Switch reference in Washo as multiple subject agreement*

Karlos Arregi & Emily Hanink
University of Chicago

1. Introduction

Switch reference (SR) is a cover term referring to grammatical markers that appear to track whether subjects of two clauses are coreferent (Jacobsen 1964:665, 1967, 1998, McKenzie 2015). In Washo, a Hokan/isolate language spoken around Lake Tahoe in the United States, switch reference morphology surfaces on embedded verbs only in the case that these subjects are *not* coreferent: the morpheme -š surfaces when the subject in its own clause differs from the one in the clause embedding it. This can be seen in (1), in which the subjects 'woman' and 'heron' are distinct, triggering the -š morpheme on the embedded verb 'sit'; in (2), the subjects of both clauses are identical and -š is absent on embedded 'see'.¹

- (1) Different subject (DS) -š:

 [CP da?mó?mo? [DP[CP k'ák'a? dá: gé:gel-i -š] -ge] yá:m-a?]

 woman heron there 3.sit-IND -DS -NMLZ1 3.speak-DEP

 'The woman spoke to a heron who was sitting there.'
- (2) Same subject (SS) -Ø:

 [CP Adele [DP[CP dalá?ak ?-ígi-yi -Ø]] -ge] hámup'áy-e:s-i]

 Adele mountain 3-see-IND -SS -NMLZ1 3.forget-NEG-IND

 'Adele remembers that she saw the mountain.' Hanink & Bochnak 2018:67

We propose an analysis of switch reference in Washo according to which the DS/SS markers are realizations of embedded C (building on Finer 1985 and Watanabe 2000), arguing that their alternation is conditioned by multiple agreement (Hiraiwa 2001) and the

^{*}We would like to thank the audiences at WSCLA 22 and NELS 48, and at the University of Chicago.

¹Glosses: 1/2/3: 1st/2nd/3rd person; ATTRibutive; COPula; DEPendent mood; DS: different subject; DUal; INDependent mood; NEGation; NMLZ1: clausal nominalizer; NMLZ2: deverbal nominalizer; OBJect agreement; OBLique; PST: past; PROnoun; REC.PST: recent past; SS: same subject; UNexpressed object prefix. IPA-deviating symbols are L [a]; § [f]; y [j] (Jacobsen 1964). Data come from Hanink's fieldnotes unless otherwise noted.

resulting presence or absence of feature conflict (Harbour 2007). More specifically, we argue that embedded C agrees with both the matrix and embedded subjects for the value of their referential indices; if the two subjects are distinct and these features do not match, feature conflict arises, resulting in the exponence of the DS morpheme -š. If both subjects have the same index, the absence of feature conflict is realized by the null SS morpheme.

The structure of this paper is as follows. In section 2, we provide evidence that switch reference in Washo is a syntactic phenomenon that cannot be analyzed in purely semantic or discursive terms. In section 3 we then give the details of the proposal and briefly discuss the connection between our proposal and those invoking binding theory. Section 4 concludes.

2. Switch reference as a syntactic phenomenon

Previous accounts of switch reference argue that the presence of DS and SS markers is conditioned by semantic or discourse factors, rather than by the syntax (i.a. Dahlstrom 1982, Stirling 1993, McKenzie 2012). However, we provide in this section a variety of arguments showing that switch reference in Washo is a purely syntactic phenomenon.

First, switch reference in Washo operates only across subordinate clause boundaries. This can be seen for example in embedded clausal nominalizations that give rise to various interpretations, such as perception readings as in (3) (see (1)–(2) for other interpretations).

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(3) [DP [CP sísu ?-íšim-i -š] -ge] di-dámal-i bird 3-sing-IND -DS -NMLZ1 1-hear-IND 'I hear the bird singing.'
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Another embedded environment in which SR occurs is in temporal adjuncts, as in (4).

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(4) [CP l-émlu-ya -š] ?-í:me?-leg-i
1-eat-DEP -DS 3-drink-REC.PST-IND
'He was drinking while I was eating.'
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Finally, switch reference is not observed in independent clauses. In (5), no DS marker appears despite the distinctness of subjects across clauses.

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    (5) [... udi Dresslerville ?-íšge-gulayg-i lí:unil ...]
        then Dresslerville 3-move-PST-IND long.ago
        [t'éliwhu gí: Dresslerville dé-itde?-i? k'-é?-i]
        husband 3.PRO Dresslerville NMLZ2-country-ATTR 3.UN-COP-IND
        '... then she moved to Dresslerville, a long time ago... her husband, he lives in Dresslerville.'
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Switch reference therefore shows sensitivity to clausal boundaries: a syntactic property. It is also worth noting that the different subject marker occurs in the clausal periphery in Washo, above Mood, and may therefore not be treated as the marker of height of vP vs.

VP coordination (cf. Keine 2013 on Kiowa). The schema in (6) provides our assumptions about the structure of an embedded clause such as (3) in Washo, following proposals in Peachey 2006 and Hanink 2016. The order of morphemes suggests that SR is in C.

(6)
$$\left[\text{DP} \left[\text{CP} \left[\text{MoodP} \left[\text{TP} \left[vP \text{ sísu } ?\text{-íšim} \right] \varnothing \text{TP} \right] -\text{i} \right] \text{MoodP} \right] -\text{š} \text{CP} \right] -\text{ge} \quad \text{DP} \right]$$
bird 3-sing -IND -DS -NMLZ1

Second, switch reference in Washo is sensitive to clausal boundaries with respect to locality. In cases of multiple embedding, switch reference tracks the immediately higher subject only. This can be seen in (7): while the most deeply embedded subject súku? 'dog' is the same as the matrix subject, the different subject marker appears on the most embedded verb due to the difference in subject of the intermediate clause, da?mó?mo? 'woman'.

'The dog who was outside who the woman called came in.'

The sensitivity to clausal boundaries as well as the observed locality effects are characteristic of syntactic conditioning, and are unexpected under a purely semantic account.

Third, previous accounts (for other languages) propose that switch reference does not track subjects, but rather topics, scene-shifts, or situations (i.a. Dahlstrom 1982, Stirling 1993, McKenzie 2012). Copy-raising in Washo however provides evidence that switch reference in the language truly does care only about subjects. This construction involves nominalized clauses embedded under a copular verb (Bochnak 2015) whose subject-agreement morpheme crossreferences some argument in the embedded clause, which we take to signal the presence of a matrix nominal coindexed with the embedded argument (i.a. Potsdam & Runner 2001). Example (8a) does not involve copy-raising, which is optional; accordingly, the subjects of the two clauses do not have the same referent, and the embedded clause is marked as DS. In its copy-raising counterpart in (8b), the matrix subject is coindexed with the embedded first person singular subject, as indicated by the subject agreement on the matrix verb. As a result of copy-raising, the subjects of the two clauses are coreferent, and the verb in the embedded clause bears the (null) SS marker.

- (8) a. No matrix copy of embedded subject: DS

 [l-éšɨm-dugá:gu-ʔi -š -gi] k'-éʔ-i

 1-sing-not.understand-IND -DS -NMLZ1 3.UN-COP-IND

 'I don't know how to sing.'
 - b. Matrix copy of embedded subject, signaled by agreement: SS [1-éšim-dugá:gu-?i -Ø -gi] L'-é?-i
 1-sing-not.understand-IND -SS -NMLZ1 1.UN-COP-IND 'I don't know how to sing.'

While there is no difference in meaning correlated with the different agreement patterns in (8), switch reference occurs only when the embedded subject differs from the matrix subject, indicating it is sensitive to the reference of grammatical subjects alone.

Finally, switch reference in Washo crucially tracks only subjects, and not any other arguments. The example in (9) shows that matrix nonsubjects do not play a role in determining switch reference: the different subject marker surfaces in the embedded clause even though the indirect object of the matrix verb (expressed only by the prefix on the verb in this case) and the embedded subject are coreferent.

(9) [bašá:? té:bil-a l-í:gi-yi -š -ge] t'é:liwhu l-éšil-i book table-OBL 1-see-IND -DS -NMLZ1 man 10BJ-give-IND 'The man gave me the book I saw on the table.'

Taken together, these effects suggest that switch reference in Washo is a syntactic property.

3. Proposal

Our analysis builds on previous syntactic analyses of switch reference in Washo and other languages (Finer 1985, Watanabe 2000, Camacho 2010). The particular implementation that we adopt is based on agreement: switch reference is the realization of a high-peripheral morpheme in an embedded clause that agrees with both the subject of its own clause and the subject of the immediately superordinate clause.

Following previous work on Washo clause structure, we take switch reference to be hosted in C (Finer 1985, Peachey 2006, Hanink 2016). Evidence for this high position comes from its relative position within the verb as the outermost suffix in clauses without a nominalization layer (e.g. (4)), and left-adjacent to the nominal suffix -gi/ge in nominalized clauses (e.g. (8), (9)). The specific syntactic mechanism responsible for this morpheme's tracking of the reference of the two subjects is Agree. More specifically, this is a case of Multiple Agree (Hiraiwa 2001), as C is a probe that targets two goals (the higher and the lower subject). Following Adger 2003 and Baker 2008, we allow Agree to probe both downward and upward.² As a result of downward probing, C agrees with a lower subject, a phenomenon similar to complementizer agreement in varieties of West Germanic (i.a. van Koppen 2005). Upward probing targets a higher subject, which we take to be parallel to complementizer agreement with higher subjects in Lubukusu and other languages (see Carstens 2016 for an agreement-based analysis, and Baker 2008:145–147 and Diercks 2013 for alternatives). This agreement-based analysis derives the clause-boundedness of switch reference described in the previous section: C is at the edge of its own CP phase, and can thus probe the lower subject internal to this phase (but not in lower phases), as well as the subject in the specifier of TP within the immediately superordinate CP phase.³ In addition, we argue that C is a case-specific probe, limited to agreeing with nominative

²For alternative views on the directionality of Agree, see, among others, Chomsky 2000, Wurmbrand 2012, Zeijlstra 2012, Preminger 2013, and Bjorkman & Zeijlstra, to appear.

³In the absence of evidence for the phasehood of v and D, we assume that only C is a phase head in Washo.

nominals (Bhatt 2005, Baker 2008:153–171, Bobaljik 2008), thus accounting for the fact that switch reference tracks subjects, and never objects, as shown in the previous section. Although most nominals are not overtly case-marked in Washo, the third person pronoun has a nominative form gi: and an accusative form gi: (these are also the exponents of the clausal nominalizing suffix, subject to the same case alternation; cf. (8), (9)).

The analysis relies on two additional claims. First, the feature C probes for is $[\ ID:i\]$ (where i is an integer), a feature-based implementation of the referential index assumed in standard analyses of reference and binding (e.g. Heim & Kratzer 1998). Independent evidence for agreement for referential index can be found in Rezac 2004, Kennedy 2014 and Grosz 2015. Thus, C is a probe with unvalued $[\ ID:_\]$. As a result of Multiple Agree, this unvalued feature either acquires a single value ($[\ ID:i\]$) or two different values (represented as ($[\ ID:i,\ ID:j\]$), depending on whether the goal subjects have the same referential index or not, respectively. A specific syntactic implementation of Multiple Agree resulting in feature specifications of this sort is offered in Harbour's (2007, 2011) analysis of inverse number-marking in Kiowa (see especially Harbour 2011:568–569). Following these works, we assume that conflicting feature specifications such as $[\ ID:i,\ ID:j\]$ are syntactically well-formed but then exploited by the morphology, as the postsyntactic vocabulary entries (10) for C are sensitive to these featural representations.

(10) a.
$$[C \text{ ID}:i, \text{ ID}:j] \leftrightarrow \check{s}$$
 (where $i \neq j$) Different subject b. $[C] \hookrightarrow \varnothing$ (elsewhere) Same subject

That is, if Multiple Agree results in a C with two different values for ID, it is realized as $-\check{s}$, reflecting agreement with subjects with different reference. If C agrees with subjects with the same referential index, it receives elsewhere exponence, as \varnothing .

We illustrate our analysis below with the different-subject example in (1) and the same-subject sentence in (2), repeated here as (11) and (12), respectively.

- (11) Different subject
 [CP da?mó?mo? [DP[CP k'ák'a? dá: gé:gel-i -š] -ge] yá:m-a?]
 woman heron there 3.sit-IND -DS -NMLZ1 3.speak-DEP
 'The woman spoke to a heron who was sitting there.'
- (12) Same subject

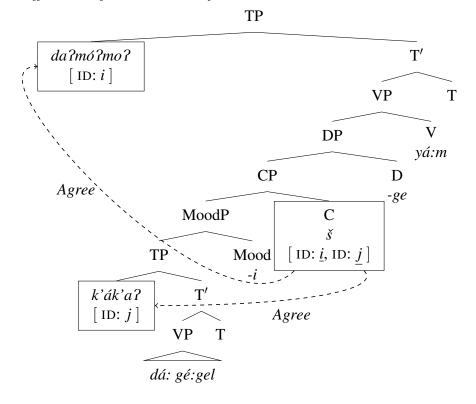
 [CP Adele [DP[CP dalá?ak ?-ígi-yi -Ø]]-ge] hámup'áy-e:s-i]

 Adele mountain 3-see-IND -SS -NMLZ1 3.forget-NEG-IND

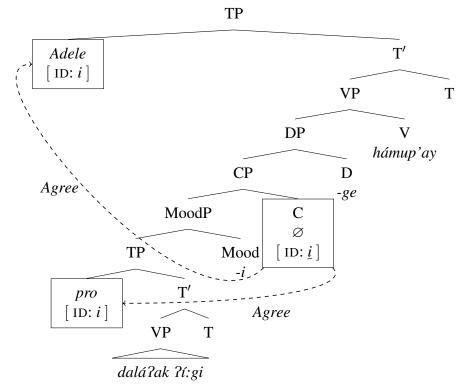
 'Adele remembers that she saw the mountain.' Hanink & Bochnak 2018:67

Agreement with referentially distinct subjects as in (11) results in feature conflict, realized as $-\check{s}$ postsyntactically, as shown in (13) (we omit the higher layers of the higher clause for reasons of space). No such conflict arises with corereferential subjects (12), and C is therefore realized as elsewhere \varnothing , as illustrated in (14).

(13) Different subject: Feature conflict in embedded C



(14) Same subject: No feature conflict in embedded C



Before we conclude, we would like to briefly discuss a potential alternative analysis. Any account must incorporate two dependencies involving the switch-reference marker: one with the embedded subject and another with the matrix subject. In the analysis proposed here, both dependencies are implemented in terms of agreement. In a similar account that ours is based on, Finer (1985) claims that while the dependency established with the embedded subject is agreement, the one with the matrix subject is binding. That is, embedded C acquires the referential index of the embedded subject mediated by subject agreement, but C itself is either a reflexive when surfacing as SS or a pronoun when surfacing as DS. As a consequence, Conditions A and B of Binding Theory ensure that SS only surfaces when bound by the higher subject, and DS when not bound by the higher subject. Although this captures some of the properties of Washo switch reference, certain shortcomings of the analysis prevent us from adopting it here.⁴ First, switch reference makes no detectable contribution to meaning. An Agree-based analysis captures this, under the standard assumption that features in agreement targets (probes) are not interpreted semantically, but a Binding-Theoretic account must stipulate the existence of semantically vacuous reflexives and pronouns (indeed, neither Finer (1985) nor Watanabe (2000) provide a semantics to their posited reflexives and pronouns). Second, McKenzie (2012:95–96) points out that Finer's analysis predicts that matrix C in Washo should always be realized as DS, since there is no higher nominal that can bind it. This is contrary to fact: matrix clauses systematically lack the DS marker -š, which can be interpreted as either absence of switch reference altogether, or presence of the null SS marker, but not as DS marking. The Agreebased analysis proposed here captures this fact: in the absence of a higher subject, only the matrix subject's index is copied onto matrix C, which is realized as elsewhere \emptyset .

4. Conclusion

The analysis of Washo switch reference proposed here is based on two basic ideas. Syntactically, it involves complementizer agreement for the index feature with both the superordinate and subordinate subjects. DS marking is then the postsyntactic realization of feature conflict arising from agreement with disjoint subjects, while SS marking is elsewhere exponence in the absence of feature conflict. All the elements of the account are independently motivated by different crosslinguistic phenomena, such as complementizer agreement, case-specific agreement, and inverse number marking. The proposal thus contributes to the understanding of switch reference in Washo, and to the wider study of multiple agreement and the effect it can have on feature conflict and the use of inverse morphology.

The proposal is incomplete in some respects, as several properties of the phenomenon have been left out of this paper for reasons of time and space. For instance, an important source of variation among languages with switch reference is its behavior in cases of overlap of reference: when the two subjects related by the switch-reference marker differ in number but overlap in reference, some languages require DS marking, and others allow

⁴We also note that Finer's analysis would have to be amended to capture subject orientation. That is, as a reflexive, SS would have to be a local subject-oriented reflexive (i.a. Ahn 2015; see Diercks 2013 for a related analysis of complementizer agreement in Lubukusu), and, as a pronoun, DS would have to be anti-subject oriented (Vikner 1985, Hestvik 1992).

either DS or SS (McKenzie 2015:427). Washo belongs to the latter group, as illustrated in (15).

(15) [**lé:-ši** di-wágayay-a? {-Ø/š}] **lé:** dí:me? l-éme?-i 1.PRO-DU 1-talk-DEP -SS/DS 1.PRO water 1-drink-IND 'I'm drinking water, while we're both talking.'

In this example, the matrix subject *lé*: is a first person singular pronoun, which overlaps in reference with the embedded first person dual subject *lé*:-ši. Accordingly, the embedded clause is optionally marked as DS or SS. Our agreement-based analysis can account for this pattern by making two additional assumptions. First, nonsingular (dual or plural) nominals have more than one referential index feature (Higginbotham 1983:400–401). Second, Agree can copy the value of any of the multiple index features in such a nominal. In the example above, the embedded dual subject has two indices, one of which coincides with that of the singular matrix subject. Thus, agreement in embedded C can result in the copying of the same or different index values from the two subjects. This extension of the analysis to these cases is tentative, and awaits confirmation in future work.

The analysis is also related to phenomena in which, at least under some accounts, C mediates a dependency between nominals in different clauses. This includes control as analyzed in Landau 2002 (see Souza 2016, Baker & Camargo Souza, to appear, for a control-based analysis of SS marking in Panoan), and logophors (i.a. Koopman & Sportiche 1989). We leave comparison of these phenomena with switch reference for future research.

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Karlos Arregi, Emily Hanink karlos@uchicago.edu, eahanink@uchicago.edu