Switch-Reference as Interclausal Agreement
Evidence from Quechua
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Claim: SR-marking is the result of interclausal agreement in tense
• In Quechua, SR-markers are tense markers which occur whenever the clause has no tense feature of its own but must enter into tense agreement with a superordinated clause.
• Tense agreement enables the comparison of referential indices of the respective subjects.
• If the two indices are identical, the SS-marker is used; if not, the DS-marker is used.

1 Data and Observations


(1) Same Subject Marker -r/-shpa (Ancash)
   a. Lima-ta chaa-ri-r, rikaari-shaq amigu-u-ta
      Lima-ACC arrive-after-SS see-FUT.1 friend-my-ACC
      ‘After arriving in Lima, I will see my friend.’
   b. chakra-chaw urya-shpa, pallamu-rqu-u wayta-kuna-ta
      field-in work-SS pick-RPST-1 flower-PL-ACC
      ‘While I worked in the field, I picked flowers.’ (Cole 1983, 2f.)
   c. *chakra-chaw urya-shpa, María pallamu-rqu-n wayta-kuna-ta
      field-in work-SS María pick-RPST-3 flower-PL-ACC
      ‘While I worked in the field, Maria picked flowers.’ (Cole 1983, 3)

(2) Different Subject Marker -pti (Ancash)
   a. chakra-chaw urya-pti-i, María pallamu-rqu-n wayta-kuna-ta
      field-in work-DS-1 María pick-RPST-3 flower-PL-ACC
      ‘While I worked in the field, Maria picked flowers.’ (Cole 1983, 3)
   b. *chakra-chaw urya-pti-i, pallamu-rqu-u wayta-kuna-ta
      field-in work-DS-1 pick-RPST-1 flower-PL-ACC
      ‘While I worked in the field, I picked flowers.’ (Cole 1983, 3)

Observation 2: In SR-clauses, agreement markers are taken from the nominal paradigm, even though no nominalizing nor case morpheme occurs overtly (Cole (1983); Lakämper and Wunderlich (1998); Cole and Hermon (2011))

(3) Ancash
   a. punu-nki
      sleep-2
      ‘you sleep’ (Lakämper and Wunderlich 1998, 119)
Observation 3: In SR adverbial clauses no tense and case markers occur; tense is determined in reference to the superordinated clause (Cole 1982, Weber 1989)

(4) Huallaga

a. chaya-mu-sha-n-pita
   arrive-AFAR-NMLZ.DEFAULT.TENSE-3P-ABL
   ‘since he arrived’ non-SR adverbial clause, Weber 1989, 290
b. maqa-rkU-ma-shpa-n-Ø
   hit-thereupon-1OBJ-SS-3P
   ‘after he hit me’ SR adverbial clause, Weber 1989, 298

Observation 4: SR markers occur in the position of the tense marker (Cole 1982, Lakämper & Wunderlich 1998)

(5) Ancash

a. rika-ya-ma-rqa-yki
   see-PL-1OBJ-PST-2
   ‘you(pl) saw me/us’ Lakämper and Wunderlich 1998, 115
   ‘you(sg) saw us’

b. rika-ma-hti-yki
   see-1OBJ-DN-2
   ‘when you see me’ Lakämper and Wunderlich 1998, 123

Note: Lakämper & Wunderlich (1998:115,fn.1) (emphasis in the original):
   “2nd person is marked by -nki on verbs and by -yki on nouns and nominalized verbs. It is an idiosyncrasy of Ancash that -rqa triggers the nominal affix -yki instead of -nki.”

2 Analysis

2.1 Assumptions

Syntactic Structure:

- 3 functional projections above VP: v, T, C
- nominalized clauses are headed by D
- in Quechua, all phrases are right-headed

(6) \( ([DP]) [CP [TP [vP [DP_1 V] DP_2 v] T] C] (D) \)
Syntactic Operations:

- Merge (Chomsky 1995):
  \[ \text{MERGE} (\{\alpha\}, \{\beta\}) = \{\alpha, \{\alpha, \beta\}\} \]

- Agree (Chomsky 2001; Baker 2008):
  \[ \text{AGREE} (P[\star F^*: \_], G[F: \text{VAL}]) = P[\leftrightarrow F^*: \text{VAL}], G[F: \text{VAL}] \]
  iff
  \[ P \text{ and } G \text{ are in a c-command relation} \]

- Head movement (cf. Roberts 2010):
  \[ \text{a. Before head movement} \]
  \[ \text{b. After head movement} \]

Referential indices:

- Referential indices are tied to \(\phi\)-features (Browning 1989; Řezáč 2004)
- Following Řezáč (2004), I assume that referentiality is encoded by a valued feature \(i\), which takes part in Agree.
  \[ \text{XP} [\{\phi:3sg, i^*:\_\}, \{\star \phi^*: \_, \star i^*: \_\}\} Y X [\{\star \phi^*: \_, \star i^*: \_\}\} \]
  \[ \text{XP} [\{\phi:3sg, i^*:\_\}, \{\star \phi^*: \_, \star i^*: \_\}\} Y X [\{\star \phi^*: \_, \star i^*: \_\}\} \]

Note: Řezáč (2004) argues that Agree rather than Merge identifies arguments. (This is necessary if subject movement consists of two independent operations \(\phi\)-Agree and Merge.) Semantically, subject agreement changes a proposition \(<t>\) to a predicate abstract \(<e,t>\) on the TP level. Spec,TP can then only be filled by a DP with the same \(\phi\)-features/index.

Tense:

- Tense shows similarities to pronouns; tense is a referential feature (Partee 1973; Kratzer 1998; Schmitt 2000)
- Tense can be a probe feature (cf. e.g. Szucsich 2008)
- Proposal: Referential features, including tense, are tied to indices; probing referential features need an index.
- Consequence: Probing tense features are tied to a probing index.
  \[ T [\{\star \text{tense}^*: \_, \star i^*: \_\}, \{\star \phi^*: \_, \star i^*: \_\}\} \]
Morphology:

- Distributed Morphology (Halle and Marantz 1993; Noyer 1997):
- syntactic features are realized post-syntactically (*Late Insertion*)
- Vocabulary Items need not be fully specified (*Underspecification*)
- If two or more vocabulary items match a context, the most specific one has to be inserted into a syntactic context (*Specificity*)

2.2 The syntactic structure of Quechua

Empirical facts:

- Verbal/clausal categories (agreement, TAM, complementizing, nominalizing functions) are realized as verbal suffixes (Cole 1982). There are no independent particles in Quechua.
- Suffixes appear in a fixed order:

(12) **Suffix Ordering in Quechua I and Quechua II dialects** (adapted from Lefebvre and Muysken 1988, Lakämper and Wunderlich 1998, 116)

a. QI: **Stem-Number-Object-Aspect/Tense-Person-Mood-(Case)**

b. QII: **Stem-Object-Aspect/Tense-Person-Mood** Number-(Mood)-(Case)

Analysis:

- feature specifications of functional heads:

(13) a. v: \(\phi\)-features object

b. T: aspect/tense features; \(\phi\)-features subject

c. C: mood

d. D: case

- Quechua has massive head movement and obeys the Mirror Principle (Baker 1985)

(14) **The Mirror Principle** (Baker 1985, 375)

Morphological derivations must directly reflect syntactic derivations (and vice versa).
Notes:

- Head movement of the verbal stem (V) derives the fact that all categories are realized as suffixes rather than as independent particles (under the assumption that head movement feeds affixation).
- Features are morphologically realized by their respective markers, e.g., a tense feature is realized by a tense marker.
- Adopting the Mirror Principle, the morphological derivation must reflect the syntactic derivation, i.e., the order in which syntactic operations (Merge, Agree) apply.

2.3 Interclausal agreement

Empirical facts

- In some adverbial clauses (SR-clauses), tense is not referential but anaphorical, i.e., if the superordinated clause is past, the adverbial clause is understood as past as well (Cole 1982; Weber 1989).
- Subordinated clauses usually precede the superordinated clause but they may also follow it (Cole 1982; Weber 1989).

Analysis

- adverbial clausal are adjuncts to the TP.
- The anaphorical tense of the adverbial clause will be implemented as a probe tense feature, which is tied to an index feature (cf. (11)).
- The tense probe enters into Agree with the tense feature of the superordinated clause.
Notes:

- Due to a deficient tense feature, the adverbial clause has to enter into Agree with the matrix clause.
- Agree is possible since, due to head movement of T to C—which is needed for independent reasons—the tense feature of the matrix clause c-commands the probe tense feature of the subordinated clause.
- Since the tense probe is tied to an index probe, the value of the superordinated T's index feature (i.e. the index of the superordinated subject) is copied onto the subordinated T. Note that, by assumption, this index feature cannot probe independently from the tense feature, thus it cannot be valued by an index feature inside the adverbial clause.

Problem:

- Assuming that tense is tied to an index feature, we would expect that the valued tense feature also has a referential index and that this index, rather than the index of the subject, is transmitted to the subordinated clause.
2.4 Morphological Realization

There are two possibilities for the feature specification on the head of the subordinated clause:

(18) \[ D+C+T+v+V[^{\text{tense:pst}},^{\text{3sg}},^{\text{i}},^{\text{j}}] \]
   (i) \( i = j \)
   (ii) \( i \neq j \)

(18-i) is the case where a SS-Marker occurs, while (18-ii) is the case where a DS-Marker occurs. In any other cases (i.e. cases where only one index is present on T), the usual tense markers are used.

(19) a. /SS/ \( \leftrightarrow \text{[tense]/i}_i \)
    b. /DS/ \( \leftrightarrow \text{[tense]/i}_j \)
    c. /tense/ \( \leftrightarrow \text{[tense]} \)

3 Deriving the 4 main facts about Quechua SR


- follows directly from the rules of vocabulary insertion

Observation 2: In SR-clauses, agreement markers are taken from the nominal paradigm, even though no nominalizing nor case morpheme occurs overtly (Cole (1983); Lakämper and Wunderlich (1998); Cole and Hermon (2011))

- In Quechua, all subordinated clauses (also SR-clauses) are nominalized, i.e. headed by D.
- Nominal agreement markers occur in the context of D, which is given in SR-adverbial clauses.

Observation 3: In SR adverbial clauses no tense and case markers occur; tense is determined in reference to the superordinated clause (Cole 1982, Weber 1989)

- Since in SR-clauses, the value of the tense feature is determined by Agree, the tense of the SR-clause and the superordinated clause must be identical.
- Tense markers cannot coocur with SR-markers since both are competing for realizing the same feature.
- Assuming that case is a reflex of Agree (Chomsky 2000) and that Agree with a certain head H triggers case \( c_H \), it is expected that SR-clauses are not case-marked. Agree with T leads to nominative case-marking, which is realized by a null-morpheme in Quechua. Since the SR-clause agrees with the superordinated T, its D-head should receive nominative case, realized by a null morpheme, which blocks insertion of other (overt) case markers. (However, the opposite case assignment would be expected, i.e., the superordinated clause should get case-marked and not the subordinated clause.)
- Note: Cole and Hermon (2011) argue that SR-clauses are not nominal since they do not occur together with nominalizers in contrast to other subordinated clauses. However, in Quechua, these nominalizers express tense/aspect (Cole and Hermon...
2011, 1229). Hence, if nominalizers are analyzed as tense markers which occur in the context of D, it is expected that they cannot occur with SR-markers, just like other tense markers.

(20)  

\[
\begin{align*}
  a. & \quad /SS/ \leftrightarrow [\text{tense}]_{i}i_i \\
  b. & \quad /DS/ \leftrightarrow [\text{tense}]_{i}i_j \\
  c. & \quad /\text{tense}_V/ \leftrightarrow [\text{tense}] \\
  d. & \quad /\text{tense}_D/ \leftrightarrow [\text{tense}]/D
\end{align*}
\]

**Observation 4:** SR markers occur in the position of the tense marker (Cole 1982, Lakämper & Wunderlich 1998)

- Again, this follows if SR-markers realize tense features.

## 4 Comparison with other approaches

### Determination of the SS/DS-Marking

- In contrast to other approaches discussed so far (Finer 1985; Broadwell 1997; Watanabe 2000; Camacho 2010), SS and DS-markers are not different heads with different feature specifications.
- Rather, the occurrence of a marker depends on the feature manipulation in the syntax (see also Georgi 2009; Keine 2011).

### SR-Markers and referentiality

- In contrast to the approaches of McKenzie (2007); Georgi (2009); Keine (2011), referentiality of subject plays a rule in SR marking.
- The main challenge of analyzing SR is to rule out coincidental coreference in canonical different subject marking contexts. In analyses where a relation between two propositions is only established in context of SS-marking (either by movement (Georgi 2009), agreement (Camacho 2010) or argument sharing (Keine 2011)), additional stipulations must be invoked to ban coincidental coreference.
- In this interclausal agreement approach, canonical DS-marking follows without further ado.

### Implementation

- The present analysis suffers from some theoretical and implementational drawbacks.
- First, a syntactic encoding of referentiality (referential index) is needed (but this might be needed anyway if one were to assume that binding is an instance of agreement).
- Second, the fact that tense-Agree also involves index-Agree is a pure stipulation.

### Literatur


Browning, Marguerite (1989), Null Operator Constructions, PhD thesis, MIT.


Georgi, Doreen (2009), Switch reference by movement. Ms. Universität Leipzig.


