

Switch-reference in Amahuaca: Syntactic and semantic implications

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Switch-reference

- Switch-reference is a strategy for indicating whether the arguments of two clauses are coreferential or disjoint
 - In a same subject (SS) construction, the subject of the marked clause is coreferential with the subject of the reference clause
 - In a different subject (DS) construction, the subject of the marked clause is disjoint from the subject of the reference clause

(1) [jaa=x_i vua=**hax**]=mun xano_i chirin=xo=nu
3SG=NOM sing=SS.SQ=C woman dance=3.PST=DECL
'After she_i sang, the woman_i danced.'

(2) [joni_i vua=**kun**]=mun xano_j chirin=xo=nu
man sing=DS.SQ=C woman dance=3.PST=DECL
'After the man_i sang, the woman_j danced.'

Crosslinguistic variation in switch-reference

- Crosslinguistically, we see variation in many aspects of switch-reference
 - Which nominals can be tracked by the switch-reference system
 - What contrasts switch-reference markers encode
 - The syntactic relationship between marked and reference clauses
 - The types of constructions switch-reference is used in
- In Amahuaca, switch-reference marking is found in adjunct clauses that attach high within the reference clause
- Amahuaca switch-reference clauses are often used as temporal adjuncts but can also be used to convey propositional attitude reports

The puzzles

- The structure of Amahuaca switch-reference constructions raises issues for previous analyses
- Recent Agree-based analyses of switch-reference assume that reference clause arguments c-command the marked clause (Baker and Camargo Souza, 2020; Arregi and Hanink, 2021)
 - In Amahuaca, the marked clause adjoins above the reference clause arguments
 - There is no c-command between a probe in the marked clause and a reference clause goal
- Traditional accounts of attitude reports assume that attitude verbs compose with complements that denote propositions (e.g. Hintikka, 1969)
 - In Amahuaca, the relevant proposition is introduced in as an adjunct above the attitude verb
 - The attitude verb cannot compose directly with a proposition

The proposals

- I will propose an analysis of switch-reference that overcomes these issues
- The analysis has implications for:
 - Our account of switch-reference crosslinguistically
 - Our model of Agree
 - Our understanding of the compositional semantics of attitude reports
- **The syntactic proposal:** Maximal projections can serve as probes through cyclic expansion (Rezac, 2003; Béjar and Rezac, 2009), allowing us to model switch-reference without loosening the c-command conditions on Agree
- **The semantic proposal:** Attitude verbs take internal arguments that are individuals with propositional content (Kratzer, 2006; Moulton, 2015), rendering the high attachment site of CPs in attitude reports unproblematic

Roadmap

1. Introduction
2. Switch-reference in Amahuaca
3. Switch-reference and the syntax of Agree
4. Switch-reference and attitude reports in Amahuaca
5. Switch-reference and the semantics of attitude reports
6. Conclusion

Switch-reference in Amahuaca

Amahuaca

- Amahuaca is an endangered Panoan language spoken in the Peruvian and Brazilian Amazon



Word order

- Amahuaca is mostly head final in the TP domain
- The base SOV order can be obscured by scrambling of arguments and adjuncts
- Matrix C is a second-position clitic that surfaces after the first syntactic constituent

(3) [jaa joni chaita=n]=**mun** nami pi=hi=ki=nu
DEM man tall=ERG=C_{MATRIX} meat bite=IPFV=3.PRES=DECL
'That tall man is eating meat.'

(4) [joni=n xuki jova=hain]=**mun**
man=ERG corn cook=DS.SIM=C_{MATRIX}
xano vua=xo=nu
woman sing=3.PST=DECL
'While the man cooked corn, the woman sang.'

Case marking

- Amahuaca shows a tripartite case alignment
 - Intransitive subjects are marked **nominative** (=x)
 - Transitive subjects are marked **ergative** (=n)
 - Objects are unmarked (\emptyset)

(5) **vaku=x**=mun rakuu=xo=nu
child=NOM=C_{MATRIX} be.afraid=3.PST=DECL
'The **child** was afraid.'

(6) **xano=n**=mun **chopa** patza=hi=ki=nu
woman=ERG=C_{MATRIX} clothes wash=IPFV=3.PRES=DECL
'The **woman** is washing **clothes**.'

- Differential subject marking causes both intransitive and transitive subjects to sometimes surface in an unmarked form (Clem, 2019)

Adjunct switch-reference clauses

- Switch-reference marking appears in adjunct clauses in Amahuaca
- The switch-reference marker is an enclitic that typically surfaces on the verb of the adjunct clause
- These clauses are generally interpreted as temporal adjuncts

(7) [jaa=x_i vua=**xon**]=mun
3SG=NOM sing=SA.SQ=C_{MATRIX}
xano=n_i xuki jova=xo=nu
woman=ERG corn cook=3.PST=DECL
'After she_i sang, the woman_i cooked corn.'

Switch-reference contrasts

- Amahuaca has a rich inventory of switch-reference markers that encode multiple pieces of information (Sparing-Chávez, 1998, 2012)
 - Temporal relationship between clauses
 - Coreference relationships between arguments
 - Abstract case (or grammatical function) of coreferential arguments
- I will focus on clauses with the sequential action ('after') paradigm of markers
- Clauses with the simultaneous ('while') and subsequent ('before') action markers show similar behavior

Switch-reference markers

- In (8), the adjunct clause subject is coreferential with a matrix transitive subject (**ERG**), and the switch-reference marker takes the form =xon

(8) [jaa=x_i vua=**xon**]=mun
3SG=NOM sing=SA.SQ=C_{MATRIX}
xano=n_i; xuki jova=xo=nu
woman=ERG corn cook=3.PST=DECL
'After she_i sang, the **woman_i** cooked corn.'

- In (9), the adjunct clause subject is coreferential with a matrix intransitive subject (abstract **NOM**), and the switch-reference marker takes the form =hax

(9) [jaa=x_i vua=**hax**]=mun **xano_i**; chirin=xo=nu
3SG=NOM sing=SS.SQ=C_{MATRIX} woman dance=3.PST=DECL
'After she_i sang, the **woman_i** danced.'

Switch-reference markers

- In (10), the adjunct clause subject is coreferential with a matrix object (abstract ACC), and the switch-reference marker takes the form =xo

(10) [jaa=x_i vua=**xo**]=mun
3SG=NOM sing=SO.SQ=C_{MATRIX}
hinan xano_i; chivan-vo=xo=nu
dog.ERG woman chase-AM=3.PST=DECL
'After she_i sang, the dog chased the woman_i.'

- In (11), no adjunct clause DP is coreferential with any matrix DP, and the switch-reference marker takes the form =kun

(11) [joni_i vua=**kun**]=mun xano_j chirin=xo=nu
man sing=DS.SQ=C_{MATRIX} woman dance=3.PST=DECL
'After the man_i sang, the woman_j danced.'

Switch-reference paradigm

- Altogether there are four coreference markers in the sequential ('after') switch-reference paradigm
- Additionally there is a 'different subject' marker that I will model as a morphological default

		Matrix		
		S	A	O
Adjunct	S	= <i>hax</i>	= <i>xon</i>	= <i>xo</i>
	A			
	O	= <i>ha</i>	= <i>kun</i> (DF)	

Arguments in switch-reference clauses

- Amahuaca switch-reference clauses are full CPs
- They can include all arguments of the verb, including case-marked subject DPs and object DPs

(12) [**xano=n_i** **chopa** patza=**xon**]=mun
woman=ERG clothes wash=SA.SQ=C_{MATRIX}
pro_i hatza jova=hi=ki=nu
 manioc cook=IPFV=3.PRES=DECL

'After the woman_i washed clothes, she_i is cooking manioc.'

(13) [**kiyoo-vini=x_i** nokoo=**xon**]=mun
all-EMPH.LG=NOM arrive=SA.SQ=C_{MATRIX}
pro_i hatza jova=kan=xo=nu
 manioc cook=3PL=3.PST=DECL

'After everyone_i arrived, they_i cooked manioc.'

Adjuncts in switch-reference clauses

- Switch-reference clauses can host adjuncts, such as adverbs

(14) [*pro*_i **koshi** ka=xon]=mun
quickly go=SA.SQ=C_{MATRIX}
xano=*n*_i hatza vana=xo=*nu*
woman=ERG manioc plant=3.PST=DECL
'After she_i went quickly, the woman_i planted manioc.'

(15) [**moha** xano=*x*_i nokoo=xon]=mun
already woman=NOM arrive=SA.SQ=C_{MATRIX}
jato=*n*_i hatza xoka=kan=xo=*nu*
3PL=ERG manioc peel=3PL=3.PST=DECL
'After the women_i had already arrived, they_i peeled manioc.'

Nested switch-reference clauses

- Switch-reference clauses are large enough to allow other switch-reference clauses to adjoin within them

(16) $[[pro_i \text{ kari choka}=\boxed{\text{xon}}] \text{ } pro_i \text{ hatza xoka}=\boxed{\text{xon}}]=\text{mun}$
yam wash=SA.SQ manioc peel=SA.SQ=C_{MATRIX}
xano=n_i xuki jova=xo=nu
woman=ERG corn cook=3.PST=DECL
'[After she_i peeled manioc [after she_i washed yams]],
the woman_i cooked corn.'
(or 'The woman washed yams, peeled manioc, and cooked corn.')

Scrambling in switch-reference clauses

- Switch-reference clauses are typically SOV
- However, switch-reference clauses allow clause-internal scrambling

(17) 'After I cooked paca, I peeled manioc.'

a. **SOV** 'after' clause

[**hiya=n hano** jova=xon]=mun
1SG=ERG paca cook=SA.SQ=C_{MATRIX}
hun hatza vuro=ku=nu
1SG manioc peel=1.PST=DECL

b. **OSV** 'after' clause

[**hano hiya=n** jova=xon]=mun
paca 1SG=ERG cook=SA.SQ=C_{MATRIX}
hun hatza vuro=ku=nu
1SG manioc peel=1.PST=DECL

External syntax of switch-reference clauses

- Switch-reference clauses typically appear in high peripheral positions
- It is ungrammatical for switch-reference clauses to appear below aspect marking

(18) 'After she_i sang, the woman_i is washing manioc.'

- a. $[pro_i \text{ vua} = \boxed{\text{xon}}] = \text{mun}$
sing=SA.SQ=C_{MATRIX}
xano=n_i hatza choka=**hi**=ki=nu
woman=ERG manioc wash=IPFV=3.PRES=DECL
- b. xano=n_i=mun hatza choka=**hi**=ki=nu
woman=ERG=C_{MATRIX} manioc wash=IPFV=3.PRES=DECL
 $[pro_i \text{ vua} = \boxed{\text{xon}}]$
sing=SA.SQ
- c. * xano=n_i=mun hatza choka=**hi**
woman=ERG=C_{MATRIX} manioc wash=IPFV
 $[pro_i \text{ vua} = \boxed{\text{xon}}] = \text{ki} = \text{nu}$
sing=SA.SQ=3.PRES=DECL

Switch-reference clauses vs. relative clauses

- Nominalized internally-headed relative clauses can appear below aspect

(19) Juan_i=mun chivan-vo=**hi** [jan_i jono
Juan=C_{MATRIX} chase-AM=IPFV 3SG peccary
vuchi=ha]=ki=nu
find=PFV=3.PRES=DECL
'The peccary that he_i found is chasing Juan_i.'

- The positional restriction on switch-reference clauses is truly syntactic

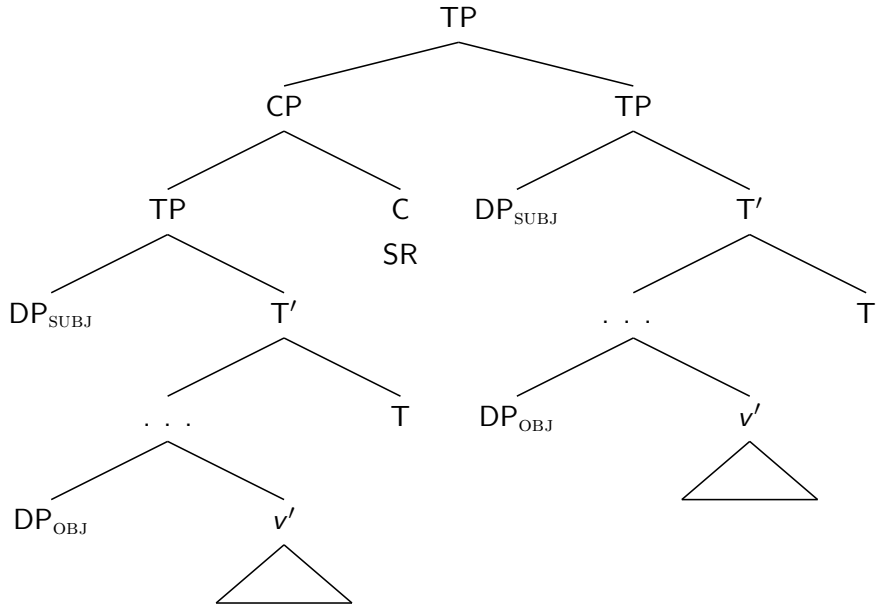
Condition C

- Even if switch-reference clauses began low in the structure, they do not reconstruct below matrix arguments for Condition C

(20) 'After Maria_i went quickly, she_i washed clothes.'

- a. [*pro*_i koshi ka=xon]=mun
quickly go=SA.SQ=C_{MATRIX}
Maria=n_i chopa patza=xo=nu
Maria=ERG clothes wash=3.PST=DECL
- b. [**Maria**_i koshi ka=xon]=mun
Maria quickly go=SA.SQ=C_{MATRIX}
*pro*_i chopa patza=xo=nu
clothes wash=3.PST=DECL
- c. **jaa**=n_i=mun [**Maria**_i koshi ka=xon]
3SG=ERG=C_{MATRIX} Maria quickly go=SA.SQ
chopa patza=xo=nu
clothes wash=3.PST=DECL

Structure of switch-reference clauses



Switch-reference as agreement

- In switch-reference clauses, a high head in the clause (C) is sensitive to the features of arguments
- This pattern is similar to complementizer agreement and has been analyzed as involving an agreeing complementizer (Watanabe, 2000; Arregi and Hanink, 2018, 2021)
- The Amahuaca pattern looks like complementizer agreement that is sensitive to referential index and case
- The agreeing complementizer is sensitive to features of DPs in its own clause and the matrix clause

Switch-reference via Agree

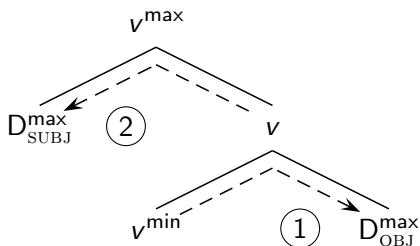
- Recent Agree-based accounts of switch-reference have assumed that Upward Agree is involved (Baker and Camargo Souza, 2020; Arregi and Hanink, 2021)
- If a switch-reference clause attaches below the matrix arguments, switch-reference C can probe upward to agree with a c-commanding argument
- In Amahuaca, switch-reference clauses adjoin above the position of matrix arguments
- If C probes upward, it will not encounter a suitable goal

If switch-reference C does not c-command arguments in the clause that it adjoins to, how can it agree with them to result in sensitivity to coreference?

Switch-reference and the syntax of Agree

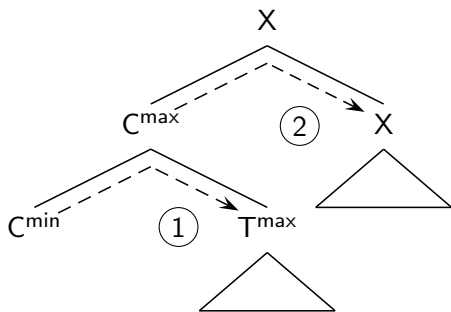
Cyclic Agree (Rezac, 2003; Béjar and Rezac, 2009)

- A probe first probes its c-command domain
- If the probe remains unsatisfied, when the head reprojects to form an intermediate projection, the probe reprojects as well
- The probe then probes its new, expanded c-command domain (the specifier of the head)



BPS and Cyclic Agree

- In Bare Phrase Structure (BPS), there is no formal distinction between the label of intermediate and maximal projections
- Cyclic Agree and BPS predict that maximal projections should be able to serve as probes
- I argue that this prediction of Cyclic Agree and BPS is borne out in switch-reference



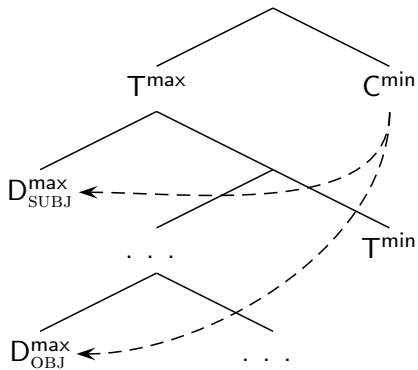
Probe insatiability

- I will assume an interaction and satisfaction model of Agree (Deal, 2015a)
- In this model, probes are specified with two types of conditions
 - Interaction conditions specify what feature(s) a probe can copy to itself
 - Satisfaction conditions specify what feature(s) will cause a probe to halt its search
- If a probe lacks satisfaction conditions, it will continue probing all possible goals in its c-command domain until reaching a phase boundary
- We can refer to this type of probe as an insatiable probe (Deal, 2015b)

First cycle Agree

- Adjunct C in Amahuaca is an insatiable probe
- First, C^{\min} probes its c-command domain, which contains the subject and object of the adjunct clause
 - Note that evidence from remnant VP-fronting suggests that objects undergo shift to Spec,vP (Clem, 2019)

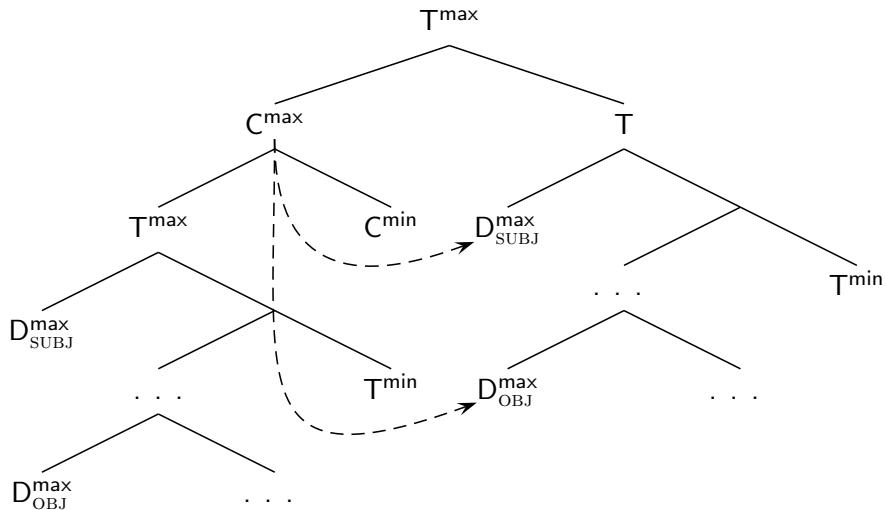
Agreement inside the adjunct clause



Second cycle Agree

- Given that C's probe is insatiable, it remains unsatisfied after probing the c-command domain of C^{\min}
- When C reprojects to form a maximal projection, the probe is reprojected as well and can probe again
- The c-command domain of this new segment of C, C^{\max} , contains the matrix subject and object, keeping with the evidence from Condition C

Agreement into the matrix clause



Features on C

- The probe on C agrees in:
 - Referential indices (modeled as ϕ -features; Rezac 2004)
 - Abstract case features
- If two DPs that C agrees with share a referential index, one of the coreference markers will be inserted
 - The form of the marker will be determined by the case of the coreferential DPs
- If no DPs share a referential index, the default different subject marker will be inserted

Vocabulary Insertion

- I assume late insertion and standard competition mechanisms of Distributed Morphology (Halle and Marantz, 1993)
- This means that the vocabulary item that matches the largest subset of the features on C will be inserted

Sample 'after' vocabulary items

[[AFTER,[<i>i</i> ,NOM*]] [<i>i</i> ,NOM]]	↔	/hax/
[[AFTER,[<i>i</i> ,NOM*]] [<i>i</i> ,ERG]]	↔	/xon/
[AFTER]	↔	/kun/

Advantages of the current account

- This account builds on the insight of Watanabe (2000) that switch-reference shares many similarities with complementizer agreement
- One advantage of the current account is its simplicity – there are independent arguments for all of the necessary technology
 - Cyclicity in Agree (Rezac, 2003; Béjar and Rezac, 2009)
 - Probe insatiability (Deal, 2015b)
 - Treating indices as ϕ -features (Rezac, 2004)
- Additionally, previous accounts of switch-reference face empirical challenges given the Amahuaca data (Clem, 2021)

Switch-reference and attitude reports in
Amahuaca

Switch-reference in attitude reports

- Switch-reference clauses can appear with matrix attitude verbs

(21) [*pro*_i Maria hiin=**xon**]=mun **shinan**=hi Juan_i=ki=nu
Maria see=SA.SQ=C think=IPFV Juan=3.PRES=DECL
'Juan_i thinks that he_j saw Maria.'

- We might assume that the switch-reference clauses in these constructions still function as temporal adjunct clause
- Instead, these constructions are interpreted as propositional attitude reports

Amahuaca attitude verbs

- A variety of attitude verbs can be used with switch-reference clauses to express attitude reports

(22) [hinan nami pi=kun]=mun Marta=n **yohi**=xo=nu
dog.ERG meat bite=DS.SQ=C Marta=ERG say=3.PST=DECL

'Marta **said** that the dog had eaten the meat.'

(23) [hinan nami pi=kun]=mun Maria=n **shinan**=xo=nu
dog.ERG meat bite=DS.SQ=C Maria=ERG think=3.PST=DECL

'Maria **thought** that the dog ate the meat.'

(24) [hinan nami pi=kun]=mun Maria=n **honan**=xo=nu
dog.ERG meat bite=DS.SQ=C Maria=ERG know=3.PST=DECL

'Maria **knew** that the dog had eaten the meat.'

(25) [hinan nami pi=kun]=mun Maria=n **nama**=xo=nu
dog.ERG meat bite=DS.SQ=C Maria=ERG dream=3.PST=DECL

'Maria **dreamed** that the dog had eaten the meat.'

Switch-reference morphology in attitude reports

- Morphologically, the switch-reference clauses used in attitude reports look just like the switch-reference clauses used elsewhere
- Switch-reference markers retain their argument-tracking function

(26) [Maria nokoo=**kun**]=mun hun yohi=ku=nu
Maria arrive=DS.SQ=C 1SG say=1.PST=DECL
'I said that Maria arrived.'

(27) [*pro*; Maria hiin=**xon**]=mun hun; yohi=ku=nu
Maria see=SA.SQ=C 1SG say=1.PST=DECL
'I said that I saw Maria.'

Syntax of attitude reports

- Syntactically, switch-reference clauses used in attitude reports pattern like the switch-reference clauses used elsewhere
- They generally appear in high peripheral positions

(28) 'Marta said that the dog had eaten the meat.'

- a. [hinan nami pi=kun]=mun Marta=n yohi=xo=nu
dog.ERG meat bite=DS.SQ=C Marta=ERG say=3.PST=DECL
- b. Marta=n=mun yohi=xo=nu [hinan nami pi=kun]
Marta=ERG=C say=3.PST=DECL dog.ERG meat bite=DS.SQ

Syntax of attitude reports

- Switch-reference clauses used in attitude reports cannot appear below aspect marking

(29) 'After it rained, Pedro thinks that Marta got sick.'

- a. hovi hi=kun=mun [Marta hizin=kun] Pedro=n
rain do.INTR=DS.SQ=C Marta be.sick=DS.SQ Pedro=ERG
shinan=**hi**=ki=nu
think=IPFV=3.PRES=DECL
- b. * hovi hi=kun=mun Pedro=n shinan=**hi** [Marta
rain do.INTR=DS.SQ=C Pedro=ERG think=IPFV Marta
hizin=kun]=ki=nu
be.sick=DS.SQ=3.PRES=DECL

Condition C in attitude reports

- Unlike what we would expect for complement clauses, switch-reference clauses used in attitude reports do not show Condition C reconstruction effects

(30) 'Juan_i thinks that he_i saw Maria.'

- a. [*pro*_i Maria hiin=xon]=mun shinan=hi Juan_i=ki=nu
Maria see=SA.SQ=C think=IPFV Juan=3.PRES=DECL
- b. [Juan_i Maria hiin=xon]=mun *pro*_i shinan=hi=ki=nu
Juan Maria see=SA.SQ=C think=IPFV=3.PRES=DECL

Morphosyntax of attitude reports

- Morphosyntactically, the switch-reference clauses used in attitude reports pattern like the high adjunct switch-reference clauses seen elsewhere
- The distributional data suggest that these clauses are not syntactically complements of the attitude verb
- Given these morphosyntactic facts, we might assume that these constructions are not actually propositional attitude reports at all

Temporal adjuncts or attitude reports?

- One possibility is that the switch-reference clauses that appear with attitude verbs are not actually interpreted in the scope of a modal operator at all
- Instead, maybe they receive the same semantic interpretation as temporal adjuncts

(31) [Juan_i Maria hiin=xon]=mun *pro*_i shinan=hi=ki=nu
Juan Maria see=SA.SQ=C think=IPFV=3.PRES=DECL
'Juan_i thinks that he_i saw Maria.'
Alternatively?: 'After Juan_i saw Maria, he_i is thinking about it.'

Attitudes *de dicto*

- A problem for the view that these switch-reference clauses are normal temporal adjuncts comes from the fact that they allow classic *de dicto* readings of nominals
- To test this, I used felicity judgments in context (Matthewson, 2004), drawing on contexts used by Deal (2018) and Dawson and Deal (2019)

(32) Context: I have to unload a lot of heavy boxes, so my neighbor comes and helps me. Maria is new to the neighborhood. She sees him helping me, and she thinks he must be my brother. Actually, though, I don't have a brother.

[*pro*_i hun povi hiin=xon]=mun shinan=hi
1SG.GEN diff.gender.sibling see=SA.SQ=C think=IPFV

Maria_i=ki=nu

Maria=3.PRES=DECL

'Maria_i thinks that she_i saw my brother.'

- (33) Context: I left a bag of corn outside my house, and one morning it is all gone. My friend Juan thinks that a winged peccary ate it.

[jono puhi yato=n hun xuki ha=kun]=mun
peccary wing with.LG=ERG 1SG.GEN corn do.TR=DS.SQ=C

shinan=hi Juan=ki=nu
think=IPFV Juan=3.PRES=DECL

'Juan thinks a peccary with wings ate my corn.'

Structural ambiguity?

- We might think that there are two structures associated with switch-reference clauses that appear with attitude verbs
 - If the clause is introduced as the complement of the attitude verb, a *de dicto* reading will be possible
 - If the clause is introduced as a high adjunct, it will be interpreted as other high adjuncts, disallowing *de dicto* readings

Condition C and attitudes *de dicto*

- The lack of Condition C effects with switch-reference clauses holds true even when elements within them are read *de dicto*, suggesting that they are never complement clauses

(34) Context: Pedro is in Pucallapa and goes to a big market. There's a deceptive salesman there who is selling something that looks like an animal pelt, but it's green. He tells Pedro that it's a pelt of a very rare animal – a green jaguar. Pedro doesn't know that green jaguars don't exist, and he believes the salesman. So, he decides to buy it.

[Pedro= n_i hinaha xaka nava maro= xon]=mun *pro*_{*i*}

Pedro=ERG jaguar pelt green buy=SA.SQ=C

shinan= $hi=ki=nu$

think=IPFV=3.PRES=DECL

'Pedro_{*i*} thinks that he_{*i*} bought a green jaguar pelt.'

Free indirect discourse?

- The availability of *de dicto* readings suggests that these clauses are evaluated within the scope of a modal operator, unlike regular temporal adjuncts
- Another way out of the puzzle would be to assume that these clauses actually involve Free Indirect Discourse

(35) [jono puhi yato=n hun xuki ha=kun]=mun
peccary wing with.LG=ERG 1SG.GEN corn do.TR=DS.SQ=C
shinan=hi Juan=ki=nu
think=IPFV Juan=3.PRES=DECL

'Juan thinks a peccary with wings ate my corn.'

Alternatively?: 'A peccary with wings ate my corn, thinks John.'

Attitudes *de re*

- Free Indirect Discourse allows for *de dicto* readings
- Crucially, however, it disallows classic *de re* readings (Sharvit, 2008)
- In Amahuaca attitude reports, *de re* readings are also possible

(36) Context: My sister has come to visit me and is staying at my house. My neighbor Marta doesn't know this. When I'm out of the house working, she sees my sister in my house. Marta thinks that someone has broken into my house, maybe to steal something. She calls me and says "I saw a woman in your house!".

[Marta=_n; hun vutza hiin=_{xon}]=mun *pro*_i

Marta=ERG 1SG.GEN same.gender.sibling see=SA.SQ=C

yohi=_{xo}=nu

say=3.PST=DECL

'Marta_i said that she_i saw my sister.'

- (37) Context: My friend Esperanza sees a cat catching a parakeet. It turns out it was the hotel cat, Florinda, but Esperanza doesn't know that. She just tells me about the fight and what the cat looked like. When I get back to the hotel, Florinda is there and her fur is all dirty. To explain what happened I say:

[Florinda=n pitzo ha=kun]=mun shinan=hi
Florinda=ERG parakeet do.TR=DS.SQ=C think=IPFV
Esperanza=ki=nu
Esperanza=3.PRES=DECL
'Esperanza thinks Florinda killed a parakeet.'

The puzzle of Amahuaca attitude reports

- Amahuaca attitude reports involving switch-reference clauses appear to have possible interpretations similar to those seen in languages like English
- The propositional attitude does not appear to be a complement of the attitude verb but is instead introduced in a high adjunct clause
- This combination of properties raises a problem for classic analyses of attitude reports

How can the propositional attitude be interpreted within the scope of the relevant modal operator if it never appears in the scope of the attitude verb at any point in the derivation?

Switch-reference and the semantics of attitude reports

The complements of attitude verbs

- One family of approaches to attitude reports seeks to reexamine the relationship between the attitude verb and the dependent clause in deriving the desired meaning (Kratzer, 2006; Moulton, 2009, 2015)
- Attitude verbs do not take propositions (or properties) as their arguments directly
- Attitude verbs combine with an internal argument of type *e* that is an individual with propositional content (Kratzer, 2006)
 - Attitude verbs like *believe* can also occur with nominal arguments such as *the rumor* that are individuals with propositional content
 - If CPs are of the same type as nouns like *rumor* this explains straightforwardly how these nouns can combine with modifier CPs

Complementizer semantics

- Kratzer (2006) assumes that complementizers mediate between individuals with propositional content and propositions via the function $CONT$, housed within the complementizer
- $CONT$ operates on individuals with propositional content to return a set of worlds that are compatible with the individual's content (Kratzer, 2013; Moulton, 2015)

(38) $\llbracket C \rrbracket = \lambda p. \lambda x_c. \lambda w. [CONT(x_c)(w) = p]$

(39) $CONT(x_c)(w) = \{w' : w' \text{ is compatible with the intentional content determined by } x_c \text{ in } w\}$

(40) Maria thought $[_{CP}$ that $[_{TP}$ a dog ate the meat $]]$.

$\llbracket TP \rrbracket = \lambda w. a \text{ dog in } w \text{ ate the meat in } w$

$\llbracket CP \rrbracket = \lambda x_c. \lambda w. [CONT(x_c)(w) = \lambda w'. a \text{ dog in } w' \text{ ate the meat in } w']$

Attitude verb semantics

- An attitude verb takes an argument of type e that is an individual with propositional content (Kratzer, 2006)
- Following Moulton (2015), the meaning of an attitude verb like *think* is that the doxastic alternatives of the attitude holder are a subset of the worlds returned by *CONT* when applied to the content argument of the verb
- This denotation of attitude verbs results in a type mismatch if we try to directly compose the verb with a CP
- Moulton (2015) argues that this type mismatch is resolved by a series of movements which also derive certain word order facts involving CPs

(41) $\llbracket \textit{think} \rrbracket = \lambda x_c. \lambda y_{att}. \lambda w. \textit{DOX}(y, w) \subseteq \textit{CONT}(x_c)(w)$

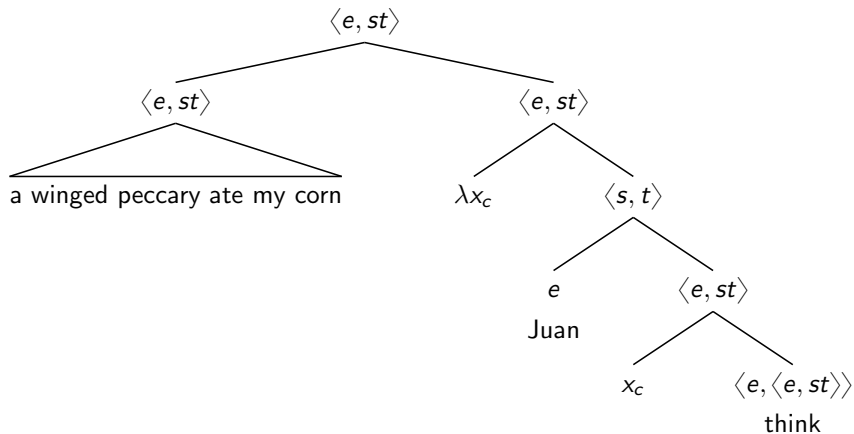
(42) Maria thought $[_{CP}$ that a dog ate the meat].

$\llbracket \textit{CP} \rrbracket = \lambda x_c. \lambda w. [\textit{CONT}(x_c)(w) = \lambda w'. a \textit{ dog in } w' \textit{ ate the meat in } w']$

A welcome consequence

- For Amahuaca, we don't actually want attitude verbs to compose directly with CPs
- If the attitude verb composes with a type e content argument bound by an operator below the adjunct CP, no type mismatch arises

Amahuaca attitude report semantics



Attitude reports and case

- Under this approach, attitude verbs combine with an internal argument of type *e*
- If this covert internal argument is syntactically a typical *pro*, this helps to account for the case marking patterns found in Amahuaca
- Perhaps unexpectedly, the subjects of attitude verbs must be marked with ergative case, which typically only appears when there is an internal argument with ϕ -features

(43) [hinan nami pi=kun]=mun Maria=**n** shinan=xo=nu
dog.ERG meat bite=DS.SQ=C Maria=ERG think=3.PST=DECL
'Maria thought that the dog ate the meat.'

Conclusion

Switch-reference and Agree

- Amahuaca switch-reference clauses are adjuncts that attach high in the matrix clause, above matrix arguments
- The high attachment site raises some issues for analyses of the syntax of switch-reference
- How can a head in the switch-reference clause agree with a matrix argument in the absence of c-command?
 - Cyclic Agree allows maximal projections to serve as probes through cyclic expansion
 - C^{max} of the switch-reference clause probes the matrix arguments in its c-command domain
- The Amahuaca data provide empirical evidence for the idea that maximal projections can probe

Switch-reference and attitude reports

- Amahuaca switch-reference clauses can be used to form propositional attitude reports
- The high adjunction site of switch-reference clauses raises some issues for analyses of the compositional semantics of attitude reports
- How can standard readings of attitude reports arise if the switch-reference clause is not a complement of an attitude verb?
 - Analyses that assume that an attitude verb takes an internal argument of type *e* require the CP to appear above the attitude verb
 - The attitude verbs takes a *pro*-form complement and the adjunct CP composes higher in the structure
- The Amahuaca data provide novel empirical support for the idea that attitude verbs do not compose with propositions directly

Future directions

- Amahuaca switch-reference is a rich empirical domain
- Areas for further investigation include:
 - Factivity distinctions in attitude verbs
 - The temporal semantics of switch-reference markers
 - The availability of an overt matrix object DP in attitude reports
- Exploration of these topics and more will continue to shed light on the implications of Amahuaca switch-reference both for our understanding of switch-reference constructions and our syntactic and semantic theories more broadly

Thank you!

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