

Distinct pathways to possessor \bar{A} -extraction in Mesoamerican languages*

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1 Introduction

The Mesoamerican linguistic area consists of several distinct language families, which share a number of structural features (e.g. Campbell et al., 1986). Relevant today:

- Verb-initial—either VOS or VSO
- “Pied-Piping With Inversion” (PPWI) of entire possessive phrases containing wh-possessors¹
- (The appearance of) \bar{A} -extraction of wh-possessors out of complex possessive phrases

In this talk, we investigate **possessor \bar{A} -extraction** in two unrelated languages, Tzeltalan (Mayan) (Aissen and Polian, to appear) vs. San Martín Peras Mixtec (Otomanguean).²

In both languages, wh-possessors may be fronted clause-initially, either with the rest of the complex possessive phrase (PPWI) (a) or alone (b).

- Note that there are interpretive differences between the (a) and (b) examples (to be discussed in §3).

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¹Also known as “secondary wh-movement” (Heck, 2008).

²Abbreviations: A = set A agreement (=ERG), AML = animal, APPL = applicative, B = set B agreement (=ABS), CLF = classifier, COMPL = completive aspect, CONT = continuative aspect, DET = determiner, ENC = enclitic, FAM = familiar, ICP = incompletive aspect, INTR = intransitive, P = preposition, PL = plural, POSS = possessive, POT = potential aspect, SG = singular, 2 = 2nd person, 3 = 3rd person.

- (1) a. [**Mach’a x-nich’an** ___] bejk’aj ___ ?
 who A3-child.of-male COMPL.be.born
 ‘Whose child was born?’
- b. **Mach’a** bejk’aj [**x-nich’an** ___]?
 who COMPL.be.born A3-child.of-male
 ‘Who had a child born?’ (Oxchuc Tseltal; Polian 2013)
- (2) a. [**Yóó se’ě** ___] kàku ___ ?
 who child be.born.COMPL
 ‘Whose child was born?’
- b. **Yóó nà** kàku [**se’ě** ___]?
 who 3PL born.COMPL child
 ‘Who (pl.) had a child born?’ / ‘Whose (pl.) child was born?’ (SMPM)

- For reasons of space, we focus just on the latter construction; PPWI is presented solely for comparison (see Appendix B for discussion).

Central finding: Despite their surface-similar empirical profiles, possessor \bar{A} -extraction in Tzeltalan and San Martín Peras Mixtec (SMPM) involves **underlyingly divergent derivational pathways**.

Putative ‘ \bar{A} -subextraction’ in Tzeltalan, as in (1b), is actually \bar{A} -extraction of a **raised possessor** (Aissen and Polian, to appear); there is no \bar{A} -subextraction directly out of possessive phrases in Tzeltalan.

In contrast, we argue that SMPM does permit **genuine \bar{A} -subextraction of possessors**, but even then it may only occur out of certain complex DPs.

To account for this contrast, we suggest that these distinct possessor \bar{A} -extraction profiles ultimately arise from **various (micro-)parametric differences** conspiring in the two languages:

1. Possible sizes of nominal constituents (DP vs. smaller)
2. The functional heads involved in both V(P)-movement and A-movement (T vs. ν)
3. The probing conditions of phasal ν —which affects whether ν can obviate DP phasehood (Rackowski and Richards, 2005; Halpert, 2019, a.o.).

- ★ The identification of these differences in two Mesoamerican languages makes testable predictions for possessor \bar{A} -extraction in other languages of the area.

Roadmap:

- §2 Overview of Tzeltalan and SMPM syntax
- §3 Possessor \bar{A} -extraction in Tzeltalan and SMPM
- §4 Obviating DP phases (in SMPM)
- §5 Summary and conclusion
- §A Movement out of indirect objects/PPs
- §B On the role of Pied-Piping With Inversion

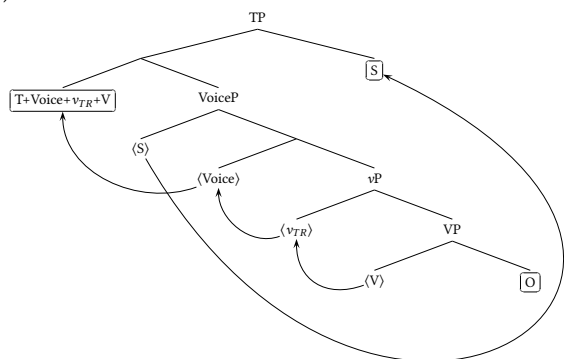
2 Overview of Tzeltalan and SMPM syntax

The Mesoamerican linguistic area spans southern Mexico and much of Central America, and includes several language families and language isolates. We focus on two unrelated families:

- **Mayan:** Tzeltalan languages (e.g., Tzeltal, Tsotsil), following the work of Aissen and Polian to appear (see also Aissen 1999 and Polian 2013)
- **Otomanguan:** San Martín Peras Mixtec (SMPM), based on original field-work (building on Hedding and Yuan to appear)

The Tzeltalan languages are **V(erb)-O(bject)-S(ubject)**, derived by head movement of V and movement of the subject to a right-pointing spec-TP (Aissen, 1992; Aissen and Polian, to appear).³

(3)



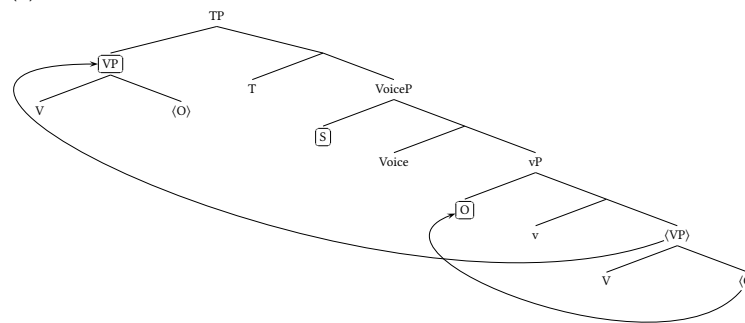
³See also Clemens and Coon 2018 and Little 2020 on right specifiers in Mayan more generally.

- Note also that Tzeltalan is a “low-ABS” Mayan language; the object does not raise past the subject, i.e., it remains *in situ*.
- Following Coon et al. 2014, Coon et al. 2021, a.o., we assume that **ABS assigned by v to the highest internal argument** (=set B agreement).

SMPM is **V(erb)-S(ubject)-O(bject)** (and has only left-oriented specifiers).

- We propose that word order in SMPM involves object shift to spec-vP, followed by remnant VP-movement to spec-TP (Hedding and Yuan, to appear; Yuan and Juárez Chávez, 2024).

(4)



- SMPM does not have any overt case morphology, so we take object shift as a diagnostic for Agreement with v.

Note: These derivational divergences (as well as the distinct functions of T and especially v) will be important later.

3 Possessor \bar{A} -extraction in Tzeltalan and SMPM

Aissen and Polian’s (to appear) analysis: Stranding of a possessum (1b) **requires an initial step of A-movement** by the wh-possessor. This is only possible when the possessive is non-specific (i.e., not a DP).

There is no \bar{A} -subextraction out of possessives in Tzeltalan.

In this section (and in Appendix A), we enumerate 7 differences between the languages, which suggest that Aissen and Polian’s (to appear) analysis should not be extended to SMPM.

	Tzeltalan	SMPM	
Stranded possessum must be non-specific	YES	NO	§3.1
Non-specifics structurally smaller	YES	NO	§3.1
External Possession	YES	NO	§3.1
Transitive objects opaque	YES	NO	§3.2
Transitive subjects opaque if non-specific	NO	YES	§3.2
Transitive objects opaque without AppP	YES	NO	§A
IOs/PPs opaque if subject specific	YES	NO	§A

Below, §3.1 sets up the basic \bar{A} -extraction profiles of the two languages focusing mainly on unaccusatives; §3.2 turns to more complex data from transitives.

3.1 Specificity and nominal size

3.1.1 Tzeltalan

Aissen and Polian show (following Polian 2013) that there is an **interpretive difference** between PPWI (5a) and possessor subextraction (5b).⁴

- These constructions correlate with the **specificity** of the possessive: (4a) presupposes the existence of a specific child, while (4b) does not.

- (5) a. [DP Mach'a x-nich'an] bejk'aj?
 who A3-child.of.male COMPL.be.born
 'Whose child was born?'
- b. [DP Mach'a] bejk'aj [PossP x-nich'an ___]?
 who COMPL.be.born A3-child.of.male
 'Who had a child born?' (Oxchuc Tzeltal; Polian 2013)

Aissen and Polian propose that specific nominals are DPs while non-specific nominals are structurally reduced (following e.g., Pereltsvaig, 2006):

- (6) a. Specific Possessive
- ```

 graph TD
 DP --> D0
 DP --> PossP
 PossP --> NPoss
 PossP --> DPsr

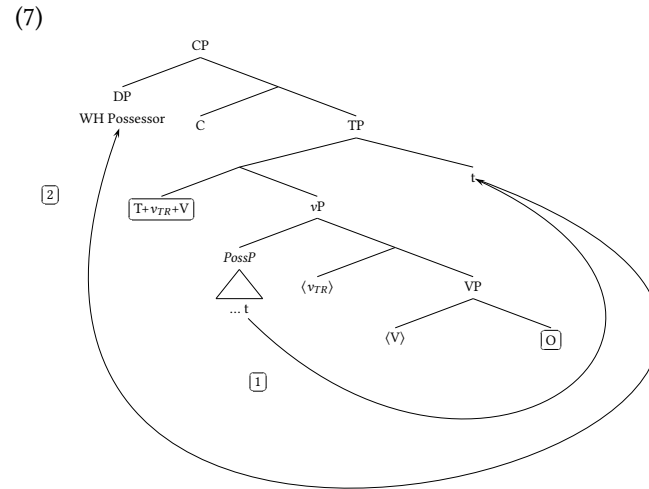
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- b. Non-specific Possessive
- ```

    graph TD
      PossP --> NPoss
      PossP --> DPsr
    
```

⁴Unless cited otherwise, all Tzeltalan data come from Aissen and Polian to appear. Aissen and Polian also claim that their analysis extends beyond Tzeltalan to other Mayan languages, such as Ch'ol (in a reinterpretation of the findings of Little 2020).

This structural difference impacts the way that they undergo A-movement:

- An A-probe on T searches and finds the most local DP in its domain.
- This DP may be the entire possessive phrase if specific or the possessor alone (if the possessive is a PossP). The latter is depicted in [1].⁵
- Only once in this external A-position can a possessor DP subsequently \bar{A} -move to spec-CP [2].



Evidence that possessors can undergo A-movement to spec-TP comes from the independent availability of **discontinuous possessors and possessa**.

- As predicted, this is possible only when the possessive phrase is non-specific.⁶

- (8) Ch'ay [PossP s-tak'in ___i] ajk'ube [DP te x-Mal=e]i
 lost.INTR A3-money yesterday DET CLF-Maria=ENC
 'Maria lost some (non-spec.) money yesterday.'
 #'Maria's money (spec.) was lost yesterday.' (Tenejapa Tzeltal)

⁵Aissen and Polian argue that the DP moved to spec-TP is interpreted as a Categorical Subject, in the sense of Kuroda 1972.

⁶If the possessive phrase is specific, that entire possessive constituent, a DP, will move rightward to spec-TP.

Therefore: For Aissen and Polian to appear, there is no direct \bar{A} -subextraction out of *any* possessive (DP or PossP) (a “selective opacity” effect, Keine 2019).

\bar{A} -extraction of possessors in Tzeltalan is always mediated by A-movement.

3.1.2 SMPM

Like Tzeltalan, PPWI in SMPM triggers a specific interpretation of the fronted possessive (9a), non-specific possessives must remain *in situ*. Examples repeated from (2):

- (9) a. [**Yóó se'ě** ___] kàku ___ ?
 who child be.born.COMPL
 ‘Whose child was born?’
- b. **Yóó nà** kàku [**se'ě** ___]?
 who 3PL born.COMPL child
 ‘Who (pl.) had a child born?’ / ‘Whose (pl.) child was born?’ (SMPM)

But unlike in Tzeltalan, leaving the possessum *in situ* in SMPM does not necessitate a non-specific interpretation. Stranded possessa can be interpreted as non-specific or specific (9b).

That stranded possessa can indeed be specific is further demonstrated in (10).

- *míi* is a strong definite marker which encodes both uniqueness and familiarity (Ostrove, 2024).

- (10) **Yóó nà** íyo [**míi** vè'ě ntsi'i ___] Ahuejutla?
 who 3PL exist.CONT FAM house blue A.
 ‘Whose is the blue house in Ahuejutla?’

	Tzeltalan	SMPM
Stranded Non-specific	✓	✓
Stranded Specific	*	✓

Moreover, **all nominals in SMPM are DPs:** There are no discernible structural or positional differences between non-specific and specific possessives.

- (11) *Context 1:* My grandfather died before I was born and I want to know what he looked like.

Context 2: A few years ago my mother showed me a nice photo of my grandfather when he was young. I would like to see it again.

Nantik=i **iin fóto táta latn=i**.
 look.CONTR=1SG one foto father grand=1SG
 ‘I am looking for a photo of my grandfather.’

Lastly, SMPM does not allow discontinuous possessa and non-wh possessors, unlike in Tzeltalan (cf. (8))—there are **no external possessors in SMPM**.⁷

- (12) Kàku (*Pedro) [**iin se'ě** (✓**Pedro**)] nuù ntova (*Pedro)
 born.COMPL P. one child P. town Oaxaca P.
 ‘Pedro had a child born in Oaxaca City.’

	Tzeltalan	SMPM
Stranded possessum must be non-specific	YES	NO
Non-specifics structurally smaller	YES	NO
External Possession	YES	NO

Our interpretation: Unlike in Tzeltalan, possessors in SMPM may be directly \bar{A} -extracted out of DPs without an initial A-movement step.

3.2 Movement possibilities in transitive clauses

3.2.1 Tzeltalan

Movement possibilities out of transitive clause arguments reveal **a restriction on subextraction in SMPM**—but not Tzeltalan—which informs our analysis (in §4).

In Tzeltalan, “subextraction” out of a transitive object is generally disallowed.⁸

⁷The only way to separate a non-wh possessor from the possessum is via focalization to a preverbal position (Hedding, 2022)—i.e., \bar{A} -movement.

- (i) PEDRO kàku [**iin se'ě** ___] nuù ntova
 P. born.COMPL one child town Oaxaca
 ‘PEDRO had a child born in Oaxaca City.’

⁸Though see Appendix A for discussion of a systematic exception to this generalization.

- This follows from Aissen and Polian’s (to appear) analysis—possessors within transitive objects generally don’t undergo A-movement, and thus cannot undergo \bar{A} -movement.

- (13) ***Much’u** avi-il [s-tseb ___] ta ch’ivit?
 who A2-see A3-girl P market
 Intended: ‘Whose daughter did you see in the market?’ (Tsotsil)

Previous work has also noticed that subextraction out of transitive subjects is generally disallowed in Mayan languages (Aissen, 1996; Coon, 2009; Little, 2020).

- (14) ***Much’u** i-y-elk’an chij [x-ch’amal ___]?
 who COMPL-A3-steal sheep A3-child.of.male
 Intended: ‘Whose child stole sheep?’ (Tsotsil)

However, Aissen and Polian conclude that **this restriction is reducible to the prohibition of A-movement out of a specific DP**.

- Transitive subjects “overwhelmingly reference specific individuals” in Mayan languages (see various citations in Aissen and Polian to appear, 45).
- But when understood as non-specific by the context, “subextraction” out of transitive subjects *is* in fact allowed:

- (15) **Macha’a** la s-wilunta-on [x-ch’akul ___]?
 who COMPL A3-fly.onto-B1 A3-flea
 ‘Whose fleas landed on me?’ (Tenejapa Tseltal)

3.2.2 SMPM

Unlike in Tseltalan, subextraction out of direct objects is readily available in SMPM (Hedding and Yuan, to appear).

- (16) **Yóó** xix=ún [ntsiàjyí và’a ñà’á ___]?
 who eat.COMPL=2SG broth good POSS
 ‘Whose mole did you eat?’

This is true, even if the object is specific, by virtue of the context.⁹

- (17) *Context:* I enter a house and see a woman cooking goat meat. I saw her goat still alive as I entered the house, so I know it is not her goat that she is cooking.

⁹These examples are thus parallel to the examples shown throughout §3.1.2, which show that specific unaccusative subjects (also internal arguments) may be subextracted from as well.

- Yóó** xà’ní ntó [tyú’u sàná ___]?
 who kill.COMPL 2PL goat POSS.AML
 ‘Whose goat did you all kill?’

Transitive subjects, on the other hand, do not permit subextraction in SMPM (Hedding, 2020; Hedding and Yuan, to appear).

- (18) ***Yóó** xàxi [tsinà sàná ___] kôñù?
 who eat.COMPL dog POSS.AML meat
 Intended: ‘Whose dog ate the meat?’

Important: These effects cannot be explained in terms of specificity.

Rather, subextraction out of transitive subjects is **categorically blocked**—even when the possessum is *non-specific*.

- (19) *Context:* Some people in town want to pick up some heavy machinery and they need a large truck. However, they are not sure if anyone in town has a truck that is big enough. They ask:
 ***Yóó** và’a kuísó [karro ña’á ___] *maquina* vejë
 who good carry.POT car POSS machine heavy
 Intended: ‘Who has a truck that can carry heavy machinery?’

Moreover, subextraction out of specific DPs in other positions is possible in SMPM (as seen above).

- Even if all subjects were interpreted specifically, we would have no expectation that subextraction out of a transitive subject should be disallowed.

Thus, the restriction in SMPM resembles a true **subject-object asymmetry**, rather than a restriction based on specificity, as in Tseltalan.

	Tseltalan	SMPM
Transitive objects opaque	YES	NO
Transitive subjects opaque if non-specific	NO	YES

3.3 Interim Summary

Despite the superficially similar patterns in Tseltalan and SMPM, **we find 7 key distinctions between them**, repeated below.

	Tseltalan	SMPM	
Stranded possessum must be non-specific	YES	NO	§3.1
Non-specifics structurally smaller	YES	NO	§3.1
External Possession	YES	NO	§3.1
Transitive objects opaque	YES	NO	§3.2
Transitive subjects opaque if non-specific	NO	YES	§3.2
Transitive objects opaque without ApplP	YES	NO	§A
IOs/PPs opaque if subject specific	YES	NO	§A

Recall the analysis of Aissen and Polian to appear (§3):

- Possessor DPs cannot directly \bar{A} -move out of any possessive constituent, but can A-move out of it (selective opacity)
- A-movement feeds subsequent \bar{A} -movement to spec-CP
- Only reduced PossPs (not DPs) allow possessor A-movement out of them

None of these components are motivated for SMPM: In SMPM, possessors directly \bar{A} -extract out of DPs, and do so without an intermediate A-movement step.

4 Obviating DP phases (in SMPM)

We now address two interrelated questions stemming from the conclusions above.

1. How is genuine possessor \bar{A} -extraction out of DPs achieved in SMPM?
2. Why is this derivation not available for Tseltalan?

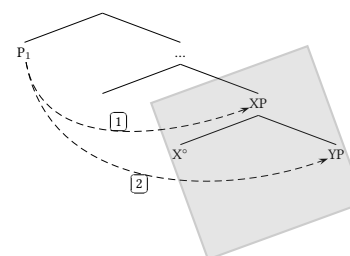
We propose that SMPM has a **mechanism for obviating DP phases**, which does not exist in Tseltalan.

Motivation: Even though SMPM permits direct \bar{A} -extraction out of DPs, this is only possible out of some DPs (internal arguments but not external arguments).

In Hedding and Yuan to appear, we connect this asymmetry to the **‘unlocking’ theory of phases** (Rackowski and Richards, 2005): extraction out of a phase first requires Agree with the phase itself by a higher phase head.¹⁰

¹⁰See also van Urk and Richards 2015, Halpert 2019, Ershova to appear, and others.

(20) ‘Unlocking’ a phase by Agree



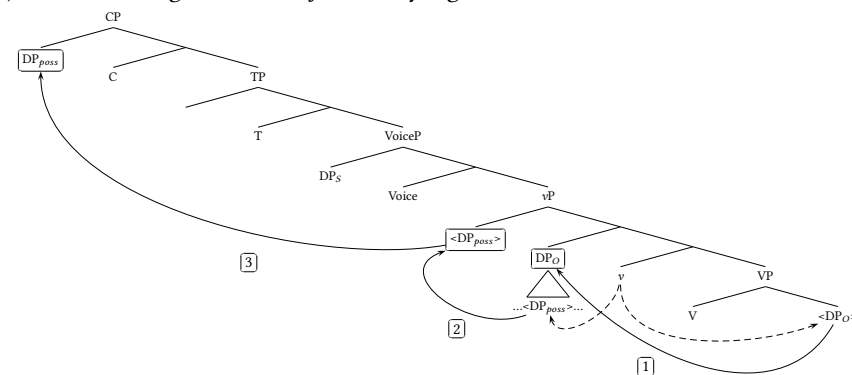
We claim that the aforementioned \bar{A} -extraction asymmetry results from two general properties of the language (cf. (4)):

- Phasal v c-commands internal arguments but not external arguments (which are in spec-VoiceP)
- Internal arguments undergo object shift to spec- v P in the course of deriving basic V(P)-S-O word order

Agree between phasal v and a lower DP not only drives object shift to spec- v P, but **also unlocks that DP for subsequent possessor \bar{A} -subextraction**.

A walk-through of unlocking a direct object possessive in (21):

(21) ‘Unlocking’ a direct object DP by Agree



- [1] Phase head v Agrees with DP phase, triggering object shift to spec- v P and unlocking it
- [2] v Agrees again, now raising possessor DP to another specifier of v (van Urk and Richards, 2015)
- [3] Possessor DP then moves from outer spec- v P to spec-CP

- Because external argument DPs (transitive subjects) in SMPM are not Agreed with by v , they remain opaque.¹¹

In contrast to SMPM, we have seen that all DPs in Tselalan remain opaque for subextraction.

- But recall from §2 that v does Agree in Tselalan—it is responsible for ABS case assignment (=set B agreement) (Coon et al., 2021, et al.), as in (22).

- (22) La j-pas-b-at ul
 COMPL A1-make-APPL-B2SG atole
 ‘I made atole for you. (Oxchuc Tselal; Polian 2013)

- In Tselalan, Agree via v does not unlock a DP phase. Why not?

Proposal: The (in)ability to ‘unlock’ a DP phase in SMPM vs. Tselalan is reducible to **variation in the probing conditions of v** .

In SMPM, v can undergo multiple Agree, so it can unlock the outer DP phase and \bar{A} -extract the inner DP possessor (23a).

In Tselalan, v probes only once (ABS case assignment): Agreeing with a DP only unlocks it, but nothing more (23b).

- (23) a. Multiple Agree (in SMPM) b. Single Agree (in Tselalan)
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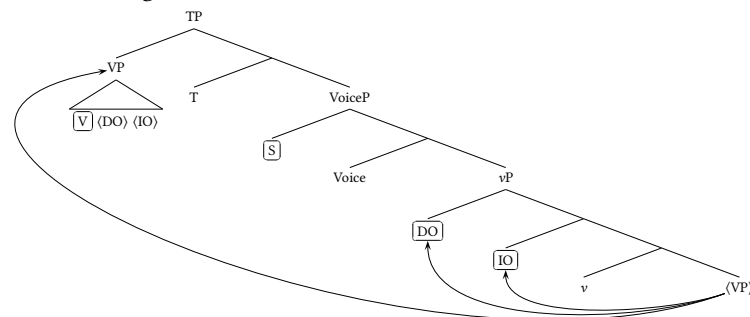
There is independent motivation for this distinction between these languages.

In SMPM, **all internal argument DPs undergo object shift**, i.e., v Agrees with multiple arguments to drive movement to spec- v P (cf. Lee, 2006; van Urk, 2024).

¹¹In Hedding and Yuan to appear, we also show that unergative subjects are opaque to subextraction, but we have not yet systematically tested this with both specific and non-specific possessa.

¹¹Under an interaction/satisfaction theory of Agree (Deal, 2015, et seq.), for instance, v is insatiable in SMPM (thus able to Agree with multiple goals), but in Tselalan it is satisfied after a single round of Agree. See Halpert 2019 for discussion of this model of Agree in an unlocking theory of phases. Note also that, if v can only Agree once in Tselalan (to assign ABS to an internal argument), then we require a different source for ERG case assignment; in line with (3), we assume this is Voice, not v .

- (24) Tàxin [S Maria] [vP [DO iin ntsikà] [IO ndà'á Juan]]
 give.COMP M. one banana hand Juan
 ‘Maria gave a banana to Juan.’



- Our simple extension here is that v also Agrees into arguments for subextraction purposes.

In contrast, the Mayan languages are considered **primary object languages** (Dryer, 1986), in that v only Agrees with one internal argument, the highest.

- (25) L-**i**-y-ak'-be (pro) tak'in li Xune
 COMPL-B1-A3-give-APPL money DET Xun
 ‘Xun gave **me** the money.’ (Tsotsil; Aissen 1983)

In sum: In addition to the differences highlighted in §3, another crucial point of divergence concerns the behavior of v .

Coupled with the ‘unlocking’ theory of phases, we have proposed that the **(in)satiability of phasal v** determines the opacity of a DP in v ’s c-command domain.

5 Summary and conclusion

Central finding of talk: Despite having surface similarities, possessor \bar{A} -extraction Tselalan and SMPM involve distinct syntactic derivations.

We have shown that these distinct profiles of possessor \bar{A} -extraction result from several interrelated syntactic differences between the two languages:

1. Nominal size.

- Tseltalan distinguishes between non-specific PossPs and specific DPs; in SMPM, all nominals are DPs.
- Being non-phasal, PossPs permit possessor (A-)raising out of them. Because SMPM lacks PossPs, it also lacks external possession.

2. The derivation of V-initiality (cf. (3)-(4)).

- In Tseltalan (VOS), V undergoes head movement to T; in SMPM (VSO), VP undergoes remnant movement to spec-TP after DPs undergo object shift.
- The heads implicated in V(P)-fronting affect the available A-positions for DPs in each language (see below).

3. The loci of A-positions for DPs.

- In Tseltalan, spec-TP is an A-position but spec-vP is not.
- In SMPM, the only A-position for DPs is spec-vP.

4. The probing conditions of phasal *v*.

- In Tseltalan, *v* probes once to assign ABS to the internal argument. In principle, this “unlocks” that DP, but without any further probing, no movement out of the DP is possible.
- In SMPM, *v* probes multiple times, “unlocking” all internal arguments and facilitating \bar{A} -extraction out of them.

Beyond Tseltalan and SMPM? Recall that the Mesoamerican linguistic area spans multiple language families and isolates.

We have identified, and have sought to account for, heretofore unnoticed differences between at least two such languages.

Our analysis makes testable predictions about the \bar{A} -subextraction patterns of other languages and how they might map to other grammatical properties.

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A Movement out of indirect objects/PPs

A.1 Tseltalan

As discussed above, Aissen and Polian to appear claim that movement to an A-position is required prior to \bar{A} -movement to spec-CP.

For possessor raising (and thus \bar{A} -movement) out of a transitive object to be possible, *another* A-position must be added; this can be achieved by adding an applicative.¹²

- (26) Mach'a_i la a-man-*(bey) tal [_{POSSP} s-lok'ombail t_i] t_i?
 who COMPL A2-buy-APPL DIR A3-representation
 ‘Who did you buy a picture of?’ (Tenango Tseltal)

Moreover, **extraction out of a PP is only possible if the external argument is non-specific (i.e., smaller than DP)**. If specific, then the subject acts as an intervener for the A-probe on T.

- (27) a. Mach'a x-'a'tej alaletik [ta s-nah ___]?
 who ICP-work children P A3-house
 ‘Who has a house that children (habitually) work in?’
 b. *Mach'a ya x-'a'tej-at [ta s-nah ___]?
 who ICP ICP-work-B2 P A3-house
 Intended: ‘Whose house do you work in?’ (Petalcingo Tseltal)

A.2 SMPM

In §3.2.2, we showed that transitive objects are generally transparent for subextraction in SMPM, without any special applicative morphology.

In fact, there is **no dedicated A-position for applied arguments** in SMPM. Indirect arguments are not introduced with applicative morphology, but are enclosed in complex DPs containing body-part relational nouns.¹³

¹²If there is an overt applied argument (blocking spec-AppIP as an A-position), then “subextraction” once again is impossible (Aissen and Polian, to appear, 18). Little (2020) makes the same observation for another Mayan language, Ch'ol.

¹³We leave open the question of whether these XPs are synchronically DPs or PPs.

- (28) Ni-tsiivi karro ñà'ǎ Maria (nùjǔ ñá)
 COMPL-break.down car POSS M. face 3SG.F
 'Maria's car broke down (on her).'

Moreover, \bar{A} -extraction out of an indirect object is likewise possible, even when the subject is specific.

- (29) Yóó tàx=ún tùtsyà [nda'a [nána ___]]
 who give.COMPL=2SG atole hand mother
 'Whose mother did you give atole to?'

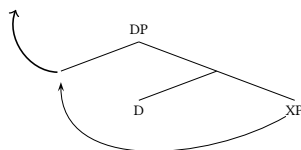
As discussed in Hedding and Yuan (to appear), this follows directly from our “unlocking” account. All internal arguments undergo object shift (and are unlocked), so subextraction out of indirect objects is possible.

	Tseltalan	SMPM
Transitive objects opaque without ApplP	YES	NO
IOs/PPs opaque if subject specific	YES	NO

B Revisiting Pied-piping With Inversion

A widely held assumption in phase theory is that movement to the phase edge is what feeds subsequent \bar{A} -extraction out of that phase. Extraction out of a complex DP is likewise taken to involve a prior step of movement to spec-DP.¹⁴

- (30) Putative Extraction out of DP



PPWI in Tseltalan and SMPM (and elsewhere) has been cited as evidence for successive-cyclic movement out of DP phases.¹⁵

But our findings point to a more nuanced conclusion: **Movement to spec-DP is, by itself, insufficient for further movement out of that DP.**

- In both Tseltalan and SMPM, PPWI is obligatory in contexts in which possessor \bar{A} -extraction out of the DP is not.

¹⁴On movement out of DPs, see Szabolcsi 1984, Horrocks and Stavrou 1987, Gavrusseva 2000, Aravind 2021, and others.

¹⁵See Smith Stark 1988, Aissen 1996, Broadwell 2001, and Coon 2009 for further details about PPWI in various Mesoamerican languages.

In Tseltalan, the only way to \bar{A} -extract a DP-internal wh-possessor is through PPWI of the entire $\bar{D}P$, since DPs are categorically opaque.

- Thus, wh-possessors born within DPs must move to spec-DP, but they may never move further.

- (31) a. [**Mach'a** x-nich'an] bejk'aj ___?
 who A3-child.of.male COMPL.be.born
 'Whose child (spec.) was born?'
- b. #**Mach'a** bejk'aj [x-nich'an ___]?
 who COMPL.be.born A3-child.of.male
 Intended: 'Whose child (spec.) was born?'

In SMPM, wh-possessors may be \bar{A} -subextracted out of internal argument DPs but not external argument DPs (§3.2.2). But PPWI is possible in the latter configuration (Hedding and Yuan, to appear).

- Again, wh-possessors of transitive subjects in SMPM must move to Spec-DP, but they may not move further.

- (32) [Yóó karro ña'ǎ] vǎ'a kuísó ___ *maquina* vejě
 who car POSS good carry.POT machine heavy
 'Whose is the truck that can carry heavy machinery?' (Infelicitous in the context for (19))

Conclusion: Possessor \bar{A} -subextraction is only possible if both movement to Spec-DP and DP-phase obviation (e.g., unlocking) take place.¹⁶

¹⁶This raises another question: Why does movement to spec-DP take place at all (why not just unlocking)? We leave this as an open question, but the idea that both steps are needed is also furthered by van Urk and Richards (2015), based on long-distance \bar{A} -extraction patterns in Nilotic language Dinka (contra Rackowski and Richards 2005). We also note that, in the pied-piping literature, both purely syntactic and PF-driven accounts of PPWI (i.e., secondary wh-movement) seem largely compatible with our data (e.g. Heck, 2008; Cable, 2010; Kotek and Erlewine, 2016).