

Syntactic asymmetries in switch reference*

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1. Introduction

Switch reference is a phenomenon in which an embedded or dependent clause receives morphological marking that tracks whether its syntactic subject is identical to a nominal in the higher clause. This effect may occur in coordination, adjunction, or complementation. The following pair of examples demonstrates same-subject and different-subject marking for adjoined temporal clauses in Zuni:

(1) *Switch reference in Zuni:*

- a. [ho' k^wayi-nan] yak'o-nna.
1SG.NOM exit-SS vomit-FUT
'When I go out, I'll throw up.'
- b. [ho' k^wayi-p] Nemme' yak'o-nna.
1SG.NOM exit-DS Nemme' vomit-FUT
'When I go out, Nemme' will throw up.' (Zuni; Nichols 2000:6)

Same-Subject marking (SS) indicates that the main clause and dependent clause subject are the same. *Different-Subject* marking (DS) indicates that the main clause and dependent clause subject are different. It has frequently been debated whether switch reference is a syntactic (e.g., Finer 1984, Arregi and Hanink 2019, Baker and Souza 2020) or semantic phenomenon (e.g., Stirling 1993, Mithun 1993). On the one hand, switch reference is based on subjecthood and tracks embedding, suggesting it is syntactic in nature. On the other hand, the fact that switch reference is sensitive to reference has been taken as evidence for a discourse-level effect. In the current paper, we examine what happens when the two relevant subjects exhibit overlap in reference (in other words, when one subject is a subset or superset of the other, as with the relationship between the pronouns *we* and *I*). It turns out that switch reference languages vary significantly in this regard. For instance, the Macro-Jê

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language Kĩsêdjê (Nonato 2014) requires SS-marking only when the referent of the main clause subject is a subset of the dependent clause subject (2a). But Seri (Moser 1976) makes use of DS-marking in any configuration of overlap (2b).

(2) *Kĩsêdjê and Seri respond differently to overlap:*

- a. athe=n wa khikre nhihwêt=ne/*wa [aj i-hwêtri kham aj
 alone=FACT 1NOM house build=and.SS/and.DS.1NOM PL 1ABS-all in PL
 i-pa].
 1ABS-live.PL
 ‘I built the house by myself and all of us moved into it.’ (Nonato 2014:94)
- b. [ko-m-p-áskin ta-χ] χáa ʔaa ʔa-sí-škam-aʔa.
 3REF-2SUB-DEP.FUT-paddle DS.FUT-COND soon there 1PL-FUT-enter-TM
 ‘If you paddle with it, soon we’ll enter there.’ (Moser 1976:68)

In the present paper, we present a survey of switch reference languages for which there is data about referential overlap. We identify two crosslinguistic asymmetries in how switch reference systems deal with these configurations:

- (3) a. **The subset asymmetry (Wiesemann 1982:55, Stirling 1993:35):**
 Some languages permit SS only when the main clause subject is a subset of the dependent clause subject, as in (2a). But no language permits SS only when the main clause is a superset of the dependent subject.
- b. **The person asymmetry (Comrie 1983, Roberts 2017):**
 Some languages permit SS in instances overlap only when the two nominals match in person. No SR system is sensitive to matching in number/gender only.

We argue that these two asymmetries provide evidence for a syntactic approach to switch reference, sensitive to syntactic features as well as directionality, as in an Agree-based approach to switch reference (e.g., Nonato 2018, Arregi and Hanink 2019, Clem 2019, Baker and Souza 2020). In particular, we propose that an Agree account can derive the subset asymmetry from the idea that the subject of the dependent clause is accessed first, based on a preference for downward Agree. In addition, we show how Arregi and Hanink’s (2019) feature-conflict account of switch reference can be extended to derive person-matching patterns, on the assumption that the probe responsible for switch reference may also probe for additional features (Clem 2019).

2. The dataset

In this section, we present our survey of 30 switch reference languages. Our survey is drawn from overviews of switch reference systems by Nonato (2014), McKenzie (2015), and Roberts (2017), as well as individual grammars.

First of all, this survey examines whether languages permit referential overlap in *subset* and *superset* configurations. In a subset configuration, the main clause subject is included in the subject of the dependent clause (4a–b). Superset configurations represent the inverse (5a–b).

(4) *Subset configurations:*

- | | | |
|----|--|---------------------------|
| a. | I _k bought food before we _{i+k} cooked it. | <i>person-matching</i> |
| b. | She _k bought food before we _{i+k} cooked it. | <i>no person-matching</i> |

(5) *Superset configurations:*

- | | | |
|----|---|---------------------------|
| a. | We _{i+k} bought food before I _k cooked it. | <i>person-matching</i> |
| b. | We _{i+k} bought food before he _k cooked it. | <i>no person-matching</i> |

Within subset and superset configurations, switch reference languages distinguish between cases in which the subjects match in person, as in (4a) and (5a), and ones in which they do not. In addition to this, we collected information on the configuration in which switch reference occurs and the morphological form of switch reference markers. The results are presented in Table 1.

Table 1. Survey of referential overlap in switch reference.

(Compiled from surveys in Roberts 2017, Nonato 2014, and McKenzie 2015)

	Language	Subset	Superset	Configuration	Form
a.	Hua	✗	✗	Initial clause	DS/SS subject agreement
	Seri	✗	✗	Initial adjunct	DS marker (sensitive to tense)
	Huallaga Quechua	✗	✗	Initial adjunct	DS/SS markers
b.	Kĩsêdjê	π	✗	Coordination	<i>and</i> (invariant SS vs. agreeing DS)
c.	Diyari	✓	✗	Final adjuncts	DS/SS markers
	Yankunytjatjara	✓	✗	Final adjuncts	DS/SS markers
	Maxakali	✓	✗	Coordination	<i>and</i> (SS vs. DS)
	Zuni	✓	✗	Initial adjunct	DS/SS markers
	Lenakel	✓	✗	Coordination	SS prefix on 2nd verb
	Amele	✓	✗	Initial adjunct	DS/SS subject agreement
	Shipibo	✓	✗	Initial adjunct	DS/SS markers

	Language	Subset	Superset	Configuration	Form
	Gokana	✓	✗	Complement	pronoun choice
	Ono	✓	✗	Initial adjunct	DS agreement
	Suena	✓	✗	Initial adjunct	DS/SS markers (sensitive to tense)
	Jamul	✓	✗	Initial adjunct	DS/SS realis markers
d.	Nend	π	π	Initial adjunct	DS/SS markers
	Kewa	(π)	(π)	Initial adjunct	SS invariant vs. DS subject agreement
e.	Kobon	✓	π	Initial adjunct	DS/SS subject agreement
	Usan	✓	π	Initial adjunct	SS invariant vs. DS subject agreement
f.	Washo	✓	✓	Subj/Comp/Adj	DS marker
	Huichol	✓	✓	Initial adjunct	DS/SS markers (sensitive to tense)
	Alamblak	✓	✓	Initial adjunct	DS marker
	Angave	✓	✓	Initial adjunct	DS/SS markers
	Irumu	✓	✓	Initial adjunct	DS/SS markers (sensitive to tense)
	Mojave	✓	✓	Initial adjunct	DS/SS markers
	Kashaya	✓	✓	Initial adjunct	DS/SS markers
	Udihe	✓	✓	Infinitival	DS/SS subject agreement
	Mian	✓	✓	Initial adjunct	SS (1SG)/DS markers

Symbols: ✓ = SS-marking, ✗ = DS-marking, π = SS-marking with person-matching, () = SS-marking optional

In this survey, we can identify a total of six distinct patterns of switch reference marking in situations of referential overlap, setting aside optionality. These patterns are summarized in Table 2, with an exemplar language for each.

Table 2. Six switch reference patterns.

	Exemplar	Subset	Superset	Source
a.	Hua	DS	DS	Roberts (2017)
b.	Kĩsêdjê	SS, pers-matched	DS	Nonato (2014)
c.	Yankunyjtjara	SS	DS	Goddard (1985)
d.	Kewa	SS, pers-matched	SS, pers-matched	Franklin (1983)
e.	Kobon	SS	SS, pers-matched	Comrie (1983)
f.	Washo	SS	SS	Arregi and Hanink (2019)

Two generalizations emerge from this picture. The first is the *subset asymmetry*, also pointed out by Wiesemann (1982:55) and Stirling (1993:35). If a language permits SS-marking in superset configurations, it permits SS-marking in subset configurations, as ev-

ident in patterns (b) to (f) in Table 2. All of the 30 languages we investigated accord with this generalization.¹ Livia Camargo-Souza (pers.comm.) points out Yawanawa as a possible counterexample, but it is clear that most switch reference systems obey the subset asymmetry.

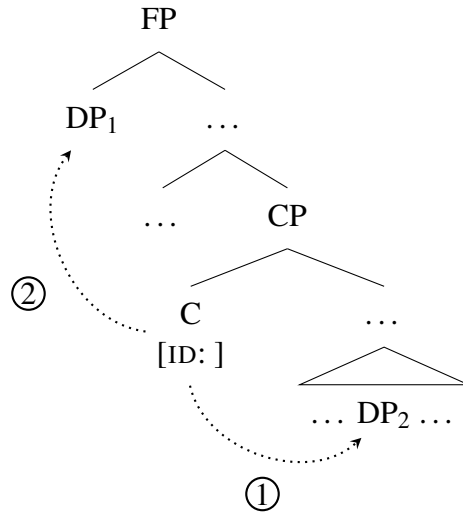
The second generalization is what we call the *person asymmetry*, noted by Comrie (1983) and Roberts (2017). A number of switch reference languages, like Kĩsêdjê and Kewa, only permit SS-marking when the relevant subjects match in person. In contrast, no language requires matching in other features, such as number or gender.

Although both of these generalizations have been noted in previous work, no existing account of switch reference derives these asymmetries or all of the patterns in Table 2.

3. A Multiple Agree syntax for switch reference

We adopt a Multiple Agree syntax for switch reference, following work by Arregi and Hanink (2019), Clem (2019), Nonato (2018), and Baker and Souza (2020). We posit a clause-peripheral probe C (complementizer or coordinator) which enters into an Agree relation with both subjects (6), first looking downward (step 1) and then upward (step 2).

(6) *Configuration behind switch reference:*



In addition, we propose that the switch reference probe differs from agreement probes in that it looks for *ID-features*: syntactic features encoding referential indices (Clem 2019, Arregi and Hanink 2019).

¹McKenzie (2015) cites Maidu and Cocopa as possible counterexamples. For Maidu, only one overlap example appears in the original source (Oswalt 1976) and Oswalt says “the pertinent situations occur too infrequently to substantiate a firm rule.” Similarly, the description of Cocopa in Crawford (1966) offers no rule, like Maidu, and there are few relevant examples. Zuni is suggested in Nonato (2014), on the assumption that switch reference in Zuni involves coordination. However, the initial clause is dependent, since it lacks tense, so that the hierarchical relations are reversed. The idea that Yankunytjatjara may only permit superset overlap, noted by Stirling (1993), appears to be a misunderstanding of Goddard (1985). The original examples clearly show that the reverse is true, like Zuni.

Following Arregi and Hanink (2019), we suggest treating the difference between Same-Subject marking and Different-Subject marking as the exponence of *feature conflict*, in the sense of Harbour (2007, 2011) (7).

- (7) *Different-Subject marking as feature conflict:*
- a. $[C\ ID:i, ID:i] \rightarrow$ Same-Subject marking
 - b. $[C\ ID:i, ID:k] \rightarrow$ Different-Subject marking

The ID-probe on C always collects both the ID-features of the nominal in the dependent clause and of the nominal in the main clause. Different-Subject marking morphology results when the switch reference probe copies conflicting ID-features. As we show below, this type of approach provides a natural perspective on person-matching: in this case, it is person features that gives rise to conflict.

4. The subset asymmetry and the directionality of Agree

We start with our account of the subset asymmetry, which we propose to derive from the directionality of Agree. As mentioned above, there are switch reference languages which only allow SS only in a subset configuration, such as Kĩsêdjê, as well as symmetric systems, like Washo (Arregi and Hanink 2019).

We suggest that this asymmetry follows from the directionality of Agree, specifically the fact that downward Agree precedes upward Agree derivationally (Béjar and Rezac 2009). Directionality will privilege the local, embedded subject as the one Probed first. What happens when the probe hits the second, upstairs goal? We introduce a redundancy principle that is active in asymmetric systems (patterns b, c, and e from Table 2), which prohibits copying of a feature value if it represents a subset of a value already present on the probe.

- (8) **Redundancy parameter:**
- A probe P will not copy a feature F:val if that value is a subset of a value for F already present on P.

The logic behind this principle also drives Cyclic Agree in Béjar and Rezac (2009) and we intend it to be a universal property of Agree relations. To see how this works, consider a subset and superset configuration in an asymmetric language like Kĩsêdjê, involving a singular with index i and a plural with a complex index $i + k$. If the ID-probe encounters the plural first, it will not copy the features of the singular, since these features are redundant (9a). However, if the features of the singular are copied first, as in a superset configuration, then the features of both DPs will be copied, resulting in feature conflict and the concomitant DS-morphology (9b).

- (9) *Redundancy in superset and subset configurations:*
- a. Singular i over plural $i + k$: $[C\ ID:i + k] \rightarrow$ No feature conflict

- b. Plural $i + k$ over singular i : $[_C \text{ ID}:i, \text{ ID}:i + k] \rightarrow \text{feature conflict}$

To deal with symmetric languages like Washo, we adopt Arregi and Hanink's (2019) proposal of an index-copying parameter that allows some languages to only copy one index from a complex index feature. In Washo then, a probe that encounters a complex index $i + k$ may only copy i , so that no feature conflict arises in a superset configuration either.²

5. The person asymmetry and the structure of ID-probes

We turn now to the person asymmetry. As pointed out by Comrie (1983), some switch reference languages only permit SS in overlap situations if the two subjects match in person, as in Kĩsêdjê (10), Kewa, or Kobon.

- (10) *athe=n wa khikre nhiihwê=ne* [aj i-hwêtri kham aj i-pa].
 alone=FACT 1NOM house build=and.SS PL 1ABS-all in PL 1ABS-live.PL
 'I built the house by myself and all of us moved into it.' (Nonato 2014:94)

An advantage of Arregi and Hanink's (2019) feature conflict approach to Different-Subject marking is that, in principle, other features could give rise to feature conflicts also. We propose that the ID-probe may be Merged with an additional probe, a person probe in this case, so that conflicts in these features may also give rise to DS-marking. As a result, even in the absence of a conflict in ID-features, a lack of person-matching will give rise to DS.

In the Kĩsêdjê example in (10), redundancy permits the ID-probe to access both nominals without feature conflict. However, on the assumption that the person features of both nominals are also copied, if the higher nominal were 2nd person, conflicting person features would give rise to DS-morphology regardless (11a–b).³

- (11) *Person features may give rise to conflict:*
 a. 1SG i over 1PL $i + k$: $[_C \text{ ID}:i + k, \pi:1] \rightarrow \text{No feature conflict}$
 b. 2SG i over 1PL $i + k$: $[_C \text{ ID}:i + k, \pi:1, \pi:2] \rightarrow \text{feature conflict}$

No SR language requires matching of only number and gender features. In a hypothetical number-matching system system, SS-marking would only be allowed when there is overlap between two plurals or two duals. A language with gender-matching would use a SS morpheme when a 3rd feminine singular overlaps with a 3rd feminine plural, but not when it overlaps with a 3rd masculine plural. But, as far as we determine, such patterns are not attested.

²One way of thinking about this difference between Washo and Kĩsêdjê may be to posit a difference in the structure of complex index features. If Washo complex indices involve separate ID-features, it may be natural to think that these can be copied independently of each other.

³The Kobon pattern presents an interesting variation on this system, since the person-matching requirement only arises in superset configurations. Our approach provides a natural way of understanding this pattern, if it is assumed that DS-morphology in Kobon reflects an ID-feature conflict in the presence of a conflict in person features. In subset configurations, no ID-feature conflict ever arises, because of redundancy.

There is a long tradition of work on the semantics of ϕ -features that treats them as presuppositional. But, in independent work on the semantics of ϕ -features and binding, it has been suggested that the representation of person may be different. In particular, in work by Minor (2011), Sudo (2012), Podobryaev (2014), it is argued that person features indices are *complex*, so that they are in essence pairs of person features and an index (e.g., $\langle i, 1st \rangle \rightarrow$ speaker). In this approach, person features directly restrict assignments, through a global admissibility condition that filters out assignment functions in which indices associated with 1st and 2nd person features do not map onto the speaker and hearer, respectively. We suggest that this proposal of a close connection between index features and person could make sense of the asymmetry evident across switch reference languages. In particular, we propose that languages differ in whether the index in a complex index is directly accessible or must be probed in its entirety, including the person feature (12).

- (12) *Two possibilities for featural structure of switch reference probes:*
- a. Pure ID-probe: no ϕ -featural sensitivity (Washo, Yankunytjatjara, Hua)
 - b. ID-probe with person: a conflict in person also gives rise to DS (Kĩsêdjê, Kewa, Kobon)

This difference will result in person-sensitivity, in a feature conflict approach to Different Subject marking. If number and gender features are not part of these complex indices, they will not be accessed by an ID-probe. In this way, crosslinguistic variation in switch reference may provide evidence from an unexpected place for a non-uniform approach to the semantics of ϕ -features.

6. Remarks on alternative approaches

The approach developed here makes use only of variation in Agree relations and the features that are copied onto the head responsible for switch reference. An alternative view of overlap in Same-Subject marking configurations might be to draw an analogy to configurations of partial binding or partial control (13a–b) (e.g., Finer 1984, Georgi 2012).

- (13) *Partial binding of pronouns and partial control of PRO:*
- a. Every one_i of my friends wanted us_{i+k} to dance together.
 - b. Do you_i want [PRO_{i+k} to discuss control together]?

Such configurations are similar to the subset configurations that permit SS-marking in asymmetric languages. Although these types of constructions are similar at first glance, the range of variation attested in switch reference languages demonstrates that a unification of switch reference with partial binding or control does not provide a satisfactory account of SS-marking. Partial control has been documented in a range of languages, but no language seems to permit the inverse of partial control or impose a person-matching requirement.⁴

⁴The absence of person-matching in partial control is evident in (13b), in which PRO is most naturally interpreted as 1st person plural.

Similarly, partial binding does not require person-matching (13a), and should not be possible in the inverse configuration, since binders are hierarchically superior to bound pronouns. As a result, we believe the crosslinguistic variation in Same-Subject marking with referential overlap provides a strong argument for a syntactic approach to switch reference.

7. Methodological prerequisites to test further predictions

The generalization about subset reference, exemplified with 1sg and 1pl subjects, remains to be tested with more complex person and number systems, in particular with inclusive/exclusive distinctions, and dual number. For dual number, the predictions seem clear: the same subset asymmetry should hold for cases of 1dl matrix subjects and 1pl embedded subjects. Suppose that 1dl > 1pl cases do not pattern the same as singular-plural cases in the text above. The explanation would have to be in terms of the specific *features* involved. More precisely, while the feature [+singular] might be wholly absent syntactically (Nevins 2011), and thus allow for underspecification that leads to the lack of redundancy for the sg > pl cases, in a three-way number system, it is not possible to underspecify both dual and plural. At present, we have found very little probative evidence on subset-superset configurations with dual number, and as the relevant cases may not necessarily be forthcoming from corpora and narratives alone, we suggest elicitation with storyboard methodology (e.g., Burton and Matthewson 2015) as a helpful way forward.

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