mamean** (or Eastern Mayan):
  - i **Mamean**: Ixil, Awakatek; Mam, Teco
  - ii **K'ichean**: Sipakapense, Sakapultek, Tz'utujil, *Kaqchikel*, K'ichee', Poqomam, Poqomchi', Uspantek, Q'eqchi'

(Adapted from Campbell and Kaufman 1985: 188)

Like other Mayan languages, Kaqchikel is a head-marking and morphologically ergative language in which subjects and objects are not overtly case-marked for grammatical relations. Instead, grammatical relations are obligatorily marked on predicates with two sets of person/number morphemes, traditionally called Set A and Set B in Mayan linguistics. Set A corresponds to ergative (transitive subjects) and genitive (possessors) marking, and Set B to absolutive (transitive objects and intransitive subjects) marking. The order of the morphemes is [Aspect-B-Verb stem] for intransitive verbs and [Aspect-B-A-Verb stem] for transitive verbs.[1]

The word order of most Mayan languages is predicate-initial in pragmatically neutral contexts (England 1991, Aissen 1992). According to García Matzar and Rodríguez Guaján (1997), among others, the basic word order of Kaqchikel is VOS, as exemplified in (2a), with neither the subject nor the object topicalized or focused (Rodríguez Guaján 1994: 200, García Matzar and Rodríguez Guaján 1997: 333, Tichoc Cumes et al. 2000: 195, Ajsivinac Sian et al. 2004: 162. For psycho/neuro-linguistic evidence of VOS being syntactically basic in Kaqchikel, see Koizumi et al. 2014, Yasunaga et al. 2015, Koizumi and Kim 2016, Yano et al.

[1] Unless otherwise noted, the description of Kaqchikel grammar in this paper is based on our fieldwork with three native consultants, Lolmay Pedro Oscar García Mátzar (Chimaltenango), Juan Esteban Ajsivinac Sian (Patzicía), and Filiberto Patal Majzul (Patzún).

2017, among others). VSO is also grammatically allowed, as shown in (2b):[2]

(2) a. X-Ø-u-chöy ri chäj ri ajanel. [VOS]
CP-B3sg-A3sg-cut DET pine.tree DET carpenter
b. X-Ø-u-chöy ri ajanel ri chäj. [VSO]
CP-B3sg-A3sg-cut DET carpenter DET pine.tree
"The carpenter cut the pine tree."

It is possible to topicalize the subject by moving it in front of the verb, as exemplified in (3a) (García Matzar and Rodríguez Guaján 1997: 334). Similarly, the object may be fronted as a topic, as shown in (3b) (García Matzar and Rodríguez Guaján 1997: 335):[3]

(3) a. Ri ajanel x-Ø-u-chöy ri chäj. [SVO]
DET carpenter CP-B3sg-A3sg-cut DET pine.tree
"The carpenter cut the pine tree."
b. Ri chäj x-Ø-u-chöy ri ajanel. [OVS]
DET pine.tree CP-B3sg-A3sg-cut DET carpenter

3. Agreement and hierarchical structure in Kaqchikel

As the starting point of our discussion of Kaqchikel syntax, we adopt Imanishi's (2014) proposal about agreement and hierarchical structure in the language, which is schematically shown in (4) and (5) below.[4] (In the discussion in this section, constituent orders are irrelevant and arbitrarily represented in syntactic diagrams. We discuss linear ordering in the next section.) At the point of a derivation in (4), Voice undergoes agreement with the subject (SUB), which will eventually be reflected as an ergative (Set A) agreement morpheme in the verbal complex.[5]

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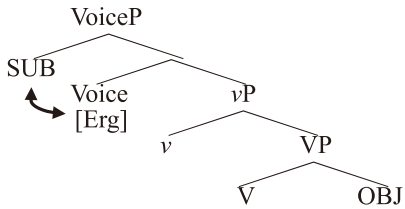
[2] The following abbreviations are used in glosses: 1: first person, 3: third person, A: set A ergative, B: set B absolutive, CL: classifier, CP: completive, DET: determiner, IP: incompletive, pl: plural, sg: singular, PRFV: perfective, TV: transitive verb suffix, AF: agent focus.

[3] When a transitive subject undergoes some type of movement to the pre-verbal position, such as *wh*-movement and focus movement, ergative agreement does not appear on the verb and a special morpheme suffixes to the stem, a construction commonly termed Agent Focus (AF). We are not concerned with AF in this paper. All transitive sentences with the SVO word order discussed in this paper have canonical transitive agreement. For AF, see, among others, Preminger (2014) and Watanabe (2017).

[4] Imanishi (2014) assumes that *v*P dominates VoiceP, whereas Coon (2010) assumes that VoiceP dominates *v*P. This difference does not have crucial bearing on the main points of this paper, and we remain agnostic between the two possibilities. For the sake of exposition, we assume in this paper that VoiceP dominates *v*P (for arguments for this structure, see Pylkkänen 2002 and Harley 2013, among others).

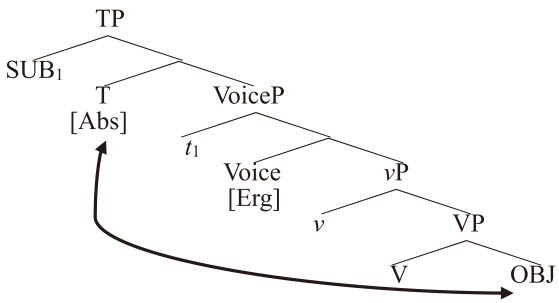
[5] More specifically, Imanishi (2014) proposes that ergative Case is a type of Case which is assigned by a phase head to the highest Case-less DP within the Spell-Out domain of a phase. In (4), therefore, ergative Case is assigned to the otherwise Case-less subject by the phase head, Voice. On the other hand, Imanishi (2014) assumes that absolutive Case is as-

(4) Ergative agreement



The subject then raises to Spec,TP to satisfy an EPP feature on T. This movement makes it possible for T to agree with the object, resulting in the absolutive agreement (Set B) morpheme. Thus, the subject movement feeds the absolutive agreement between T and the object (Imanishi 2014: 60).

(5) Absolutive agreement



The structure in (5) captures the following two basic characteristics of Kaqchikel transitive sentences. First, the absolutive agreement morpheme (Set B) occurs outside the ergative agreement morpheme (Set A) in the verbal complex ([Aspect-B-A-Verb stem]). The Mirror Principle proposed by Baker (1985) (i.e., morpheme order should mirror syntactic structure) suggests that the functional head responsible for the absolutive agreement should be structurally higher than the functional head implicated in the ergative agreement, as is the case in (5).

Second, the subject is structurally higher than the object, in the sense that the former c-commands the latter. This point can be shown by well-known syntactic diagnostics. For example, anaphors (e.g., *herself, himself, themselves, each other*) must be c-commanded by their antecedents in a local domain (i.e., anaphors must be locally bound), a condition known as Binding Condition A (cf. Chomsky 1981). Thus, (6a), in which the anaphor *each other* in a verb phrase (VP) is bound by *Mary and John*, is grammatical, whereas (6b) is ungrammatical, because *each other* is not c-commanded by its potential antecedent *Mary and John*.

(6) a. [Mary and John [$_{VP}$ saw each other]].
b. *[Each other [$_{VP}$ saw Mary and John]].

signed by T via Agree (Chomsky 2000).

Now consider the following Kaqchikel sentences:

(7) a. X-Ø-ki-tz'ët (jub'ey chik) k-i' a Lolmay chuqa' a Xwan.
CP-B3sg-A3pl-see (once again) each.other CL Lolmay and CL Juan
"Lolmay and Juan saw each other (again)."

b. *X-e'-ru-tz'ët (jub'ey chik) a Lolmay chuqa' a Xwan k-i'.
CP-B3pl-A3sg-see (once again) CL Lolmay and CL Juan each.other

In (7a), the subject *a Lolmay chuqa' a Xwan* "Lolmay and Juan" is cross-referenced with the third person plural agreement morpheme of Set A, *ki*. The object is the anaphor *k-i'* "*each other*," associated with the third person singular agreement morpheme of Set B, Ø, which is phonetically null. In (7b), on the other hand, the subject is the anaphor *k-i'*, which triggers the third person singular Set A agreement *ru*, and the object is the plural DP *a Lolmay chuqa' a Xwan*, which is cross-referenced with the third person plural Set B agreement *e'*. The contrast in grammaticality between (7a) and (7b) indicates that the ergative subject c-commands the absolutive object in Kaqchikel (see also Henderson 2012 for similar data).

Another syntactic test that can be used to detect a c-command relation between nominal arguments is Binding Condition C, which states that R-expressions (e.g., *Mary*, *the book that John wrote*) must be free (i.e., R-expressions must not be c-commanded by noun phrases coreferential with them) (cf. Chomsky 1981). The first three examples in (8) are grammatical under the interpretations in which *John* is coreferential with *his* or *him*. In contrast, (8d) is ungrammatical if *John* and *He* are coreferential. This is because only in (8d) is *John* c-commanded by the pronoun coreferential with it.

(8) a. John$_1$ is looking for his$_1$ wife.
b. His$_1$ wife is looking for John$_1$.
c. John$_1$'s wife is looking for him$_1$.
d. *He$_1$ is looking for John$_1$'s wife.

Turning back to Kaqchikel, consider the sentences in (9), which are parallel to the English counterparts in (8). In (9c) and (9d), *pro* indicates a phonetically null pronoun in the object and subject position, respectively.

(9) a. N-Ø-u-kanoj [ri r$_1$-ixjayil] a Xwan$_1$.
IC-B3sg-A3sg-seek DET A3sg-wife CL Juan
"Juan$_1$ is looking for his$_1$ wife."

b. N-Ø-u-kanoj a Xwan$_1$ [ri r$_1$-ixjayil].
IC-B3sg-A3sg-seek CL Juan DET A3sg-wife
"His$_1$ wife is looking for Juan$_1$."

c. N-Ø-u-kanoj *pro*$_1$ [ri r-ixjayil a Xwan$_1$].
IC-B3sg-A3sg-seek DET A3sg-wife CL Juan
"Juan$_1$'s wife is looking for him$_1$."
d. *N-Ø-u-kanoj [ri r-ixjayil a Xwan$_1$] *pro*$_1$.
IC-B3sg-B3sg-seek DET A3sg-wife CL Juan
Lit. "He$_1$ is looking for Juan$_1$'s wife."

The grammaticality of (9c) suggests that the object does not c-command the subject; the ungrammaticality of (9d) indicates that the subject c-commands the object. Taken together, the paradigm in (9) shows again that in Kaqchikel transitive sentences, the syntactic position of the ergative subject c-commands that of the absolutive object, but not vice versa.[6]

4. A right-specifier analysis

In this section, we show that a right-specifier analysis, such as that by Aissen (1992), is readily applicable to Kaqchikel with minimal modification.

4.1. Right-specifier analysis of Tzotzil (Aissen 1992, 1996)

To account for VOS word orders in Mayan languages in general and those in Tzotzil (Tseltalan branch) in particular, Aissen (1992) proposes parameterizing the order of specifiers with respect to their heads as follows: The specifier of a functional category X precedes X, whereas the specifier of a lexical category X follows X. Assuming that the base position of the external argument (subject) is Spec,VP, the VOS order is obtained when both the subject and object remain *in situ*, as shown in (10). According to Aissen (1992, 1996), if the subject undergoes movement to the specifier of a functional category outside VP, the SVO order is obtained, because the specifiers of functional categories are all located to the left.

(10) [$_{CP}$ [$_{IP}$ [$_{VP}$ [$_{V'}$ V OBJ] SUB]]]

[6] Data from weak crossover effects make the same point. It has been known since Postal (1971) that an object *wh*-operator cannot cross over a bound pronoun contained in a structurally higher subject DP. For instance, (ia), which involves no crossover configuration, can be understood as a question asking the identity of the person x such that x respected x's mother, whereas (ib), in which the object *wh*-operator crosses over the subject DP containing the pronoun *his*, does not allow such a bound variable interpretation.

(i) a. Who$_1$ t_1 respected his$_1$ mother?
b. Who$_1$ did his$_{*1/2}$ mother respect t_1?

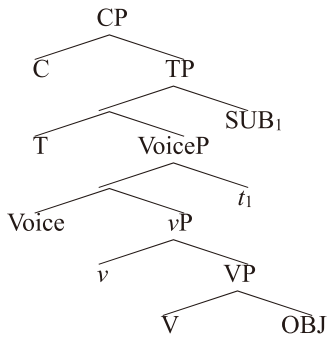
The corresponding Kaqchikel examples in (ii) show the exact same pattern, which suggests that the subject is structurally higher than the object in the language.

(ii) a. Achike$_1$ x-Ø-kamela-n ru$_1$-te' t_1?
who CP-B3sg-respect-AF A3sg-mother
b. Achike$_1$ x-Ø-u-kamelaj t_1 ru$_{*1/2}$-te'?
who CP-B3sg-A3sg-respect A3sg-mother

4.2. Extension to Kaqchikel

We now consider how various word orders in Kaqchikel can be derived if we apply to this language a right-specifier analysis similar to that by Aissen (1992, 1996). Following Imanishi (2014), we have assumed a slightly more elaborated hierarchical structure than does Aissen (1992). Specifically, the subject overtly raises to Spec,TP in our analysis. To make this analysis compatible with Aissen's right-specifier analysis, we propose that in Kaqchikel, in addition to lexical categories, all categories up to TP have specifiers to the right, correctly resulting in the VOS order, as shown in (11).[7] Following Imanishi (2014), we also assume that V raises to C via *v*, Voice, and T.[8]

(11) Kaqchikel VOS



If the object undergoes a right-ward scrambling to TP across the subject, the VSO order is obtained, as shown in (12).

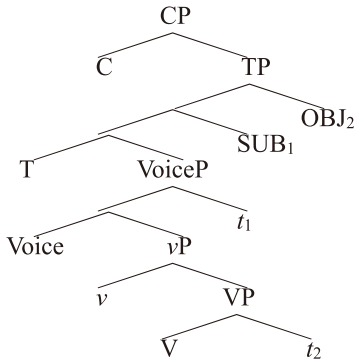
[7] We stipulate that specifiers are located to the right, *except for CP*. We suspect that this is because the CP domain is closely related to discourse/information structure, and it might be the case that UG requires elements related to discourse/information structure to appear to the left. This is consistent with the fact that rightward *wh*-movement is virtually unattested in spoken languages (cf. Richards 2010, 2016).

[8] In Kaqchikel embedded clauses, a complementizer such as *chin* "that" appears as an independent lexical item, as shown below.

(i) X-Ø-in-rayij [chin x-Ø-tzaq ri achin].
CP-B3sg-A1Sg-desire COMP CP-B3sg-fall DET man
'I wanted the man to fall.' (Clemens 2013)

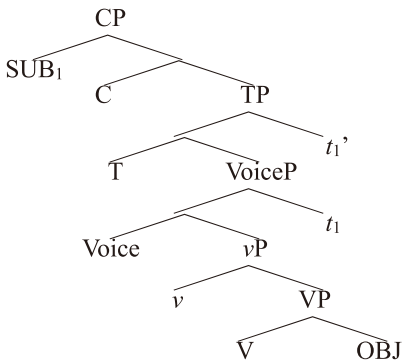
Note that this fact does not preclude V-to-C movement in Kaqchikel once a split CP structure (cf. Rizzi 1997) is adopted: the complementizer is located in the topmost category, Force, which specifies clause types, and V moves to a lower category, presumably Topic or Fin(ite).

(12) Kaqchikel VSO



The SVO word order is derived from a structure similar to (11) by moving the subject to Spec,CP, which, following Aissen (1992), we assume is located to the left, as shown in (13).[9]

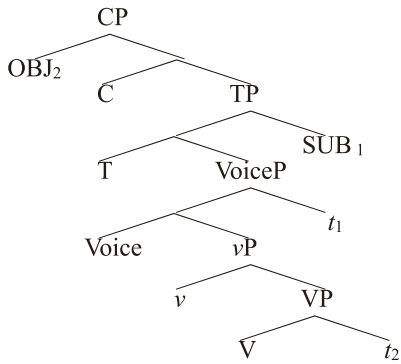
(13) Kaqchikel SVO



Similarly, we obtain the OVS order by topicalizing the object to Spec,CP, as shown in (14).

[9] In Kaqchikel, the SVO order is possible in matrix clauses and certain subordinate clauses. Again, we assume a split CP structure for the left periphery.

(14) Kaqchikel OVS



The right-ward scrambling in (12), subject topicalization in (13), and object topicalization in (14) are all A-bar movements.[10] Thus, for example, they do not alter A-binding relations between the subject and the object, as detected in the anaphor binding test.

5. A predicate fronting analysis

In this section, we argue that Coon's (2010) predicate fronting analysis of Chol cannot easily be extended to Kaqchikel because of crucial grammatical differences between the two languages.

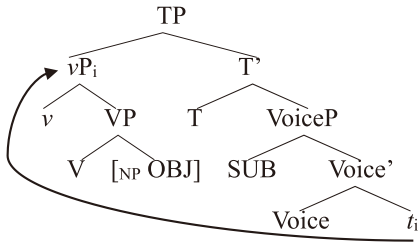
5.1. Predicate fronting analysis of Chol (Coon 2010)

Coon (2010) proposes an alternative account of the VOS order in Chol (Cholan branch), which is called a predicate fronting analysis. According to this analysis, all specifiers precede their heads *a la* Kayne (1994), and the subject remains *in situ* in Spec,VoiceP. The maximal predicate projection, *v*P, fronts to Spec,TP, giving rise to the VOS order, as schematically shown in (15). Coon (2010) argues that T in Chol has strong agreement features requiring the verb to move overtly to T; V cannot move to T because head movement is generally absent in this language. Therefore, the entire predicate phrase *v*P must front as a last resort.

[10]Unlike the Spec,TP subject position, which is considered to have A-properties, the scrambled object in (12) is located in a TP adjoined position, resulting in showing A-bar properties. This is similar to the case where sentence-internal scrambling adjoining to TP can be A-bar movement in Japanese, as shown in the following example (no condition C violation is triggered).

(i) Zibun-zishin$_1$-o Taro$_1$-ga t_1 hihanshita.
himself-Acc Taro-Nom criticized
"Taro criticized himself."

(15) Chol VOS



Evidence for this analysis stems from different restrictions on objects in VOS and VSO sentences. In Chol, the object must be a bare (determiner-less) noun phrase (NP) in VOS sentences, and full determiner phrases (DPs) with an overt determiner (D) are prohibited from occupying the VOS object position, as shown in (16).

(16) VOS

a. Tyi i-kuch-u [$_{NP}$ si'] aj-Maria.
PRFV A3-carry-TV wood DET-Maria
"Maria carried wood."

b. *Tyi i-kuch-u [$_{DP}$ jiñi si'] aj-Maria.
PRFV A3-carry-TV DET wood DET-Maria
"Maria carried the wood." (Coon 2010: 355)

In contrast, the object must be a DP in VSO sentences, as shown in (17).

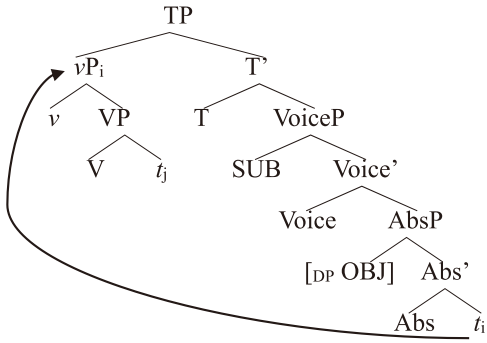
(17) VSO

a. Tyi i-kuch-u aj-Maria [$_{DP}$ jiñi si'].
PRFV A3-carry-TV DET-Maria DET wood
"Maria carried the wood."

b. *Tyi i-kuch-u aj-Mari a [$_{NP}$ si'].
PRFV A3-carry-TV DET-Maria wood
"Maria carried wood." (Coon 2010: 355)

These restrictions on objects are readily accounted for by assuming that a bare NP object must remain *in situ* within VP, as in (15), whereas a full DP object must undergo an object shift to Spec,AbsP before the remnant *v*P preposing, as shown in (18), yielding the VSO order.

(18) Chol VSO



Further empirical support for Coon's analysis pertains to adjunct positions. The predicate fronting analysis makes two predictions. First, the verb and a bare NP object are adjacent to each other within VP, such that nothing can intervene between them. Second, the verb and a full DP object are separated by several functional projections so that some adverbial expressions may intervene between them. These predictions are well borne out, as illustrated in (19), in which the subjects are all phonetically empty (i.e., *pro*).[11]

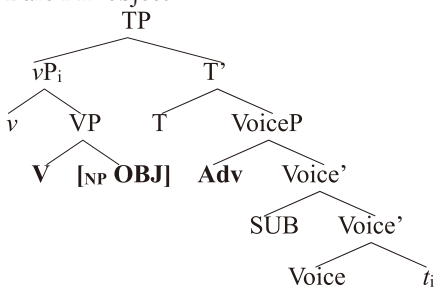
(19) a. Tyi k-wuts'-u **abi** [$_{DP}$ ili pisil].
PRFV A1-wash-TV yesterday DET clothes
b. *Tyi k-wuts'-u **abi** [$_{NP}$ pisil].
PRFV A1-wash-TV yesterday clothes
c. Tyi k-wuts'-u [$_{NP}$ pisil] **abi**.
PRFV A1-wash-TV clothes yesterday
"I washed (the) clothes yesterday." (Coon 2010: 367)

More concretely, if the adverb *abi* "yesterday" is left-adjoined to VoiceP, the pattern in (19) is as expected, as shown in (20) and (21).[12]

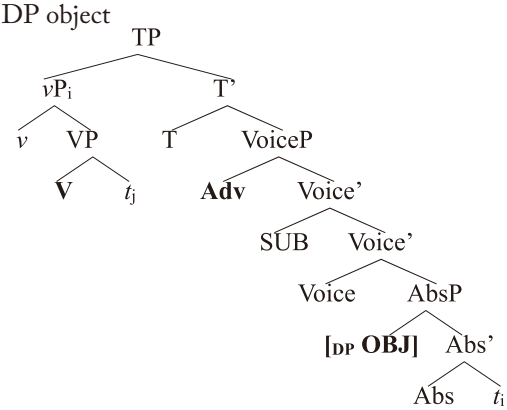
[11] Since no examples with overt subjects are provided in Coon (2010), there remains a possibility that the sentence in (19a) has the underlying V-S-Adv-O order and the V-Adv-S-O order is actually ungrammatical. If that is the case, the V-Adv-S-O order will no longer be problematic for the right-specifier analysis of Chol without assuming V-to-C movement (see discussion in Section 5.3).

[12] Although the time adverb *abi* "yesterday" is adjoined to VoiceP in (20) following the analysis by Coon (2010), we posit in our analysis of Chol and Kaqchikel that time adverbs are adjoined to TP/T', as their interpretations are related to tense, not to voice.

(20) Bare NP object



(21) Full DP object



5.2. Extension to Kaqchikel

In attempting to extend Coon's predicate fronting analysis of Chol to Kaqchikel, however, we face at least three problems. First, if *v*P raises to Spec,TP in Kaqchikel parallel to the structure of Chol in (20), and the object in the fronted VP must be a bare NP, we expect that the VOS object in Kaqchikel must likewise be a bare NP. However, this expectation does not materialize. As shown in (22), in Kaqchikel, unlike in Chol, both a bare NP object and a full DP object (either definite or indefinite) are acceptable in the VOS order. The object must be definite in VSO, as shown in (23).

(22) a. X-Ø-u-qüm raxya' ri ajanel.
CP-B3sg-A3sg-sip cold.water the carpenter
"The carpenter sipped cold water."

b. X-Ø-u-ch'äj ri ch'ich' ri a Xwan.
CP-B3sg-A3sg-wash DET car DET CL Juan
"Juan washed the car."

c. X-Ø-u-ch'äj jun ch'ich' ri a Xwan.
CP-B3sg-A3sg-wash a car DET CL Juan
"Juan washed a car."

(23) a. X-Ø-u-ch'äj ri a Xwan ri ch'ich'.
CP-B3sg-A3sg-wash DET CL Juan DET car
"Juan washed the car."
b. *X-Ø-u-ch'äj ri a Xwan jun ch'ich'.
CP-B3sg-A3sg-wash DET CL Juan a car
"Juan washed a car."

Second, as we saw in (19b), the predicate fronting analysis accounts for the fact that adjuncts cannot intervene between the verb and the object in the VOS order in Chol. If Kaqchikel had the same structure as Chol, adverbs could not occur between the verb and its object in the VOS order in Kaqchikel, either, contrary to fact. In Kaqchikel, unlike in Chol, a time adverb such as *iwir* "yesterday" may freely occur between the verb and the object, irrespective of its definiteness, as shown in (24).

(24) a. V **Adv** O_{indef} S
X-Ø-u-ch'äj **iwir** jun ch'ich' ri a Xwan.
CP-B3sg-A3sg-wash yesterday a car DET CL Juan
"Juan washed a car yesterday."
b. V **Adv** O_{def} S
X-Ø-u-ch'äj **iwir** ri ch'ich' ri a Xwan.
CP-B3sg-A3sg-wash yesterday DET car DET CL Juan
c. V O **Adv** S
X-Ø-u-ch'äj ri ch'ich' **iwir** ri a Xwan.
CP-B3sg-A3sg-wash DET car yesterday DET CL Juan
d. V O S **Adv**
X-Ø-u-ch'äj ri ch'ich' ri a Xwan **iwir**.
CP-B3sg-A3sg-wash DET car DET CL Juan yesterday
"Juan washed the car yesterday."

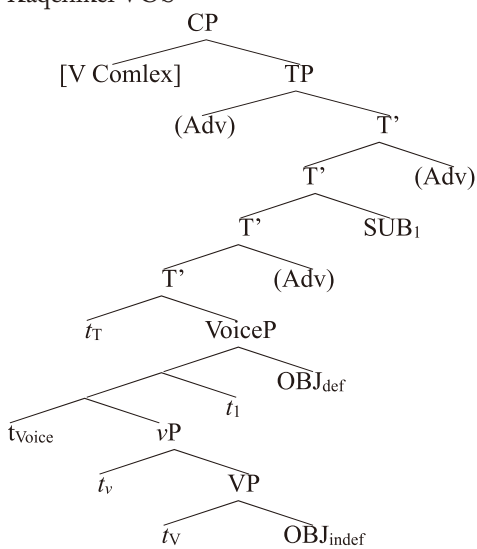
The final problem with the application of the predicate fronting analysis of Chol to Kaqchikel is that it cannot account for the absolutive agreement. Chol is a so-called low absolutive language, in which absolutive agreement of a transitive object is licensed within a predicate phrase. The morpheme order in the verbal complex is [Aspect-A-Verb stem-B] in this language. We might assume that *v* enters into an absolutive agreement relation with the object. In contrast, Kaqchikel is a high absolutive language, in which the functional head responsible for the absolutive agreement with the object is structurally higher than the base position of the transitive subject, as reflected in the morpheme order [Aspect-B-A-Verb stem]. As mentioned in Section 3, following Imanishi (2014), we assume that T enters into an absolutive agreement relation with the object. If the subject stays *in situ*, and the object together with the verb raises to Spec,TP parallel to (16) in Kaqchikel, then the object should not be able to agree with T even before the predicate fronting because of a defective intervener, i.e., the subject.

To summarize, it is entirely unreasonable and difficult to apply predicate-

fronting to account for the VOS word order in Kaqchikel because of the three empirical differences between Chol and Kaqchikel, as described.

On the other hand, the right-specifier analysis of Kaqchikel outlined in the previous section can readily account for problematic cases regarding the predicate fronting analysis. First, the fact that the VOS object may either be definite or indefinite follows if we assume that a subject obligatorily moves to Spec,TP, resulting in the VOS order, even if a definite object undergoes object shift to Spec,VoiceP.[13] Second, if an adverb such as *iwir* "yesterday" is adjoined to TP/T', as schematically shown in (25), then its distribution shown in (24) is as expected. The [V Complex] in (25) stands for the verbal complex resulting from V raising to C through *v* to T.

(25) Kaqchikel VOS



Finally, T can agree with the object before it raises to C because the subject does not intervene between them on this account.[14]

[13] We assume that definite objects obligatorily undergo object shift to Spec,VoiceP in both Chol and Kaqchikel, following the Mapping Hypothesis by Diesing (1992).

[14] As an anonymous reviewer points out, it would be interesting to see how other types of adverbs, such as manner adverbs, behave in VOS sentences. Given that manner adverbs appear low in the structure (adjoined to *v*P or VP, for example), it seems difficult to obtain the "V OBJ_{def} ADV_{manner} SUB"/"V OBJ SUB ADV_{manner}" order. (Whether these orders are possible or not is up to the availability of adverb scrambling in the language.) Imanishi (2014, to appear) reports some facts concerning manner and time adverbs in Kaqchikel, although they are used within nominalized clauses (usually with null pronouns) and it is unclear how they behave in VOS sentences (see also Henderson and Coon 2018, who discuss various adverbs in relation to AF in Kaqchikel).

5.3. Right-specifier analysis of Chol

To derive the VOS in Chol, Coon (2010) posits that (i) specifiers uniformly occur to the left, (ii) *v*P is obligatorily fronted to Spec,TP, (iii) V does not move (no head movement in Chol), and (iv) the external argument stays in situ in Spec,VoiceP (T does not have an EPP feature). On the other hand, on our account of Kaqchikel, (i) specifiers occur to the right except for CP, (ii) there is no *v*P fronting, (iii) V raises to C, and (iv) the external argument moves to Spec,TP. These differences between the two languages are summarized in (26).

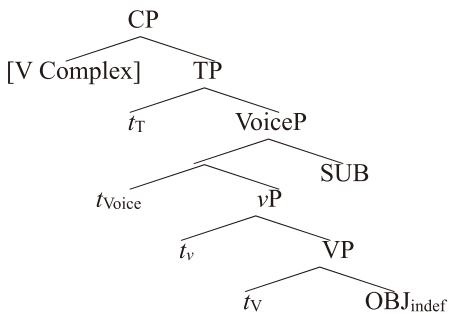
(26) Parametric differences between Chol and Kaqchikel (to be revised)

	Chol (Coon 2010)	Kaqchikel
Directionality of specifiers	Left	Right (except for cp)
*v*P fronting to Spec,TP	Present	Absent
V raising to C	Absent	Present
Subject raising to Spec,TP	Absent	Present

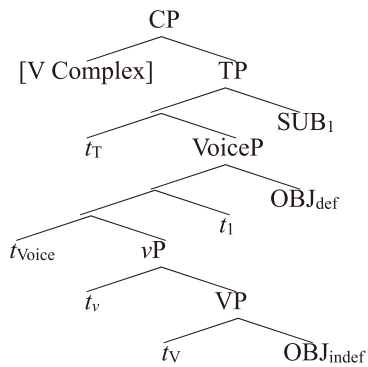
We will show below that we can dispense with some of the parametric differences given in (26), and that it is possible to reduce the parametric differences between Chol and Kaqchikel into two.

Exploring the possibility that there is no predicate fronting even in the derivation of Chol VOS sentences, we suggest that VOS sentences in Chol and Kaqchikel have the structures represented in (27a) and (27b), respectively.

(27) a. Chol VOS

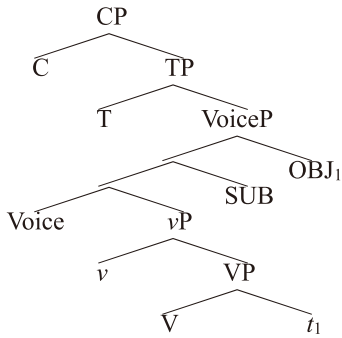


b. Kaqchikel VOS



The only difference between (27a) and (27b) is that the subject moves to Spec,TP in Kaqchikel, but not in Chol (the subject remains in Spec,VoiceP). This difference is necessary to explain the fact that definite objects invariably result in the VSO order in Chol: a full definite DP undergoes object shift to the periphery of the phase (i.e., VoiceP), skipping over a subject, as shown in (28). A comparable object shift in Kaqchikel, on the other hand, does not alter word order because the subject is located in Spec,TP.

(28) Chol VSO



Given the structure in (27a), an immediate question arises as to why nothing can intervene between V and bare NPs in Chol. We assume that bare NPs in Chol must undergo (pseudo-)incorporation to be licensed. This means that (pseudo-)incorporation is prohibited in cases where some element (such as a subject and adverb) intervenes between V and NPs. Therefore, we can explain the fact that V and bare NPs must be adjacent in Chol, without invoking *v*P-fronting.[15] In contrast, such (pseudo-)incorporation is not necessary for indefinite objects to be licensed in Kaqchikel, presumably because it has the indefinite article *jun*. The table in (29) summarizes the parametric differences between Chol and Kaqchikel.[16]

[15]We thank an anonymous reviewer for suggesting the possibility that the presence/absence of (pseudo-)incorporation could be a locus of parametric differences between Chol and Kaqchikel. As the reviewer suggests, this process is similar to "incorporation antipassive," a phenomenon discussed by Dayley (1981), Coon (2013), among others.

(i) a. Transitive
Tyi k-wuts'-u pisil.
PRFV A1-wash-TV clothes
"I washed clothes."
b. Incorporation antipassive
Tyi k-cha'l-e wuts' pisil.
PRFV A1-do-DTV wash clothes
"I washed clothes." (Coon 2013: 76)

Contrary to transitive objects, objects in incorporation antipassive may not be a full DP – for example, determiners cannot appear with antipassive objects. We suspect that a similar process is happening in transitive sentences with bare objects in Chol, thus prohibiting them from being used with determiners and other elements (such as adverbs).

[16]A recent paper by Clemens and Coon (2018) proposes yet another theory of deriving verb-initial word order in Mayan languages. They argue that, all else being equal, the basic word order of Mayan languages is invariably VSO (which is derived by a sequence of head movement), and VOS is obtained by one of the following strategies (Clemens and Coon 2018: 238):

(29) Parametric differences between Chol and Kaqchikel (Revised)

	Chol	Kaqchikel
Subject raising to Spec,TP	Absent	Present[17]
(Peudo-)incorporation of bare NP objects	Present	Absent

6. Conclusion

There are multiple syntactic routes to the VOS order (Chung 2017). Different VOS languages may have different syntactic structures. There are two major proposals regarding how Mayan VOS word order is grammatically obtained. We proposed in this paper that Kaqchikel, and possibly Chol as well, derive the VOS order through a right-specifier route, rather than a predicate fronting route.

Before concluding the paper, we would like to briefly comment on the linearization of specifiers. What is clear from the discussion above is that we need to depart from Kayne's (1994) LCA-based approach to word order, which assumes that precedence relations are determined by dominance relations: since subjects in the VOS order in Kaqchikel are structurally higher than objects, the LCA predicts that subjects precede objects, contrary to the fact.

Recently, Takita (to appear) proposes the hypothesis that labeling is required for linearization. More specifically, departing from Chomsky (2013, 2015), he argues that labeling does not contribute to semantic interpretation, but is required solely for linearization in the sense that only labeled SOs (=syntactic objects) can have the relative linear order of their members determined. For example, he considers how the following structures in (30) are labeled.

(30) a. {X, Y} [head-head]
b. {X, YP} [head-phrase]
c. {XP, YP} [phrase-phrase]

(i) a. subject in high right-side topic position
b. heavy-NP shift of phonologically heavy subjects
c. prosodic reordering of bare NP objects

Of relevance to Kaqchikel VOS is (ia), which assumes that the VOS order is derived by moving a subject to a right-side topic position, as illustrated in (ii).

(ii) $[_{\text{TopicP}}\ [_{\text{CP}}$ V-Complex $[_{\text{TP}}\ t_{\text{S}}$ O]] S]

This proposal, however, is incompatible with the experimental data reported in Koizumi et al.'s (2014) study. Based on the results obtained from the sentence-plausibility judgment task, Koizumi et al. (2014) report that VOS sentences induce less processing load than VSO/SVO sentences for Kaqchikel speakers, suggesting that VOS is syntactically simpler than the other two. If VSO is the basic word order and VOS is derived by movement to the higher right-side functional projection, it is not clear why VOS has a processing advantage over VSO.

[17] Erlewine (2016) also argues that ergative subjects in Kaqchikel move to Spec,TP, based on the facts that ergative subjects in Kaqchikel trigger AF in constructions involving A-bar dependencies (see also footnote 3).

(30a) represents the case where a head is merged with another head. The SO is problematic for labeling because X and Y are symmetric and its label cannot be determined. Takita (to appear) argues that (30a) can be pronounced if one of the heads lacks its phonological realization due to its lexical property or movement, thus making linearization of X and Y irrelevant. In (30b), there is an asymmetry between the head X and the phrase XP, so minimal search takes the head X as the label for (30b). Furthermore, he assumes the following linearization rules in (31), which regulate the process of mapping a set to an ordered pair.

(31) a. Head-initial linearization rule (e.g., English): $\{_X X, YP\} \rightarrow \langle X, YP \rangle$
b. Head-final linearization rule (e.g., Japanese): $\{_X X, YP\} \rightarrow \langle YP, X \rangle$

The SO in (30c), again, is symmetric and hence cannot be labeled. Takita (to appear) argues that one way to avoid the problem is to make one of the set members phonologically null (by movement, for example). Another way to pronounce (30c), which is relevant to our discussion, is to label it by feature sharing (cf. Chomsky 2013) and linearize the structure with the linearization rule in (32), which states that XP with a valued feature precedes YP with an unvalued feature.

(32) Linearization rule for SOs labeled as <F, F>:
$\{_{\langle F, F \rangle} XP_{F[val]}, YP_{F[unval]}\} \rightarrow \langle XP, YP \rangle$

In effect, this rule yields the left specifier order, provided that φ-features on DPs are valued and their counterparts (on T) are unvalued.

We suggest that the linearization rule in (32) is not universal but subject to parametric variation, as in the case in (31). More concretely, we assume that Kaqchikel and Chol have the linearization rule in (33).

(33) Linearization rule for SOs labeled as <F, F> (Kaqchikel and Chol)
$\{_{\langle F, F \rangle} XP_{F[val]}, YP_{F[unval]}\} \rightarrow \langle YP, XP \rangle$

This linearization rule ensures that in Kaqchikel and Chol, the subject with a valued feature, which enters into an Agree relation with Voice, appears to the right of VoiceP, resulting in the OS order.[18,19] Whether or not the parametric variation between (32) and (33) is related to other properties of grammar (such as ergativity

[18] Actually, the order of the SO {TP,DP} in Kaqchikel cannot be determined by (33) because we assume, following Imanishi (2014), that subject movement to Spec,TP does not involve φ-feature valuation (purely EPP-driven movement): hence, no feature sharing is happening between TP and DP. We stipulate that, in cases where Agree is not involved in movement, the order of the original position of the moved element (for example, VoiceP precedes DP) must be preserved in the moved position. This stipulation might be relevant to the fact that leftward scrambling, another candidate of non-Agree-driven movement, is observed only in head-final languages, which has the "object before verb" order in the original position (cf. Saito and Fukui, 1998; see also Takita, to appear, for relevant discussion).

19 The order of adverbs is relatively flexible in that they can right- or left-adjoin to TP/T'. We suspect that this is because adverbs do not enter into an Agree relation with T, thus being out of the scope of the linearization rule in (33).

and head/dependent marking) is also an interesting research question, which we leave for future research.

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[Received 31 December 2018;
Accepted 6 September 2019]

【要　旨】

マヤ語VOS語順への2つの道筋
――カクチケル語からの考察――

大滝　宏一　金沢学院大学
杉崎　鉱司　関西学院大学
遊佐　典昭　宮城学院女子大学
小泉　政利　東北大学

マヤ諸語における VOS 語順の派生に関して，これまで主に二つの分析が提案されている。一つは，主語が占める指定部の位置が主要部よりも右側に現れるとする「右方指定部分析」であり，もう一つは，vP 全体が主語を越えて前置されるとする「述語前置分析」である。本稿では，チョル語とカクチケル語という二つのマヤ系言語を比較・分析することによって，少なくともカクチケル語の VOS 語順に関しては「右方指定部分析」の方が妥当であることを示す。また，「右方指定部分析」をチョル語の VOS 語順にも拡張する可能性に関しても議論する。