VERB INITIAL WORD ORDER IN MAYAN: CAUSES AND CONSEQUENCES*

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1 INTRODUCTION

- The roughly thirty currently-spoken languages of the Mayan family are predominantly verb-initial (V1).
- In her study of Mayan word order, England (1991) groups Mayan languages into three main types: **(i)** VSO (e.g. Q'anjob'al); **(ii)** VOS (e.g. Tsotsil); and **(iii)** alternating VOS/VSO (e.g. Ch'ol).
- However, while languages in the VSO category have a rigid ordering of postverbal arguments (i.e., VOS is generally prohibited), the distinction between the latter two categories—VOS and alternating VOS/VSO—is less clear.
- England (1991) ultimately concludes that these two alternatives should be collapsed into a single category of VOS languages that allow VSO to varying extents (see also Quizar 1979):

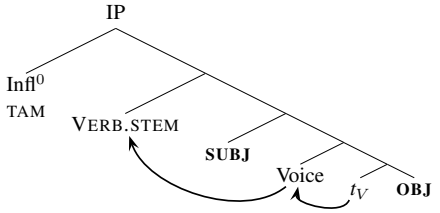
(1) MAYAN WORD ORDER
   a. Rigid VSO
   b. Alternating VOS/VSO

- For alternating VOS∼VSO languages, variety of factors have been reported to determine postverbal argument order:

(2) FACTORS INFLUENCING POSTVERBAL ARGUMENT ORDER
   a. Phonological size
   b. Animacy
   c. Discourse status
   d. Specificity
   e. Definiteness

- The degree of variation in the factors governing postverbal order presents a challenge for any unified account of Mayan V1 word order.
- Nonetheless, the morphosyntactic commonalities across these languages—e.g. order of morphemes on the verb stem—make a unified account of Mayan V1 order appealing.
- To start, we propose **head-raising of the verb root to a projection above the subject and below Infl^0**, simplified in (3).
  - The verb root acquires derivational and stem-forming suffixes along the way.
  - This derives VSO order.

(3) HEAD-MOVEMENT VSO



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- Straightforward: nothing more needs to be said for VSO languages like Q'anjob'al in (4-a), or for VSO sentences in alternating languages, like Ch'ol in (4-b).

(4) a. Max y-il [S no tx'i] [O naq Lwin].
PFV A3-see CLF dog CLF Pedro
'The dog saw Pedro.' (Q'anjob'al; Baquiax Barreno et al. 2005)

b. Tyi i-kuch-u [S aj-Maria] [O jiñi si'].
PFV A3-carry-SS CLF-Maria DET wood
'Maria carried the wood.' (Ch'ol)

➽ More controversial claim: a head-movement account of verb-initial order should be maintained even for languages that allow or have *basic* VOS order.

- We argue that there are three paths to VOS order, and we demonstrate that a single head-raising analysis, like the one in (3), is compatible with each of these.

(5) PATHS TO VOS
a. Heavy-NP shift of subjects
b. Subject in high right-side topic position
c. Prosodic reordering of bare NP objects

- This allows us to recast the factors contributing to postverbal argument order in other terms:

(6) FACTORS INFLUENCING POSTVERBAL ORDER

Size → **Phonological weight (5-a)**
Animacy → *Extra-grammatical*
Discourse status → **Postverbal topic (5-b)**
Specificity → **NP/DP status (5-c)**
Definiteness → **NP/DP status (5-c)**

- **Heavy-NP shift** (5-a) is attested in many Mayan languages (see Larsen 1988):

(7) K'a tee ka-r-il [S lee achi] [O **rii jun keej xaa maa**
until suddenly IPFV-A3-see DET man DET one horse just EXCL
pwaq k-uu-kisiij].
money IPFV-3A-shit
'Suddenly the man sees a horse that is just shitting money.' (K'iche; Mondloch 1978, 18)

(8) Ja'-uk me to jajch me s-ti'-ik [O te k'ulub-etik-e]
EMPH-IRR DES still AUX DES A3-eat-PL DET locus-PL-ENC
[S **te mut-etik-e**, **te tz'i'-etik-e**, **te mis-etik-e**].
DET chicken-PL-ENC DET dog-PL-ENC, DET cat-PL-ENC
'Chickens, dogs, and cats ate locusts.' (Tseltal; Robinson 2002, 55)

  - We remain agnostic as to whether this should receive a phonological or syntactic account.

- The existence of **high topics** to the right of the verb (5-b) is supported in the literature (e.g. Can Pixabaj 2004; Curiel 2007).
  - In section 5, we provide a syntactic account based on Aissen (1992).

➽ With an empirical focus on Ch'ol, we provide novel evidence for the existence of (5-c) in Mayan.
  - We argue that it is not the semantic factors of *definiteness* or *specificity* per se that govern word order, but rather **the presence of D^0-level material**: determiners, demonstratives, pronouns, proper names.
  - Drawing on Clemens (2014): a high-ranked prosodic constraint requires bare NP objects to be adjacent to the verb, deriving VOS order.

- **Predictions of our account:**
  - Word order in Mayan should be VSO, with VOS arising due to the factors listed in (5).
  - Languages that generally allow bare NP arguments (i.e. "NP languages"; Chierchia 1998; Bošković 2008) may frequently show VOS due to the prosodic constraint we motivate below.
  - Post-syntactic prosodic reordering and high right-side topics make clear predictions for the prosodic organization of the clause.

Plan: ☐ Word order • ☐ X^0-Raising • ☐ Prosodic reordering • ☐ Right-side topics

2 Mayan word order

- Though Mayan languages are generally described as "verb initial," in many languages, all six orders of S, V, and O are possible (see e.g. Brody 1984 on Tojolab'al; Hofling 1984 on Yucatecan languages; Can Pixabaj 2006 on Uspantek).

- Determining "basic word order" in any given language is not always straightforward, and in Mayan this is particularly true (see discussion in Brody 1984; Larsen 1988; England 1991; Quizar 1979; Robinson 2002).

2.1 Preverbal orders — SVO, OVS, SOV, OSV

- One or both arguments may appear preverbally for topic, focus, *wh*-questions, and relativization (e.g. Norman 1977, discussed in Larsen 1988, and Aissen 1992).[1]
- Topic position precedes focus position, as shown in the SOV examples in (9)–(10):

(9) [$_{TOP}$ A ti prove tzeb-e] [$_{FOC}$ sovra] ch'ak'bat.
TOP DET poor girl-ENC leftovers was.given
'As for the poor girl, it was leftovers that she was given.' (Tsotsil; Aissen 1992, 51)

(10) [$_{TOP}$ A li ajOskar-i] [$_{FOC}$ ixim-äch] tyi i-kuch-u tyälel.
TOP DET Oskar-ENC corn-AFF PFV A3-carry-SS DIR
'As for Oscar, it is corn that he brought.' (Ch'ol; Vázquez Álvarez 2011)

- OSV order—with a topical object and a focused subject—appears to be less frequent, but is also attested:

(11) [$_{TOP}$ Ja-xa pan-i] [$_{FOC}$ ja' Roberto] s-lo'-o.
DET-now bread-ENC FOC Roberto A3-eat-SS
'As for the bread, it was Roberto who ate it.' (Tojolab'al; Brody 1984)

(12) [$_{TOP}$ U-meyaj-ej] [$_{FOC}$ in-ten] k-inw-il-ik ti'ij.
A3-work-TOP EMPH-1PRON IPFV-A1-see-SS 3PRON
'As for his work, it is I who look after it for him.' (Itzaj; Hofling 2000, 196)

- The relative ordering of *postverbal* arguments is less well understood, and also appears to show more variation across the family.

[1] Abbreviations used in glosses are as follows: A – "Set A" (ergative, possessive); AFF – affirmative; AP – antipassive; B – "Set B" (absolutive); DEIC – deictic; DES – desiderative; DIR – directional; ENC – enclitic; EMPH – emphatic; HS – hearsay; MOD – modal; PART – particle; PLUR – pluractional; REP – reportative; SS – "status suffix"; other glosses follow Leipzig convetions. In some cases, glosses, transcriptions, or the spelling of language names have been modified from the original source for consistency and in accordance with revised conventions (see discussion in Mateo Toledo 2003 and Bennett et al. 2016a). Examples without citations are from elicitation work and translations from Spanish sources are our own.

2.2 Postverbal orders — VSO, VOS

- It is very uncommon in naturally-occurring speech to find a transitive sentence with two overt arguments (DuBois 1987; England and Martin 2003), and even **less common for both overt arguments to appear postverbally**.
  - Mayan languages are generally *pro*-drop and arguments appear preverbally for topic and focus.
  - 3% or fewer of corpus sentences in England and Martin's (2003) survey have two overt arguments.
  - See Robinson 2002; Curiel 2007; Skopeteas and Verhoeven 2005; Vázquez Álvarez and Zavala 2013 for other corpus counts.
- In addition to being infrequent, a range of factors have been listed as affecting postverbal argument order, repeated from above.

➽ In the remainder of this section, we propose that the apparent animacy effects are due to processing and should not factor into grammatical accounts of word order.

(13) FACTORS INFLUENCING POSTVERBAL ARGUMENT ORDER

a.	Phonological size	(*heavy-NP shift*)
b.	~~Animacy~~	
c.	Discourse status	(*right-side topic*; §5)
d.	Specificity	(*prosody*; §4)
e.	Definiteness	(*prosody*; §4)

2.3 Grammatical vs. extra-grammatical word order factors

- Much of the literature discussing the apparent effect of animacy cites Norman and Campbell (1978, 146) for Proto-Mayan:

> "Unmarked order was VSO when S and O were equal on the [animacy] feature hierarchy, VOS when S was higher than O".
>
> – V – S_{ANIM} – O_{ANIM}
> – V – O_{INAN} – S_{ANIM}

- Norman and Campbell base this claim primarily on comparative data from two genetically distant Mayan languages: Huastec and Tseltal.
- Tseltal examples are illustrated in (14): the VSO sentence in (14-a) involves animals, while in the VOS sentence in (14-b), the human subject outranks the non-human object.

(14) a. La s-t'om ta ti'el [$_S$ ts'i'] [$_O$ te baka].
ASP A3-bite dog DET cow
'The dog bit the cow.'
b. La s-mil [$_O$ baka] [$_S$ te jpetule].
ASP A3-kill cow DET Pedro
'Pedro killed the cow.' (Tseltal; Norman and Campbell 1978, 145)

⇨ Though the claim in Norman and Campbell 1978 is widely cited, conflicting and more complex statements also exist:

- Larsen (1988, 341) on K'iche':, "if the NP in O function is animate, it must be 'non-definite'."
- Brody (1984, 720) on Tojolab'al: VSO is only acceptable when the subject is high-ranked in animacy and the object is low-ranked.
- Hofling (2000, 191) on Itzaj: "animacy of arguments has some effect on interpretations, with subjects typically human, specificity appears to be more important."

- Minkoff (2000) suggests a **processing explanation** for the apparent relevance of animacy in Mam (also Bohnemeyer 2009 and Skopeteas and Verhoeven 2005).
- Important to this account: Mayan languages are:
  - **(i)** are verb-initial, **(ii)** show no case-marking on nominals, and **(iii)** allow pro-drop of either or both subject and object:

(15) V [NP$_1$] [NP$_2$]

- At the point at which a speaker has uttered a string [V]–[NP$_1$] out of context, the listener will **not know whether the NP is the subject or the object**.
- Even in a rigidly VSO language, three interpretations are available for the string [V]–[NP$_1$]:
  1. NP$_1$ is the subject and the object is still to come;
  2. NP$_1$ is the subject and the object has been *pro*-dropped; or
  3. NP$_1$ is the *object* and the subject has been *pro*-dropped.

➽ This leads to a higher processing difficulty.

- Minkoff proposes that, in caseless, verb-initial, *pro*-drop languages like those of the Mayan family, the processor:

> "is innately configured so that it values any interpretation that assigns the agent role to any argument that might bear it, and that this value is proportional to the animacy of the argument in question"

- According to Hofling (2000) for Itzaj, provided that both interpretations are equally plausible, a sentence may be interpreted as either VOS or VSO:

(16) T-u-kin-s-aj [$_{NP1}$ winik] [$_{NP2}$ b'alum].
PFV-A3-die-CAUS-SS man jaguar
'A man killed a jaguar.' / 'A jaguar killed a man.' (Itzaj; Hofling 2000, 191)

- When presented with a **constructed example** in a language with variable VOS/VSO, we suggest that speakers are most likely to assign the role of subject to the most animate/salient argument—**regardless of whether the grammar of the language in question would generate such a sentence.**
- Grammatical descriptions that report animacy hierarchy effects in Mayan base their discussion on elicited examples
  - (this is often *necessary*, since it is very rare to find two postverbal arguments in natural speech)
- But, given the factors described above, there is **a risk associated with eliciting judgments for non-naturally occurring examples**.
- For Akatek, Peñalosa (1987, 283) writes that consultants presented with V-NP$_1$-NP$_2$ sequences

> "may give contradictory interpretations on different occasions, be confused, or say it depends on the context which is subject and which is object."

- In a study of word order in Yucatec, Skopeteas and Verhoeven (2005) report a range of variation in interpretations assigned to V-NP$_1$-NP$_2$ sentences.
- The problem described here has been replicated in our own work with Ch'ol, and is articulated clearly by Larsen (1988), who writes of K'iche' (emphasis ours):

> "It is often dangerous to attempt to investigate word order phenomena by means of eliciting sentences. And in fact, it turns out that even though my informants might, when presented with [certain constructed examples], accept these as good [VOS] sentences, **they never seemed to produce such sentences spontaneously**... similarly, even though my informants might accept sentences like [certain constructed examples] as well-formed [VSO] sentences, **I have never encountered such sentences in texts.**" (Larsen 1988, 345).

- Turning to a **corpus study of attested speech** Robinson (2002:76) finds "little evidence in favor of the claim, first made by Smith (1975) and later cited by Norman and Campbell (1978) and Dayley (1981), that Tenejapa Tseltal constituent order is determined by a hierarchy of animacy."

➽ **Conclusion:** The apparent effects of animacy on Mayan word order are *extragrammatical*—not part of the grammar of the language.

  – The effects of animacy are based on speakers' judgments of constructed examples, rather than by naturally-occurring sentences.

2.4 What *does* govern VOS∼VSO?

- In her larger survey, England (1991, 464) concludes:

  "The general rule is that VOS is used when the S is definite and the O indefinite, while VSO is used when both S and O are definite."

  – V – S_{DEF} – O_{DEF}
  – V – O_{INDEF} – S_{DEF}

- Note that the crucial factor is the status of the *object*.

➽ We argue that it is in fact syntactic NP vs. DP status—not semantic definiteness or specificity—that governs this variation.

- Basic word order in Ch'ol is described as VOS (Vázquez Álvarez 2002, 2011; Coon 2017a), illustrated in (17).

(17) a. Tyi i-kuch-u [$_O$ si'] [$_S$ aj-Maria].
PFV A3-carry-SS wood CLF-Maria
'Maria carried some/the wood. (Coon 2010, 355)

b. Tyi y-il-ä [$_O$ x'ixik] [$_S$ wiñik].
PFV A3-see-SS woman man
'The man saw a/the woman.' (Vázquez Álvarez 2011, 21)

- A bare NP object in Ch'ol *may* receive a definite interpretation in VOS position. However, VOS objects cannot be full DPs:

(18) a. *Tyi i-kuch-u [$_O$ ili si'] [$_S$ aj-Maria].
PFV A3-carry-SS DEM wood CLF-Maria
intended: 'Maria carried this wood.' (Coon 2010, 355)

b. *Tyi y-il-ä [$_O$ jiñi x'ixik] [$_S$ wiñik].
PFV A3-see-SS DET woman man
intended: 'The man saw the woman.'

- If both arguments are postverbal and the object is a DP, VSO is preferred:

(19) a. Tyi i-kuch-u [$_S$ aj-Maria] [$_O$ ili si'].
PFV A3-carry-SS CLF-Maria DEM wood
'Maria carried this wood.'

b. Tyi y-il-ä [$_S$ aj-Pedro] [$_O$ jiñi wiñik].
PFV A3-see-SS CLF-Pedro DET man
'Pedro saw the man.'

- The presence of D^0-level material often goes together with a definite/specific interpretation.

➽ However, where these diverge—e.g. in languages which allow bare NPs to be interpreted as definite—it is syntactic status of the argument (NP vs. DP) rather than semantic definiteness, that governs word order variation.

Plan: ☑ Word order • ☐ X^0-Raising • ☐ Prosodic reordering • ☐ Right-side topics

3 A unified Mayan syntax: Head-movement

- Previous accounts of Mayan V1 order fall into two main groups:

  – **right-side specifiers** (e.g. Aissen 1992) — designed primarily for VOS orders, difficult to extend to VSO; see Appendix A.1.

  – **phrasal fronting of the verb phrase** (e.g. Coon 2010) — captures VOS∼VSO alternations, but see worries in Appendix A.2.

- In this section, we offer a head-movement account of Mayan verb-initial order.

- We draw on several commonly-held assumptions about head movement:

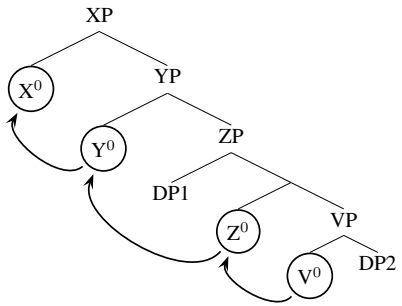
  – Head movement in the syntax creates words (Travis 1984; Baker 1988).

  – *The Head Movement Constraint* (Travis 1984): Head movement does not skip intervening heads.

  – *The Mirror Principle* (Baker 1985): Morphological order within a word reflects syntactic structure.

➽ The configuration in (20) results in (21).

(20)



(21) V-Z-Y-X DP1 DP2

Morpheme order reflects order of derivation:

(22) VERB.ITV-CAUS-PASS

(23) *VERB.ITV-PASS-CAUS

- Despite much variation, the ∼30 currently-spoken Mayan languages share a number of commonalities (see e.g. England and Zavala 2013; Aissen, England, and Zavala 2017).
  - *pro*-drop of core arguments
  - ergative alignment: Set A (ergative, possessive) and Set B (absolutive)
  - Stem-initial TAM marker in verbal predicates
  - Verb stems are often suffixed with a "status suffix" (SS), the nature of which may vary depending on transitivity, aspect, and other factors.
  - Basic order of morphemes on the stem:

(24) TAM – {**ABS**} – **ERG** – [ROOT – (voice) – SS] – {**ABS**}

- Intransitive examples from Ch'ol and Chuj are shown in (25).

(25) a. Tyi= [mos-l-i]=yety.
PFV cover-PASS-SS=B2
'You were covered.' (Ch'ol)

b. Ix=ach= [mus-chaj-i].
PFV=B2S-cover-PASS-SS
'You were covered.' (Chuj)

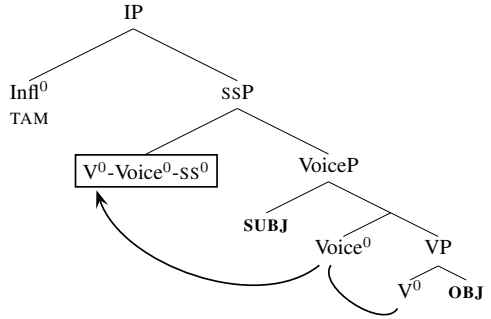
- Initial TAM marker in verbal predicates; variation as to whether and where a word boundary is transcribed internal to the TAM–stem complex.[2]

[2]We assume that the presence of an orthographic word boundary does not necessarily reflect a syntactic difference with respect to the head movement proposal here, but rather reflects differences in the constraints governing the formation of prosodic words in the language (following Bennett, Harizanov, and Henderson 2015) and/or in language-specific orthographic conventions.

➽ Head movement of the verb to a position above the subject both derives the attested order of morphemes on the stem, and derives VSO order.

- The verb root undergoes head movement to a position above the subject and below Infl^0, which hosts TAM markers (Aissen 1992).
- The stem lands in the head that hosts the status suffix, labelled SS^0.
  - ∗ We don't know *what* the status suffixes are, or why they are there.
  - ∗ We *do* know that they are at the edge of the verb stem, above the subject (see below).
- The order of morphemes in the stem—ROOT-(VOICE)-STATUS.SUFFIX—is consistent with the Mirror Principle (Baker 1985).

(26) HEAD-MOVEMENT VSO



- On Set A and Set B morphemes, see Coon et al. 2014; Coon 2017b.

- **The head-movement account captures both…**
  - The pan-Mayan attributes of morpheme order within the verbal complex (found in both VSO and VOS/VSO languages), and
  - The fact that all Mayan languages make VSO available in *some* contexts.
- The question now becomes **how to derive VOS order** in such a way that it is compatible with a general head-movement account of V1.

Plan: ☑ Word order • ☑ X^0-Raising • ☐ Prosodic reordering • ☐ Right-side topics

4 Prosodic reordering

- **Proposal:** Some instances of Mayan VOS are the result of a non-syntactic reordering of NP objects.

  (i) The verb undergoes a series of head movements in the syntax §3.

  (ii) A prosodic constraint requires that the verb and its object be pronounced in the same phonological phrase.

  – Our proposal captures the intuition that head-argument pairs should be phrased together. This intuition is shared by a variety of proposals in the prosodic literature including:

    * Selkirk's (1984) SENSE UNIT CONDITION
    * Truckenbrodt's (1999, 2007) WRAP-XP constraint
    * Henderson's (2012) COMPLEMENT-φ constraint
    * Richards' (2016) SELECTIONAL CONTIGUITY

  – Acoustic data from Ch'ol support a prosodically driven analysis.

    * Clemens and Coon (to appear) argue for the prosodic constituency schematized in (27):

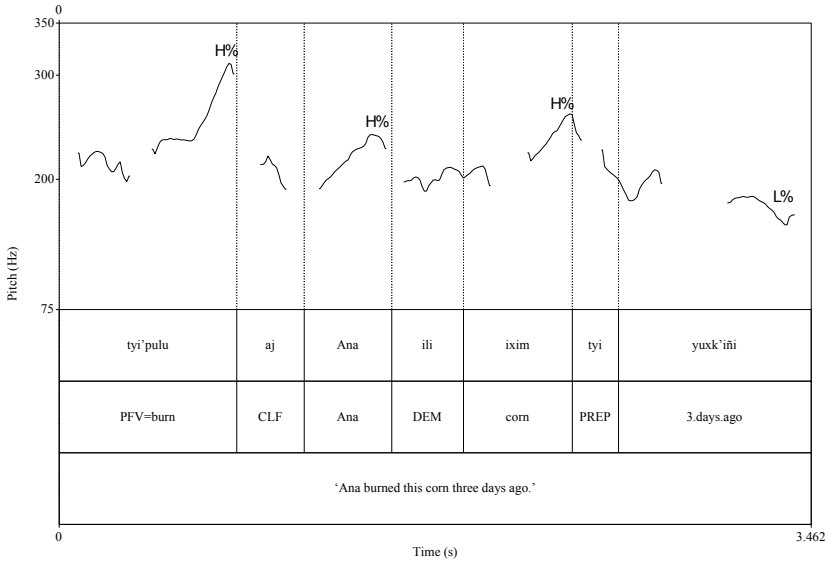
  (27) PROSODIC PHRASING OF VSO AND VOS CLAUSES IN CH'OL
  a. $(\text{V O})_{\varphi}$ $(\text{S})_{\varphi}$
  b. $(\text{V})_{\varphi}$ $(\text{S})_{\varphi}$ $(\text{O})_{\varphi}$

  ➪ The verb and the object form a prosodic unit in VOS clauses (27-a), but the verb is parsed into a unique prosodic phrase in VSO clauses (27-b).

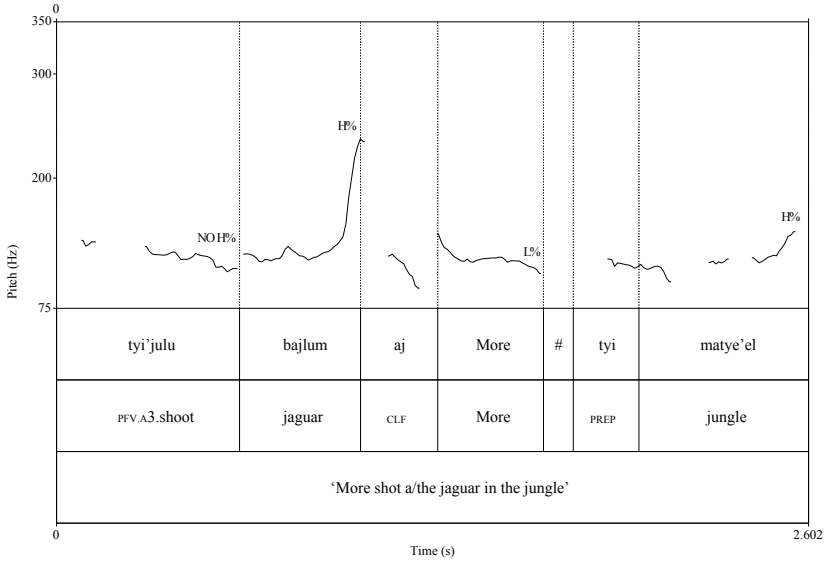
- The analysis given in (27) is motivated in part by intonational differences between VSO and VOS clauses.

  – High boundary tones (H%) mark the right edge of non-final φ-phrases in Ch'ol. So the absence of a H% on the verb in VOS clauses indicates that there is no φ-phrase boundary between the VOS verb and its object.

(28) INTONATIONAL CONTOUR OF A VSO CLAUSE



(29) INTONATIONAL CONTOUR OF A VOS CLAUSE



4.1 Components of the analysis

- We formalize our account in Match theoretic terms (Selkirk 2011).
  - **Syntax-prosody isomorphism:** Match Theory addresses positive evidence for prosodic recursion (Elfner 2015; Féry and Truckenbrodt 2015; Itô and Mester 2010; Wagner 2010).
    - ∗ MATCH constraints require that syntactic constituents correspond to prosodic constituents and vice versa.
    - ➪ Here, we focus on the correspondence between XPs and φ-phrases.

(30)
a.	IP/CP	$\longleftrightarrow$	ι-phrase
b.	XP	$\longleftrightarrow$	φ-phrase
c.	X^0	$\longleftrightarrow$	prosodic-ω

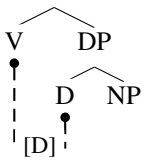
  - **Syntax-prosody nonisomorphism:** MATCH Theory is able to account for nonisomorphism as well, e.g. the fact that prosody is 'flatter' than syntax.
    - ∗ Constraints are construed as violable in the context of Optimality Theory (Prince and Smolensky 1993)
    - ➪ When one or more MATCH Constraints is outranked by a competing prosodic constraint nonisomorphic structure is the result

➽ One such competing prosodic constraint is ARGUMENT-φ, which mandates that head-argument pairs be realized in a unique φ-phrase.

(31) ARGUMENT CONDITION ON PHONOLOGICAL PHRASING: A head H^0 with a categorial feature [C] and head C^0 with the same [C] feature must constitute a φ-phrase.

  - Following Clemens 2014, we adopt an approach where:
    - (i) categorial selection (c-selection) is as an instance of AGREE (Emonds 2000; Adger and Svenonius 2011, a.o.), and
    - (ii) AGREE is an instance of feature-sharing (Pesetsky and Torrego 2007).
  - ➪ The prosodic grammar identifies head-argument pairs by lexical class:

(32) a.

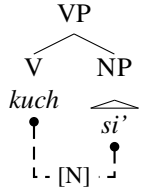

b.


4.2 Deriving VOS

- In this section, we work through our account of Ch'ol VOS
- All verb-initial clauses result from head-movement of the verb.
  - The syntax is always VSO.
  - VSO is shown as the input in the tableaux below.
- At least one type of VOS clause is the result of prosodic reordering.
  - Some VSO clauses are linearized VOS.
  - Certain output candidates in tableaux below have VOS order.
- In Ch'ol, any time the verb selects a bare NP, the output is a VOS clause.
- Let's take a look at an example like (33):

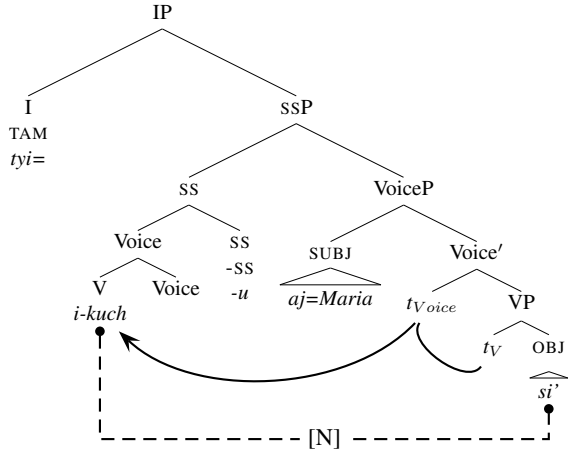
(33) Tyi i-kuch-u si' aj-Maria.
PFV A3-carry-SS wood CLF-Maria
'Maria carried the wood.'

- In (33), the verb and the object are connected by a shared [N] feature, because the verb selects the object.
  - The root *kuch* 'carry' selects a bare NP complement with an [N] feature; once *si'* 'wood' enters the derivation, the same [N] feature is associated with the selecting head and its complement.

(34)


  - Next, the verb undergoes X^0-movement, forming the stem and eventually landing above the subject in the head SS^0 that hosts the status suffix.

(35) FEATURE SHARING AND V^0-RAISING



– What is shown in (35) is the end of the syntax and this is what needs to be linearized. The tree in (35) can also be represented as (36).

(36) $[_{IP}$ Tyi $[_{ssP}$ ikuchu $[_{VoiceP}[_{DP}$ aj=Maria$]$ $[_{VP}[_{NP}$ si’$]]]]]$

- The tableau in (37) illustrates a first pass at predicting the sentence's prosodic structure with ARGUMENT-φ:

(37) Initial Arg-φ analysis

Input: $[_{TP}$Tyi $[_{vP}$ikuchu $[_{VoiceP}[_{DP}$aj=Maria$]$ $[_{VP}[_{NP}$si’$]]]]]$		ARG φ	MATCH (φ, XP)	MATCH (XP, φ)
a.	(tyi’=kuchu$_N$ (aj=Maria)φ (si’$_N$)φ)ι	*!		
b. ☹	((tyi=’kuchu$_N$ si’$_N$)φ (aj=Maria)φ)ι		*	*!
c. ☞	((tyi=’kuchu$_N$ (si’$_N$)φ)φ (aj=Maria)φ)ι		*	

– Candidate (a) is the most isomorphic candidate, i.e. there are no MATCH violations. However, ARG-φ is violated.

– Candidate (b) satisfies ARG-φ, but now there is a φ-phrase in the output that does not correspond to an XP in the input (V O)φ, and there is an XP in the input that does not correspond to a φ-phrase in the output $[_{NP}$ si’].

– Candidate (c) satisfies ARG-φ and is more isomorphic to the input than Candidate (b). There is a φ-phrase in the output that does not correspond to an XP in the input (V O)φ, but the NP *si’* still corresponds to a φ-phrase.

➪ **But Candidate (b) is the attested candidate!**

- We need to add another prosodic well-formedness constraint: STRONG START (Bennett et al. 2016b; Elfner 2012, 2015; Selkirk 2011; Werle 2009). The prosody of VSO clauses is consistent with a high-ranked STRONG START .

(38) STRONG START (Selkirk 2011): A prosodic constituent optimally begins with a leftmost daughter constituent which is not lower in the prosodic hierarchy than the constituent that immediately follows.

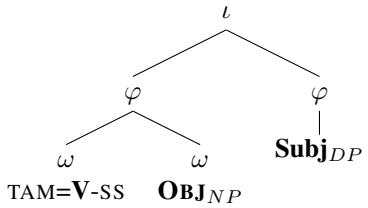
– Candidate (a) violates STRONG START, because the verb is a prosodic-ω, which is lower on the prosodic hierarchy than its sister, a φ-phrase.

– Candidate (b) **satisfies** STRONG START, because the verb is a prosodic-ω, as is the object, which is its sister.

– Candidate (c) violates STRONG START, because the verb is a prosodic-ω that is sister to a φ-phrase.

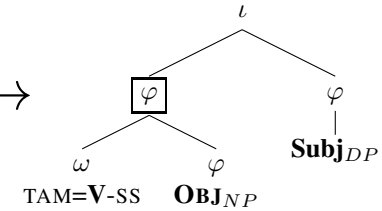
- The prosodic structure of Candidates (b) and (c) is shown below.

(39) PROSODIC STRUCTURE CANDIDATE (B)



(40) PROSODIC STRUCTURE CANDIDATE (C)

φ-phrase violating STRONG START →



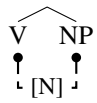
(41) VSO_{NP} INPUT WITH VOS OUTPUT

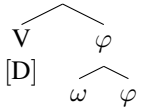
Input: $[_{TP}$Tyi $[_{vP}$ikuchu $[_{VoiceP}[_{DP}$aj=Maria$]$ $[_{VP}[_{NP}$si’$]]]]]$		STRONG START	ARG φ	MATCH (φ, XP)	MATCH (XP, φ)
a.	(tyi’=kuchu$_N$ (aj=Maria)φ (si’$_N$)φ)ι	*!	*		
b. ☞	((tyi=’kuchu$_N$ si’$_N$)φ (aj=Maria)φ)ι			*	*
c.	((tyi=’kuchu$_N$ (si’$_N$)φ)φ (aj=Maria)φ)ι	*!		*	

➪ **Now Candidate (b) is the winning candidate!**

4.3 Allowing VSO

- Next, we turn to cases where prosodic domains are assigned without restructuring, allowing VSO to surface.
- We account for the fact that ARGUMENT-φ does not affect the output of a clause with a DP object by appealing to the idea that prosodic structure is assigned in stages, i.e. we are working in PHASE THEORY (Chomsky 2000, 2001).
  - We rely on a few of the theoretical underpinnings of PHASE THEORY:
    - The process of assigning prosodic structure deletes syntactic features.
    - DPs are phases (Chomsky 2000, 2001); DPs are assigned prosodic structure even before the rest of the clause is built.
  - Prosodic constraints that operate on syntactic features, will not be able to see the relevant features, once prosodic structure has been assigned.
  - If a feature is shared between two heads that are assigned prosodic structure at different times ARG-φ won't apply.

(42) a. 

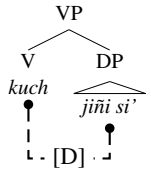
b. 

Turning to the derivation of VSO…

(43) Tyi i-kuch-u [$_S$ aj-Maria] [$_O$ jiñi si'].
PFV A3-carry-SS CLF-Maria DET wood
'Maria carried the wood.

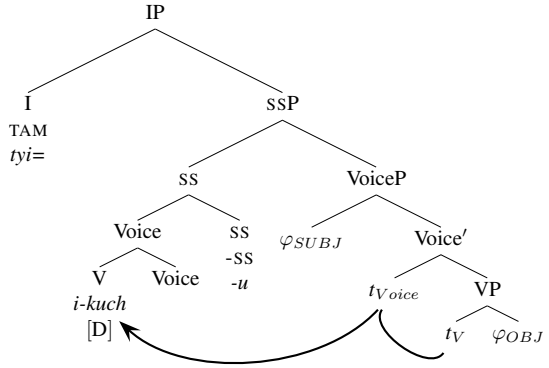
In this case, the root *kuch* 'carry' selects a complement with a [D] feature, which is shared between the root and the object DP *jiñi si'* 'the wood.'

(44) FEATURE SHARING IN SITU



As in the derivation of VOS, the verb in the incipient VSO structure undergoes a series of X^0-movements, eventually landing in SS^0.

(45) FEATURE SHARING AND V^0-RAISING



ARG-φ does not influence the way prosodic structure is built here, because only one instance of the relevant feature ([D]) is ever visible at a given time.

- The object DP and its [D] feature is spelled out in a different cycle than the selecting head and its matching [D] feature.

Below, the object DPs are crossed out, indicating that their syntactic features are no longer visible, as they were already assigned prosodic structure.

(46) VSO_{DP} input with VSO output

Input: [$_{TP}$Tyi [$_{vP}$ikuchu [$_{VoiceP}$[$_{DP}$aj-Maria] [$_{VP}$[$_{DP}$jiñi si']]]]]		STR START	ARG φ	MATCH (φ, XP)	MATCH (XP, φ)
a.	(tyi'=kuchu$_D$ (~~aj=Maria~~)φ (~~jiñi si'~~)φ)ι	*!			
b.	☞ ((tyi'=kuchu$_D$)φ (~~aj=Maria~~)φ (~~jiñi si'~~)φ)ι			*	
c.	(((tyi='kuchu$_D$)φ (~~jiñi si'~~)φ)φ (~~aj=Maria~~)φ)ι			**!	
d.	((tyi='kuchu$_D$ ~~jiñi si'~~)φ (~~aj=Maria~~)φ)ι			*	*!

- Candidate (a) is the most isomorphic candidate, but it violates STRONG START, because the verb is lower ranked than its sister.
- Candidate (b) is the attested phrasing and winning candidate. It violates MATCH-(φ, XP), but it satisfies the higher ranked STRONG START.
- Candidates (c) and (d): The object and the verb are phrased together, but since none of these candidates violate ARG-φ, there is no pay-off for violating MATCH Constraints in this way.

4.4 NP vs. DP objects

- The prosodic proposal is based on Clemens' (2014) account of Niuean. A comparison of Ch'ol and Niuean reveals:

1. VOS for NP objects; VSO for DP objects.
2. The verb and the object in VOS clauses are phrased together.
3. While Ch'ol is "basically VOS", Niuean is "basically VSO".

- **Claim:** In both languages, VOS is the result of a high-ranked ARGUMENT-φ. However, Ch'ol allows NP arguments to serve as true arguments of the verb, while Niuean requires DP arguments (see Chierchia 1998 and Bošković 2008 for NP vs. DP languages).
- VOS sentences in Niuean arise in so-called "pseudo-noun incorporation" (PNI) structures (Massam 2001):

(47) Ne inu [kofe kono] [$_S$ e Mele].
PST drink coffee bitter ABS Mele
'Mary drank bitter coffee.' (Niuean; Massam 2001, 158)

- Niuean PNI constructions like (47) are formally *intransitive*:
  - the subject is marked as absolutive instead of ergative
  - the incorporated element in PNI constructions—*kofe kono* in (47)—is interpreted as nonspecific and non-referential (Massam 2001)
- Niuean PNI is reminiscent of the "incorporation antipassive" found in some "rigidly VSO" Mayan languages, including Popti', Akatek, Q'anjob'al, and Chuj (Maxwell 1976; Craig 1979; Zavala 1992; Mateo Toledo 2008).
- Compare the transitive in (48-a) with the incorporation antipassive in (48-b):

(48) a. Max s-tzok' [$_S$ naq winaq] [$_O$ te' si'].
PFV A3-chop CLF man CLF wood
'The man cut the wood.'
b. Max tzok'-w-i [si'] [$_S$ naq winaq].
PFV cut-AP-SS wood CLF man
'The man cut wood.' (Q'anjob'al)

  - The Q'anjob'alan "incorporation antipassive" in (48-b) occurs only with nonreferential, nonspecific objects (Maxwell 1976).
  - The notional object must be adjacent to the verb, which is intransitive.

➽ Both Niuean and Q'anjob'al are languages with basic VSO order in which VOS arises when a non-referential phrasal NP object is pseudo-incorporated.

- In contrast, for Ch'ol
  - VOS is pragmatically unmarked
  - the object may be interpreted as definite, and
  - the subject patterns with other transitive subjects in triggering Set A (ergative) agreement on the verb:

(49) Tyi y-il-ä [$_O$ x'ixik] [$_S$ wiñik].
PFV A3-see-TV woman man
'The man saw the woman.' (Ch'ol; Vázquez Álvarez 2011, 21)

- In Ch'ol–as in many alternating VOS/VSO Mayan languages–bare NP objects occur frequently and behave as true arguments of the verb.
- In contrast, Niuean and Q'anjob'al do not generally allow bare NPs as arguments.
  - Bare-NP complements in Niuean (47) and Q'anjob'al (48) combine with predicates via RESTRICT (Chung and Ladusaw 2003); the "objects" *restrict* the denotation of the predicate, rather than saturate an argument slot.
  - They are nonetheless *complements*, which are selected by the verb, and thus may be subject to the ARGUMENT-φ constraint introduced below.

➽ The crucial factor underlying VOS in all three languages—Ch'ol on one hand, and Q'anjob'al and Niuean on the other—is **the absence of D^0-level material on the object, affects the timing of Spell-Out in such a way that ARG-φ is active**.

Plan: ☑ Word order • ☑ X^0-Raising • ☑ Prosodic reordering • ☐ Right-side topics

5 Right-side topics

- Most of the naturally-occurring VOS examples in the literature have bare NP objects. Thus, the analysis in §4 has the potential to cover VOS structures in many languages.
- The purpose of this section is to discuss exceptions to the generalization that objects in VOS clauses are typically bare.
- **Claim:** Some VOS subjects occupy a high right-side topic position.

- Right-side topics go unnoticed, because they do not result in a 'marked' word order for languages that allow VOS order.

- Curiel (2007) shows that topics in Tojolab'al appear not only clause-initially, but also *clause-finally*:

(50) a. S-mak'-a-ta [$_S$ ja 'epra] [$_O$ ja men marya].
A3-hit-SS-EMPH DET Efraín DET FEM María
'Efraín hit María.'
b. S-mak'-unej [$_O$ ja jorje] [$_S$ ja jwano='i]
A3-hit-PERF DET Jorge DET Juan=TOP
'Juan hit Jorge.' (Tojolab'al; Curiel 2007, 26)

- Example (50-a) is VSO, the expected order for DP objects following our analysis. In contrast, (50-b) has VOS order, despite having a full DP object.

  ⇨ Note, however, that in the VOS example, the subject is explicitly marked with topic morphology.

- Five other naturally-produced VOS sentences occur in Curiel's thesis:

  – In four of these examples, the object is a bare NP.

  – In the fifth, the object is a full DP, but the subject appears with overt topic-marking (Curiel 2007, 67), as in (50-b).

- Polian (2013) supports a peripheral right-side topic in Oxchuc Tseltal, where it is also possible to find examples of VOS with an unmarked topical subject.:

(51) La y-ich' [$_O$ nujk'ul] [$_S$ te kerem=e].
PFV A3-receive rope DET boy=DET
'The boy received rope.' (Tseltal; Polian 2013, 65)

(52) a. [Q:] The teacher in primary school didn't teach you anything?
b. [A:] He never taught well, never, it was a mess...
c. ... ma s-bijtes lek [$_O$ te indigena-etik] [$_S$ te kaxlan-etik]
NEG A3-teach well DET indigenous-PL DET *ladino*-PL
namey.
long.ago
'...the *ladinos* (teachers) didn't teach the indigeous people well.'
(Tseltal; Polian 2013, 66)

  – In (51), the object is a bare NP and thus compatible with either our prosodic account of VOS or our right-side-topic account.

  – The object in the VOS sentence in (52-c) is a full DP. Here, however, Polian provides a context which clarifies that the subject—*ladino*—is the topic.

- Further evidence comes from Can Pixabaj (2004). In her study of topicalization patterns in K'iche', Can Pixabaj finds the following:

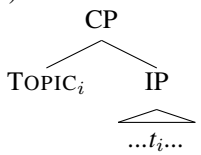
  – Topics surface most commonly in preverbal position.

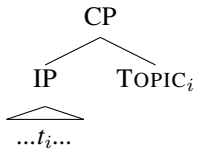
  – They occur frequently in postverbal position as well (53).

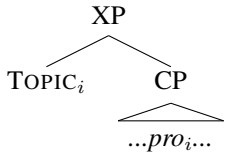
  – Postverbal topics appear to be particularly common in constructions that introduce new topics and those in which topics are updated.

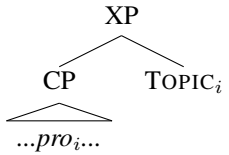
(53) Tonse k'a te ka-r-il [$_O$ jo-sin tz'unun].
etonces PART PART INC-A3-see DET-AFF hummingbird
'Suddenly he saw a *hummingbird*.' (K'iche'; Can Pixabaj 2004, 115)

- In order to account for clause-final topics, we combine Aissen's (1992) account of internal and external topics with her right-side specifier account of Mayan VOS.

(54)
a. 

b. 

(55)
a. 

b. 

- Our analysis maintains that subjects are uniformly base-generated in left-side specifier positions (i.e. Spec,VoiceP), but that higher topic positions may be alternately ordered either to the left or to the right, as shown in (54) and (55).

Plan: ☑ X^0-Raising • ☑ Prosodic reordering • ☑ Right-side topics • ☐ Predictions

6 Predictions

- Focusing on right-side topics and prosodic reordering, our account predicts four basic types of Mayan languages:

(56) MAYAN WORD ORDER TYPOLOGY

a.	ARGUMENT-φ: low; right-side topic: ✗	VSO
b.	ARGUMENT-φ: low; right-side topic: ✓	VSO/VOS
c.	ARGUMENT-φ: high; right-side topic: ✗	VSO/VOS
d.	ARGUMENT-φ: high; right-side topic: ✓	VSO/VOS

- **(56-a):** For languages with low-ranking ARG-φ and no right-side topic, we predict rigid VSO, whether or not the object is an NP or a DP, as in (57):

(57) LOW ARGUMENT-φ WITHOUT RIGHT-SIDE TOPIC

a. VSO_{DP}
b. VSO_{NP}

- **(56-b):** For languages with low-ranking ARG-φ and right-side topics, we predict VOS *only* in cases where the subject is the topic of the clause (58-d).

(58) LOW ARGUMENT-φ WITH RIGHT-SIDE TOPIC

a. VSO_{DP}
b. VSO_{NP}
c. VSO_{TOP}
d. VOS_{TOP}

➽ **The prosodic phrasing of NP and DP objects in relationship to the verb should be the same.**

- **(56-c):** For languages with high-ranking ARGUMENT-φ and no right-side topic, we predict a strict correlation between word order and DP objects.

(59) HIGH ARGUMENT-φ WITHOUT RIGHT-SIDE TOPIC

a. VSO_{DP}
b. $VO_{NP}S$

➽ **In the VOS clauses of these languages, we expect the object and the verb to be realized as subconstituents of a unique phonological phrase.**

- For languages with high-ranking ARGUMENT-φ *and* a designated topic position (56-d), we predict VSO with DP and topical objects, VOS with NP objects (60-c)–(60-d), and VOS with DP objects and topical subjects (60-e).

(60) HIGH ARGUMENT-φ WITH RIGHT-SIDE TOPIC

a. VSO_{DP}
b. VSO_{TOP}
c. $VO_{NP}S$
d. $VO_{NP}S_{TOP}$
e. $VO_{DP}S_{TOP}$

➽ **We expect to see a difference between the prosodic constituency of VOS clauses with NP objects, as in (60-c) and (60-d), and VOS clauses with DP objects and topicalized subjects, as in (60-e).**

- Finally, our account predicts that it should not be possible to find the following:
  - Naturally occurring examples of VOS in cases where the object is a DP and the subject can not be characterized as a topic (or a heavy NP).
  - A single language that has naturally occurring examples of both:
    i. VOS clauses with NP objects, for which the subject is neither heavy nor a topic, *and*
    ii. VSO clauses with NP objects.
  - This would result in a ranking paradox on our analysis.

7 Conclusion

- In sum, a unified derivation of V1 in the Mayan family is possible.
- On our account, VSO is derived in the syntax via head-movement, while VOS—described as "basic" in many languages—is the result of:
  1. the post-syntactic reordering of NP objects into a position where they can be pronounced with the verb (§4)
  2. orienting subject-topics to the right side of the clause (§5)
  3. shifting heavy subjects to final position (see Clemens and Coon to appear)
- Our proposal makes a number of testable prediction both with respect to word order typology and prosodic constituency.

References

Adger, David, and Peter Svenonius. 2011. Features in minimalist syntax. In *The oxford handbook of linguistic minimalism*, ed. Cedric Boeckx, 27–51. New York: Oxford University Press.

Aissen, Judith, Nora C. England, and Roberto Zavala, ed. 2017. *The Mayan languages*. Routledge Language Famliy Series. New York: Routledge.

Aissen, Judith L. 1992. Topic and focus in Mayan. *Language* 68:43–80.

Armstrong, Grant. 2015. Non-verbal predicate constructions in Yucatec Maya. Ms. University of Wisconsin, Madison.

Baker, Mark. 1985. The Mirror Principle and morphosyntactic explanation. *Linguistic Inquiry* 16:373–415.

Baker, Mark C. 1988. *Incorporation: A theory of grammatical function changing*. Chicago: University of Chicago Press.

Baquiax Barreno, Modesto, Rigoberto Juárez Mateo, Fernando Rodríguez Mejía, and María Magdalena Pérez. 2005. *Yaq'b'anil stxolilal ti' Q'anjob'al: Gramática descriptiva Q'anjob'al*. Academia de Lenguas Mayas de Guaatemala.

Bennett, Ryan, Jessica Coon, and Robert Henderson. 2016a. Introduction to Mayan linguistics. *Language and Linguistics Compass* 10:453–454.

Bennett, Ryan, Emily Elfner, and James McCloskey. 2016b. Lightest to the right: an anomolous displacement in Irish. *Linguistic Inquiry* 47:169–234.

Bennett, Ryan, Boris Harizanov, and Robert Henderson. 2015. Prosodic smothering in macedonian and kaqchikel. Ms. Yale University, Stanford University, and University of Arizona.

Bohnemeyer, Jürgen. 2009. Linking without grammatical relations in Yucatec: Alignment, extraction, and control. In *Issues in functional-typological linguistics and language theory: A festschrift for christian lehmann on the occasion of his 60th birthday*, ed. Y. Nishina, Y. M. Shin, S. Skopeteas, E. Verhoeven, and J Helmbrecht, 185–214. Berlin: Mouton de Gruyter.

Bošković, Željko. 2008. What will you have, DP or NP? In *Proceedings of 37th Northeast Linguistics Society (NELS 37)*. GLSA.

Brody, Jill. 1984. Some problems with the concept of basic word order. *Linguistics* 22:711–736.

Can Pixabaj, Telma. 2004. La topicalización en K'ichee': una perspectiva discursiva. BA Thesis.

Can Pixabaj, Telma. 2006. *Gramática descriptiva Uspanteka*. Oxlajuuj Keej Maya' Ajtz'iib' (OKMA).

Chierchia, Gennaro. 1998. Reference to kinds across languages. *Natural Language Semantics* 6:339–405.

Chomsky, Noam. 2000. Minimalist inquiries: the framework. In *Step by Step: Essays on Minimalist Syntax in Honor of Howard Lasnik*, ed. Roger Martin, David Michaels, and Juan Uriagereka, 89–155. Cambridge, MA: MIT Press.

Chomsky, Noam. 2001. Derivation by phase. In *Ken Hale: A life in Language*, ed. Michael Kenstowicz, 1–52. Cambridge, MA: MIT Press.

Chung, Sandra. 2006. Properties of VOS languages. In *The Blackwell Companion to Syntax*, ed. Martin Everaert and Henk van Riemsdijk, 685–720. Malden: Blackwell.

Chung, Sandra, and William A. Ladusaw. 2003. *Restriction and saturation*. Cambridge, Mass.: MIT Press.

Clemens, Lauren Eby. 2014. Prosodic noun incorporation and verb-initial syntax. Doctoral Dissertation, Harvard University, Cambidge, MA.

Clemens, Lauren Eby, and Jessica Coon. to appear. Deriving verb-initial word order in Mayan. *Language* .

Clemens, Lauren Eby, and Maria Polinsky. to appear. Verb-initial word orders (primarily in Austronesian and Mayan languages). In *The Blackwell Companion to Syntax*, ed. Martin Everaert and Henk van Riemsdijk. Wiley-Blackwell, 2nd edition.

Coon, Jessica. 2010. VOS as predicate fronting in Chol Mayan. *Lingua* 120:345–378.

Coon, Jessica. 2017a. Ch'ol. In *The Mayan languages*, ed. Judith Aissen, Nora England, and Roberto Zavala, 648–684. New York, NY: Routledge.

Coon, Jessica. 2017b. Little-v agreement and templatic morphology in Ch'ol. *Syntax* 20:101–137.

Coon, Jessica, Pedro Mateo Pedro, and Omer Preminger. 2014. The role of case in A-bar extraction asymmetries: Evidence from Mayan. *Linguistic Variation* 14:179–242.

Craig, Colette Grinevald. 1979. The antipassive and Jacaltec. In *Papers in Mayan linguistics*, ed. Laura Martin, volume 1, 139–164. Lucas Brothers.

Curiel, Alejandro. 2007. Estructura de la información, enclíticos y configuración sintáctica en tojol 'ab'al. Master's thesis, CIESAS, México.

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

DuBois, John W. 1987. The discourse basis of ergativity. *Language* 63:815–855.

Elfner, Emily. 2012. Syntax-prosody interactions in Irish. Doctoral Dissertation, University of Massachusetts Amherst.

Elfner, Emily. 2015. Recursion in prosodic phrasing: Evidence from Connemara Irish. *Natural Language and Linguistic Theory* 33:1169–1208.

Emonds, Joseph. 2000. *Lexicon and grammar: The English syntacticon*. Berlin: Mouton de Gruyter.

England, Nora. 1991. Changes in basic word order in Mayan languages. *International Journal of American Linguistics* 57:446–486.

England, Nora C., and Laura Martin. 2003. Issues in the comparative argument structure analysis in Mayan narratives. In *Preferred argument structure: Grammar as architecture for function*, ed. John W. DuBois, Lorraine E. Kumpf, and William J. Ashby, 131–157. John Benjamins.

England, Nora C., and Roberto Zavala. 2013. Mayan languages. In *Oxford bibliographies in linguistics*, ed. Mark Aronoff. Oxford: Oxford University Press.

Féry, Caroline. 2011. German sentence accents and embedded prosodic phrases. *Lin-*

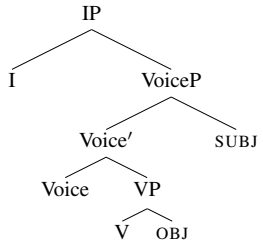
gua 121:1906–1922.
Féry, Caroline, and Hubert Truckenbrodt. 2015. Hierarchical organization and tonal scaling. *Phonology* 32:19–47.
Hofling, Charles A. 1984. On Proto-Yucatecan word order. *Journal of Mayan Linguistics* 4:35–64.
Hofling, Charles A. 2000. *Itzaj Maya grammar*. Salt Lake City: University of Utah Press.
Ishihara, Shinichiro. 2007. Major phrase, focus intonation, Multiple Spell-Out. *The Linguistic Review* 24:137–167.
Itô, Junko, and Armin Mester. 2010. Recursive prosodic phrasing in Japanese. In *The Proceedings of the 18th Japanese/Korean Conference*, 147–164. CSLI.
Kahnemuyipour, Arsalan. 2004. The syntax of sentential stress. Doctoral Dissertation, University of Toronto, Toronto.
Kratzer, Angelika. 1996. Severing the external argument from its verb. In *Phrase Structure and the Lexicon*, ed. Johan Rooryck and Laurie Zaring, 109–137. Dordrecht: Kluwer Academic Publishers.
Kratzer, Angelika, and Elisabeth Selkirk. 2007. Phase theory and prosodic spellout: The case of verbs. *The Linguistic Review* 24:93–135.
Larsen, Thomas. 1988. Manifestations of ergativity in Quiché grammar. Doctoral Dissertation, University of California, Berkeley.
Massam, Diane. 2001. Pseudo noun incorporation in Niuean. *Natural Language and Linguistic Theory* 19:153–197.
Mateo Toledo, Eladio. 2003. The use of languages' names: The Mayan case. *International Journal of American Linguistics* 69:151–153.
Mateo Toledo, Eladio. 2008. The family of complex predicates in Q'anjob'al (Maya): Their syntax and meaning. Doctoral Dissertation, University of Texas, Austin.
Maxwell, Judith M. 1976. Chuj intransitives: Or when can an intransitive verb take an object? *Journal of Mayan Linguistics* 1:128–140.
Minkoff, Seth. 2000. Animacy hierarchies and sentence processing. In *The syntax of verb initial languages*, ed. Andrew Carnie and Eithne Guilfoyle, 201–212. Oxford University Press.
Mondloch, James. 1978. Disambiguating subjects and objects in Quiché. *Journal of Mayan Linguistics* 1:3–19.
Norman, William. 1977. Topic and focus in Mayan. Paper presented at the Mayan Workshop II, San Cristóbal de las Casas, Chiapas, Mexico.
Norman, William M., and Lyle Campbell. 1978. Toward a Proto-Mayan syntax: a comparative perspective on grammar. In *Papers in Mayan linguistics*, ed. Nora C. England, volume University of Missouri Miscellaneous Publications in Anthropology, no. 6; Studies in Mayan Linguistics, no. 2. Columbia: University of Missouri.
Peñalosa, Fernando. 1987. Major syntactic structures of Acatec (dialect of San Miguel Acatán). *International Journal of American Linguistics* 53:281–310.
Pesetsky, David, and Esther Torrego. 2007. The syntax of valuation and the interpretability of features. In *Phrasal and clausal architecture: Syntactic derivation and interpretation*, ed. Simin Karimi, Vida Samiian, and Wendy K. Wilkins, 262–294. Amsterdam: John Benjamins.
Polian, Gilles. 2013. *Gramática del tseltal de Oxchuc*. Publicaciones de la Casa Chata. México: Centro de Investigaciones y Estudios Superiores en Antropología Social.
Prince, Alan, and Paul Smolensky. 1993. Optimality Theory: Constraint interaction in generative grammar. In *RUCCS Technical Report No. 2*. Piscataway, NJ: Rutgers University Center for Cognitive Science.
Pylkkänen, Liina. 2002. Introducing arguments. Doctoral Dissertation, Massachusetts Institute of Technology, Cambridge, MA.
Quizar, Robin. 1979. Comparative word order in Mayan. Doctoral Dissertation, University of Colorado Boulder.
Robinson, Stuart. 2002. Constituent order in Tenejapa Tzeltal. *International Journal of American Linguistics* 68:51–80.
Selkirk, Elisabeth. 2011. The syntax-phonology interface. In *The handbook of phonological theory*, ed. John Goldsmith, Jason Riggle, and Alan C. L. Yu, 435–484. Wiley-Blackwell, 2nd edition.
Skopeteas, Stavros, and Elisabeth Verhoeven. 2005. Postverbal argument order in Yucatec Maya. *Sprachtypologie und Universalienforschung* 58:347–373.
Smith, Joshua Hinmán. 1975. La familia tzeltalana. Paper presented at the Mayan Workshop, Antigua, Guatemala, August 1975.
Travis, Lisa. 1984. Parameters and effects of word order variation. Doctoral Dissertation, Massachusetts Institute of Technology, Cambridge, MA.
Vázquez Álvarez, Juan J. 2002. Morfología del verbo de la lengua chol de Tila Chiapas. M.A. thesis, CIESAS, México.
Vázquez Álvarez, Juan J. 2011. A grammar of Chol, a Mayan language. Doctoral Dissertation, The University of Texas at Austin.
Vázquez Álvarez, Juan J., and Roberto Zavala. 2013. La estructura argumental preferida en el chol, una lengua agentiva. *Memorias del VI Congreso de Idiomas Indígenas de Latinoamérica (CILLA)* .
Wagner, Michael. 2005. Prosody and recursion. Doctoral Dissertation, MIT.
Wagner, Michael. 2010. Prosody and recursion in coordinate structures and beyond. *Natural Language and Linguistic Theory* 28:183–237.
Werle, Adam. 2009. Word, phrase, and clitic prosody in Bosnian, Serbian, and Croatian. Doctoral Dissertation, University of Massachusetts, Amherst.
Zavala, Roberto. 1992. *El Kanjobal de San Miguel Acatán*. México: UNAM.

A Previous accounts of V1 order

A.1 Right-side specifiers

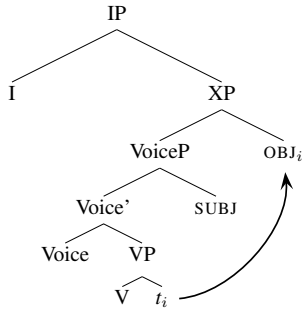
- The standard approach to Mayan V1 base-generates VOS by placing the subject in a right-side specifier (Aissen 1992), as in (61).

(61) RIGHT-SIDE SPECIFIER VOS



- Aissen proposes that the linearization of specifiers is parameterized:
  - specifiers of functional categories appear to the left (i.e. topic and focus)
  - specifiers of lexical categories to the right (i.e. postverbal subjects)
- Specifier paramaterization also captures word order in the nominal domain, where *wh*-possessors precede the noun and all other possessors follow it.[3] Aissen (1992, 44) explicitly states that her account is not meant to capture postverbal order.
- Nonetheless, an Aissen-style base-generation approach does allow for the derivation of VSO via object post-posing to a right-side specifier, as in (62).

(62) RIGHT-SIDE-SPECIFIER VSO



[3] Aissen posits right-side specifiers for lexical categories V, N, Adj, and does not assume VP-external subjects; we, on the other hand, show subjects as occupying Spec,VoiceP (e.g. Kratzer 1996). Aissen's parameterization could be maintained by dividing thematic positions (ordered to the right), from specifier positions which are the landing site for movement (ordered to the left).

- Such an approach is also in line with suggestions in Norman 1977, discussed in Larsen 1988 and England 1991.
- From a pan-Mayan perspective, base-generating subjects in a right-side specifier is a natural approach to languages that are predominately VOS, but presents complications for rigid-VSO languages like Q'anjob'al and Mam.
- See discussion in Chung 2006, Clemens and Polinsky to appear, and Coon 2010.

A.2 VP-fronting

- Coon (2010) argues for a predicate-fronting account of the VOS/VSO in Ch'ol:
  - Basic word order in Ch'ol is described as VOS (Vázquez Álvarez 2002, 2011; Coon 2017a), illustrated in (63).

(63) a. Tyi i-kuch-u [$_O$ si'] [$_S$ aj-Maria].
PFV A3-carry-SS wood CLF-Maria
'Maria carried wood. (Coon 2010, 355)

b. Tyi y-il-ä [$_O$ x'ixik] [$_S$ wiñik].
PFV A3-see-SS woman man
'The man saw the woman.' (Vázquez Álvarez 2011, 21)

  - However—as noted in discussion above—VOS objects cannot be full DPs:

(64) a. *Tyi i-kuch-u [$_O$ ili si'] [$_S$ aj-Maria].
PFV A3-carry-SS DEM wood CLF-Maria
intended: 'Maria carried this wood.' (Coon 2010, 355)

b. *Tyi y-il-ä [$_O$ jiñi x'ixik] [$_S$ wiñik].
PFV A3-see-SS DET woman man
intended: 'The man saw the woman.'

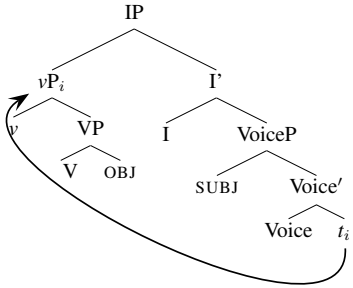
  - If both arguments are postverbal and the object is a DP, VSO is preferred:

(65) a. Tyi i-kuch-u [$_S$ aj-Maria] [$_O$ ili si'].
PFV A3-carry-SS CLF-Maria DEM wood
'Maria carried this wood.'

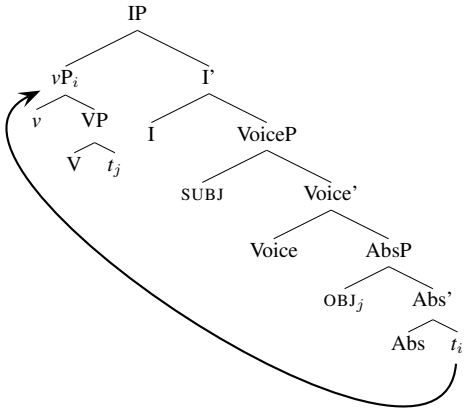
b. Tyi y-il-ä [$_S$ aj-Pedro] [$_O$ jiñi wiñik].
PFV A3-see-SS CLF-Pedro DET man
'Pedro saw the man.'

  - Drawing on Massam's (2001) account of Niuean, Coon (2010) proposes that bare NP objects remain internal to the fronted *v*P (66), but when the object is a DP, it raises out of the VP before the remnant VP fronts(67):

(66) PREDICATE-FRONTING VOS



(67) PREDICATE FRONTING VSO



– Coon (2010) uses the placement of adjuncts to demonstrate that NP objects and DP objects occupy different structural positions in Ch'ol.

- **Worries for predicate fronting:**

  – **VSO —** Coon's proposal connects the NP/DP status of the object to VOS/VSO order, but would be difficult to extend to a rigid-VSO language.

  – **Stem formation paradox —** In order to derive VOS, the fronted XP must *not* contain the subject. Assuming stems are formed by X^0-movement, Coon must locate the status suffix and all voice morphology *below* the subject.

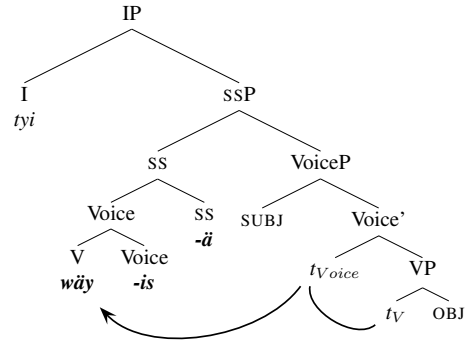
    ∗ But there is reason to believe that external arguments are introduced below the head which hosts the status suffix, (Coon et al. 2014; Armstrong 2015). Consider the unaccusative/transitive alternation:

    (68) a. Tyi wäy-**i** ñeñe'.
    PFV sleep-SS baby
    'The baby slept.'

    b. Tyi i-wäy-**is-ä** ñeñe' x-k'aläl.
    PFV A3-sleep-CAUS-SS baby CLF-girl
    'The girl put the baby to sleep.'

    ∗ The external argument is introduced in the specifier of the causative Voice head (per Pylkkänen 2002), and X^0-raising of the verb root through Voice^0 to SS^0 results in the correct order of morphemes.

    (69) HEAD-MOVEMENT TO *v*P



    ➪ In (69), there is no maximal projection XP containing the verb and the object but *not the subject*, which could front to derive VOS.

- **Landing site? —** In addition to the question of *what* raises, it is also unclear *where* the XP predicate raises to.

  – Coon (2010): the predicate fronts to Spec,IP, but Infl^0 is typically taken to be occupied by a TAM marker which appears *to the left of* the verb stem.

  – Some TAM markers are clitics, and their ordering could be parameterized. Others are free-standing words that may themselves host clitics:

    (70) **Tsa'**=äch=bi i-mel-e waj aj-Maria.
    PFV=AFF=REP A3-make-SS tortilla CLF-Maria.
    'Apparently Maria did indeed make tortillas.'

➽ **Where this leaves us:**

  – XP-movement can capture VOS order, and is compatible with the contrast in behavior of NP vs. DP objects, but faces other problems...

  – On the other hand, X^0-movement correctly captures morpheme order of the stem and VSO—**but how do we account for VOS?**