

# Attitude reports without complementation: The case of Amahuaca\*

Emily Clem

*University of California, San Diego*

**Abstract** Classic analyses of propositional attitude reports assume that attitude verbs compose with a clausal argument that expresses a proposition. I use original fieldwork data to demonstrate that Amahuaca (Panoan; Peru) attitude reports involve high adjunct switch-reference clauses rather than clausal complements to an attitude verb. This structure raises issues for the traditionally assumed compositional semantics of attitude reports. I present two potential analyses that do not require the verb to compose directly with a complement CP, ultimately arguing in favor of an analysis that aligns with proposals by Kratzer (2006) and Moulton (2015) that the internal arguments of attitude verbs are individuals with propositional content. Amahuaca therefore provides novel empirical support for this approach to the semantics of attitude reports.

**Keywords:** propositional attitude reports, switch-reference, *de dicto*, *de re*, Amahuaca

## 1 Introduction

Propositional attitude reports in Amahuaca can be expressed with a range of attitude verbs, as illustrated in (1).<sup>1</sup>

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<sup>1</sup> Abbreviations in glosses follow the Leipzig Glossing Rules with the following modifications: C = complementizer, DS = different subject, LG = long form, SQ = sequential action, SA = subject coreferential with transitive subject.

- (1) [hinan nami pi=kun]=mun Maria=n  
 dog.ERG meat bite=DS.SQ=C Maria=ERG  
**yohi/shinan/koon/honan/nama**=xo=nu  
 say/think/believe/know/dream=3.PST=DECL  
 ‘Maria **said/thought/believed/knew/dreamed** that the dog had eaten the meat.’

In this paper I demonstrate that the CP that expresses the reported attitude (bracketed in (1)) is not a syntactic complement of the attitude verb in Amahuaca. Instead, as I will argue here, this CP is a high adjunct switch-reference clause. Despite this unexpected syntax, I demonstrate that attitude reports in Amahuaca have a range of interpretations that is typical of propositional attitude reports. In particular, I provide evidence that this construction in Amahuaca admits classic *de dicto*, *de re*, and *de se* readings. This combination of syntactic and semantic properties raises issues for traditional semantic analyses, which assume that attitude verbs compose directly with CP complements that express propositions (or properties) to derive the range of meanings associated with attitude reports. In this paper, I discuss two possible semantic analyses that are compatible with the syntactic structure involved in Amahuaca attitude reports. The first draws on work by Moulton (2009) and relies on a high type operator and trace to force the dependent CP to be interpreted in a lower position than it syntactically occupies. The second analysis departs more substantially from traditional semantic accounts of attitude reports, building on work by Kratzer (2006) and Moulton (2015) that assumes that attitude verbs take individuals with propositional content as their internal arguments rather than propositions. I provide evidence that attitude reports in Amahuaca do involve a nominal individual internal argument that can be subject to *pro*-drop, offering support for the latter analysis. Thus, while Amahuaca attitude reports differ substantially from the patterns that were originally used to motivate this approach, they provide empirical support for this style of analysis for propositional attitude reports.

## 2 The morphosyntax of Amahuaca attitude reports

### 2.1 Background on Amahuaca

Amahuaca is a Panoan language spoken in the Amazonian region of Peru and Brazil by approximately 500 speakers (Eberhard, Simons & Fennig 2022). All data for this paper are drawn from my fieldwork with speakers of the language, which has been ongoing since 2015. The 15 speakers with whom I have worked ranged in age from approximately 24 to 85 years old at the time of data collection and all live in the district of Sepahua, Atalaya Province, Ucayali, Peru. The majority of the core attitude report data discussed here were collected in 2018 and 2022 with 5 speakers.

Amahuaca is mostly head-final in the TP (with the exception of AspP; Clem 2021b). In dependent clauses, which will be discussed further in Section 2.2, CP is also head-final. In matrix clauses, CP is head-initial, with C being realized as the second position clitic *=mun* in declarative clauses. The clitic *=mun* is preceded by exactly one syntactic constituent, regardless of that constituent's category or prosodic size. The base SOV word order of the language is often obscured by *pro*-drop and by scrambling of both arguments and adjuncts. The language displays a tripartite alignment for case, with overt nominative (*=x*) and ergative (*=n*) case and unmarked accusative. Both transitive and intransitive subjects can also appear in an unmarked form due to differential case marking (Clem 2019a).

## 2.2 Switch-reference in Amahuaca

Amahuaca makes robust use of switch-reference, a strategy for morphologically indicating whether arguments of two clauses are coreferential or disjoint. A same-versus different-subject contrast is illustrated in (2) and (3).

- (2) [jaa=**x**<sub>i</sub>  vua=**xon**]=mun xano=**n**<sub>i</sub>    xuki jova=xo=nu  
 3SG=NOM sing=SA.SQ=C  woman=ERG corn cook=3.PST=DECL  
 'After **she**<sub>i</sub> sang, the **woman**<sub>i</sub> cooked corn.'
- (3) [joni<sub>i</sub>  vua=**kun**]=mun xano=**n**<sub>j</sub>    xuki jova=xo=nu  
 man  sing=DS.SQ=C  woman=ERG corn cook=3.PST=DECL  
 'After the **man**<sub>i</sub> sang, the **woman**<sub>j</sub> cooked corn.'

In both examples, there is a dependent clause (bracketed) that hosts a switch-reference marker (boxed). In (2), the dependent clause subject is coreferential with the matrix clause subject, as indicated by the same-subject marker *=xon*. In (3), there is no coreference between arguments of the dependent and matrix clauses, so the switch-reference marker *=kun* is used instead. I assume, following much of the syntactic work on switch-reference, that switch-reference markers realize head-final C in the dependent clause (Clem 2021a). The switch-reference marker forms a constituent with the dependent clause, with the entire constituent appearing before the matrix complementizer *=mun*. I further assume, as argued in Clem 2021a and discussed in Section 2.3, that switch-reference clauses are adjuncts to TP.<sup>2</sup>

Switch-reference in Amahuaca is sensitive to the reference of both subjects and objects (Sparing-Chávez 1998, 2012; Clem 2019b, 2021a). In addition to indicating (non-)coreference, switch-reference markers encode temporal relationships between clauses and the abstract case (or, alternatively, grammatical function) of coreferential arguments. Thus there are multiple switch-reference paradigms, with

<sup>2</sup> Switch-reference clauses can scramble to a higher position, such as Spec,CP, as in (2) and (3).

each marker simultaneously encoding multiple pieces of information. For simplicity, the examples in this paper will use the two switch-reference markers in (2) and (3). Both are part of the sequential action paradigm (corresponding roughly to ‘after’), with *=xon* indicating coreference between the adjunct clause subject and a matrix transitive subject and *=kun* being a default used when all arguments are disjoint or when a coreference relationship lacks a dedicated marker (Clem 2021a).

### 2.3 Attitude reports and switch-reference

As mentioned previously, attitude reports in Amahuaca involve switch-reference clauses. The same switch-reference markers that are used in temporal adjunct switch-reference clauses appear in attitude reports and they retain the same reference-tracking function, as illustrated in (4) and (5).

- (4) [*pro*<sub>i</sub> Maria hiin=xon]=mun **hun**<sub>i</sub> yohi=ku=nu  
 Maria see=SA.SQ=C 1SG say=1.PST=DECL

‘I said that I saw Maria.’

- (5) [**Maria** nokoo=kun]=mun **hun** yohi=ku=nu  
 Maria arrive=DS.SQ=C 1SG say=1.PST=DECL

‘I said that Maria arrived.’

In (4) the attitude holder, the matrix subject, is coreferential with the dependent clause subject, and the same-subject marker *=xon* is used. In (5) the subjects are disjoint so the default *=kun* switch-reference marker appears.

The similarities between the switch-reference clauses used as temporal adjuncts and those used in attitude reports go beyond their shared morphology. Recall from Section 2.2 that switch-reference clauses are adjuncts that attach high in the matrix clause. While we might expect the type of dependent clause that appears in an attitude report to be a complement of the attitude verb, I will demonstrate that the switch-reference clauses used in attitude reports in Amahuaca syntactically pattern with the TP-adjunct switch-reference clauses used elsewhere in the language.

One piece of evidence for the high attachment site of Amahuaca switch-reference clauses comes from their possible surface positions. Like other adjuncts, switch-reference clauses can undergo scrambling. However, there are restrictions on their surface position. They typically appear in high peripheral positions and cannot appear to the right of aspect marking, as shown in (6).

- (6) ‘After she<sub>i</sub> sang, the woman<sub>i</sub> is washing manioc.’  
 a. [*pro*<sub>i</sub> vua=xon]=mun xano=<sub>i</sub> hatza choka=hi=ki=nu  
 sing=SA.SQ=C woman=ERG manioc wash=IPFV=3.PRS=DECL

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- b. xano= $n_i$ =mun hatza choka= $hi$ = $ki$ =nu [ $pro_i$  vua= $xon$ ]  
 woman=ERG=C manioc wash=IPFV=3.PRS=DECL sing=SA.SQ
- c. xano= $n_i$ =mun [ $pro_i$  vua= $xon$ ] hatza choka= $hi$ = $ki$ =nu  
 woman=ERG=C sing=SA.SQ manioc wash=IPFV=3.PRS=DECL
- d. \* xano= $n_i$ =mun hatza choka=**hi** [ $pro_i$  vua= $xon$ ]= $ki$ =nu  
 woman=ERG=C manioc wash=IPFV sing=SA.SQ=3.PRS=DECL

In (6a) the switch-reference clause appears in initial position and in (6b) it surfaces to the right of the matrix clause-final clitics in an extraposed position. The example in (6c) shows that it is possible for a switch-reference clause to appear below =*mun* in C; this is its TP-adjoined position. However, the clause cannot appear lower than the aspect marker =*hi* in (6d). The position to the right of aspect marking and before tense is where  $\nu$ P-internal material surfaces (Clem 2019a, 2021b). Therefore, the unavailability of this position for switch-reference clauses suggests that they adjoin higher than  $\nu$ P.<sup>3</sup>

The same positional restrictions can be seen for switch-reference clauses that are used in attitude reports. As shown in (7a), attitude reports can involve a switch-reference clause in the initial position, as in (7a), or in an extraposed position to the right, as in (7b).

- (7) ‘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

Further, in (8) we see that it is possible for a switch-reference clause in an attitude report to appear below C, as in (8a), but not below aspect, as in (8b).

- (8) ‘After it rained, Pedro thinks that Marta got sick.’
- a. hovi  $hi$ = $kun$ =mun [Marta  $hizin$ = $kun$ ] Pedro= $n$   
 rain do.INTR=C Marta be.sick=DS.SQ Pedro=ERG  
 $shinan$ =**hi**= $ki$ =nu  
 think=IPFV=3.PRS=DECL
- b. \* hovi  $hi$ = $kun$ =mun Pedro= $n$   $shinan$ =**hi** [Marta  
 rain do.INTR=C Pedro=ERG think=IPFV Marta  
 $hizin$ = $kun$ ]= $ki$ =nu  
 be.sick=DS.SQ=3.PRS=DECL

<sup>3</sup> See Clem 2021a for evidence that this positional restriction is not a surface prosodic requirement since nominalized dependent clauses, which have a  $\nu$ P-internal base position, can surface between aspect and tense.

Further evidence for the high attachment site of switch-reference clauses comes from a lack of reconstruction effects. If switch-reference clauses were to attach low and obligatorily move to a higher position, we might expect them to undergo reconstruction. However, (9) shows that switch-reference clauses do not reconstruct to a low position for Condition C.

- (9) ‘After  $Maria_i$  went quickly,  $she_i$  washed clothes.’
- a. [ $pro_i$  koshi ka=xon]=mun **Maria=n<sub>i</sub>** chopa patza=xo=nu  
quickly go=SA.SQ=C Maria=ERG clothes wash=3.PST=DECL
- b. [**Maria<sub>i</sub>** koshi ka=xon]=mun  $pro_i$  chopa patza=xo=nu  
Maria quickly go=SA.SQ=C clothes wash=3.PST=DECL

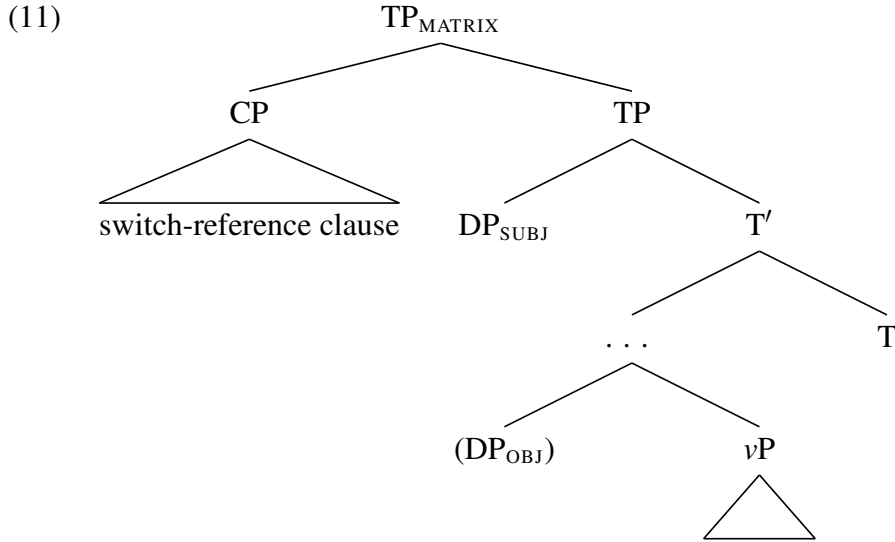
In (9) we see examples with an R-expression and coreferential *pro* – one in the matrix clause and one in the adjunct clause. Regardless of which clause hosts the R-expression, no Condition C violation arises, suggesting that the adjunct switch-reference clause does not reconstruct below the matrix subject for Condition C.

Perhaps unexpectedly, the same facts hold for switch-reference clauses that are used in attitude reports, as seen in (10).

- (10) ‘**Juan<sub>i</sub>** thinks that **he<sub>i</sub>** saw Maria.’
- a. [ $pro_i$  Maria hiin=xon]=mun shinan=hi **Juan<sub>i</sub>=ki=nu**  
Maria see=SA.SQ=C think=IPFV Juan=3.PRS=DECL
- b. [**Juan<sub>i</sub>** Maria hiin=xon]=mun  $pro_i$  shinan=hi=ki=nu  
Juan Maria see=SA.SQ=C think=IPFV=3.PRS=DECL

In (10), the matrix subject is coreferential with the subject of the dependent clause. Here it once again does not matter which clause hosts the R-expression and which hosts the coreferential *pro*. This suggests that these switch-reference clauses do not instantiate the typical complementation structure assumed for attitude reports but rather involve the same high adjunction structure seen for other switch-reference clauses in Amahuaca.

Given the evidence presented here for the high adjunction position of switch-reference clauses, I assume that they involve the same syntactic structure as temporal adjunct switch-reference clauses in the language. That is, regardless of whether a switch-reference clause is used as a temporal adjunct or in an attitude report, it is a TP-adjunct. This structure for switch-reference clauses is illustrated in (11).



Here we see that the switch-reference clause itself is a full CP and it adjoins to the matrix TP, above the position of the matrix arguments. With this structure for switch-reference clauses, and thus attitude reports, in mind, we now turn to a discussion of the possible interpretations of Amahuaca attitude reports.

### 3 The interpretation of Amahuaca attitude reports

Given that the switch-reference clauses used in Amahuaca attitude reports seem to have the same syntactic distribution as temporal adjunct switch-reference clauses, it is not unreasonable to question whether they have interpretations like those of typical attitude reports. In this section, I examine classic *de dicto* and classic *de re* readings, demonstrating that both types of readings are available for attitude reports in Amahuaca despite the unexpected syntax.

#### 3.1 Attitudes *de dicto*

Because attitude verbs appear with switch-reference clauses that look morphosyntactically like temporal adjuncts, it is tempting to assume that these constructions are not truly attitude reports but instead involve a typical temporal adjunct clause. That is, one might assume that a more appropriate translation for the sentence in (12) would be something like ‘After Juan saw Maria, he is thinking about it.’

- (12) [Juan<sub>i</sub> Maria hiin=xon]=mun *pro*<sub>i</sub> shinan=hi=ki=nu  
 Juan Maria see=SA.SQ=C think=IPFV=3.PRS=DECL  
 ‘Juan<sub>i</sub> thinks that he<sub>i</sub> saw Maria.’

If the switch-reference clauses that appear with attitude verbs are normal temporal adjunct clauses, they should not allow for classic *de dicto* readings of nominals since these readings are assumed to involve evaluation of the descriptive content of the nominal at a world other than the actual world. However, attitude reports in Amahuaca do allow classic *de dicto* readings. To test this, I used felicity judgments in context (Matthewson 2004), drawing on contexts used by Deal (2018) and Dawson & Deal (2019). The sentences in (13) and (14) were accepted in the accompanying contexts, which require the bolded nominals to be read *de dicto*.

- (13) 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*<sub>i</sub> **hun**      **povi**                      hiin=xon]=mun shinan=hi  
 1SG.GEN different.gender.sibling see=SA.SQ=C    think=IPFV  
 Maria<sub>i</sub>=ki=nu  
 Maria=3.PRS=DECL

‘Maria<sub>i</sub> thinks that she<sub>i</sub> saw **my brother**.’

- (14) 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 shinan=hi  
 peccary wing=with.LG=ERG 1SG.GEN corn do.TR=DS.SQ=C think=IPFV  
 Juan=ki=nu  
 Juan=3.PRS=DECL

‘Juan thinks **a peccary with wings** ate my corn.’

In (13), since the context makes it clear that I do not have a brother in the actual world, the nominal *hun pov* ‘my brother’ in the switch-reference clause must be evaluated with respect to Maria’s thought worlds. Similarly, since peccaries do not have wings, the nominal *jono puhiyaton* ‘peccary with wings’ must be read *de dicto* in (14); it must be evaluated with respect to Juan’s thought worlds, not the actual world.

The availability of *de dicto* readings in (13) and (14) suggests that the switch-reference clauses in these examples can be interpreted in the scope of a modal operator, unlike typical temporal adjunct clauses. It is generally assumed that this type of reading results from the nominal that is read *de dicto* being evaluated in the scope of the attitude verb. However, we have seen syntactic evidence that switch-reference clauses in attitude reports do not originate in or (obligatorily) reconstruct to a position below the attitude verb. One plausible assumption that we might entertain is that switch-reference clauses in attitude reports are actually structurally



ambiguous. We might assume that some switch-reference clauses are high adjunct clauses, explaining the lack of obligatory reconstruction for Condition C. In contrast, we could hypothesize that some switch-reference clauses are truly complements to the attitude verb, explaining the availability of *de dicto* readings. Under this type of structural ambiguity account, the readings in (13) and (14) would be the result of positing a complementation structure. This account based on syntactic ambiguity predicts that the properties of the adjunct and complement switch-reference clauses should not co-occur. Specifically, if a *de dicto* reading of an element within a switch-reference clause is forced, that clause should show reconstruction for Condition C. Likewise, if a switch-reference clause does not reconstruct for Condition C, it should not allow *de dicto* readings. This prediction does not match the empirical picture we find in Amahuaca. As shown in (15), *de dicto* readings are possible even when the R-expression referring to the attitude holder appears within the switch-reference clause.

- (15) Context: Pedro is in Pucallpa 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.PRS=DECL

'Pedro<sub>i</sub> thinks that he<sub>i</sub> bought a green jaguar pelt.'

In (15), the nominal *hinaha xaka nava* 'green jaguar pelt' is read *de dicto*. However, in this same-subject construction, the subject of the switch-reference clause, *Pedro*, is coreferential with the attitude holder *pro* and no Condition C violation arises. This suggests that the switch-reference clause does not reconstruct to a position below the matrix subject, ruling out the possibility that the *de dicto* reading is derived via reconstruction of the switch-reference clause to a position as the complement of the attitude verb.

To summarize, in this section we have seen that attitude reports in Amahuaca admit classic *de dicto* readings, which is unexpected if the switch-reference clauses that are involved are interpreted as other temporal adjunct switch-reference clauses. Additionally, evidence from the simultaneous availability of *de dicto* readings and lack of Condition C effects suggests that attitude reports do not involve a structural ambiguity with *de dicto* readings resulting from a complementation parse.

### 3.2 Attitudes *de re*

One way to accommodate the *de dicto* readings found in Amahuaca without positing a typical attitude report structure would be to assume that these constructions instead involve Free Indirect Discourse. That is, we might think that the sentence in (16) is better translated with the more stylistic ‘He had seen Maria, Juan thinks’.

- (16) [*pro*<sub>i</sub> Maria hiin=xon]=mun shinan=hi Juan<sub>i</sub>=ki=nu  
 Maria see=SA.SQ=C think=IPFV Juan=3.PRS=DECL  
 ‘Juan<sub>i</sub> thinks that he<sub>i</sub> saw Maria.’

Compatible with the hypothesis that these constructions in Amahuaca involve Free Indirect Discourse is the fact that *de se* readings are available, as illustrated in (17).

- (17) Context: Juan entered a singing competition. After it was over, he watched a video of the competition. When he heard himself on the video he said ‘wow, I sang really well.’

[*pro*<sub>i</sub> vua=sharaa=xon]=mun shinan=hi Juan<sub>i</sub>=ki=nu  
 sing=well=SA.SQ=C think=IPFV Juan=3.PRS=DECL  
 ‘Juan<sub>i</sub> thinks that **he**<sub>i</sub> sang well.’

In (17) Juan’s attitude is explicitly about himself, meaning that the null pronominal subject of the switch-reference clause is read *de se*.

While Free Indirect Discourse is known to admit *de dicto* and *de se* readings, it does not allow *de re* readings (Sharvit 2004, 2008). Thus, if the constructions of interest in Amahuaca involve Free Indirect Discourse rather than traditional attitude reports, they are predicted to disallow classic *de re* readings. However, this is not borne out. Instead, examples such as (18) and (19) show that *de re* readings of the bolded nominals are possible.

- (18) 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<sub>i</sub> **hun** **vutza** hiin=xon]=mun *pro*<sub>i</sub>  
 Marta=ERG 1SG.GEN same.gender.sibling see=SA.SQ=C  
 yohi=xo=nu  
 say=3.PST=DECL  
 ‘Marta<sub>i</sub> said that she<sub>i</sub> saw **my sister**.’

- (19) 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.

[**Florinda=n** pitzo ha=kun]=mun shinan=hi  
 Florinda=ERG parakeet do.TR=DS.SQ=C think=IPFV  
 Esperanza=ki=nu  
 Esperanza=3.PRS=DECL

'Esperanza thinks **Florinda** killed a parakeet.'

In (18) Marta does not identify the woman that she saw as my sister, but I as the speaker know that the individual is my sister in the actual world, meaning that *hun vutza* 'my sister' is read *de re*. Similarly, in (19), Esperanza does not identify the cat in question as Florinda, so the name is read *de re*.

Interestingly, even the subject in same-subject constructions can be read *de re*; it need not be read *de se*, as illustrated in (20).

- (20) Context: Juan is singing while he washes clothes one day. Marta sneaks up behind him and records him singing on her phone. Later, he hears the recording and doesn't recognize that it is his voice. He says, 'wow, that person sang really well.'

[*pro*<sub>i</sub> vua=sharaa=xon]=mun shinan=hi Juan<sub>i</sub>=ki=nu  
 sing=well=SA.SQ=C think=IPFV Juan=3.PRS=DECL

'Juan<sub>i</sub> thinks that **he**<sub>i</sub> sang well.'

In (20) we see the same sentence that was presented in (17). However, in this context, Juan's attitude is not a *de se* attitude about himself. Instead, the subject of the same-subject switch-reference clause that is obligatorily coreferential with the matrix subject is read *de re*.

Thus, we have seen in this section that *de re* readings are generally available in Amahuaca attitude reports, suggesting that they cannot be analyzed as instances of Free Indirect Discourse.

### 3.3 Interim summary

Propositional attitude reports in Amahuaca have been shown to involve somewhat unexpected syntactic properties. Rather than being selected as complements of attitude verbs, the switch-reference clauses used in attitude reports appear to be high adjunct clauses. Despite this unexpected syntax, Amahuaca attitude reports show a similar range of interpretations as attitude reports in better-studied languages.

Classic *de dicto*, *de re*, and *de se* interpretations are all available. The availability of this range of readings provides evidence against approaches that would assume these constructions are not true attitude reports.

The combination of syntactic and semantic properties found in Amahuaca raises questions for traditional semantic analyses of propositional attitude reports (e.g. Hintikka 1969). Typically, it is assumed that attitude verbs introduce quantification over worlds, with the dependent clause introduced as a complement of the attitude verb and being evaluated in the scope of this modal operator. However, while the interpretation of Amahuaca attitude reports suggests that such modal quantification is present, the dependent switch-reference clause is not syntactically the complement of the attitude verb. Thus, we must ask how the switch-reference clause is evaluated within the scope of modal quantification when it never appears in the scope of the attitude verb at any point.

#### 4 A semantics for Amahuaca attitude reports

As outlined above, a semantics for Amahuaca attitude reports must allow the quantification over worlds to scope above the adjunct switch-reference clause without assuming that the switch-reference clause originates in a position below the attitude verb. In this section I outline two possible accounts that satisfy these properties. The first uses a high type operator and trace to force the switch-reference clause to be interpreted in a position lower than its base position, drawing on Moulton's (2009) analysis of English sentential subjects. The second builds on work by Kratzer (2006) and Moulton (2015) and assumes a somewhat different semantics for attitude verbs and complementizers than traditional accounts of attitude reports. Under this style of analysis, attitude verbs are assumed to compose with internal arguments that are individuals with propositional content, and I suggest that Amahuaca switch-reference clauses are adjuncts that optionally specify this propositional content. I then provide evidence that this analysis of attitude reports provides a straightforward account of multiple additional properties of Amahuaca attitude verbs and propositional attitude reports.

##### 4.1 High type operators

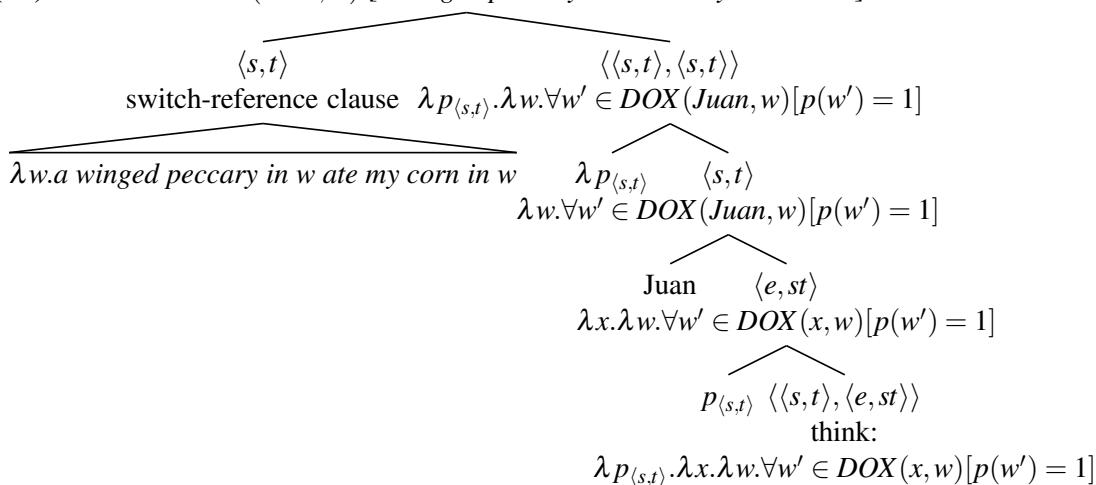
One relatively straightforward option to allow the switch-reference clause in Amahuaca attitude reports to be interpreted in the scope of the attitude verb is to use a high type operator and trace to force the clause to essentially be interpreted in a lower position than it occupies. This is the same type of logic used to derive semantic reconstruction. However, in this case, the switch-reference clause is not reconstructing to a lower position that it previously occupied. It is instead being interpreted in a position

lower than its base position by means of an operator that binds a high type trace.

This type of approach is used by [Moulton \(2009\)](#) in his treatment of *de re* readings with sentential subjects in English (see [Dawson & Deal 2019](#) for a semantic reconstruction approach to deriving third readings of proleptic objects in Tiwa). [Moulton](#) argues that CP subjects do not undergo movement from the associated gap position. One piece of evidence that CPs do not move from a low position comes from the fact that they do not show Condition C reconstruction effects, just like Amahuaca switch-reference clauses. What is puzzling, however, is the fact that sentential subjects do seem to “reconstruct” for variable binding. To account for this mixed reconstruction behavior of CPs, [Moulton](#) argues that an operator that ranges over properties undergoes movement from the argument position of the verb to a position below the CP, which is also of property type due to a lambda binder housed within the complementizer. The semantic variable in the gap position is of property type as well, essentially allowing the CP to semantically reconstruct to the complement position of the verb, despite never occupying this position syntactically.

If we adopt this style of analysis for Amahuaca attitude reports, we could maintain fairly standard denotations for attitude verbs. [Moulton’s](#) (2009) approach to *de re* attitudes could be adopted directly, and for *de dicto* attitudes we could assume an operator that instead ranges over propositions. The operator would move to a position below the site of the switch-reference clause, allowing the switch-reference clause to semantically reconstruct to be interpreted in the scope of the attitude verb. This is illustrated in (21) for the sentence in (14).

(21)  $\lambda w.\forall w' \in DOX(\textit{Juan}, w)$  [*a winged peccary in w' ate my corn in w'*]



In this structure, since the operator below the switch-reference clause binds the propositional variable that is the internal argument to the attitude verb, the switch-reference clause is able to be interpreted as a propositional argument of the verb.

Thus, we arrive at the desired interpretation where the switch-reference clause is interpreted in the scope of the modal quantification introduced by the attitude verb.

## 4.2 Individuals with propositional content

Another possible alternative approach to the semantics of Amahuaca attitude reports capitalizes on the fact that switch-reference clauses do not appear to syntactically be arguments of the attitude verbs. Kratzer (2006) and Moulton (2009, 2015) have argued that attitude verbs do not compose with propositions (or properties) directly but instead have internal arguments that are individuals with propositional content. One piece of evidence in favor of this approach is that attitude verbs in languages like English can occur with nominal arguments that are individuals with propositional content (e.g. *believe the rumor*) rather than occurring with CP complements. Kratzer (2006) assumes that this means that CPs are of the same type as these nominal arguments, explaining straightforwardly how nouns such as *rumor* can compose with CP modifiers via predicate modification.

In order to derive the correct semantics for CPs, Kratzer (2006) argues that complementizers mediate between propositions and individuals with propositional content. One way to do this is with a function housed within the complementizer itself (Kratzer 2006, 2013). This function, *CONT*, is defined in (22).

$$(22) \quad \text{CONT}(x_c)(w) = \{w' : w' \text{ is compatible with the intensional content determined by } x_c \text{ in } w\} \quad (\text{Moulton 2015: 312})$$

As seen in (22), *CONT* operates on individuals with propositional content ( $x_c$ ) and returns a set of worlds that are compatible with the individual's content (Kratzer 2013; Moulton 2015). This function can be incorporated into the denotation of the complementizer as illustrated in (23).

$$(23) \quad \llbracket C \rrbracket = \lambda p. \lambda x_c. \lambda w. [\text{CONT}(x_c)(w) = p] \quad (\text{Moulton 2015: 312})$$

With this denotation for the complementizer, the type of dependent CPs will be  $\langle e, st \rangle$ .

Now we must consider the semantics of attitude verbs themselves. We have already noted that under this approach the internal argument of an attitude verb is an individual with propositional content. 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 the function *CONT* when applied to this content argument of the verb. A denotation drawing on Moulton's proposal is given in (24).<sup>4</sup>

<sup>4</sup> In this denotation I simplify by abstracting away from event arguments and the role of Voice in introducing the external argument.

$$(24) \quad \llbracket think \rrbracket = \lambda x_c. \lambda y_{att}. \lambda w. DOX(y, w) \subseteq CONT(x_c)(w)$$

With this denotation for the attitude verb, a type mismatch arises if we try to compose it with a CP internal argument. Moulton (2015) argues that the CP does not compose with the verb in situ but rather that the type mismatch is resolved through a series of movements. In Amahuaca, this type mismatch is not an issue since the dependent CP is not actually an argument of the verb.

To extend this account to Amahuaca we can assume that attitude verbs have a denotation like the one given in (24) and that they always combine with an internal argument of type  $e$  – an individual with propositional content. This internal argument of the verb is then bound by an operator that appears below the switch-reference clause, allowing the switch-reference clause to compose via predicate modification. The denotation of the switch-reference clause serves to make explicit the propositional content of the individual argument of the verb. This is illustrated in (25) for the sentence in (14).<sup>5</sup>

$$(25) \quad \begin{array}{c} \lambda x_c. \lambda w. DOX(Juan, w) \subseteq CONT(x_c)(w) \\ \& CONT(x_c)(w) = \lambda w'. a peccary with wings in w' ate my corn in w' \\ \hline \begin{array}{cc} \langle e, st \rangle & \langle e, st \rangle \\ \text{switch-reference clause} & \lambda x_c. \lambda w. DOX(Juan, w) \subseteq CONT(x_c)(w) \end{array} \\ \hline \begin{array}{cc} \lambda x_c. \lambda w. [CONT(x_c)(w) = \lambda w'. a peccary & \lambda x_c \quad \langle s, t \rangle \\ \text{with wings in } w' \text{ ate my corn in } w'] & \lambda w. DOX(Juan, w) \subseteq CONT(x_c)(w) \end{array} \\ \hline \begin{array}{cc} Juan & \langle e, st \rangle \\ \lambda y_{att}. \lambda w. DOX(y, w) \subseteq CONT(x_c)(w) & \end{array} \\ \hline \begin{array}{cc} x_c & \langle e, \langle e, st \rangle \rangle \\ \text{think:} & \end{array} \\ \hline \lambda x_c. \lambda y_{att}. \lambda w. DOX(y, w) \subseteq CONT(x_c)(w) \end{array}$$

Here the attitude verb ‘think’ (*shinan*) composes with a phonologically null internal argument that is of type  $e$ , an individual with propositional content. The lambda binder below the switch-reference clause binds this argument, creating an  $\langle e, st \rangle$  denotation for the matrix TP. Because of the denotation we have posited for complementizers, the switch-reference clause CP is also of type  $\langle e, st \rangle$ , so it can compose with the matrix TP in situ via predicate modification to result in another  $\langle e, st \rangle$  function. I follow Moulton (2015) in assuming that existential closure can

<sup>5</sup> Here I provide a treatment for a *de dicto* attitude. As far as I am aware, the data presented here have no novel implications for the treatment of *de re* attitudes and are compatible with multiple possible analyses.

apply when a content argument is unsaturated. Applying existential closure will result in the desired propositional type for the entire clause. With this semantics for attitude reports in mind, I now turn to a comparison of this analysis with the high type operator analysis and offer arguments in favor of the view that the internal argument of attitude verbs in Amahuaca is an individual with propositional content.

### 4.3 A comparison of analyses

Both of the analyses presented here are able to capture the basic facts in Amahuaca by offering a semantics for attitude reports that does not require the switch-reference clause to be introduced as a complement of the attitude verb. Under the first account presented, the switch-reference clause is essentially forced to semantically reconstruct to a lower position that it ever occupied syntactically via high type operator and trace. One possible conceptual reason to reject such an analysis is if the existence of high type traces was generally disallowed, as has been argued by Landman (2006) and Poole (2017). Under the second account, a typical semantics for attitude verbs and complementizers is rejected in favor of the idea that attitude verbs select arguments that are individuals with propositional content. Conceptually this analysis might be dispreferred on the grounds that it represents a more radical departure from the traditionally assumed semantics of attitude reports. However, in this section, I present multiple pieces of evidence that support the view that Amahuaca attitude verbs indeed compose with typical nominal individual arguments, providing evidence in favor of this semantics for attitude reports and against the high type operator account and other imaginable competitor analyses.

The first piece of evidence in favor of the claim that Amahuaca attitude verbs select a nominal internal argument comes from the distribution of case marking. The subjects of attitude reports surface with ergative case in Amahuaca, as in (26).<sup>6</sup>

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

I have argued in Clem 2019a that ergative case in Amahuaca requires  $v$  to have agreed with an internal argument with  $\phi$ -features before agreeing with the external argument. If the internal argument of the attitude verb is a typical null *pro*, as shown in (26), this explains why the subject in attitude reports surfaces with ergative case. If there is no *pro* internal argument, the case on the subject is unexpected.

<sup>6</sup> Amahuaca displays differential subject marking. The transitive subject only appears with ergative case if it has moved out of its base position in  $vP$  (Clem 2019a). If it remains in situ between the aspect clitic and the tense clitic, it remains unmarked, explaining the lack of ergative case in many of the examples in this paper.



Another reason to think that attitude verbs covertly select nominal internal arguments is that they can select overt nominal internal arguments. Instead of appearing with a switch-reference clause, attitude verbs can appear with a nominal internal argument that is an individual with propositional content, as seen in (27).

- (27) xano=n=mun    jau    hontza    koon=xo=nu  
 woman=ERG=C    thing lie    believe=3.PST=DECL  
 ‘The woman believed a lie.’

We see in (27) that the attitude verb *koon* ‘believe’ appears with the internal argument nominal *jau hontza* ‘lie’. There is no switch-reference clause. Following Kratzer’s (2006) reasoning, the fact that attitude verbs can compose with overt nominals that are individuals with propositional content provides evidence for a semantic treatment of attitude verbs that involves an individual internal argument, not a propositional one. With the assumption that attitude verbs compose first with an individual with propositional content, we can maintain a unified semantics for Amahuaca attitude verbs regardless of whether they appear with an overt nominal argument, as in (27), or a switch-reference adjunct clause, as in (26).

Further, there is evidence that the internal argument of attitude verbs is subject to normal conditions on *pro*-drop, even in the absence of a switch-reference clause. This is expected if the internal argument is a typical nominal. When the propositional content of the verb’s internal argument is sufficiently recoverable from context, an attitude verb can appear without an overt internal argument and without a switch-reference clause, as seen in (28).

- (28) Marta=n=mun    *pro*    yohi=xo=nu  
 Marta=ERG=C    say=3.PST=DECL  
 ‘Marta said so/that.’

In (28), we see an attitude verb *yohi* ‘say’ appearing with only an overt attitude holder argument. The nominal that denotes the attitude holder appears with ergative case, suggesting the presence of a null *pro* internal argument. This sentence can be uttered when the content of what Marta said can be easily recovered from context, suggesting that the internal argument of the verb is simply subject to normal *pro*-drop here. If the internal argument of the attitude verb is a regular nominal subject to normal discourse conditions on *pro*-drop, the fact that the internal argument of the attitude verb is generally *pro*-dropped with switch-reference clauses is not unusual. The presence of the switch-reference clause serves to make the propositional content of the verb’s internal argument salient, creating the conditions for *pro*-drop.

The final piece of evidence in favor of an analysis of Amahuaca attitude reports involving individual internal arguments comes from the fact that nominal internal

arguments of attitude verbs can co-occur with switch-reference clauses. This is expected if switch-reference clauses are adjuncts that simply specify the propositional content of the verb's internal argument. This co-occurrence is shown in (29).

- (29) [hinan nami pi=kun]=mun hun jau hontza koon=ku=nu  
 dog.ERG meat bite=DS.SQ=C 1SG thing lie believe=1.PST=DECL  
 'I believed the lie that the dog ate the meat.'

Here we see that the attitude verb *koon* 'believe' appears with the nominal internal argument *jau hontza* 'lie', as in (27). However, there is also a switch-reference clause (bracketed), and this clause is interpreted as specifying what the lie was that was believed.<sup>7</sup> This aligns with the analysis of Amahuaca attitude reports presented here where the switch-reference clause is not saturating an argument position of the verb but is simply providing additional information about the propositional content of the verb's internal argument.

Taking all four pieces of evidence from this section together, then, the picture that emerges favors an analysis of attitude reports in Amahuaca that involves the verb selecting an internal argument that is an individual with propositional content.

## 5 Conclusion

In this paper, I have demonstrated that, despite the fact that Amahuaca attitude reports involve high adjunct clauses rather than complement CPs, they display the range of readings we expect from typical attitude reports. This combination of syntactic and semantic properties may seem difficult to capture, but I have shown that the account of attitude reports put forth by [Kratzer \(2006\)](#) and [Moulton \(2015\)](#) can be straightforwardly extended to Amahuaca. While other types of semantic analyses are certainly possible, as outlined here, I have provided evidence that favors this style of account that posits an internal argument to the attitude verb that is an individual with propositional content. Any competitor account should be able to elegantly capture the fact that Amahuaca attitude verbs can select nominal internal arguments, even when they also appear with a switch-reference clause in an attitude report. Given the success of the approach of [Kratzer \(2006\)](#) and [Moulton \(2015\)](#) in capturing the full range of Amahuaca data, we can conclude that Amahuaca provides a novel type of empirical support for this style of analysis of attitude reports.

<sup>7</sup> Unlike in the translation, the switch-reference CP does not form a constituent with the nominal internal argument. It is separated from the nominal by the second-position clitic =*mun* and by the first person subject clitic *hun*. Thus, while it seems to have a similar function to a CP modifier to a nominal in English, it displays a different structure.

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Emily Clem  
Department of Linguistics  
University of California, San Diego  
9500 Gilman Drive #0108  
La Jolla, CA 92093-0108  
eclem@ucsd.edu