

Switch-Reference as Interclausal Tense Agreement: Evidence from Quechua

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Abstract

In this paper, I propose that switch-reference in Quechua can best be analyzed as agreeing tense. Given the properties of the Quechuan switch-reference system and the clause structure of Quechua, I assume that a switch-reference adverbial clause does not have a valued tense feature and must agree with its superordinated clause in tense. Tense agreement is only possible if the subjects of both clauses are identical. The same subject marker is analyzed as the spell-out of successful tense agreement, while the different subject marker is the spell-out of failed agreement. I argue that this approach to switch-reference is conceptually as well as empirically compelling and raises the interesting question as to whether switch-reference is a true morpho-syntactic category or not.

1. Introduction

Switch-reference is a system of morphological marking that indicates whether the syntactic subjects of two different clauses are identical or not (Jacobsen 1967). In a canonical switch-reference system, the same subject (SS) marker is used in case the two subjects refer to the same entity; otherwise the different subject (DS) marker is used. In a non-canonical system, the use of the two markers depends on additional factors (cf. Stirling 1993).

Switch-reference systems occur in many unrelated languages, mainly in Australia, Papua New Guinea, and South and North America. Even though there are cross-linguistic tendencies concerning the syntactic and morphological properties of

*I would like to thank Doreen Georgi, Stefan Keine, Gereon Müller, Philipp Weisser, the audience at the workshop “The Fine Structure of Grammatical Relations” in Leipzig, December 2010, and the BCGL 6 in Brussels, December 2011, as well as the participants of the Seminar “local modeling of non-local dependencies in syntax” at the department of linguistics at the University of Leipzig for helpful comments and discussion. This research was funded by the DFG (Deutsche Gemeinschaft für Forschung) within the project “Lokale Modellierung nicht-lokaler Abhängigkeiten in der Syntax (local modeling of non-local dependencies in syntax). (<http://www.uni-leipzig.de/~lomo>)

switch-reference systems (Haiman and Munro 1983), the systems are characterized heavily by language-specific properties, which leaves no clear basis for a morpho-syntactic definition of switch-reference. Even the functional definition of switch-reference has been questioned for languages like e.g. Kiowa, where 'switch-reference' marks the identity of certain aspects (time, place, reason of doing something etc.) of two different situations rather than the referential identity of syntactic subjects (Watkins 1993; McKenzie 2007; see Weisser 2012 for discussion that such languages do not exhibit switch-reference).

Theoretically, the main challenge one faces when dealing with switch-reference is that switch-reference constitutes a non-local dependency, which invokes information of two different clauses. Therefore, one main goal for an analysis of switch-reference carried out in a phase-based derivational framework should be to model this non-local dependency locally, thereby minimizing the representational residue of the theory.

A second theoretical problem shows up in cases where the two sentences to be compared are in a subordination-superordination relation. In this case, the switch-reference markers show up on the subordinated clause cross-linguistically (Haiman and Munro 1983). This results in a potential look-ahead problem if derivation proceeds bottom-up, since the subordinated clause is built before the subject of the superordinated clause enters the derivation. This potential look-ahead problem must be overcome.

Finally, the empirical challenge for an analysis of switch-reference is its cross-linguistic diversity. In a successful analysis of switch-reference, the language-specific properties should fall out from the system without further ado.

In this paper, I focus on switch-reference marking in Quechua, an Amerindian language, spoken in Argentina, Brasil, Bolivia, Chile, Columbia, Ecuador and Peru. The aim of this paper is to derive the properties of the Quechuan switch-reference system. Although the analysis may be transferred to other languages with similar properties as well, there is no claim that this analysis is suited for all switch-reference systems.

The main claim is to analyze switch-reference in Quechua as the morphological realization of an interclausal agreement relation between the heads of two clauses. More precisely, I claim that in Quechua, certain subordinated adverbial clauses lack tense and must enter into a tense agreement relation with their superordinated clauses. This agreement relation then additionally transmits information about the subject of the superordinated clause to the subordinated clause and enables a comparison between the subjects. The analysis will be carried out in the minimalist framework (Chomsky 1995, 2000, 2001, 2008) and is based upon fairly standard definitions of Agree and Merge. Importantly, the transmission of information about the superordinated subject is enabled without invoking a mechanism of feature sharing (cf. Pollard and Sag 1994; Frampton and Gutman 2000; Legate 2005; Pe-

setsky and Torrego 2007; Heck and Cuartero 2008) as done by Camacho (2010) for Pano and Muskogean languages.

The paper is structured as follows: in section 2, I will introduce the reader to the main properties of switch-reference in Quechua. In section 3, an analysis of switch-reference is presented which overcomes the two theoretical challenges of non-locality and look-ahead outlined above. Furthermore, it is shown how this analysis captures the properties of switch-reference marking in Quechua naturally. Section 4 provides a comparison between this approach and other approaches to switch-reference. Section 5 concludes.

2. Data

2.1. Switch-reference in Quechua

Quechua is a suffixing SOV language that has a switch-reference system in adverbial clauses. The subjects of the subordinated adverbial and the superordinated main clause are compared. If they are identical, the verbal suffix *-shpa* is used; if not, the verbal suffix *-pti* is used.¹

(1) summarizes four important properties of switch-reference in Quechua based on the research by Cole (1982, 1983); Cole and Hermon (2011); Lakämper and Wunderlich (1998) and Weber (1989).

(1) *Observations*

- a. Switch-reference is canonical.
- b. The switch-reference marker occurs in the position of the tense marker.
- c. Switch-reference markers and tense/case-markers are mutually exclusive.
- d. Switch-reference markers can only occur with nominal person agreement markers.

In the rest of this section, these observations are explained in more detail and illustrated by data. In the data summary that follows I am abstracting away from dif-

¹There is another same subject marker *-r*, which is in complementary distribution with *-shpa*. In what follows, I will not take this marker into account. See (Cole, 1983, 3), (Weber, 1983, 299) for details about the difference between *-r* and *-shpa*. Cole (1983) claims that the marker *-r* is used if the two actions described by the subordinated and the superordinated clause are contextually related, while *-shpa* is used if the two actions are not related. Weber (1983), on the other hand, says that there is no clear difference between the two markers.

ferences between the Quechuan dialects. The points I am focusing on here are the same in all dialects. As far as I know, the only differences between the dialects concern (i) the morphological realization of the switch-reference markers and (ii) the co-occurrence of switch-reference markers and person agreement markers. Peculiarities of certain dialects will be mentioned in the footnotes.

The first observation (1-a) is that switch-reference in Quechua is canonical, i.e., the same subject marker *-shpa* is used whenever the subjects of the adverbial and the main clause are identical and the different subject marker *-pti* is used when the two subjects differ (Cole 1982, 1983; Weber 1989).

(2) *Identical subjects (Ancash)*

- a. *chakra-chaw urya-shpa, pallamu-rqu-u wayta-kuna-ta*
field-LOC work-SS pick-RPST-1 flower-PL-ACC
“While I worked in the field, I picked flowers.” (Cole, 1983, 2f.)
- b. **chakra-chaw urya-pti-i, pallamu-rqu-u wayta-kuna-ta*
field-LOC work-DS-1 pick-RPST-1 flower-PL-ACC
“While I worked in the field, I picked flowers.” (Cole, 1983, 3)

(3) *Different subjects (Ancash)*

- a. *chakra-chaw urya-pti-i, María pallamu-rqu-n wayta-kuna-ta*
field-LOC work-DS-1 Maria pick-RPST-3 flower-PL-ACC
“While I worked in the field, Maria picked flowers.” (Cole, 1983, 3)
- b. **chakra-chaw urya-shpa, María pallamu-rqu-n wayta-kuna-ta*
field-LOC work-SS Maria pick-RPST-3 flower-PL-ACC
“While I worked in the field, Maria picked flowers.” (Cole, 1983, 3)

In the sentences in (2), the subjects of the adverbial clause and the main clause are identical. In this case, the same subject marker *-shpa* must be used. In (3), the two subjects are different and therefore, the different subject marker *-pti* occurs.²

The second observation (1-b) is that switch-reference markers occur in the position of tense markers, i.e. between object and subject agreement markers, as can be seen in (4).

²The only exception to this cross-dialectal generalization is found in Imbabura Quechua where subjunctive adverbial and complement clauses are not marked by the suffixes *-shpa* and *-jpi* (~ *-pti*), like indicative adverbial clauses, but by *-ngapaj* and *-chun* respectively (Cole 1982, 1983; Cole and Hermon 2011). Cole (1983) shows that this additional switch-reference system is non-canonical in contrast to the system outlined in (2)–(3). In what follows, I will only consider the canonical *-shpa/-pti*-system found in all dialects of Quechua.

(4) *Ancash*

- a. *rika-ya-ma-rqa-yki*
 see-PL-1 OBJ-PST-2
 “you(pl) saw me/us”
 “you(sg) saw us” (Lakämper and Wunderlich, 1998, 115)
- b. *rika-ma-pti-yki*
 see-1 OBJ-DS-2
 “when you see me” (Lakämper and Wunderlich, 1998, 123)

In (4), the past tense marker *-rqa* as well as the different subject marker *-pti* occur between the object agreement marker *-ma* and the subject agreement marker *-yki*.³ Note that the switch-reference clause in (4-b) could be translated as “*when you saw me*” as well, in case the matrix clause is past, i.e., semantically, the tense of a switch-reference adverbial clause is identical to the tense of its superordinated clause (Cole 1982). Now, except for the verbal present tense marker, all tense markers are overt (see section 3.5.1.2). Since the tense of a switch-reference adverbial clause is not fixed but depends on the tense of its matrix clause, there is no empirical evidence that switch-reference clauses exhibit a zero tense marker. Instead, the position of the tense marker is filled by the switch-reference marker. The third observation (1-c) states that switch-reference markers do not co-occur with tense and case markers. Since switch-reference markers occupy the position of tense markers, one could argue that they are expected not to co-occur with tense markers. But interestingly, case markers are excluded from these contexts as well, whereas such markers can occur in adverbial clauses that have a tense marker and no switch-reference marker, as shown in (5-a) vs. (5-b).^{4,5}

³(Lakämper and Wunderlich, 1998, 115, fn.1) note that Ancash Quechua uses the nominal 2nd person marker *-yki* instead of the expected verbal marker *-nki* when it follows the past tense marker *-rqa*. This is an idiosyncrasy of Ancash and not found in other dialects.

⁴The tense markers in adverbial clauses are claimed to be nominalizers or nominalizing subordinators (Cole 1982; Lefebvre and Muysken 1988; Weber 1989). However, like verbal markers, they have a tense function (Costa 1972, Cole and Hermon 1981, Weber 1983, 25). See section 3.5 for a paradigm of verbal and nominal tense markers.

⁵Oblique cases are glossed as case in Cole and Hermon (1981); Lefebvre and Muysken (1988); Weber (1989) but glossed as adpositions in Cole (1982). Here, I follow Cole and Hermon (1981); Lefebvre and Muysken (1988); Weber (1989) and take such markers to be case markers.

(5) *Huallaga*

- a.
- non-SR adverbial clause*

tamya-na-n-pita

rain-NMLZ.FUT-3-ABL

“because it is going to rain”

(Weber, 1989, 294)

- b.
- SR adverbial clause*

maqa-rkU-ma-shpa-n-Ø

hit-thereupon-1OBJ-SS-3

“after he hit me”

(Weber, 1989, 298)

In (5-a) the nominalizing tense marker *-na* occurs together with the ablative case marker *-pita*. In (5-b), the SS marker *-shpa* occurs instead of a tense marker and the adverbial clause is not case-marked, illustrated above by a zero marker *-Ø*.

Finally, the last observation (1-d) is illustrated in (6). The data show that person agreement markers are taken from the nominal paradigm in switch-reference clauses, even though no nominalizing tense markers occur (Cole 1983; Lakämper and Wunderlich 1998).⁶

(6) *Ancash*

- a.
- punu-nki*

sleep-2

“you sleep”

(Lakämper and Wunderlich, 1998, 119)

- b.
- wamra-yki*

child-2

“your child”

(Lakämper and Wunderlich, 1998, 119)

- c.
- Alqu-wan puklla-pti-yki wamra asi-n.*

dog-INSTR play-DS-2 child laugh-3

“When you play with the dog, the child laughs.”

(Lakämper and Wunderlich, 1998, 122)

In (6-a), the clause is not nominalized and the verbal marker *-nki* is used. (6-b) shows, that in nominal phrases a different marker *-yki* is used. Now in (6-c), the same nominal marker *-yki* as in (7-b) is used.

⁶Here, dialects differ in the way person agreement is realized in switch-reference adverbial clauses. Imbabura Quechua has no person agreement markers at all, which results from the lack of a nominal paradigm for person agreement markers (Cole 1983). In Ancash Quechua, on the other hand, subject agreement is only realized in different subject contexts (Lakämper and Wunderlich 1998). Finally, in Huallaga Quechua, subject agreement is realized in different subject as well as same subject contexts (Weber 1989).

In the rest of this section, I will shortly summarize the main points about Quechuan clause structure. Afterwards, in section 3, an analysis is developed that is able to derive both the clause structure of Quechua and the four observations about switch-reference summarized in (1).

2.2. Clause structure in Quechua

Quechua is an SOV language which realizes all grammatical categories as suffixes (Cole 1982; Stewart 1988). There are no independent grammatical morphemes.⁷ The order of the suffixes is the same in all dialects of Quechua with the exception of the plural marker, which occurs right after the verbal stem in Quechua I dialects and before or after the mood marker in Quechua II dialects (Lakämper and Wunderlich 1998). In the analysis presented below, I will focus on the markers in bold face, i.e. the order ‘stem-object-tense-subject-case’.⁸

(7) *Suffix Order in Quechua I and Quechua II dialects*

(adapted from (Lefebvre and Muysken, 1988, 73); (Lakämper and Wunderlich, 1998, 116)

a. QI:

Stem-Number-Object-Tense-Subject-(Mood)-(Case)

b. QII:

Stem-Object-Tense-Subject-(Mood)-Number-(Mood)-(Case)

The orders of the markers in bold face are illustrated in (8) for Huallaga Quechua, a Quechua I dialect, and in (9) for Cuzco Quechua, a Quechua II dialect.

- (8) a. *pro* [*pro pro mucha-ma-na-n-ta*] *muna-n*
 3SG_i [3SG_j 1SG kiss-1OBJ-NMLZ.FUT-3-ACC] want-3
 “He_i wants him_j to kiss me.” (Weber, 1989, 289)
- b. Stem Object Tense Subject Case
 mucha ma na n ta

⁷See, however, Lefebvre (1980) for arguments that Quechua has lexical complementizers.

⁸In most cases, the agreement marker after the tense marker realizes the person features of the subject. There are, however, cases where the marker realizes the features of the object. See Lakämper and Wunderlich (1998) for details. Since person agreement in switch-reference clauses is to some extent dialect-specific, I will not provide an analysis for it here.

- (9) a. *Xwan* [*tata-y-pa* *pro* *maqa-wa-sqa-n-ta*] *uyari-n*.
 Juan [father-1-GEN 1SG beat-1OBJ-NMLZ.PST-3-ACC] hear-3
 “Juan heard that my father had beaten me.”
 (*Lefebvre and Muysken, 1988, 16*)
- b. Stem Object Tense Subject Case
 maqa wa sqa n ta

Note that Quechua has subject as well as object *pro*-drop. In (8), all arguments are *pro*-dropped, indicated by different covert *pros*. In (9), the 1st person object is dropped, again indicated by *pro*.

In (8) and (9), the suffix orders are exemplified for verbs of subordinated clauses. Subordinated clauses are always nominalized, while main clauses are not. Nominalizations can be recognized by three properties: (i) a case marker, (ii) a nominalizing tense marker and (iii) nominal person agreement markers.

Since switch-reference adverbial clauses lack the nominalizing tense morpheme as well as the case marker (cf. (5)), Cole (1982); Weber (1989); Cole and Hermon (2011) claim that these clauses are not nominalized, in contrast to all other subordinated clauses. Under these analyses, however, there is no explanation why switch-reference markers can only be combined with nominal person agreement markers.

In the next section, I will present an analysis of switch-reference which assumes that switch-reference adverbial clauses are nominalized and which thereby captures the fact that nominal person agreement markers occur even though no nominalizing tense markers nor case markers occur. In the first part of the next section (3.1–3.3), I will show how the facts about the clause structure of Quechua follow from standard assumptions of the minimalist framework and the framework of Distributed Morphology. Afterwards (3.4–3.5), I will show how the system can be extended in order to derive switch-reference and how the system accounts for the properties of switch-reference listed in (1).

3. Analysis

3.1. Assumptions about the syntactic derivation

The analysis of the data presented in section 2 will be carried out in the minimalist framework (Chomsky 1995, 2000, 2001, 2008). I assume that the derivation is cyclic and proceeds bottom-up. Clauses have a structure as in (10) with three functional projections above VP. Since Quechua is an SOV language, all phrases are right-headed.

- (10) $[_{CP} [_{TP} [_{vP} DP_2 [_{vP} DP_1 V] v] T] C]$

The functional head *v* introduces the external argument (subject), agrees with the internal argument (object) in ϕ -features and assigns accusative case to it. T is the head where tense and aspect features are located. Additionally, T assigns nominative case to the subject via ϕ -agreement. C is the head of the clause and contains features that are relevant to the whole clause, such as topic/focus features, clause type etc.

Nominalized clauses have an additional DP-layer.

- (11) $[_{DP} [_{CP} [_{TP} [_{vP} DP_2 [_{vP} DP_1 V] v] T] C] D]$

The two syntactic operations Merge and Agree are defined as in (12) and (13).

- (12) MERGE ($\{\alpha\}, \{\beta\}$) (Chomsky 1995)
 = $\{\alpha, \{\alpha, \beta\}\}$
- (13) AGREE ($X[P=\{*F*:___, \dots\}]$, $Y[G=F:VAL, \dots]$)
 = $X[*F*:VAL]$, $Y[F:VAL]$ (Chomsky 2001; Baker 2008; Richards 2008)
 iff
- a. X and Y are in a c-command relation and
 - b. X matches Y in P, where match = non-distinctness

The operation Merge in (12) connects two independent syntactic objects α and β , where one of the two objects, here α , projects. Note that movement is considered to be Rmerge (Epstein et al. 1998; Bobaljik 1995; Gärtner 1997; Starke 2001; Zhang 2004; Boeckx 2008 among others).

The operation Agree in (13) takes a probe P on a head X with an unvalued feature F ($[*F*:___]$) and a goal G with a valued F ($[F:VAL]$) on a head Y.⁹ If either X c-commands Y or Y c-commands X and if X and Y are not distinct with respect to the feature(s) of P, F on X gets checked and valued. Following Richards (2008), I assume that a probe P can consist of a single feature or more than one feature. Richards (2008) shows that this assumption leads to an elegant analysis of defective intervention in Icelandic, partial agreement in English *there*-constructions and the Russian genitive of negation. (See also Assmann 2010, who uses this approach to derive PCC effects in Tagalog.)

Furthermore, there might be several different probes on one head. Curly brackets signal which features belong to a probe. The matching condition (13-b) always considers the non-distinctness with respect to all features of a probe P on a head

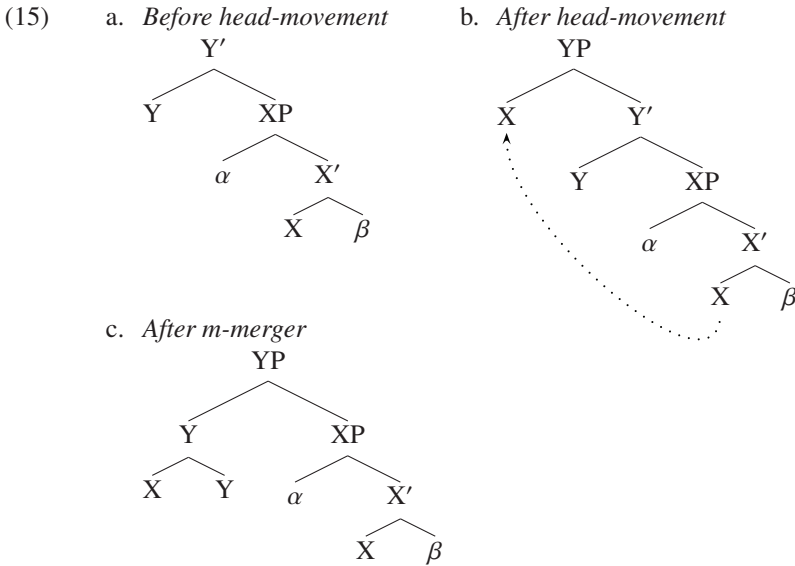
⁹For the notation, see Sternefeld (2006); Heck and Müller (2007); Lahne (2008).

X. Since P can consist of more than one feature, different scenarios are possible, as shown in (14).

- (14) a. $P = \{\alpha\}$
 $AGREE(X[\{*\alpha*:__\}], Y[\alpha:VAL]) =$
 $X[\{*\alpha*:__\}], Y[\alpha:VAL]$
- b. $P = \{\alpha, \beta\}$
 $AGREE(X[\{*\alpha*:__\}, *\beta*:__\}], Y[\alpha:VAL_1, \beta:VAL_2]) =$
 $X[\{*\alpha*:__\}, *\beta*:__\}], Y[\alpha:VAL_1, \beta:VAL_2]$
- c. $P = \{\alpha, \beta\}$
 $AGREE(X[\{*\alpha*:__\}, *\beta*:__\}], Y[\alpha:VAL_1]) =$
 $X[\{*\alpha*:__\}, *\beta*:__\}], Y[\alpha:VAL_1]$
- d. $P = \{\alpha, \beta\}$
 $AGREE(X[\{*\alpha*:__\}, *\beta*:__\}], Y[\alpha:VAL_1, \beta:VAL_2]) =$
 $X[\{*\alpha*:__\}, *\beta*:__\}], Y[\alpha:VAL_1, \beta:VAL_2]$
- e. $P = \{\alpha, \beta\}$
 $AGREE(X[\{*\alpha*:__\}, *\beta*:__\}], Y[\alpha:VAL_1, \beta:VAL_3]) =$
no match → *no Agree possible*

In (14-a), P consists of a single feature [α] and X and Y match trivially. Agree can apply in this case. If P consists of more than one feature, as in (14-b) to (14-e), four different cases are possible. First, all features of P on X can be unvalued and Y provides values for all the features of P, as in (14-b). Again, X and Y match in P since there are no contradicting feature values and Agree is possible. The same holds for (14-c), the only difference being that Y provides a feature value only for [α], leaving [β] unvalued. The other two cases are shown in (14-d) and (14-e). Here, one of the features of P—[β]—is already valued. In (14-d), the values for [β] are the same on X and Y. Thus, X and Y match in P and Agree can apply. In (14-e), however, the values for [β] are different, so that this time, X and Y do not match. Consequently, Agree is not possible in this case. The last two cases will become important in the analysis of switch-reference in section 3.5.

The last syntactic operation that is crucial for the analysis to follow is head movement. The exact implementation of head movement is not important here, as long as a moved head c-commands everything that the head of the target projection c-commands (cf. Surányi 2005; Matushansky 2006; Roberts 2010; Georgi and Müller 2010 among others). For sake of concreteness, I will adopt the approach of Matushansky (2006) that assumes that the landing sites of heads, as well as phrases, are specifier positions. Moved heads undergo the operation of m-merger in the morphological component.



3.2. Assumptions about morphological realization

The morphological part of the analysis is carried out in the Distributed Morphology framework (Halle and Marantz 1993; Halle 1997; Noyer 1997). Distributed Morphology is a realizational framework, i.e., morpho-syntactic features of terminal nodes (*morphemes*), which have been manipulated in the syntax, are realized post-syntactically by *markers* with phonological content ((*Late Vocabulary Insertion*). The combination of the markers and the morpho-syntactic feature bundles they realize are called *vocabulary items*. Importantly, a vocabulary item need not be fully specified, i.e., its feature specifications may be a proper subset of the morpheme's feature specification (cf. *Subset Principle* in (16)). In case, more than one marker matches the feature specification of a morpheme, the most specific item is chosen, i.e. the one with most features.

(16) *Subset Principle* (Halle 1997)

The phonological exponent of a vocabulary item is inserted into a morpheme if the item matches all or a subset of the grammatical features specified in the terminal morpheme. Insertion does not take place if the vocabulary item contains features not present in the morpheme. Where several vocabulary items meet the conditions for insertion, the item matching the

greatest number of features specified in the terminal morpheme must be chosen.

Following Baker (1988); Ritter (1995) among others, I assume that head movement leads to realizing morphological markers as affixes, i.e., head movement feeds affixation. However, I do not claim that head movement is the only reason for affixation (in line with Donati 2006; Matushansky 2006).

In order to get the right linear order of the morphemes, I adopt the *Mirror Principle* in (17) (Baker 1985).

- (17) *The Mirror Principle* (Baker 1985, 375)
Morphological derivations must directly reflect syntactic derivations (and vice versa).

The Mirror Principle ensures that the linear order of the markers is the same as the order in which the respective heads they realize have entered the derivation. Note that the Mirror Principle might be a theorem derived from theoretical primitives (cf. Surányi 2005). This depends on the exact implementation of head movement, which I have not been explicit about since it is not relevant for the discussion here.

3.3. Deriving Quechuan clause structure

With these assumptions in mind, we can now derive the facts about clause structure in Quechua, outlined in section 2.2.

The embedded clause in (18), repeated from (9-a), can be derived as follows.

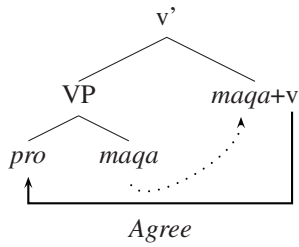
- (18) *Xwan* [*tata-y-pa pro maqa-wa-sqa-n-ta*] *uyari-n.*
Juan [father-1-GEN 1SG beat-1OB-NMLZ.PST-3-ACC] hear-3
“Juan heard that my father had beaten me.”

(Lefebvre and Muysken, 1988, 16)

At first, the verbal stem *maqa* and *pro* are merged.¹⁰ Then, *v* is merged, agrees with the internal argument in ϕ -features and *V* is head-moved to *v*.

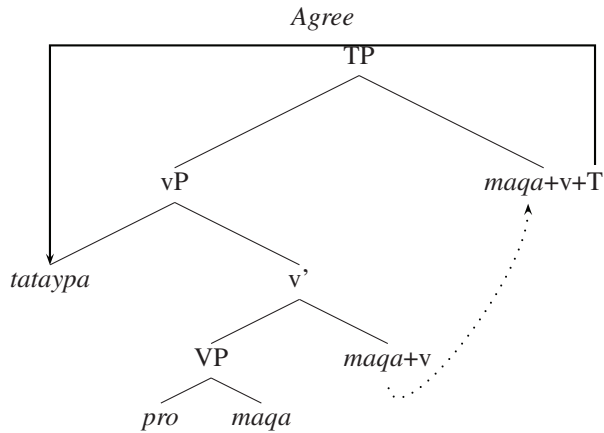
¹⁰Alternatively, a phonologically overt pronoun is merged, agrees with the predicate and is deleted under recoverability (Chomsky 1980).

(19)



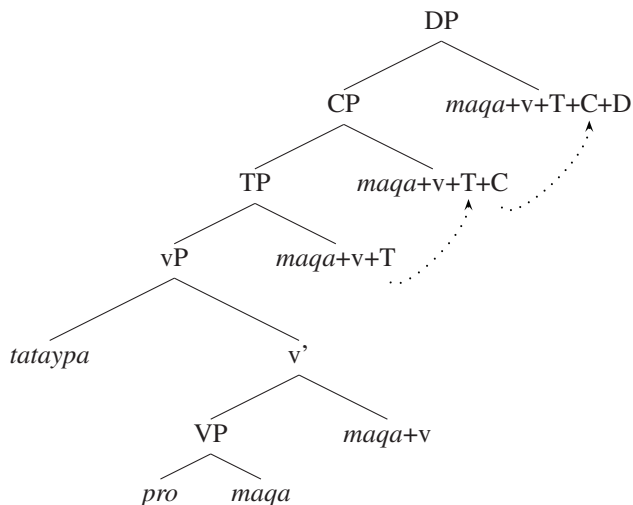
Next, *tataypa* is merged as the external argument, followed by T. T agrees with *tataypa* in ϕ -features and the complex head *maqa+v* moves to T.

(20)



Finally, C and D are merged. The complex head *maqa+v+T* first moves to C and then *maqa+v+T+C* moves to D.

(21)



Afterwards, the whole DP is merged as the internal argument of the matrix clause and receives accusative case from the matrix *v*.

After the derivation has finished, vocabulary insertion takes place and markers are inserted into the morphemes. For the ϕ -features on *v*, which have been valued by the internal argument *pro*, the object agreement marker *-wa* is inserted. The tense morpheme on T is filled with the nominal past marker *-sqa*. The ϕ -features of T are realized by *-n*. (In order for this to happen, I assume that T undergoes *Fission* (Noyer 1997), so that more than one marker can be inserted into T.) Finally, the case features on D are realized by the accusative marker *-ta*. For sake of completeness, I assume that C is realized by a zero marker. The vocabulary insertion is summarized in (22).

(22)	$v[\phi:1sg]$	\leftrightarrow	<wa>
	T[tense:pst]/D	\leftrightarrow	<sqa>
	T[$\phi:3sg$]	\leftrightarrow	<n>
	C	\leftrightarrow	< \emptyset >
	D[case:acc]	\leftrightarrow	<ta>

Now, the morpho-syntactic features are realized by markers following the Mirror Principle. The *v* head bears the agreement features of the object after Agree. Since it is the first functional head that has entered the derivation, the object agreement marker is realized right after the stem. Next, the features on T, viz., the subject agreement features and the tense features, must be realized. They follow the object agreement marker because T enters the derivation after *v*. Finally, the marker

farthest away from the stem must be the case marker, as D is the last head that is merged in the embedded clause.

- (23) *Order of heads and morphemes*
- | | | | | | |
|----------|-------------|------------|-------------|--------------|------------|
| Steps: | 1. | 2. | 3. | 4. | 5. |
| Heads: | V | v | T | C | D |
| Markers: | <i>maqa</i> | <i>-wa</i> | <i>-sqa</i> | $-\emptyset$ | <i>-ta</i> |

Having derived the clause structure and marker order of a simple Quechuan nominalized clause, I will now outline concrete assumptions about the feature specification of the heads v and T and show how the properties of switch-reference in Quechua (cf. section 2.1) can be derived.

3.4. Assumptions about the feature specifications of v and T

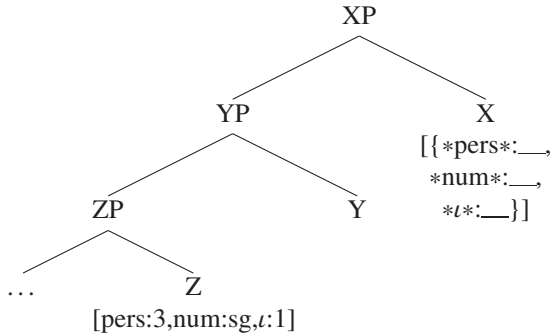
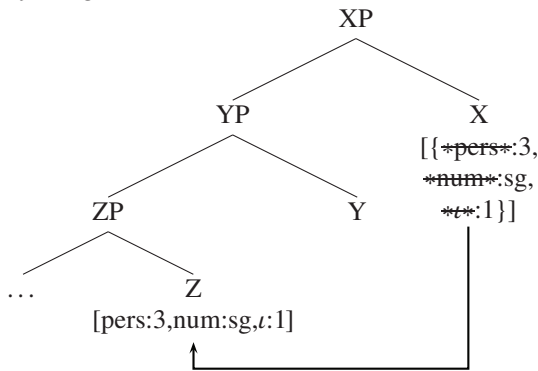
There are two points which are important for the analysis of switch-reference in the next section. They concern ϕ -features and tense features.

ϕ -features are important for agreement of the verbal complex with its arguments. Unvalued ϕ -features on v trigger Agree with the internal argument and unvalued ϕ -features on T trigger Agree with the external argument as described above in section 3.3.

ϕ -features are person, number and gender. Henceforth, gender will be ignored as it is of no importance in the analysis of switch-reference in Quechua. Following Řezáč (2004*a,b*, 2006) (cf. also Browning 1989; Wechsler and Zlatić 2000, 2003; Wechsler to appear for similar ideas), I assume that the referentiality of nominal phrases is encoded by an index feature [*l*], which takes part in object and subject agreement. Possible values for [*l*] are integers $i \in \mathbb{N}$. It should be noted, that the index feature presented here does not necessarily violate the inclusiveness condition (Chomsky 1995, 228). Index features can be considered to be already present on DPs in the numeration, with a value maybe yet to be specified (cf. Agree approaches to binding à la Fischer 2004).

Unvalued index features [*l*] on v and T are checked by valued features on the internal argument and the external argument respectively. As any other feature, the index feature might be part of a complex probe or constitute a probe by itself. For sake of concreteness, I assume that the index feature is part of the ϕ -probe on v and T.

Now, a more concrete version of ϕ -Agree can be given. A head X that bears an unvalued person, number and index feature enters into Agree with a head Z that bears valued features.

(24) a. *Before Agree*b. *After Agree*

In (24), X agrees with Z in the ϕ -features [pers] and [num] and in the index feature [t]. The c-command condition of Agree is fulfilled since X c-commands Z. The matching condition is trivially fulfilled because there are no valued features on X in (24-a), hence, no contradiction of feature values is possible.

The second feature I want to make concrete assumptions about is the tense feature. Tense is encoded by the morpho-syntactic feature [tense], which might take values such as [past], [future], [present] etc.¹¹ The tense feature is located on T. In what follows, I assume that T might bear a valued tense feature or an unvalued one (cf. also the feature sharing approach of Szucsich 2009 and the zero-tense approach of Kratzer 1998), i.e., the value of a tense feature can also be received via Agree with the valued tense feature of another clause.

Concretely, I assume that a T head may enter the derivation with a valued or an

¹¹Later in section 3.5, I will decompose the tense feature into two binary features [\pm pst] and [\pm fut]. The decomposition does not affect the syntactic analysis in any way and is only relevant for the morphological analysis, so that the tense feature will not be decomposed until section 3.5.1.2.

unvalued tense feature. There are no restrictions concerning the occurrence of the types of tense feature. If the tense feature is unvalued, T has to enter into tense Agree with another clause. If the T of an adverbial clause bears an unvalued tense feature, it must agree with the superordinated clause in tense. Morphologically, this tense Agree will be realized by switch-reference marking.

On the other hand, if the T of an adverbial clause bears a valued tense feature, this will be realized by a tense marker.¹²

Following (Partee 1973; Kratzer 1998; Schmitt 2000), I assume that tense is not an operator but a referential feature that shows similarities to pronouns. Hence, in addition to the morpho-syntactic feature [tense], T bears a tense index feature [t_i]. The tense index feature [t_i] is not the same feature as the index feature [t]. It is important to make a difference between these two features because semantically, tense is not of type $\langle e \rangle$ like nominal arguments of predicates but of type $\langle i \rangle$ (Abusch 1997; Musan 1997; Kratzer 1998).

The tense index feature on T is unvalued when the tense feature is unvalued, i.e., a tense index can only be present if tense is present as well. This in turn means that in cases where tense Agree is necessary, tense binding happens as well (cf. Kratzer 1998). This assumption accounts for the fact that in Quechua, the tense of clauses with no tense markers of their own, i.e. switch-reference clauses, is identical to the tense of the superordinated clause (cf. (5), section 2.1).

Putting the assumptions about ϕ -features and tense features together, (25) shows the two different feature specifications of an adverbial T in Quechua.

- (25) a. *Valued tense feature (no switch-reference marking)*
 T[$\{ *pers*: _ , *num*: _ , *t*: _ \}$, tense:VAL₁, t_i :VAL₂]
 b. *Unvalued tense feature (switch-reference marking)*
 T[$\{ *pers*: _ , *num*: _ , *t*: _ , *tense*: _ \}$, $\{ *t_i*: _ \}$]

Important is the structure in (25-b) with the unvalued tense feature. Since the tense feature and the ϕ -features constitute a single probe, tense Agree is only possible, if the values of the ϕ -features and the value of the index feature on the two heads do not contradict. Assuming that the tense feature and the subject agreement features are both located on T, the unvalued tense feature of an adverbial T can only be

¹²There is no clarity regarding the question in which contexts switch-reference adverbial clauses are used and in which contexts non-switch-reference adverbial clauses are used. Cole (1982) gives the impression that the use of switch-reference marking depends on the semantic function of the adverbial clause, i.e., whether it is a time, manner, purpose clause etc. (Weber, 1983, 297), on the other hand, notes particularly that there is no semantic and/or pragmatic difference in the use of the two types of adverbial clauses.

valued if either the subject features on T are valued after the tense feature or if the subject features of both clauses—and hence the subjects—are identical.

The first option runs afoul with the assumption that derivation proceeds bottom-up and is cyclic because the adverbial clause is built before it is merged with a projection of the matrix clause. Hence, Agree between T and the subject after T has entered into tense Agree with the matrix clause would violate the Strict Cycle Condition (Chomsky 1973, 243).

(26) *Strict Cycle Condition*

No rule can apply to a domain dominated by a cyclic node A in such a way as to affect solely a proper subdomain of A dominated by a node B which is also a cyclic node.

Thus, only the second option remains, which essentially states that tense Agree is only possible if the subjects of two clauses are identical, i.e., if there is a same subject configuration.

3.5. Deriving switch-reference in Quechua

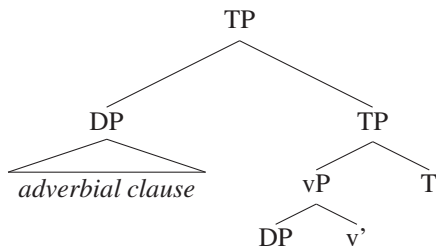
3.5.1. How switch-reference marking comes about

3.5.1.1. The syntax

With the analysis developed so far, switch-reference adverbial clauses can now be derived. I assume that adverbial clauses are left-adjoined to TP in Quechua. As far as I know, there is no clear evidence from word order that adverbial clauses are in a different position. Adverbial clauses often appear to the left of the matrix clause but they may also follow the matrix clause (Weber, 1989, 297f). Since there is also no clear evidence that there is subject movement to Spec-TP, I will not assume subject movement here.

Like all other subordinated clauses, adverbial clauses are nominalized, i.e., they are headed by D.

(27)

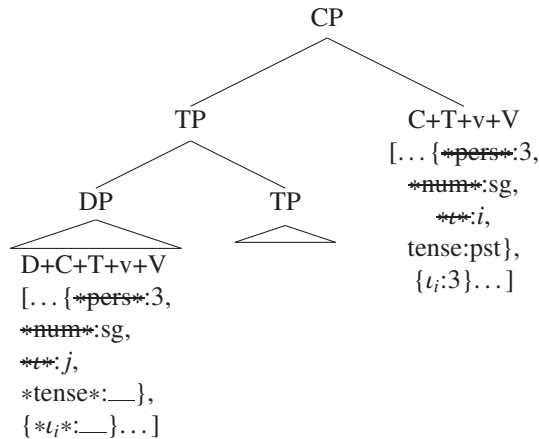


Due to head movement, the head of the adverbial clause is complex (cf. section 3.3).

Now, there are two types of adverbial clauses. The first type subsumes adverbial clauses which have tense of their own. The second type of adverbial clauses is tenseless and must get a tense value from another clause.

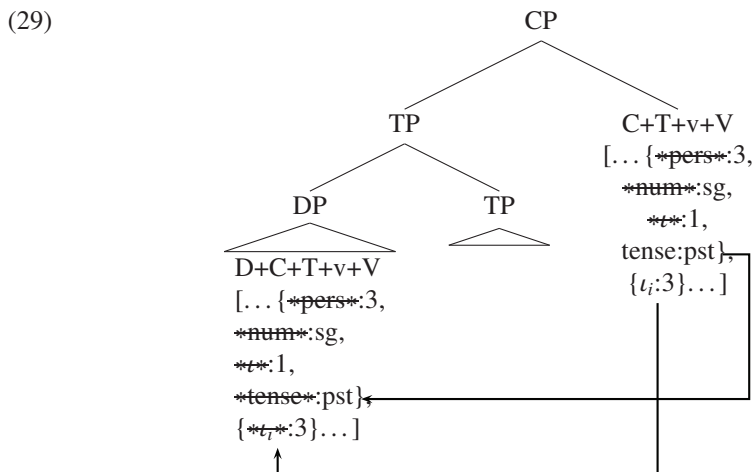
If the tense feature of the adverbial clause is unvalued, it has to enter into tense Agree with the T head of the matrix clause. Remember that an unvalued tense feature constitutes a probe together with the features for subject agreement, which must have been valued before the tense feature gets valued. The configuration before tense Agree is shown in (28) (with arbitrarily chosen values for [pers] and [num] and variables i and j for the subject indices).

(28)

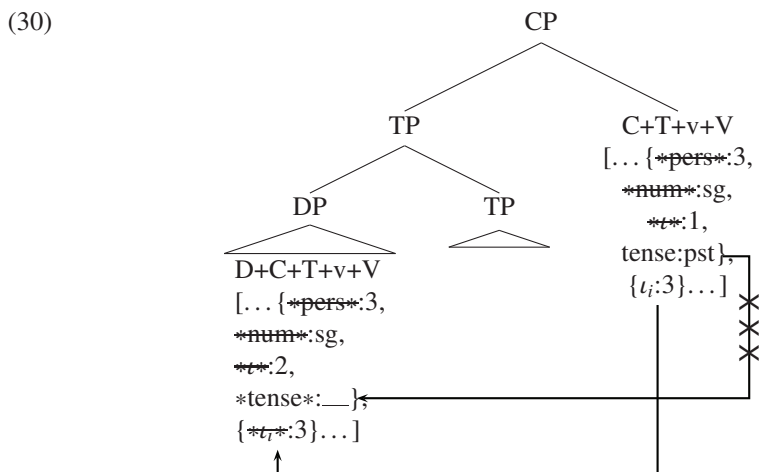


In this configuration, the T heads of the adverbial and the matrix clause have Agreed with their subjects, so that the ϕ -features and the index of the subjects are available on the respective T heads. Head movement makes the subject agreement and tense features of the T heads available on the highest heads in the respective clause. In a head movement approach à la Matushansky (2006) or Roberts (2010), the superordinated T, which is the goal, c-commands the T in the adverbial clause, which is the probe. Hence, the c-command condition of Agree is fulfilled with the goal and the probe standing in a c-command relation. So, only the matching condition decides whether Agree is possible or not. The two heads match if the values for the subject agreement features are identical. There are two possible scenarios that can emerge: either the values are identical and tense Agree is possible or the values are different and tense Agree is not possible. In order to illustrate the most interesting case, the person and number feature of the two subjects are taken to be identical. Then, only the values of the index features decide whether the matching condition is fulfilled or not.

The first possibility is that $i = j$. In this case, tense Agree is possible as shown in (29), for $i = j = 1$.



In the other case, the indices of the two subjects are different ($i \neq j$). Here, the two T heads are not matching and tense Agree is not possible. Note that the tense index feature can always be valued since it constitutes a probe of its own.



In (30), the tense feature of the embedded T does not receive a value because there is no matching goal for the probe. However, the principle of Full Interpretation (Chomsky 1986) ensures that unvalued, i.e. uninterpretable, features must be checked by the end of the derivation. Thus, the derivation illustrated in (30) is supposed to crash. Here, I would like to propose that a post-syntactic mechanism

of default valuation assigns a default value [def] in case that the feature does not receive a value by Agree (see Frampton and Gutman 2000; Cho and Park 2004; Heck and Cuartero 2008 for similar proposals; Preminger 2010, 2011 for a proposal where morphological realization differs directly between failed Agree and successful Agree). The exact structure of [def] in the case of tense in Quechua will be outlined below in section 3.5.1.2.

Note that a mechanism of default valuation is wide-spread in the literature about agreement, though it has not always been mentioned explicitly. If, e.g., 3rd person is considered to be absence of person (Kayne 2000; Sigurðsson 2001; Anagnostopoulou 2003), the person feature of a ϕ -probe cannot be valued by a 3rd person argument and must be given a default value.

Up to this point, we have received the following result: in same subject configurations, where the subject of the adverbial clause and the subject of the matrix clause are identical, tense Agree is possible and in different subject configurations, where the two subjects are different, tense Agree is not possible, and the tense feature on the embedded T receives a default value.

- (31) a. Same subject: T[**tense**:pst|pres|fut|...]
 b. Different subject: T[**tense**:def]

3.5.1.2. The morphology

Now, the morphological realization of the features decides which markers are inserted. The main point of this part of the analysis is that the switch-reference markers are inserted whenever the tense feature is valued by Agree, while tense markers occur in case the tense feature enters the derivation valued. In other words, the important outcome of the analysis is that switch-reference markers and tense markers are realizations of the same morpho-syntactic category, namely tense, i.e., there is no morpho-syntactic category ‘switch-reference’ in Quechua.

(32) provides a closer look at the different morpho-syntactic contexts for marker insertion. According to the analysis above, the tense feature comes in the four different forms given in (32).

- (32) where $\alpha \in \{pst, pres, fut\}$, $i, t \in \mathbb{N}$
- C+T+v+V [{tense: α ,** ϕ **:3sg,**t**:i},{ t_i :t},...]
 - D+C+T+v+V [{tense: α ,** ϕ **:3sg,**t**:i},{ t_i :t},...]
 - D+C+T+v+V [{**tense**: α ,** ϕ **:3sg,**t**:i},{**t**:t},...]
 - D+C+T+v+V [{**tense**:def,** ϕ **:3sg,**t**:i},{**t**:t},...]

There are three parameters that are important here. First of all, the tense feature may appear in context of a D head, i.e., the clause is nominalized (32-a), or not

(32-b-d). Second, the tense feature may be a probe feature (32-c-d) or not (32-a-b). Finally, the value of the tense feature is default (32-d) or not (32-a-c).

The paradigm of markers that occur in the slot between the object and subject agreement markers (cf. section 2.1) is given in (33) for Imbabura Quechua (Cole 1982, 142f., Cole and Hermon 1981, 10); for discussion see Kusters 2003; Hintz 2007). Note that this paradigm is simplified with respect to the tense/aspect paradigm of Quechua in order to illustrate the main point, namely why switch-reference markers and tense markers are mutually exclusive. If further tense/aspect distinctions are made, the morphological analysis outlined below must be refined.

(33)

TENSE		
	verbal markers	nominal markers
present	∅	/j/
past	/rka/	/shka/
future	/nga/	/na/
SWITCH-REFERENCE		
same subject	/shpa/	
different subject	/jpi/	

In (34), the tense feature is decomposed into binary features [pst] and [fut]. This is just a refinement of the feature specification given above; all other points of the analysis stay the same. Here I assume that the default value for tense features is ‘+’.

- (34) present = [-pst-fut]
 past = [+pst-fut]
 future = [-pst+fut]
 default = [+pst+fut]

The vocabulary items that derive the correct distribution of the markers are given in (35). Following (Bejár, 2003, 155ff.), I assume that vocabulary items may differ between values that are added to a probe by Agree (italicized features and feature values) and values that are already present on heads. Bejár (2003) needs this distinction in order to derive so-called *second cycle effects* of Agree. She also presents an alternative analysis where the vocabulary items have different contextual requirements. This alternative might be possible here as well, even though the implementation might be more complex than the analysis in (35).

(35) *Vocabulary items for tense feature in Quechua*

- a. [-pst–fut] ↔ ∅
- b. [+pst–fut] ↔ <rka>
- c. [-pst+fut] ↔ <nga>
- d. [-pst–fut]/D ↔ <j>
- e. [+pst–fut]/D ↔ <shka>
- f. [-pst+fut]/D ↔ <na>
- g. [] ↔ <shpa>
- h. [+pst+fut] ↔ <jpi>

The idea of the analysis in (35) is that the alleged switch-reference markers *-shpa* and *-jpi* (~ *-pti*) are in fact realizations of a tense feature valued by Agree, in contrast to the tense markers, which are realizations of tense features with inherent values. As shown in (35-a-f), the tense markers are inserted when the tense features have the respective feature values. Nominal tense markers are inserted in the context of a nominal head D (35-d-f). The different subject marker *-jpi* (~ *-pti*) is inserted when the tense features have default values due to failed Agree (35-h). The same subject marker *-shpa* is inserted in case the tense features do not have values of their own and do not both have default values (35-g). Hence, the same subject marker can be considered to be the *elsewhere marker*.

Summing up, I have developed an analysis of switch-reference that is able to overcome the two theoretical problems with switch-reference. First of all, the non-local dependency between the subjects of two different clauses is split up into different local Agree operations. When subjects Agree with the T heads of their clauses, the ϕ -features and the index of the subject become available on T. Then, the T heads enter into an Agree relation which is needed for independent reasons since the T head of one of the clauses lacks tense values. However, this Agree relation can only be established in case the subjects are identical. Otherwise, T receives a default value. The different appearances of the tense features are then realized with tense or switch-reference markers. Switch-reference markers realize tense features if their values have been added by Agree and tense markers are used if the tense features have values of their own.¹³ Note that this analysis resembles previous analyses of switch-reference in several ways. A comparison of the approach developed here and other approaches to switch-reference is given in section 4.

In the final part of this section, I will show how the properties of the Quechuan

¹³Ritter and Wiltschko (2009, 2010) argue that T (their “INFL”) actually bears an abstract morpho-syntactic category [\pm coincidence] which encodes *clausal anchoring* and can be instantiated by different concrete categories in different languages, e.g. tense, location or participant. In a way, the present analysis of switch-reference being a realization of T captures the spirit of their analysis.

switch-reference system fall out from the analysis of switch-reference developed so far, i.e., I will show how the agreement analysis of switch-reference can also overcome the empirical problem with switch-reference.

3.5.2. *Deriving the properties of switch-reference in Quechua*

The empirical problem with switch-reference is its cross-linguistic diversity. Switch-reference systems differ immensely in their properties. This makes it hard and probably impossible to analyze switch-reference cross-linguistically alike. In this paper, I solely focus on Quechua and show how the interclausal agreement analysis developed in this section so far is able to derive the four observations that can be made for switch-reference in Quechua (cf. section 2.1 for details).

(36) *Observations*

- a. Switch-reference is canonical.
- b. The switch-reference marker occurs in the position of the tense marker.
- c. Switch-reference markers and tense/case-markers are mutually exclusive.
- d. Switch-reference markers can only occur with nominal person agreement markers.

3.5.2.1. *Switch-reference is canonical*

The first property (36-a) follows from the assumptions about tense Agree. If the subjects are identical, tense Agree is possible and the tense features receive non-default tense values and must be realized by the same subject marker *-shpa* (cf. (35)). If the subjects are not identical, tense Agree is not possible and the tense features get default values, which in turn leads to insertion of the different subject marker *-pti*. Thus the switch-reference system in Quechua is correctly predicted to be canonical, with the different subject marker only occurring in different subject contexts and the same subject marker only occurring in same subject contexts.

3.5.2.2. *The switch-reference marker occurs in the position of the tense marker*

The second observation (36-b) follows as well because there is no morpho-syntactic category ‘switch-reference’, but only ‘tense’. Switch-reference is analyzed as *agreeing tense*. Hence, the switch-reference markers are tense markers

which must occur in the slot of tense markers between the object and subject agreement markers.

3.5.2.3. *Switch-reference markers and tense/case-markers are mutually exclusive*

The third property (36-c) combines two facts. First, tense markers and switch-reference markers cannot co-occur. Since both types of markers realize the tense feature, we expect that the markers cannot show up at the same time. However, overt case marking of the adverbial clause is also not possible when a switch-reference marker occurs. This is interesting since it is not obvious why this should be so. In what follows, I will provide an explanation for this puzzling fact.

Quechua has structural as well as semantic cases. The case markers for Huallaga Quechua, according to (Weber, 1989, 55ff.), are given in (37).¹⁴

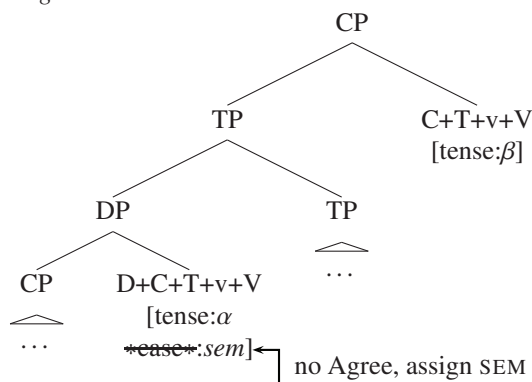
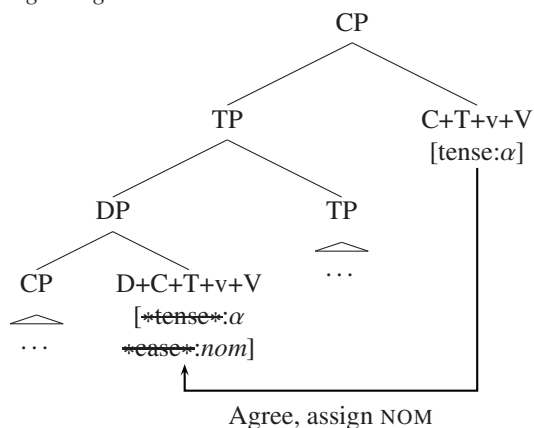
(37)

structural case	∅	nominative
	/-ta/	accusative
Semantic case	/-yaq/~/-kama/	limitative
	/-man/	goal
	/-chaw/	locative
	/-paq/	purposive/benefactive
	/-pita/	ablative
	/-rayku/	sake
	/-naw/	similarity
	/-niraq/	like
	/-wan/	comitative
	/-pa/	genitive
	/-pura/	among

Here I assume that structural case is a reflex of Agree (George and Kornfilt 1981; Schütze 1997; Chomsky 2000). If a category agrees with T, it is marked with nominative case; if it agrees with v, it receives accusative case. Semantic cases, on the other hand, are typically assigned to adjuncts depending on its relation with the matrix clause (Wunderlich and Lakämper 2001). A DP is marked by semantic case, if it has not received structural case, i.e., if it has not agreed with T or v.

¹⁴The marker *-ta* is also used for dative case and case of direction. The genitive marker is not only used to indicate possession but also to indicate direction etc.

Now, in the theory developed above, the difference between switch-reference and non-switch-reference adverbial clauses is that the complex head of the former agrees with the matrix T in tense while the head of the latter does not do so. Since an Agree relation with T induces nominative case assignment, we expect that adverbial clauses which agree with T must receive nominative case. Adverbial clauses which do not Agree with T do not receive structural case and must be lexically case-marked. Note that if case is viewed as a true reflex of Agree and not constructed as an uninterpretable feature that T must get rid of, it must be possible for two categories α and β which Agree with the same head H to receive the same case. Concretely, it must be possible for both the matrix subject and the adverbial switch-reference clause to receive nominative case.

(38) a. *Non-agreeing adverbial clause*b. *Agreeing adverbial clause*

Note that the locus of case assignment in (38-b) is not the goal, as in cases of case assignment to arguments but the probe. This is not problematic if case is considered to be a reflex of Agree. Then, case should be realized on all categories where possible. Since T is not able to receive case, only the adjunct clause, which includes the DP in question, can receive it.

patible only with nominative case. As (37) shows, nominative case is realized by a zero marker (\emptyset). Thus, switch-reference adverbial are mutually exclusive with overt case markers.

3.5.2.4. *Switch-reference markers can only occur with nominal person agreement markers*

Finally, the last property (36-d) follows from the assumption that switch-reference clauses in Quechua are nominalized, i.e. headed by D. The subject agreement markers of Ancash Quechua are given in (39).¹⁵ Object agreement markers are identical in verbal and nominal contexts.

(39) *Person markers (Ancash)* (Lakämper and Wunderlich, 1998, 119)

	VERBAL	NOMINAL
1	-:	-:
2	-nki	-yki
3	-n	-n
12	-ntsik	-ntsik

For the person agreement markers in (39), the vocabulary items in (40) are plausible. (The 1st person is marked by lengthening of the stem-final vowel: ‘-:’.) Note that the person feature might be decomposed into binary features just like the tense feature. Nothing hinges on that.

¹⁵Whether verbal or nominal markers are used, can only be seen in the 2nd person. All other markers are identical. In other dialects of Quechua, the marker for 1st person differs as well, e.g. Ayacucho Quechua in (i).

(i) *Person markers (Ayacucho)* (Lakämper and Wunderlich, 1998, 120)

	VERBAL	NOMINAL
1	-ni	-y
2	-nki	yki
3	-n	-n
12	-nchik	-nchik

- (40)
- a. [1] ↔ <:;>
 - b. [2] ↔ <nki>
 - c. [2]/D ↔ <yki>
 - d. [3] ↔ <n>
 - e. [] ↔ <ntsik>

If nominal person markers are specified by the context ‘D’, it is correctly predicted that in switch-reference adverbial clauses, which are nominalized just like any other adverbial clauses, the nominal person agreement markers must be used despite the absence of other markers that indicate nominalization. This is an important outcome of the theory.

To sum up, I have shown that the observations about switch-reference in Quechua can be captured by the agreement theory developed in this section. As far as I can see, no other theory of switch-reference is able to derive the same facts. I have also shown that an account that treats switch-reference adverbial clauses in Quechua as nominalized, thereby explaining the fact that nominal person agreement markers are used, is compatible with the fact that this kind of adverbial clause does not show any other sign of nominalization. It follows from the theory of interclausal tense agreement that switch-reference markers are mutually exclusive with nominal tense as well as with overt case markers.

4. Other approaches to switch-reference

In this section, the analysis developed in the section 3 is compared with other approaches to switch-reference with respect to conceptual properties and empirical adequacy.

4.1. Comparison with respect to conceptual properties

In general, it should be mentioned that the account presented here, is highly reminiscent of the binding approach of *Finer 1985* (cf. *Broadwell 1997*; *Watanabe 2000*; *Peachey 2006* for variants of it). In this type of theory, the switch-reference dependency is also split up into dependencies between the subject and the head of the clause and a dependency between the heads of two clauses, i.e., the comparison between two subjects is only established indirectly via clausal heads. The same idea was pursued in the agreement analysis developed above in section 3.5. The main idea of *Finer’s* approach is that the head of a switch-reference clause is either the same subject marker—an anaphor, which must be bound by the head of the superordinated clause—or the different subject marker—a pronoun, which

must not be bound. Binding is possible if the two heads bear the same index, which they have obtained via an indirect agreement relation with the subject. This derives the fact that the same subject marker can only be used if the subjects of the two clauses are identical (binding is obligatory), and the different subject marker can only be used if the two subjects differ (binding is not allowed). Since the agreement analysis pursued here involves referential indices which enter into a syntactic Agree relation, the dependency may also be considered to be a binding dependency, just as in *Finer* (1985).

There are, however, three points in which *Finer's* approach and the approach presented here differ. First of all, the agreement analysis is built upon the idea that switch-reference is *not* a proper morpho-syntactic category. Rather, what we observe as switch-reference marking is in fact only a subsystem of another morpho-syntactic category, namely tense.

Another difference to the binding approaches of *Finer* (1985); *Broadwell* (1997); *Watanabe* (2000); *Weisser* (2009) as well as the feature sharing approach of *Camacho* (2010) is that whether a morpheme is a same subject marker or a different subject marker is not settled at the beginning but is an outcome of morphological realization after syntax has manipulated features and feature values (see also *Georgi* (this volume), *Keine* (this volume)) for analyses where same and different subject marking is not fixed from the beginning).

Finally, the binding approach is clearly representational in nature, since it involves the representational binding principles A and B.

(41) *Binding Principles* (Chomsky, 1981, 188)

- A. An anaphor is bound in its governing category.
- B. A pronominal is free in its governing category.

The agreement approach developed here is, however, entirely derivational since it does not rely on representational constraints such as binding principles. Thus, the interclausal agreement approach is in line with the tenet of reducing the representational residue in derivational theories (cf. *Brody* 2001).

So far, the question of phases has been ignored. Note, however, that in principle, the agreement approach presented here is compatible with various versions of phase-based derivation (see e.g. *Chomsky* 2001; *Richards* 2011; *Müller* 2010 and references cited therein). Since in the analysis of Quechua, every head moves up to the next phase head, the heads will always be at the edge of the respective phase and their features will be accessible to operations outside the phase. Thus, the interclausal agreement approach is fully compatible with a minimalist derivational syntax.

A possible flaw in the interclausal agreement analysis might be that it is based upon referential indices in the syntax. This may be seen as a step backwards in

syntactic theory as the minimalist program tries to eliminate syntactic indices in narrow syntax and considers them to be a purely semantic object. In fact, theories have been proposed where switch-reference is analyzed without invoking referentiality. However, as I will argue below, theories which do not make use of indices, encounter difficulties with deriving canonical different subject marking.

4.2. Comparison with respect to empirical adequacy

Here I would like to summarize three different accounts of switch-reference that do not make use of referential indices.

Georgi (2012) assumes that in same subject contexts there is only one DP that is merged as the subject of the subordinated clause and then moves to the position of the subject of the superordinated clause. In different subject contexts there are two DPs which are merged in the two subject positions.

Keine (this volume) proposes that in switch-reference contexts, clauses are coordinated. In same subject contexts, low coordination of VPs excluding the subject applies, so that only one subject is present in the structure, while in different subject contexts high coordination of vPs applies with two subjects being present in the structure.

Finally, Camacho (2010) assumes that the clause bearing switch-reference morphology has an empty pronominal as its subject which is ϕ -defective and cannot value the ϕ -features on T. Camacho then proposes that the T of a same subject clause has a valency feature which must be valued via Agree with the superordinated clause. Since he assumes feature sharing (Pesetsky and Torrego 2007), the valency Agree relation establishes a link between the subject of the superordinated clause and the subordinated clause. In other words, the subject of the superordinated clause is identified as the subject of the subordinated clause. In different subject contexts, however, no such interclausal dependency is established, and two different subjects are present.

What these three approaches have in common is that a dependency between two clauses is only established in same subject contexts, while different subject contexts exhibit no dependency between the clauses. This, however, means that it cannot be guaranteed if the subjects in different subject contexts are truly different, and additional stipulations are necessary in order to rule out accidental identity.

Keine (this volume), e.g., rules out accidental identity of subjects in different subject contexts by the principle of *Economy of Coordinate Structures* in (42) (cf. also Chomsky 1995; Rizzi 1997; Bresnan 2001; Grimshaw 1997, 2001, 2008 among others).

- (42) *Economy of Coordinate Structures*
 Given semantic equivalence, minimize structure.

Since vP and VP coordination are semantically equivalent if both subjects are identical, only VP coordination may be used. Note, however, that this constraint is at least translocal (maybe even transderivational), i.e., it involves a comparison of possible structures that go back to the same input numeration. Since such constraints increase the complexity of syntactic computation immensely, they are not desirable and should be dispensed with, if possible.

It should be noted that there are in fact languages which have non-canonical different subject marking, i.e., the different subject marker is used even though the subjects are identical, e.g. Seri (cf. Moser 1978; Marlett 1981, 1984*a,b*, 2010; Farrell et al. 1991), Amele (cf. Roberts 1987, 1988*a,b*, 1990, 1997, 2001), Eastern Pomo (cf. McLendon 1975, 1978) or Lenakel (cf. Lynch 1983). Nevertheless, canonical different subject marking as can be observed in Quechua, does not follow directly from such accounts and needs additional assumptions. Canonical different subject marking, however, follows directly within the agreement approach developed here. Note that the main idea of the interclausal agreement analysis can be maintained in order to derive unexpected switch-reference marking. Presupposing that an Agree relation between two clauses can be established in any case, the constitution of probes decides whether Agree can be established (SS marking) or not (DS marking). Even though I do not claim that the agreement account is suited for all switch-reference systems—in fact, it rather seems to me that switch-reference is a term covering syntactically distinct phenomena—it is in principle possible to adapt the agreement analysis to other languages and derive unexpected switch-reference marking without altering the main assumptions.

Furthermore, one main advantage of the interclausal agreement analysis is that it is able to derive the language-specific properties of the Quechuan switch-reference system, viz., that the switch-reference marker behaves morpho-syntactically like a tense marker and is not compatible with neither verbal person agreement markers nor case markers.

To sum up the discussion of this section, I have argued that the interclausal agreement approach to switch-reference in Quechua has several advantages over other accounts of switch-reference. On the one hand, the analysis is completely local and derivational in nature, which makes it more compatible with a local derivational framework than *Finer's* (1985) binding approach. (It seems to me that for reasons of complexity, it is also more attractive than *Keine's* (this volume) account, which relies on a translocal economy constraint.) Furthermore, I have argued that, at least with respect to Quechua, the interclausal agreement analysis can capture the data in a more elegant way, without invoking additional assumptions.

5. Conclusion

In this paper, I have developed an approach to switch-reference in Quechua, which analyzes switch-reference as an instance of the morpho-syntactic category tense. Adverbial clauses in Quechua might enter the derivation without a valued tense feature and must receive a value by Agree with the head of its superordinated clause. Due to assumptions about Agree, which are needed for deriving completely independent phenomena (cf. Richards 2008; Assmann 2010), tense Agree may only apply if the subjects of the adverbial and its superordinated clause are identical. The complementary distribution of tense and switch-reference markers can now be derived by sensitizing vocabulary insertion rules to whether feature values have been obtained by Agree or not. Tense markers are used if the tense features were valued from the start. The same subject marker is used if Agree has applied and the different subject marker is used if Agree has failed.

This agreement analysis of switch-reference in Quechua is not only attractive on empirical grounds since it captures the major facts about Quechuan switch-reference without further ado, but it is also compelling in light of the discussion of elegant syntactic theory (cf. Brody 2001). The agreement analysis does not make use of representational or transderivational devices and constraints and can, thus, be considered to be in line with conceptual tenets of local derivational frameworks. An interesting question, which arises given the discussion in this paper, is whether switch-reference should be analyzed cross-linguistically alike, or whether it is an epiphenomenon from a theoretical perspective, which results from other (perhaps even different) syntactic phenomena. At least for Quechua, I have argued that switch-reference can best be analyzed not as a proper morpho-syntactic category.

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1. Appendix: Abbreviations

1	– 1st person
2	– 2nd person
3	– 3rd person
ABL	– ablative
ACC	– accusative
DS	– different subject
FUT	– future
GEN	– genitive
INSTR	– instrumental
LOC	– locative
NOM	– nominative
NMLZ	– nominalizer
OBJ	– object
PL	– plural
PST	– past
RPST	– recent past
SEM	– semantic case
SG	– singular
SS	– same subject