Mayan animacy hierarchy effects and the dynamics of Agree

Amy Rose Deal
ardeal@berkeley.edu

Justin Royer
justinroyer@berkeley.edu

SMircle — Stanford University — April 5 2024

1 Introduction

- In some languages, combinations of agents/objects are regulated by animacy hierarchy restrictions, given a scale like (1).

  (1) HUMAN > ANIMATE > INANIMATE

- This is true of many Mayan languages (Aissen 1997, 1999; 2007, 2017; Curiel 2007; Pascual 2007; Vázquez Álvarez 2011; Polian 2013; Pérez Vail 2014), like Chuj:

  (2) a. ✓ Ix-y-il nok' chan winh winak.
  PFV-A3-see CLF snake CLF man
  'The man saw the snake.' HUM > ANIM

  b. * Ix-y-il winh winak nok' chan.
  PFV-A3-see CLF man CLF snake
  Intended: 'The snake saw the man.' ANIM > HUM

- Moreover, interesting claims about microvariation:
  1. **Articulation of the scale:**
     - Poqom (Benito Pérez 2016): (ANIM>INAN)
     - Chuj: three distinctions (HUM > ANIM > INAN, i.e. (1))
     - Cajolá Mam (Pérez Vail 2014): seven distinctions
  2. **Where the hierarchy effect holds**
     - Ch'ol, Tsotsil: hierarchy effects in both actives and passives
     - Chuj: hierarchy effects in actives but not passives

- Aissen (1997, 1999) connected these effects to **obviation** in Algonquian, with an analysis in terms of an obviation tier.

Today: Account of Mayan animacy restrictions and microvariation

- Animacy restrictions reflect Agree, echoing much recent work, including on Algonquian (e.g., Oxford 2019, to appear; Hammerly 2020).
- Interaction/satisfaction model of Agree (Deal, 2015, 2023)
- *Dynamic interaction*: a probe's Agreement with a first goal (G1) can change the probe's specification, such that it may only further agree with a G2 that has features in common with G1

Plan

§2 Novel data on animacy restrictions in Chuj, and variation within Mayan
§3 Account of restrictions in active sentences
§4 Microvariation in articulation of scales
§5 Microvariation wrt hierarchy effects in passive sentences
§6 A broader look at Set A (ergative/possessive) morphemes: extension to a novel description of possessum-possessor hierarchy effects in Chuj

2 Mayan animacy restrictions

2.1 A concrete example: San Mateo Ixtatán Chuj

- Mayan; Q'anjob'alan sub-branch
- Primarily spoken in Guatemala and Mexico
- ≈70,000 to 80,000 speakers
- VOS, head marking, ergative-absolutive
- Set A = ergative/possessive | Set B = absolutive
- Data come from Justin's fieldwork (2017-2023)

- Combinations of **third person arguments** in active sentences are subject to the following restriction:

  (3) *Chuj animacy restriction in actives*:
  Objects cannot outrank agents on the hierarchy
  HUMAN > ANIMATE > INANIMATE

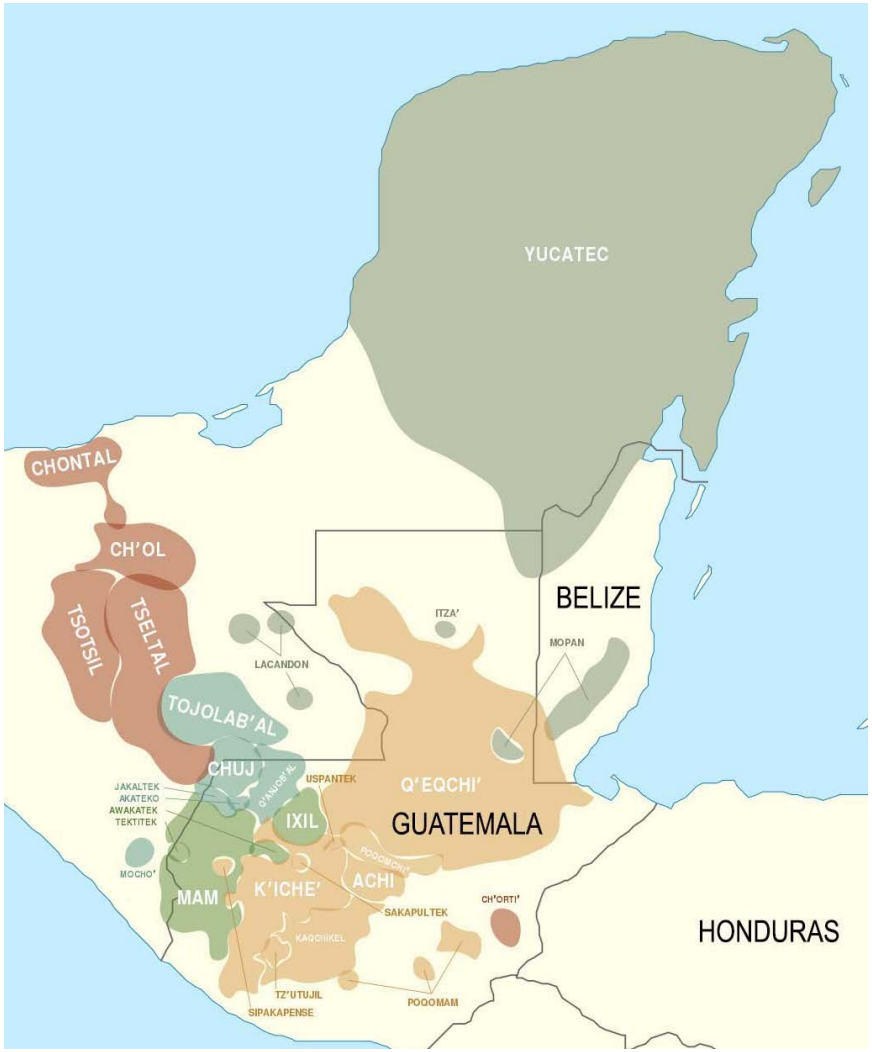


Figure 1: Current-day Mayan-speaking area (Law 2014, p. 25)

- **Active sentences:** ✓HUM>ANIM, *ANIM>HUM

(4) a. ✓ Ix-y-il nok' chan winh winak.
PFV-A3-see CLF snake CLF man
'The man saw the snake.' HUM A, ANIM Obj

b. * Ix-y-il winh winak nok' chan.
PFV-A3-see CLF man CLF snake
Int. 'The snake saw the man.' ANIM A, HUM Obj

– Note: *nok' chan* 'the snake' *can* be the agent of 'see'; it just can't be the agent of a "3rd person human-seeing" active, e.g. (4b).

(5) a. ✓ Ix-y-il nok' much nok' chan.
PFV-A3-see CLF bird CLF snake
'The snake saw the bird.' ANIM A, ANIM OBJ

b. ✓ Ix-{in/ach/onh}-y-il nok' chan.
PFV-B1S/B2S/B2P-A3-see CLF snake
'The snake saw me/you/us.' ANIM A, LOCAL OBJ

Active sentences: ✓HUM>INAN, *INAN>HUM

(6) a. ✓ Ix-y-il k'en kamera waj Xun.
PFV-A3-see CLF camera CLF Xun
'Xun saw the camera.' HUM A, INAN OBJ

b. * Ix-y-il waj Xun k'en kamera.
PFV-A3-see CLF Xun CLF camera
Int. 'The camera saw/filmed Xun.' INAN A, HUM OBJ

– Again, note that INAN>INAN is fine:

(7) ✓ Ix-y-il te' pat k'en kamera.
PFV-A3-see CLF house CLF camera
'The camera filmed the house.' INAN A, INAN OBJ

- **Active sentences:** ✓ANIM>INAN, *INAN>ANIM

(8) a. ✓ Ix-y-il k'en kamera nok' chab'in.
PFV-A3-see CLF camera CLF monkey
'The monkey saw the camera.' ANIM A, INAN OBJ

b. * Ix-y-il nok' chab'in k'en kamera.
PFV-A3-see CLF monkey CLF camera
Int. 'The camera saw/filmed the monkey.' INAN A, ANIM OBJ

. . . . . .

- To express the desired meaning for the ungrammatical sentences above, a passive is used (a common strategy to circumvent hierarchy effects; Zavala 2007).

(9) Ix-il-j-i winh winak [$_{OBL}$ yuj nok' chan].
PFV-see-PASS-IV CLF man by CLF snake
'The snake saw the man.' cf. (4b)

> Important: no animacy restrictions with passives in Chuj (the oblique agent *can* outrank the passive subject):

(10) Ix-il-j-i nok' chan [$_{OBL}$ yuj winh winak].
PFV-see-PASS-IV CLF snake by CLF man
'The snake was seen by the man.'

– This holds for all kinds of HUM/ANIM/INAN DPs.

. . . . . .

In sum, (im)possible combinations of 3P in Chuj actives:

AG	OBJ		AG	OBJ		AG	OBJ	
HUM	HUM	✓	ANIM	HUM	✗	INAN	HUM	✗
HUM	ANIM	✓	ANIM	ANIM	✓	INAN	ANIM	✗
HUM	INAN	✓	ANIM	INAN	✓	INAN	INAN	✓

2.2 Mayan microvariation

- Thanks to vast work on the topic (Aissen 1997, 1999; Zavala 1997, 2007 2017; Curiel 2007; Pascual 2007; Polian 2013; Pérez Vail 2014), we know there's **variation** across Mayan languages w.r.t. animacy hierarchy effects.

1. **Variation wrt the articulation of the scale**

	scale n.s. = not specified	reference
Chuj	HUM>ANIM>INAN	(data presented here)
Akatek	HUM>ANIM>INAN, other n.s.	Zavala 1992, 2007
Q'anjob'al	HUM>ANIM>INAN; other n.s.	Pascual 2007
Tojol-ab'al	ANIM>INAN; other n.s.	Curiel 2007
Mocho'	ANIM>INAN	Pérez González 2021
Cajolá Mam	7 distinctions, including PART	Pérez Vail 2014
Ch'ol	HUM>ANIM>INAN	Zavala 2007
Tseltal	HUM>BIG.ANIM>ANIM>INAN	Polian 2004, 2013
Tsotsil	HUM>NON.HUM	Aissen 1997, 1999
Poqom	ANIM>INAN	Benito Pérez 2016
Yucatec Maya	HUM>ANIM>INAN; other n.s.	Bohnemeyer 2009

2. **Variation in whether hierarchy effects also hold in passives**

- E.g., Zavala (2007) and Vázquez Álvarez (2011) argue for Ch'ol animacy restrictions (ANIM>INAN) in both **actives** and **passives**.

> Ch'ol is notably different from Chuj (10) in also showing restrictions in **passives**—the oblique agent *cannot* outrank the passive subject.

(11) Ch'ol passive (Zavala 2007, (80)/(82))

a. * Tyi mejl-i waj [$_{OBL}$ tyi k-ña'jel]
PFV make+PASS-IV tortilla PREP A1-aunt
Int. 'The tortilla was prepared by my aunt.'

b. ✓ Tyi jajts'-i aj-Pedro [$_{OBL}$ tyi chajk].
PFV hit+PASS-IV CLF-Pedro PREP lightning
'Pedro was hit by the lightning.'

Next: Follow much recent work that models hierarchy effects via **Agree**

Core idea: The effects arise when *a single probe Agrees with two goals.*

- **Dynamic interaction**: A dynamic feature [α↑] on a first goal alters the probe P such that P may only further Agree with goals bearing [α].

To account for...

1. Variation in the articulation scales (§4): there is variation regarding what features are dynamic.
2. Variation in whether the hierarchy also holds in passives (§5): we'll consider a pragmatic and syntactic account.

3 Deriving hierarchy effects in Mayan actives

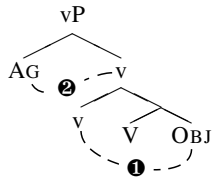
- While all relevant Mayan languages show animacy effects in actives, Mayan actives are syntactically diverse (Coon et al. 2014, 2021; Aissen 2017; Royer 2022):

(12) Ch'ol is a **low-abs** language
TAM – Set A (ERG) – ROOT – (VOICE) – SS – Set B (ABS)

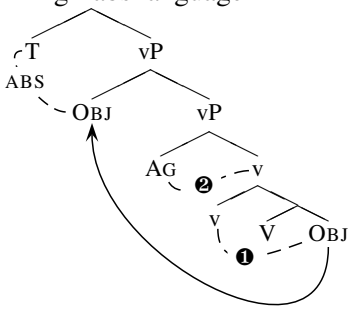
(13) Chuj is a **high-abs** language
TAM – Set B (ABS) – Set A (ERG) – ROOT – (VOICE) – SS

- Following Coon et al. (2014), we assume ABS varies across Mayan in whether it reflects a probe on *v* (low-abs) or T (high-abs).
- We also follow this and other work (Coon 2017a, 2019) in assuming that ERG reflects Agree with *v* across the family.

(14) Low-abs language



(15) High-abs language



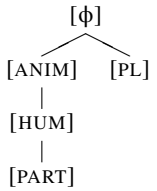
- Low-abs: ❶ produces Set B (ABS), while ❷ produces Set A (ERG)
- High-abs: ❶ produces Obj movement (Coon et al. 2021), and ❷ again produces Set A (ERG); Set B (ABS) results from Agree with T.
- Given Cyclic Agree, we assume v always Agrees with the Obj first.

Our proposal: this "one-head/two goals" configuration—present in all Mayan languages—is the source of animacy restriction effects.

- Three theoretical tools:

1. **Feature geometry with animacy features** (Harley and Ritter 2002; Toosarvandani 2023)

(16)

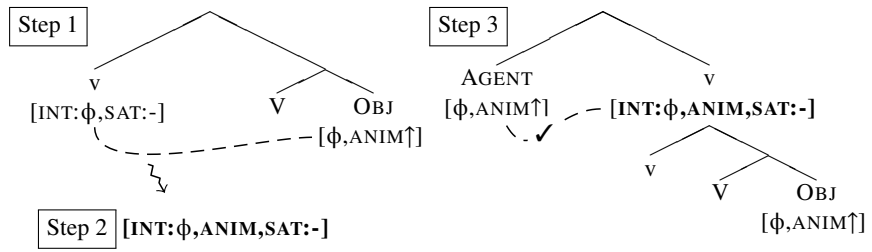


3.INAN.SG = [ϕ]
3.ANIM.SG = [ϕ, ANIM]
3.HUM.SG = [ϕ, ANIM, HUM]
...

2. **Interaction and satisfication model of Agree** (Deal 2015, 2023):
   - Probes have two specifications:
     (a) Interaction (INT); features copied by the probe
     (b) Satisfaction (SAT); features that make the probe stop
3. **Dynamic Interaction [ϕ↑]** (Deal 2023)
   - A goal's features can change [INT:] on a probe that agrees with it:
     (a) Probe [INT:ϕ, SAT:-] Agrees with DP bearing [HUM↑]
     (b) This changes the probe specification to [INT:HUM, SAT:-]

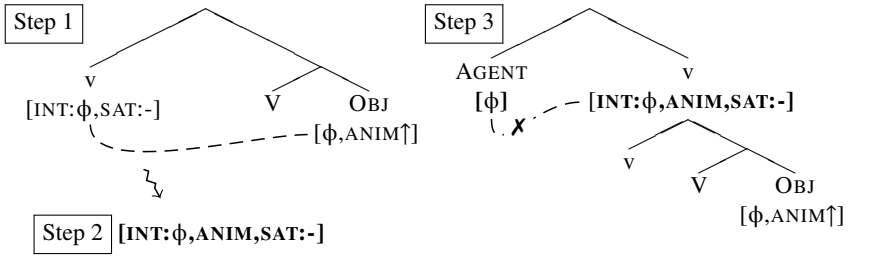
- Example:

(17) ✓ Ix-y-il nok' much nok' chan.
PFV-A3-see CLF bird CLF snake
'The snake saw the bird.' ANIM A, ANIM P



- Now, if the Agent is inanimate and v first interacts with an ANIM Obj:

(18) * Ix-y-il nok' chab'in k'en kamera.
PFV-A3-see CLF monkey CLF camera
Int. 'The camera saw/filmed the monkey.' INAN A, ANIM P



– Dynamic Interaction with [ANIM↑] bleeds Agree with the Agent. If the Agent can't Agree with *v*, **Set A (ERG) can't be derived :(**.

- This system can explain the **relativity** of animacy restrictions.
- If the object is...

(19) **Human** [HUM↑,ANIM↑,ϕ]; the Agent must also be human.

A	Obj		A	Obj		A	Obj	
HUM	HUM	✓	ANIM	HUM	✗	INAN	HUM	✗

(20) **Animal** [ANIM↑,ϕ]; the Agent must be animate (human or animal).

A	Obj		A	Obj		A	Obj	
HUM	ANIM	✓	ANIM	ANIM	✓	INAN	ANIM	✗

(21) **Inanimate** [ϕ/or trivially ϕ↑]: no restrictions.

A	Obj		A	Obj		A	Obj	
HUM	INAN	✓	ANIM	INAN	✓	INAN	INAN	✓

4 Microvariation in the articulation of animacy scales

- Recall: Mayan microvariation in the articulation of animacy scales.
  - Poqom (Benito Pérez 2016) (ANIM>INAN)
  - Chuj: three distinctions (HUM > ANIM > INAN)
  - Cajolá Mam (Pérez Vail 2014): seven distinctions

(22) Seven-way scale in Cajolá Mam (Pérez Vail 2014, ch. 4 & 5)
↓
Local persons
Other humans
Infants
Other animals
Insects
Energetic inanimates
Nonenergetic inanimates

- Local persons are part of the system:

(23) Cajolá Mam person hierarchy (Pérez Vail 2014: 139)

a. ✓ Ma kub' n-tzyu-'n=e' Leexh.
PROX DIR A1S-grab-DS=1S Andrés
'I grabbed Andrés.' (1>3)

b. ✓ Ma kub' t-tzyu-'n=a Leexh.
PROX DIR A2S-grab-DS=2S Andrés
'You grabbed Andrés.' (2>3)

c. * Ma chin kub' t-tzyu-'n=e' Leexh
PROX B1S DIR A3S-grab-DS=1S Andrés
Int. 'Andrés grabbed me.' (*3>1)

d. * Ma kub' t-tzyu-'n=a Leexh
PROX B1S DIR A3S-grab-DS=2S Andrés
Int. 'Andrés grabbed you.' (*3>2)

- The effect is again relative: local person objects are fine as long as the subject is also a local person.

(24) Cajolá Mam: local/local cases (Pérez Vail 2014: 139)

a. ✓ Ma kub' n-tzyu-'n=a.
PROX DIR A1S-grab-DS=2S
'I grabbed you.' (1>2)

b. ✓ Ma chin kub' t-tzyu-'n=a.
PROX B1S DIR A2S-grab-DS=2S
'You grabbed me.' (2>1)

- Again, this is not the case in Chuj (example repeated from (5b)):

(25) ✓ Ix-{in/ach/onh}-y-il nok' chan.
PFV-B1S/B2S/B2P-A3-see CLF snake
'The snake saw me/you/us.' (3>local)

- Cajolá Mam also has a more extended scale for third persons:

(26) Illicit co-arguments in Cajolá Mam (Pérez Vail 2014: 187-190)

a. * Ma t-il ne'x xjaal.
PROX A3S-see baby person
Int. 'The baby saw the person.' (*infant > adult)

b. * Ma b'aj-e'l k-ch'yo-'n xeeni'l waakx.
PROX DIR-DIR A3P-sting-DS mosquito cow
Int. 'The mosquitos bit the cow.' (*insect > other animal)

c. * Ma t-maq tze kyq'iq.
PROX A3S-block tree wind
Int. 'The tree blocked the wind.' (*non-energ. > energ. INAN)

- These restrictions again don't apply in Chuj:

(27) Chuj: licit third person combinations

a. Ix-y-il ix ix ix nene.
PFV-A3-see CLF woman CLF baby
'The baby saw the woman.' (compare (26a))

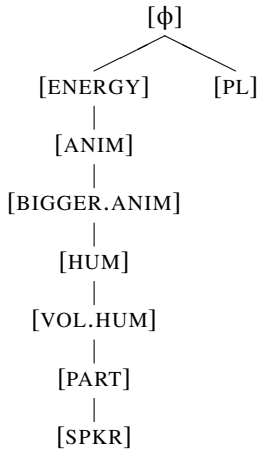
b. Ix-s-chi' nok' wakax nok' xe'en.
PFV-A3-eat CLF cow CLF mosquito
'The mosquito bit the cow.' (compare (26b))

c. Ix-s-mak ik' te' te'.
PFV-A3-block wind CLF tree
'The tree blocked the wind.' (compare (26c))

- **Therefore:** there's clearly variation in the articulation of the relevant person/animacy scale across Mayan languages.

- To account for variation in the **articulations of scales**, we must first refine our feature geometry to include those relevant for Cajolá Mam, for instance:

(28) Expanding the feature geometry



▶ This kind of geometry creates coherent sets of features semantically.

- To account for Cajolá Mam effects, all features but [SPKR] (see (24)) and maybe also [ϕ], *must be dynamic*:

(29) ϕ-sets for a subset of 3rd person DPs in Cajolá Mam

a. energetic inanimates = [ϕ, ENERGY↑]
b. smaller animals (e.g., insects) = [ϕ, ENERGY↑, ANIM↑]
c. bigger animals (e.g., cats, cows) = [ϕ, ENERGY↑, ANIM↑, BIG.ANIM↑]
d. infants = [ϕ, ENERGY↑, ANIM↑, BIG.ANIM↑, HUM↑]
e. other humans = [ϕ, ENERGY↑, ANIM↑, BIG.ANIM↑, HUM↑, VOL.HUM↑]
f. second person = [ϕ, ENERGY↑, ANIM↑, BIG.ANIM↑, HUM↑, VOL.HUM↑, PART↑]
g. first persons = [ϕ, ENGY↑, ANIM↑, B.ANIM↑, HUM↑, V.HUM↑, PART↑, **SPKR**]

- **Question:** Why are some of these features but not others relevant for animacy hierarchy effects in other languages, such as in Chuj?

- Two possible answers (or a combination of the two):

1. **Feature activity**: a feature like [ENERGY] would are "inactive" in Chuj:

(30) Featural representation of Chuj 3rd person human DPs
[ϕ, ANIM↑, HUM↑]

▶ As Harley and Ritter (2002, 486) write, "in any given language a subset of the possible features will be active—most languages will only use a portion of the features available."

2. **Feature dynamicity**: features like [ENERGY] are active, but not dynamic:

(31) Featural representation of Chuj 3rd person human DPs
[ϕ, ENERGY, ANIM↑, BIGGER ANIM, …, HUM↑]

- While we leave deciding between option 1. and 2. to future work, the behaviour of **local persons** shows that option 2. must be a viable one.

- Recall that local persons do not participate in hierarchy effects in Chuj:

(32) Chuj local persons do not participate in hierarchy effects

a. ✓ Ix-{**in/ach/onh/ex**}-y-il nok' chan.
PFV-B1S/B2S/B1P/B2P-A3-see CLF snake
'The snake saw me/you/us/y'all.' ANIM > LOCAL

b. * Ix-y-il winh winak nok' chan.
PFV-A3-see CLF man CLF snake
'The snake saw the man.' ANIM > HUM

- Adopting option 1. would lead us to the assumption that local persons lack ANIM and HUM features.

(33) Theory 1: local persons lack [ANIM] and [HUM] features
   a. 1st person: [ϕ,PART,SPKR]
   b. 2nd person: [ϕ,PART]
   c. 3rd person: [ϕ], [ϕ,ANIM↑], or [ϕ,HUM↑,ANIM↑]

► This treats local persons as inanimates, and so predicts that they be banned as agents of sentences with animate objects, which is not borne out:

(34) Chuj
   a. Ix-{**w/h/k/ey**}-il ix ix.
   PFV-A1S/A2S/A1P/A2P-see CLF woman
   'I/you/we/y'all saw the woman.' LOCAL>HUM
   b. Ix-{**w/h/k/ey**}-il nok' tz'i'.
   PFV-A1S/A2S/A1P/A2P-see CLF dog
   'I/you/we/y'all saw the dog.' LOCAL>ANIM

• Adopting option 2. on the other hand, can account for data like (34):

(35) Theory 2: [ANIM] and [HUM] are not dynamic on local persons
   a. 1st person: [ϕ,PART,SPKR,**HUM,ANIM**]
   b. 2nd person: [ϕ,PART,**HUM,ANIM**]
   c. 3rd person: [ϕ], [ϕ,ANIM↑], or [ϕ,HUM↑,ANIM↑]

In sum

• It is possible to account for microvariation in the articulation of animacy scales in Mayan by:

1. Refining our feature geometry
2. By tweaking which features are active and/or dynamic.

5 Deriving variation in passive sentences

• Chuj and Ch'ol animacy restrictions apparently diverge in passives:

(36) ✓ Ix-b'o'-j-i ixim wa'il [$_{OBL}$ yuj ix w-icham].
   PFV-make-PASS-IV CLF tortilla by CLF A1S-aunt
   'The tortillas were made by my aunt.' (**Chuj**: no restrictions)

(37) * Tyi mejl-i waj [$_{OBL}$ tyi k-ña'jel]
   PFV hacer+PASS-IV tortilla PREP A1-aunt
   Int. 'The tortilla was made by my aunt.' (**Ch'ol**: animacy restrictions)

• We provide two different explanations for these data.

5.1 A pragmatic explanation?

• Hierarchy effects in passives are reported for Ch'ol (Zavala, 2007; Vázquez Álvarez, 2011), Tsotsil (Aissen, 1997, 1999) and Tojol-ab'al (Curiel, 2007), but not to arise in Cajolá Mam (Pérez Vail 2014) and Poqom (Benito Pérez 2016).

• **However**: hierarchy effects in passives like (38b), contrary to hierarchy effects with actives, are most often reported as degraded (?? vs. *); see Aissen 1997 on Tsotsil and Vázquez Álvarez 2011 on Ch'ol.

(38) Tsotsil (Aissen, 1997, 728)
   a. I-s-man nukul li Xun-e.
   CP-A3-buy skin the Juan-ENC
   Juan bought the skin.
   b. ?? I-man-at yu'un Xun li nukul-e.
   CP-buy-PASS by Juan the skin-ENC
   The skin was bought by Juan.

• It is possible that passives just require special discourse properties, in order to be used in cases where they do not circumvent a hierarchy effect.

• But when actives can't be used, passives become the only alternative.

5.2 A syntactic approach?

- If the passive restriction really results from hierarchy effects in the syntax, we have another option:

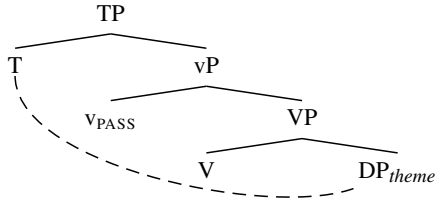
► Extend the"one-head/two goals" analysis of hierarchy effects:

1. T agrees only with passive Subj (Chuj; no hierarchy effects)
2. T agrees with both Obl Agent and passive Subj (Ch'ol, hierarchy effects)

Assumptions about Mayan passives

- We follow others (e.g., Coon et al. 2014; Coon 2017b, 2019) in assuming that Set B (ABS) in intransitives (passives included) comes from Agree with T.

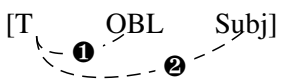
(39) Set B (ABS) assignment in passive



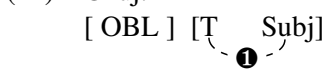
- While T Agrees with the underlying Obj in both Ch'ol and Chuj, two ways T could vary in also Agreeing—or not—with the oblique Agent:

1. Distinct syntactic position and probe accessibility, e.g.:

(40) Ch'ol:



(41) Chuj:



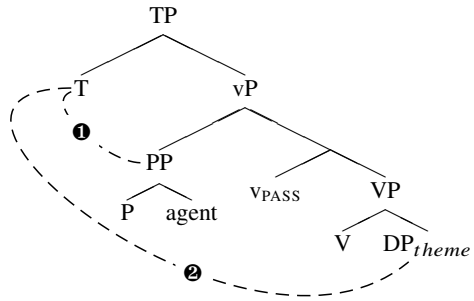
2. The internal composition of the oblique Agent is structurally distinct in both languages, e.g., it is a DP in Ch'ol but a PP in Chuj.

- We explore option 1 here, but there's empirical evidence for both options (see Coon et al. 2021, 291-2)

Ch'ol passives (hierarchy effects)

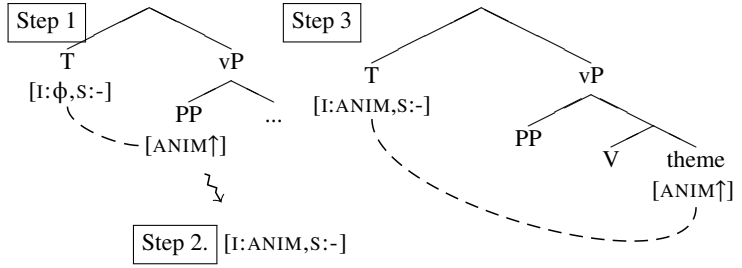
- By-phrase is generated in agent position, Spec,vP (Collins 2005, i.a.)

(42)



- T Agrees first with PP, then with the theme (if possible) (1 probe, 2 goals).[1]
- As above, [ANIM↑] interacts dynamically

(43) Tyi il-än-ty-i li wiñik tyi x-'ixik.
PFV see-DTV-PASS-IV the man PREP CLF-woman
'A woman was seen by the man.'



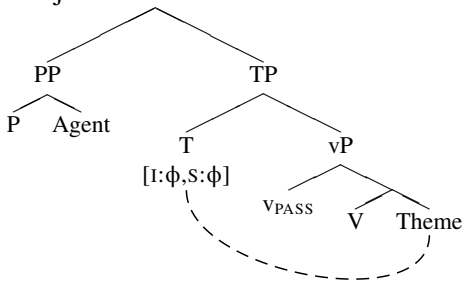
- If the OBL has [ANIM↑] and not the theme, the theme cannot Agree with T; Set B is not derived (presumable Case assignment problem for the theme)

[1] ϕ-features are accessible on the by-phrase: either it's a PP that has agreed with an internal DP (Rezac, 2008), as we show here, or it's itself a DP (as per Coon et al. 2021 for Ch'ol).

Chuj passives (no hierarchy effects)

- If oblique phrases in Chuj are first Merged outside the c-command domain of T, T will only find the Theme; no animacy restrictions.

(44) Chuj (see Royer 2023)



- Independent evidence that PPs are lower in Ch'ol than Chuj in Royer 2023:
  1. Subjects can bind inside PPs in Ch'ol, but not in Chuj.
  2. PPs in Chuj vs Ch'ol have a distinct distribution: must be peripheral in Chuj but not Ch'ol, where V-O-PP-S is possible ((68)-(69) in Royer 2023).

. . . . . .

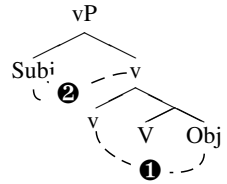
In sum:

- Two ways to account for apparent variation in Mayan passives:
  1. The hierarchy effects, which are independently reported as "weaker" than in actives, are only apparent.
     - ▶ They arise because there must be reasons to use a passive, either due to discourse properties of passives or because an active can't be used.
  2. Keeping to a one probe/two goals analysis of hierarchy effects.
     - ▶ Several ways to work this out formally, but one way comes from varying the syntactic position of the oblique agent.
- More work is needed to deliberate among these accounts.

6 Mayan Set A and possessor-possessum hierarchy effects

- To capture the Mayan animacy hierarchy effect via Agree, we've followed the standard analysis for hierarchy effects via Agree: one probe/two goals:

(45)



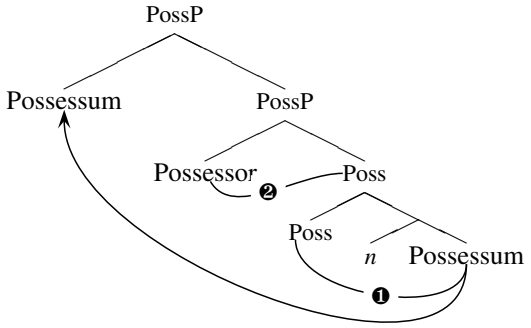
Recall: ❷ generates Set A (ERG) in all relevant Mayan languages

- Across Mayan, Set A cross-references not only ergatives, but also possessors.

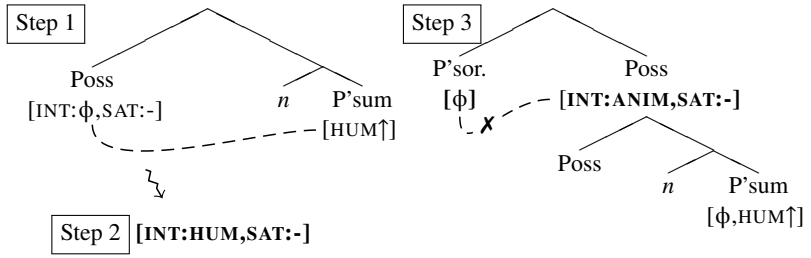
(46) [ix [S]-nun [POSS waj Xun]]
CLF A3-mother CLF Xun
'Xun's mother'

- **Proposal** (cf. Clem 2019, Clem and Deal 2023): Mayan Set A (ERG/POSS) arises when a single probe on v/Poss Agrees with a *second* goal.
- **Consequence**: Set A in the nominal domain also results from Agree with two goals; the possessor gets Set A because it's second to agree with Poss^0
  - – Word order: the possessum comes first, across Mayan (Coon 2013)
  - – Parallel to high-abs in vP – the probe's first goal is raised

(47)



- **Prediction**: if this is the right analysis (and dynamic features are borne by DPs), we expect animacy restrictions in possessive constructions as well:



- This prediction is borne out in Chuj.

(48) a. ✓ te' s-pat heb' unin
CLF A3-house PL child
'the children's house' (HUM p'sor, INAN p'sum)

b. * heb' y-unin te' pat.
PL A3-child CLF house
intended: 'the house's children' (INAN p'sor, HUM p'sum)

(49) a. ✓ te' s-pat nok' tz'i'
CLF A3-house PL child
'the dog's house' (ANIM p'sor, INAN p'sum)

b. * nok' s-tz'i' te' pat.
CLF A3-dog CLF house
intended: 'the house's dog' (INAN p'sor, ANIM p'sum)

(50) a. ✓ nok' s-tz'i' winh winak
CLF dog CLF man
'the man's dog' (HUM p'sor, ANIM p'sum)

b. * heb' s-winak nok' choj.
PL A3-man CLF puma
intended:[2] 'the puma's men/people' (ANIM p'sor, HUM p'sum)

[2]Intended given cultural concept of *moj spixan* (non-human entities that possess humans).

- Again, note lack of any restriction when DPs rank equally:

(51) a. ✓ s-kuxinu te' pat
A3-kitchen CLF house
'the house's kitchen' (INAN p'sor, INAN p'sum)

b. ✓ nok' y-une' nok' kaxlan
CLF A3-child CLF hen
'the hen's chicks' (ANIM p'sor, ANIM p'sum)

c. ✓ ix s-nun winh winak
CLF A3-mother CLF man
'the man's mother' (HUM p'sor, HUM p'sum)

- **In sum:** we find the exact same pattern as in Chuj actives:

P'SOR	P'SUM		P'SOR	P'SUM		P'SOR	P'SUM	
HUM	HUM	✓	ANIM	HUM	✗	INAN	HUM	✗
HUM	ANIM	✓	ANIM	ANIM	✓	INAN	ANIM	✗
HUM	INAN	✓	ANIM	INAN	✓	INAN	INAN	✓

- Several kinds of repairs for different kinds of nouns, but for the ones above:

(52) a. y-unin-**al** te' pat
A3-child-INAL CLF house
'the house's children'

b. s-tz'i'-**al** te' pat
A3-dog-INAL CLF house
'the house's dog'

c. s-winak-**il** nok' choj
A3-man-INAL CLF puma
'the puma's men' (those whose "moj spixan" is a puma)

- Possessa all appear with *-Vl* suffix, an "inalienable" suffix; and Set A is preserved, which we could account in different ways:

1. *-Vl* overrides ANIM and HUM features on the noun.
2. *-Vl* overrides *dynamic features* on the noun.

7 Conclusion

We proposed a new analysis of animacy restrictions that accounts for points of uniformity and microvariation with the Mayan family.

(53) **Main proposals**:

a. Hiearchy effects arise when *a single probe agrees with two goals*, which we explained via Int/Sat model of Agree (Deal 2015, 2023).

b. Goals can bear *dynamic features*, e.g., [ANIM↑], altering the kinds of goals with which the probe can subsequently Agree.

- **Uniformity in active sentences:** Across Mayan, v Agrees with Obj first and Agent second (Coon et al. 2021)

  ▶ A dynamic feature α on Obj bleeds further Agree with Agent if Agent does not bear α.

- **Variation in articulation of the scale**: Arises because there is variation wrt which features are dynamic (see appendix A on local pronouns).

- **Variation in passives**: We considered one pragmatic and one syntactic explanation; more work is needed to decide among these options

- **Extension to possessive constructions**: Our analysis predicts hierarchy effects in possessive constructions, a prediction which we showed is borne out.

- **Other extension**: the factors traditionally associated to "obviation", restrictions based on coreference, definiteness, and topicality (see appendix A).

Acknowledgements

We are very grateful to our Chuj collaborators: Matin Pablo, Matal Torres, Petul Gómez, Xapin Torres, and Elsa Velasco. Many thanks to Judith Aissen, Jessica Coon, Carol Rose Little, Gilles Polian, Matt Tyler, Hugo Vázquez López, Tessa Scott, Michelle Yuan, Roberto Zavala, and the audiences of the Berkeley Syntax & Semantics Circle, the Seminario de Estudios de Lenguas Indígenas de México at CIESAS, WSCLA 2023, and WCCFL 2023 for their comments and feedback. Finally, we also thank the Banting Fellowships Program of the Social Sciences and Humanities Research Council of Canada for funding Royer's postdoctoral research.

References

Aissen, Judith. 1997. On the syntax of obviation. *Language* 73:705–769.
Aissen, Judith. 1999. Agent focus and inverse in Tzotzil. *Language* 75:451–485.
Aissen, Judith. 2017. Correlates of ergativity in Mayan. In *Oxford Handbook of Ergativity*, eds. Jessica Coon, Diane Massam, and Lisa Travis. New York: Oxford University Press.
Benito Pérez, José Gonzalo. 2016. Orden básico y pragmática de las voces en poqom. Master's thesis, CIESAS, México.
Bohnemeyer, Jürgen. 2009. Temporal anaphora in a tenseless language. In *The expression of time in language*, eds. W. Klein and P. Li, 83–128. Berlin: Mouton de Gruyter.
Clem, Emily. 2019. Agreement, case, and switch-reference in Amahuaca. Ph.D. dissertation, University of California, Berkeley.
Clem, Emily, and Amy Rose Deal. 2023. Dependent case by Agree: Ergative in Shawi. Ms. UCSD and UC Berkeley.
Collins, Chris. 2005. A Smuggling Approach to the Passive in English. *Syntax* 8:81–120.
Coon, Jessica. 2013. *Aspects of Split Ergativity*. Oxford: Oxford University Press.
Coon, Jessica. 2017a. Little-v agreement and templatic morphology in Ch'ol. *Syntax* 20:101–137.
Coon, Jessica. 2017b. Two types of ergative agreement: Implications for case. In *MIT Working Papers in Linguistics*, eds. Claire Halpert, Hadas Kotek, and Coppe van Urk, 361–370. Cambidge, MA: MITWPL.
Coon, Jessica. 2019. Building verbs in Chuj: Consequences for the nature of roots. *Journal of Linguistics* 55:35–81.
Coon, Jessica, Nico Baier, and Theodore Levin. 2021. Mayan Agent Focus and the ergative extraction constraint: Facts and fictions revisited. *Language* 97:269–332.
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.
Curiel, Alejandro. 2007. Estructura de la información, enclíticos y configuración sintáctica en tojol 'ab'al. Master's thesis, CIESAS, México.
Deal, Amy Rose. 2015. Interaction and satisfaction in ϕ-agreement. In *The proceedings of the 45th North-Eastern Linguistic Society (NELS 45)*, eds. Thuy Bui and Deniz Ozyildiz, 179–192. Amherst, MA: GLSA.
Deal, Amy Rose. 2023. Interaction, satisfaction, and the PCC. *Linguistic Inquiry* .
Hammerly, Christopher. 2020. Person-based prominence in Ojibwe. Ph.D. dissertation, University of Massachusetts Amherst.
Harley, Heidi, and Elizabeth Ritter. 2002. Person and Number in Pronouns: A Feature-Geometric Analysis. *Language* 78:482–526.
Law, Danny. 2014. *Language contact, inherited similarity and social difference: The story of linguistic interaction in the Maya lowlands*. Amsterdam: John Benjamins.
Oxford, Will. 2019. Inverse marking and Multiple Agree in Algonquian: Complementarity and variability. *Natural Language and Linguistic Theory* 37:955–996.
Oxford, Will. to appear. Probe specification and agreement variation: Evidence from the Algonquian inverse. *Linguistic Inquiry* .

Pascual, Adán F. 2007. Transitividad y dependencia sintáctica y discursiva en Q'anjob'al. Master's thesis, CIESAS, México.
Pérez González, Jaime. 2021. The genius of Mocho' (Mayan): Morphosyntactic alignment and its Interaction with Grammatical Aspect and Iinformation Structure. Ph.D. dissertation, University of Texas Austin.
Pérez Vail, José Reginaldo. 2014. La inversion y obviación en mam de Cajolá. Master's thesis, CIESAS, México.
Polian, Gilles. 2004. Éléments de grammaire du tseltal. Ph.D. dissertation, Université Paris III.
Polian, Gilles. 2013. *Gramática del tseltal de Oxchuc*. Publicaciones de la Casa Chata. México: Centro de Investigaciones y Estudios Superiores en Antropología Social.
Rezac, Milan. 2008. Phi-Agree and Theta-Related Case. In *Phi Theory: Phi-features across interfaces and modules*, eds. Daniel Harbour, David Adger, and Susana Béjar, 83–129. Oxford: Oxford University Press.
Royer, Justin. 2022. Elements of (in)definiteness and binding: A Mayan perspective. Ph.D. dissertation, McGill University, Montréal, QC.
Royer, Justin. 2023. Binding and anti-cataphora in Mayan. *Linguistic Inquiry* .
Toosarvandani, Maziar. 2023. The interpretation and grammatical representation of animacy. Ms. UCSC.
Vázquez Álvarez, Juan J. 2011. A grammar of Chol, a Mayan language. Ph.D. dissertation, University of Texas Austin, Austin, TX.
Zavala, Roberto. 1992. *El Kanjobal de San Miguel Acatán*. México: UNAM.
Zavala, Roberto. 1997. Functional analysis of Akatek voice constructions. *International Journal of American Linguistics* 63:439–474.
Zavala, Roberto. 2007. Inversion and obviation in Mesoamerica. In *Endangered Languages*, eds. Peter Austin and Andrew Simpson, volume Linguistische Berichte Sonderheft 14, 267–306. Hamburg: Helmut Buske Verlag.
Zavala Maldonado, Roberto. 2017. Alignment patterns. In *The Mayan Languages*, eds. Judith Aissen, Nora C. England, and Roberto Zavala Maldonado, 226–258. New York: Routledge.

Appendix

A Obviation, topicality, and coreference

- Aissen (1997) and much subsequent work have related Mayan animacy restrictions to Algonquian patterns of obviation.

  (54) Obviation scale:
  (local) > proximate > obviative

  – In Algonquian, direct voice is required whenever the subject is proximate and the object obviative.

  – **Aissen's core thesis**: in Tsotsil, active voice is required whenever the subject is proximate and the object obviative.

  – Otherwise, an inverse/passive is needed.

- While proximate vs obviative DPs are overtly distinguished in Algonquian, they are not in Mayan. So why connect the Mayan patterns to obviation? Three reasons:

  1. The same animacy effects hold in Algonquian languages: the obviation scale aligns with the animacy scale, i.e., for combinations of 3rd person animates/inanimates (and only for such combinations), the animate must be proximate (otherwise inverse voice is required).

  2. Proximates in Algonquian are generally more "topical/definite" than obviatives (see Oxford to appear and references therein), and Aissen (1999) argues that might also be the case for Tsotsil.

  3. Given additional assumptions, two constraints on the distribution of coreferential nominals can be made to follow, in particular:

     (a) *Possessives.* Sentences of the type [*x*'s *y* V *x*] are not possible when *x* and *y* are third persons. (e.g. *Her$_i$ friend helped her$_i$*)

     (b) *Attitudes.* Sentences of the type [*x* V$_{speech/attitude}$ [CP that *y* V *x*]] are also not possible when *x* and *y* are third persons. (e.g. *Maria$_i$ said that Juan helped her$_i$*)

- We focus on possessives, but we believe our analysis can be extended to attitudes.

- Possessive coreference effects in Chuj and Ch'ol:

  (55) * Ix-y-il waj Xun [S ix s-nun *pro*].
  PFV-A3-see CLF Xun CLF A3-mother PRON
  Intended: 'His$_1$'s mother saw Xun$_1$.' (Chuj)

  (56) * Tyi i-tyaj-a *pro* [S i-ñox'a *pro*] tyi Yermosaj.
  PFV A3-find-TV PRON A3-husband PRON PREP Villahermosa
  Intended: 'Her$_1$ husband found her$_1$ in Villahermosa.' (Ch'ol)

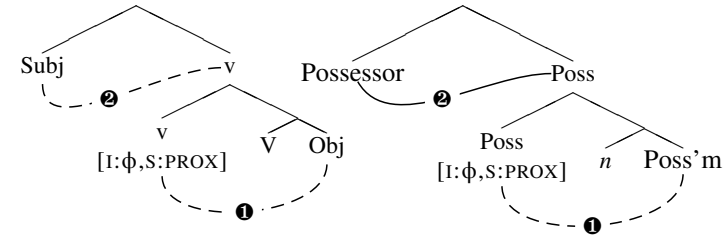
- Like for animacy effects in these languages, local persons don't count:

(57) a. Ix-in-y-il ix hin-nun.
PFV-B1S-A3-see CLF A1S-mother
'My mother saw me.' (Chuj)

b. Tyi i-ts'äk-ä-y-oñ k-alo'b-il.
PFV A3-cure-TV-EPEN-B1 A1-son-NML
'My son cured me.' (Ch'ol, Zavala 2007: 77)

- To capture these data, we take two steps. First, what we previously analyzed as an insatiable probe on *v* and Poss should instead be [SAT:PROX].

(58) a. vP b. PossP



- This rules out structures with set A agreement and (i) proximate objects or (ii) proximate possessa—Agree would stop at the first goal and set A cannot be generated (for ERG or POSS).

- Second, we make two additional assumptions, which match parts of the analysis of Aissen (1997)

(59) *Obviation tracks reference*
If two expressions co-refer, they must match wrt the feature [PROX]. (Ideally this is derivable from a proper semantics from obviation features)

(60) *Third person dissimilation*
If there are two third persons in a clause, one must be proximate (i.e. bear the feature [PROX]).

- This rules out the generation of examples like (61), from above:

(61) * Ix-y-il waj Xun [$_{SUBJ}$ ix s-nun *pro*].
PFV-A3-see CLF Xun CLF A3-mother PRON
Intended: 'His$_1$'s mother saw Xun$_1$.' (Chuj)

– Given set A agreement in the clause and the possessive DP, neither the object (*Xun*) nor the possessum ('mother') is proximate.

– The pronominal possessor cannot be proximate because it is coreferential with a non-proximate (*Xun*)

– This means that no argument is proximate, which violates Third Person Dissimilation

- Local persons are outside this generalization because the constraint is specifically *third person* dissimilation.

– This is part of a broader pattern of dissimilation effects specifically in 3/3 contexts, within Mayan and beyond

– E.g. in Tsotsil, agent focus is only used in 3/3

– Could be related, as Aissen has suggested, to processing issues arising in a verb-initial, *pro*-drop language.