

Deconstructing Switch-Reference

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This paper develops a new view on switch-reference, a phenomenon commonly taken to involve a morphological marker on a verb indicating whether the subject of this verb is coreferent with or disjoint from the subject of another verb. I propose a new structural source of switch-reference marking, which centers around coordination at different heights of the clausal structure, coupled with distinct morphological realizations of the syntactic coordination head. Conjunction of two VPs has two independent consequences: First, only a single external argument is projected; second, the coordinator head is realized by some marker A (the ‘same subject’ marker). Conjunction of two *v*Ps, by contrast, leads to projection of two independent external arguments and a different realization of the coordination by a marker B (the ‘different subject’ marker). The hallmark properties of this analysis are that (i) subject identity or disjointness is only indirectly tied to the switch-reference markers, furnishing a straightforward account of cases where this correlation breaks down; (ii) switch-reference does not operate across fully developed clauses, which accounts for the widely observed featural defectiveness of switch-reference clauses; (iii) ‘same subject’ and ‘different subject’ constructions differ in their syntactic structure, thus accommodating cases where the choice of the switch-reference markers has an impact on event structure. The analysis is mainly developed on the basis of evidence from the Mexican language Seri, the Papuan language Amele, and the North-American language Kiowa.

Keywords: coordination · clause linkage · reference tracking · Distributed Morphology · event semantics · verbal projections

1 Introduction

As first conceptualized by Jacobsen (1967), switch-reference (SR) involves distinct morphological marking on a verb depending on whether or not the subject of this verb is coreferent with the subject of another verb. Under this view, switch-reference instantiates a direct link between verbal morphological marking and nominal reference relations. It has been vastly influential and can safely be regarded as the canonical position. An example of SR marking from Zuni, an isolate spoken in New Mexico, is given in (1). In (1a) the subjects of *k^w ayi* ‘exit’ and *yakò* ‘vomit’ are coreferent. Consequently, the SAME SUBJECT (SS) marker *-nan* is attached to *k^w ayi*. In (1b), by contrast, the subjects of the two verbs are distinct and the DIFFERENT SUBJECT (DS) marker *-p* is used.¹

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¹ A list of abbreviations is provided in section 9.

(1) Zuni

- a. *ho' k^w ayi-nan yakò-nna*
 1SG.NOM exit-SS vomit-FUT
 'I will go out and throw up; When I go out, I'll throw up.'
- b. *ho' k^w ayi-p Nemme' yakò-nna*
 1SG.NOM exit-DS Nemme vomit-FUT
 'I will go out and Nemme will throw up.'

[Nichols 2000: 6]

In his seminal work on SR in generative syntax, [Finer \(1984, 1985\)](#) employs generalized binding theory to directly compare the referential indices of the two subjects. If the indices are identical, SS-marking is used, otherwise DS-marking has to occur. Extensions to this general line of inquiry have been suggested by [Broadwell \(1997\)](#), [Watanabe \(2000\)](#), and, at least to some extent, [Camacho \(2010\)](#). All of these analyses adopt [Jacobsen's \(1967\)](#) view in that the distribution of the SR markers is taken to be predictable from whether the two subjects have the same referent.

From a purely conceptual point of view, these proposals involve mechanisms and notions that have been called into question since the advent of the Minimalist Program ([Chomsky 1995, et seq.](#)). For instance, they make crucial use of purely syntactic index features, which have to be taken to also appear on semantically non-referring expressions such as quantificational DPs.² While this is of course not fatal, it raises the question whether index-less alternatives are viable. Furthermore, to account for the fact that it is the verb that is morphologically marked for SR, these proposals conceive of the SR relation as mediated via verbal agreement. This requires a mechanism of index agreement between subject and verb, which is not independently motivated. Finally, since a relation is established between elements within distinct clauses, SR raises issues related to syntactic locality (e.g. [Chomsky's 2000, 2001](#) notion of *phases*). This question is particularly severe for proposals such as [Finer \(1984\)](#) that treat SR to operate on clausal adjunction structures. Under this view, clausal adjuncts, otherwise opaque for syntactic processes, must be treated as surprisingly transparent when it comes to SR. Because SR by definition involves morphological marking on the verb, the reference relation is not plausibly handled in a purely semantic fashion as is possible for, e.g., bound readings of pronouns. In contrast to pronouns, SR must hence be syntactically represented, which renders the locality question more pressing in the case of SR.

From a more empirical perspective, it has been noted that the distribution of the SR markers and the actual subject reference relations may part company. This results in patterns of 'unexpected' SR marking. While such cases have already been noted in [Jacobsen's \(1967\)](#) original paper, they have quite often been considered 'fringe' cases to be abstracted away from (see especially [Stirling 1993](#) for relevant discussion and critique). As an example, consider the Zuni data in (2). Despite the fact that the two subjects are coreferent in both sentences, the DS-marker is used.

(2) Zuni

- a. *ho' sa-kòšo-p ho' sa'le' k'uhmo-kè-nna*
 1SG.NOM dish-wash-DS 1SG.NOM dish break-CAUS-FUT
 'Whenever I wash dishes, I always break a dish.'
- b. *teči-p antewa-kya*
 arrive-DS spend.the.night-PST
 'He arrived and camped [there] for the night.'

[Nichols 2000: 7, Nichols 1997: 26]

² Neither [Watanabe \(2000\)](#) nor [Camacho \(2010\)](#) employs an explicit index feature; they claim instead that coreferentiality follows as a product of ϕ -agreement. The exact mechanism are, however, not made precise. Specifically, identity of ϕ -features is not sufficient to yield coreference (as two 3SG elements may, of course, be disjoint). Something in addition to ϕ -identity is doubtlessly needed in these accounts as well.

Conversely, there are cases of ‘unexpected’ same subject marking, i.e. SS-marking without the existence of coreferent subjects. An example is given in (3), taken from the Yuman language Mesa Grande Diegueño. Given that the weather verbs in both clauses do not project referring subjects, an approach that directly ties the SS marker to subject coreference does not readily capture data like these.

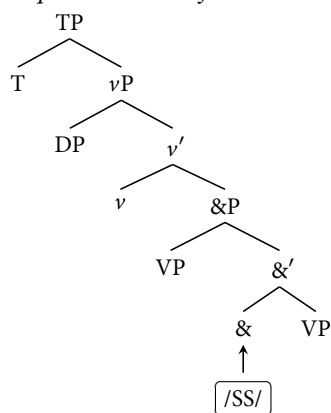
- (3) Mesa Grande Diegueño
nya-a:lap-č / -m səcu:r-č apasi:w
 when-be.snowing-ss -DS be.cold-ss be.very.much
 ‘When it snows, it’s very cold.’ [Langdon and Munro 1979: 329]

If the distribution of the SR markers were entirely predictable from subject reference relations, both (2) and (3) should be ruled out. Notably, such instances of ‘unexpected’ SR marking are attested in various unrelated languages and will play a major role in the discussion below.³ Any account that sets aside these cases of ‘unexpected’ SR marking arguably leaves a pervasive property of SR systems unaccounted for.

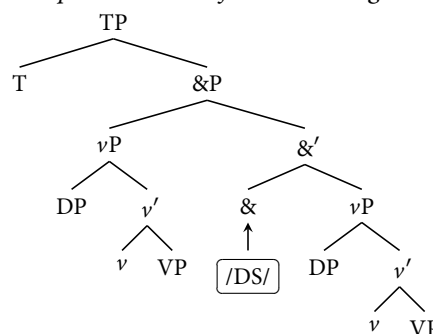
‘Unexpected’ SR marking has led various researchers to deviate from the canonical conception of switch-reference. Thus, while Stirling (1993) argues that reference relations are just one of several factors determining SR marking, McKenzie (2007, 2010) contends that, at least in Kiowa, subject reference relations are not at all relevant for the SR system. Both approaches identify more abstract semantic notions as the locus of SR. For Stirling (1993), the crucial role is played by *eventualities* (Bach 1981); for McKenzie (2007, 2010) it is the concept of *situations* (Kratzer 1989).

This paper proposes a new structural basis for switch-reference phenomena. I will argue that switch-reference may exist clause-internally, as a result of coordination of low verbal projections. The central structural contrast is sketched in (4) and (5). (4) contains a coordination of two VP’s, while (5) involves coordination of two vP’s. Certain types of switch-reference arise if the syntactic coordination head is morphologically realized differently in (4) and (5). Under this view, the switch-reference markers *are* the different modes of spelling out the coordination.

- (4) *Proposed structure for SS marking*



- (5) *Proposed structure for DS marking*



³ To give just some examples, DS-marking with coreferent subjects (like (2)) are reported for Amele (Roberts 1987), various Caucasian languages (including Chechen, Ingush, Dido, Bežta, Agul, and Udi; cf. Nichols 1983a,b), Creek (Martin 1998), Central Pomo (Mithun 1993), Oirata (Donohue 2008), Tonkawa (Jacobsen 1967), and Nélémwa (Bril 2004). Unexpected SR marking is pervasive in Kiowa (McKenzie 2007) and Lakhota (Dahlstrom 1982) and will receive closer inspection in section 5.

Same subject marking without coreferent subjects, as in (3), is also found in a number of languages, including Amele, Seri (Marlett 1981), Choctaw (Davies 1986), Lenakel (Lynch 1983), as well as other Yuman languages (Langdon and Munro 1979).

If two VPs are conjoined, as in (4), the entire structure comprises only a single v head, and hence only a single external argument (above the entire conjunction). This element is, by general semantic principles, interpreted as the agent of both VPs. Compare this to the vP coordination structure in (5). As each conjunct involves a v projection, each contains its subject. All else equal, the two subjects may or may not be coreferential. Suppose now that the coordination head is realized differently in the two cases. The marker used in (4)—which will be the SS-marker—necessarily goes hand in hand with a ‘same subject’ interpretation. Importantly, this element itself is not sensitive to reference relations between nominals but only to the narrow syntactic environment it appears in. Moreover, the two verbs literally have the same subject as syntactically only a single DP is projected in (4). By contrast, a second marker—the DS-marker—realizes the coordination in (5). This marker does not correlate with specific reference relations, leading to ‘unexpected’ DS-marking as in (2).

In this system, the SR markers correlate with certain semantic properties by virtue of appearing in certain syntactic structures. They are not, however, directly associated with these properties. This view deviates from previous accounts in that the distribution of the SR markers is not conditioned by a direct comparison of either reference or eventualities/situations. Rather, morphological differences (i.e. the difference between SS- and DS-marking) on the one hand and semantic properties (i.e. identity of reference or situations) on the other are conceived of as independent consequences of the structural contrast between VP coordination (4) and vP coordination (5). No direct reference comparison takes place. The locality problem noted above that such a comparison would raise is thus non-existent. Since no relation is established between elements in distinct clauses, the view that these clauses are computationally opaque is no longer a problem.

It is evident from this initial exposition that my proposal hinges on the claim that SR need not operate across distinct clauses but may appear within a single clause. This deviates from previous accounts, which treat SR as an inter-clausal relation.

As for the divide between syntactic approaches to SR (Finer 1984, Broadwell 1997, Watanabe 2000, Camacho 2010) and semantic ones (Stirling 1993, McKenzie 2007, 2010), the present proposal clearly belongs to the former group. The central contrast underlying the analyses is a syntactic one, viz. between VP and vP coordination. While this contrast has semantic and morphological effects, these are derivative of the underlying syntactic asymmetry. In the same vein, notice that the height of coordination has an effect on the DP residing in Spec, vP . In (4) there is one such DP, while there are two in (5). Spec, vP is, first of all, a syntactic position. Whether this position corresponds to a specific θ -role or whether it may be mapped to various θ -roles is, strictly speaking, an independent question. Thus, nothing in the proposal itself links switch-reference to agents, precisely because the fundamental contrast is a syntactic one and not one of θ -roles *per se*.

Before delving into the discussion, two general remarks are in order. First, the claim that SR phenomena are not conditioned by reference relations is intended as a statement solely about the narrow syntactic computation. In the view presented here, the SR markers are merely sensitive to a syntactic difference, which in turn correlates with certain interpretative effects. It is the combination and interaction of several subcomponents, none of which directly ties morphological marking to semantic restrictions, which give rise to a system which achieves, to a certain extent, to tie morphological marking to semantic properties. The system developed here is taken to provide the structural basis for these SR phenomena.

Second, while I claim the proposal presented here accommodates a significant class of SR cases, there are undoubtedly instances of SR which resist analysis in terms of coordination height. This is by no means surprising as the fact that various systems are given the same descriptive

label does not entail that they must be theoretically uniform. Some residual cases are discussed in section 6.4, along with reasons that render the analysis proposed here unsuitable for analyzing them.

The paper is structured as follows: Section 2 lays out the theoretical background assumptions that the discussion is based on. The system is then developed on the basis of three case studies. Section 3 considers the SR system of the Mexican language Seri; section 4 develops an account for the Papuan language Amele; and, lastly, section 5 considers, in a rather cursory fashion, the North American language Kiowa. Going through these systems will allow us to develop the account in some detail and at the same time highlight ways of dealing with cross-linguistic variation. Finally, section 6 relates the system developed here to several remaining issues. It establishes a link between SR markers and nominal coordination (§6.1), discusses certain functional asymmetries between SS- and DS-marked structures (§6.2), discusses arguments made by previous researchers against a coordination analysis (§6.3), and discusses some switch reference systems that are not obviously amenable to an analysis in terms of coordination height (§6.4). Section 7 sums up.

2 Theoretical background

This section lays out the conceptual background assumptions that the present analysis rests on. In doing so, I will point out their relevance for my proposal and show up viable alternatives.

2.1 The structure of coordination

I will presuppose a fairly mainstream view of coordination structures. In particular, I assume that coordination structures are asymmetric, with the first conjunct in the specifier position of the coordinator &^o and the second conjunct in its complement position (see Munn 1993, Kayne 1994, Zoerner 1995, Johannessen 1998, Progovac 1998a,b, de Vos 2005). It is well-known that the two conjuncts differ with respect to binding (Munn 1993):

- (6) a. Every man_i and his_i dog went to mow the meadow.
 b. *His_i dog and every man_i went to mow the meadow.

The contrast in (6) indicates that the first conjunct c-commands the second one but not vice versa. This asymmetry is captured if the former resides in a specifier position and the latter in the complement of &^o. That the two conjuncts bear distinct structural relations to the coordination head is exploited in the account of Amele in section 4.1.3.

Secondly, I will presuppose here that the only requirement for coordination of two elements is semantic parallelism between the two, i.e. type identity. That semantic parallelism rather than syntactic labels *per se* are the relevant factor is illustrated by sentences such as (7), adapted from Gazdar, Klein, Pullum and Sag (1985).

- (7) Robin might be [_{AP} ugly] , [_{NP} a dolt] and [_{PP} of no help]

One consequence of the fact that coordination is merely sensitive to semantic types is that VPs and *v*P may be coordinated. Such asymmetric coordination is made use of in sections 3.2 and 4.2.

2.2 Post-syntactic morphology

I will develop my proposal against the background of Distributed Morphology (DM; see Halle and Marantz 1993, 1994, Noyer 1997).⁴ Morphology realizes the output of a syntactic derivation. Syntax itself operates on morpho-syntactic feature bundles without phonological specification. After the syntactic derivation is terminated, VOCABULARY ITEMS are inserted into the syntactic structure (a process termed VOCABULARY INSERTION). Vocabulary items (also called ‘markers’) link a morpho-syntactic specification to phonological features. Vocabulary insertion is realizational in the sense that vocabulary items do not contribute new morpho-syntactic features; rather, they realize morpho-syntactic features that are already part of the syntactic structure. Vocabulary insertion thus designates the process of furnishing syntactic heads with pronounceable features. As it applies post-syntactically, it is sensitive not only to the feature content of the syntactic heads themselves but also to the syntactic context of the head (within some well-defined domain). To take an example, a certain vocabulary item may require the structural context to contain an element of a certain category. Unless this requirement is fulfilled, the marker may not be inserted.

In order to account for syncretism, i.e. the phenomenon that distinct morpho-syntactic specifications may receive identical morphological markings, DM employs underspecification of vocabulary items. Markers may only be inserted if they fulfill the SUBSET PRINCIPLE in (8), i.e. if their morpho-syntactic feature specification constitutes a subset of the features of the relevant syntactic head. Once underspecification is employed, more than one marker may fulfill the Subset Principle for a given morpho-syntactic specification. To decide among several such markers, the notion of SPECIFICITY in (9) is employed. Specificity requires that among all markers fulfilling the Subset Principle for a given head, only the marker with the most morpho-syntactic features is inserted.

(8) SUBSET PRINCIPLE

A vocabulary item \mathcal{V} is inserted into a functional morpheme \mathcal{M} iff (i) and (ii) hold:

- (i) The morpho-syntactic features of \mathcal{V} are a subset of the morpho-syntactic features of \mathcal{M} .
- (ii) \mathcal{V} is the most specific vocabulary item that satisfies (i).

(9) SPECIFICITY (Halle 1997)

A vocabulary item \mathcal{V}_1 is more specific than a vocabulary item \mathcal{V}_2 iff \mathcal{V}_1 contains more morpho-syntactic features than \mathcal{V}_2 .

To illustrate, consider the abstract morpho-syntactic specification Γ in (10a) and the three markers in (10b), which compete for insertion into Γ .

- (10) a. $\Gamma = \{+\alpha, -\beta, +\gamma\}$

⁴ See Harley and Noyer (2003), and Embick and Noyer (2007) for an overview of Distributed Morphology. It is worth emphasizing that the analysis developed below makes use of machinery that is solely available in DM. First, my core assertion that a coordination head is spelled out depending on its syntactic context is incompatible with lexicalist theories of morphology, which decidedly reject such interactions (cf., e.g., Selkirk 1982, Di Sciullo and Williams 1987). Second, as will become clear from the discussion of Amele in section 4, the coordination head must be able to interact with the morphological structure of an adjacent verb. While this is straightforwardly accomplished in DM, lexicalist and inferential frameworks of morphology (such as A-Morphous Morphology [Anderson 1992] or Paradigm Function Morphology [Stump 2001]) do not straightforwardly accommodate this. Thus, to the extent that the present proposal is on the right track, it may be seen as evidence for the conflation of syntax and morphology embodied within DM.

- b. /a/ ↔ [+α]
 /b/ ↔ [-β, +γ]
 /c/ ↔ [-α, +γ]

According to requirement (i) of the Subset Principle (8), /c/ is excluded from the competition as $\{-\alpha, +\gamma\} \notin \Gamma$. Among /a/ and /b/, Specificity favors /b/ because $|\{-\beta, +\gamma\}| > | \{+\alpha\} |$. Hence, /b/ is the most specific marker fulfilling the Subset Principle and hence inserted into Γ .

Morphology applying post-syntactically provides the foundation for my proposal that rests on the claim that the spellout of a syntactic head may be conditioned by its syntactic environment.

2.3 Context-sensitive vocabulary insertion

A fundamental assumption for the account advocated here is that vocabulary insertion may be affected by the local syntactic environment of a head (Halle and Marantz 1993). Put differently, there has to be some connection between morphological marking and the wider syntactic structure. At least for coordination structures, which lie at the heart of my account, there is ample evidence for such an interaction. Consider the data from the Oceanic language Xârâcùù in (11). Like several other languages,⁵ Xârâcùù employs different conjunctions for nominal and clausal coordination.

(11) Xârâcùù

- a. *gu mē gē*
 2SG and 1SG
 ‘you and I’
 b. *È nā fādē nā è nā bare tēpe.*
 3SG IPF walk and 3SG IPF also talk
 ‘He speaks as he is walking.’

[Moyses-Faurie and Lynch 2004: 452, 457]

(11) demonstrates how the overt form of the conjunction may vary depending on the category of the conjoined elements: The coordinator is *mē* in a nominal environment (11a), and *nā* between clauses as in (11b).

This context-sensitivity of morphological marking is implemented here by specifying the morpho-syntactic features of a vocabulary item not only for the head that insertion applies to but also for categories in its environment. Thus, in all examples in (11) the syntactic head is the same; it is only the morphological realization of that head that varies.

2.4 Agent severance

I follow the dominant view in recent work in syntax that the external argument of a verb is not introduced by the verbal head itself but rather by the functional projection *vP*. Thus, I adopt the neo-Davidsonian position that the subject is not an argument of the verb (see Marantz 1984, 1997, Larson 1988, Kratzer 1994, 1996, 2003, Pylkkänen 2008). The main reason for doing so is the underlying assumption that only phrasal nodes may be conjoined. As shown in (4), the account for SS-structures crucially relies on coordination between the verb and the base generation site of the external argument. Agent-severed structures deliver a phrasal node that contains the verb but not the external argument.

⁵ See Haspelmath (2007) for an overview. Haspelmath cites Somali, Chamorro, Maori, and Yapese as exhibiting a contrast similar to (11). Other examples are Jacalteco (Craig 1977) and Dholuo (Seth Cable, p.c.).

In principle, any theory of how agent-severed syntactic structures are interpreted is feasible. For the sake of concreteness, I will adopt Kratzer’s (1996) system, which makes crucial use of a verbal event argument to link the V and ν projection to each other semantically. Kratzer proposes that ν (her *voice* head) and VP are combined semantically via EVENT IDENTIFICATION in (12).

$$(12) \quad \text{EVENT IDENTIFICATION (Kratzer 1996:122)}$$

$$\begin{array}{ccc} f & g & \rightarrow & h \\ \langle e, \langle s, t \rangle \rangle & \langle s, t \rangle & & \langle e, \langle s, t \rangle \rangle \\ & & & \lambda x_{\langle e \rangle} \lambda e_{\langle s \rangle} [f(x)(e) \wedge g(e)] \end{array}$$

Applied to the case at hand, event identification takes a VP (type: $\langle s, t \rangle$) and a ν head (type $\langle e, \langle s, t \rangle \rangle$) and gives the denotation $\lambda x_{\langle e \rangle} \lambda e_{\langle s \rangle} [f(x)(e) \wedge g(e)]$ (type: $\langle e, \langle s, t \rangle \rangle$).

As an illustration of this system, consider the sentence *Mary likes John* with the ν P structure in (13). The relevant steps of the semantic interpretation are given in (14).

$$(13) \quad [{}_{\nu\text{P}} \text{ Mary } \nu [{}_{\text{VP}} \text{ likes John }]]$$

$$(14) \quad \textit{Semantic computation for (13)}^6$$

a. Terminal nodes:

$$\begin{array}{l} \llbracket \text{like} \rrbracket_{\langle e, \langle s, t \rangle \rangle} = \lambda x_{\langle e \rangle} \lambda e_{\langle s \rangle} \cdot \text{LIKE}(x)(e) \\ \llbracket \nu \rrbracket_{\langle e, \langle s, t \rangle \rangle} = \lambda x_{\langle e \rangle} \lambda e_{\langle s \rangle} \cdot \text{AGENT}(x)(e) \end{array}$$

b. Non-terminal nodes:

$$\begin{array}{l} \llbracket \text{VP} \rrbracket_{\langle s, t \rangle} = \llbracket \text{like} \rrbracket (\llbracket \text{John} \rrbracket) \\ \quad \quad \quad \stackrel{\text{F.A.}}{=} \lambda e_{\langle s \rangle} \cdot \text{LIKE}(\text{JOHN})(e) \\ \llbracket \nu' \rrbracket_{\langle e, \langle s, t \rangle \rangle} = \llbracket \nu \rrbracket (\llbracket \text{VP} \rrbracket) \\ \quad \quad \quad \stackrel{\text{E.I.}}{=} \lambda x_{\langle e \rangle} \lambda e_{\langle s \rangle} \cdot \text{LIKE}(\text{JOHN})(e) \wedge \text{AGENT}(x)(e) \\ \llbracket \nu\text{P} \rrbracket_{\langle s, t \rangle} = \llbracket \nu' \rrbracket (\llbracket \text{Mary} \rrbracket) \\ \quad \quad \quad \stackrel{\text{F.A.}}{=} \lambda e_{\langle s \rangle} \cdot \text{LIKE}(\text{JOHN})(e) \wedge \text{AGENT}(\text{MARY})(e) \end{array}$$

The ν P denotation in (14) may be paraphrased as ‘the set of all events e such that e is an event of liking John and Mary is the agent of e ’.

If a clause does not contain an agent (e.g., in the case of unaccusative verbs) I assume no ν to be present, mainly because it simplifies the exposition. Nothing hinges on that. If there are reasons to include a defective ν head into such structure, nothing in what follows will be affected.

I will treat the label ‘AGENT’ mainly as a technical term, a rather coarse concept which may have a variety of specific semantic entailments (cf. Dowty’s 1991 concept of PROTO-AGENT). For example, the external argument *John* in *John likes Mary* falls under the term AGENT. The exact semantic entailments associated with *John*—viz., the fact that it corresponds to the more narrowly conceived concept of experiencer—are a product of what it means to be an event of liking Mary. The situation is entirely parallel to the fact that, e.g., the verb *murder* entails volitionality of the external argument but *kill* does not. To give a concrete example, Marlett (2010: 303) notes that an agentive interpretation is not necessary for SR marking in Seri, to which we will turn in section 3. External arguments interpreted as, e.g., experiencers are treated in the same way as agents. Thus, in at least Seri it is a syntactic position (i.e., Spec, ν P) rather than a concrete θ -role that is affected by the SR system. The term AGENT is slightly misleading in that it seems to entail a much narrower semantic interpretation than I intend it to have. I will stick to the traditional terminology here, merely noting that the term is not to be taken too narrowly. The

⁶ ‘F.A.’ abbreviates functional application. ‘E.I.’ designates event identification.

view that arguments interpreted as ‘experiencers’ may be generated in Spec,vP is by no means unprecedented (cf., e.g., Ura 2000).

In sum, the most relevant background assumption for my proposal is the possibility of context-sensitive vocabulary insertion. The other views in this section, in particular the specific way the verbal projections are interpreted, are adopted mainly to have a concrete technical background to base the discussion on. My main proposal is, to a large extent, independent of them.

3 Case study 1: Seri

The first language we will investigate in more detail is Seri, an isolate spoken in Mexico. At least at first glance, its SR system is a textbook example of morphological markers being conditioned by reference relations. Extensive empirical as well as theoretical discussion of this system can be found in Moser (1978), Marlett (1981, 1984a,b, 2010), and Farrell, Marlett and Perlmutter (1991). As I will show below, even in this language there are configurations in which the alleged correlation between marking and reference relations systematically breaks down, which suggests that their relation is indirect rather than direct.

3.1 Empirical evidence

Only DS-markers are overt in Seri. The SS-marker is phonologically null. There are two versions of the DS-marker, depending on the mood of the clause. The marker *ma* appears in realis contexts (such as (16a) below), while *ta* occurs in irrealis configurations (cf. (17a)).

3.1.1 The role of subject reference

At first consideration, the SR system in Seri seems to involve a tight connection between the distribution of the switch reference markers and reference relations. Finer (1984) cites Seri as evidence for his system in which reference relations between the subjects directly determine SR marking. The data presented in (15) and (16) seem to corroborate this view.

The examples in (15) demonstrate SS-marking. (15a) shows that SS-marking is obligatory if the two subjects are coreferent. Conversely, (15b) illustrates that in the presence of SS-marking (i.e. in the absence of DS-marking) the subjects of both clauses have to be interpreted as identical in reference.

- (15) a. *mi-nail kom m-po-k-i:xx (*ta)-X ?ata:p ko-m-si-a: ?a=?a*
 2POSS-skin the 2SG.S-IR-AUG-wet DS-UT mucus 3OBL-2SG.S-IR-be AUX=DCL
 ‘If you wet your skin, you will get a cold.’ [Farrell et al. 1991: 434]
- b. *..., xazoj cop itii, ziix ticom itácatx, hapx iiqui*
 puma the 3S.3O-R-hear thing that 3S.3O-R-release outside 3POSS-toward
tpanzx, ...
 R-run
 ‘...Puma_i heard it, he_{i/*j} released that thing (Rabbit), he_{i/*j} ran away ...’
 [Marlett 2010: 304]

The data in (16) provide examples of DS-marking. If the two subjects are distinct in reference, only DS-marking is possible, as in (16a). The reverse is also true: If a sentence receives DS-marking, the two subjects have to be distinct, cf. (16b). (16a) and (16b) are in realis mood and the DS-marker

ma is used. (16c) stands in the irrealis and, concomitantly, *ta* appears. Note incidentally that (16a) also demonstrates that SR cannot be a mere disambiguation device since no ambiguity arises in cases with first or second person subjects. Nevertheless, SR marking is obligatory. Also see [Finer \(1985:§1.1\)](#) for additional discussion.

- (16) a. *ʔim-t-kašni *(ma) ʔp-yo-o:ʔa*
 1SG.O-R-bite DS 1SG.S-DIST-cry
 ‘Since it bit me, I cried.’ [Farrell et al. 1991: 434]
- b. *Comcaac coi itaht ma, mójocam*
 Seris the.PL 3S.3O-R-see-PL DS PROX-flee.PL
 ‘When the Seris_i saw them, they_{i/j} fled.’ *also:*
 ‘When they_i saw the Seris, they_{i/j} fled.’ [Marlett 2010: 305]
- c. *Ziix ipxasi cmiipla zo hpoohit ta x, hiiqui saa aha*
 thing 3POSS-flesh SN-bad a 1SG-IR-eat DS UT it.will.harm.me AUX-DCL
 ‘If I eat rotten meat, it will do me harm.’ [Marlett 2010: 133]

3.1.2 Subject-less clauses

The strong link between morphological marking and semantic interpretation breaks down once clauses without external arguments are taken into account. As (17) demonstrates, if exactly one of the two clauses involves a passivized verb, DS-marking is obligatory, regardless of the actual reference relations. Hence, in both (17a) and (17b) DS-marking occurs despite the fact that the surface subjects are in fact coreferent.⁷

- (17) a. *ʔp-po-a:ʔ-kašni *(ta)-X ʔp-si-o:ʔa ʔa=ʔa*
 1SG.S-IR-PASS-bite DS-UT 1SG.S-IR-cry AUX=DCL
 ‘If I am bitten, I will cry.’ [Farrell et al. 1991: 434]
- b. *cmaax mos isoj quij tpaho ma, zi ina cooxp z itacö, ...*
 then also 3POSS-body the R-PASS-see DS antelope.jackrabbit a 3S.3O-R-kill
 ‘... then when he was seen again, he had killed an antelope jackrabbit, ...’ [Marlett 2010: 310]

For additional confirmation that the relevant factor is the existence of an external argument consider weather verbs. If one of the two clauses is a weather verb construction, DS-marking has to be used ([Marlett 2010: 305](#)). An example is provided in (18).⁸

- (18) *t-ápka ma iʔp-y-íim*
 DEP.PST-rain DS 1SG.S-PST-sleep
 ‘When it rained, I slept.’ [Moser 1978: 116]

The examples in (17) contain exactly one passivized clause. If both clauses linked via SR are passivized, the distribution of the SR markers is conditioned by the reference relations of the *underlying* subjects (cf. [Farrell et al. 1991](#), [Marlett 2010: §9.1.1.5](#)):

⁷ The same problem arises if SR is taken to operate on verbal agreement features as suggested by [Finer \(1984\)](#), [Broadwell \(1997\)](#), [Watanabe \(2000\)](#), and [Camacho \(2010\)](#). In (17a) both verbs comprise 1st person singular subject agreement, which leads these accounts to wrongly predict SS-marking in (17).

⁸ One might wonder whether unaccusative verbs differ from unergative verbs with respect to SR. Seri does not show morphological or syntactic evidence for this distinction ([Marlett 2010: 629–30](#)), which makes it hard to probe this question.

In passive clauses ... the grammatical subject (as commonly conceived) is *not* the nominal that is relevant for the purpose of DS marking; instead it is the unexpressed *agent/experiencer* — whatever would be the subject in the non-passive clause — that is relevant for the question of coreference ... When *both* clauses are passive and when the implied agents are understood as being coreferential, DS marking does not occur even though the grammatical subjects (those relevant for subject inflection) are obviously different.

(Marlett 2010: 310–2, emphasis in the original)

Consider (19) as an example. Because of SS-marking, the underlying agents of both passive clauses have to be coreferent. The two surface subjects *?a:t ki?* ‘the limberbush’ and *?e:poł ki?* ‘the ratany’ are irrelevant as far as SR marking is concerned. Conversely, DS-marking is impossible under this interpretation, but becomes grammatical if the logical subjects are distinct in reference.

- (19) *?a:t ki? p-a:ʔ-ka: (*ta)-X ?e:poł ki? mos si-a:ʔ-ka: ?a=?a*
 limberbush the IR-PASS-look.for DS-UT ratany the also IR-PASS-look.for AUX=DCL
 ‘If limberbush is looked for, white ratany should also be looked for.’ [Farrell et al. 1991: 434]

This example is particularly challenging for approaches to SR that mediate the coreference relations via subject agreement (Finer 1984, Broadwell 1997, Watanabe 2000, Camacho 2010). As subject agreement is controlled by the surface subjects in (19), it is these elements that should be relevant for SR marking. Thus, not only is DS-marking predicted to be obligatory in (19) as the only agreement triggers *?a:t ki?* and *?e:poł ki?* are distinct in reference. Furthermore, the fact that the logical subjects, which do not control verbal agreement to begin with, must be coreferent provides compelling evidence that verbal agreement is not the mediator of switch-reference in Seri.

3.1.3 Clause linkage without SR

Notably, SR marking does not occur in all instances of clause combination. First, SR markers stand in complementary distribution with other clause joiners. Specifically, once clauses are conjoined by *Xo* ‘but’, SR marking is not possible, as shown in (20).⁹ The DS-marker may not appear in (20) although the two subjects are disjoint.

- (20) [*yoo-fp*] (**ma*) *Xo* [*?-yo-m-aʔʔo*]
 DIST-arrive DS but 1S-DIST=NEG-see
 ‘He arrived, but I didn’t see him.’ (Finer 1985: 39, Marlett 2010: 124)

Second, SR marking is not possible in clausal complementation structures, as illustrated by (21).

- (21) a. *Eenim cop icooz ihmiiho*
 knife the 3-POSS-PON-steal 1SG-PROX-see
 ‘I saw him/her steal the knife.’
 b. *Cafee cop cmatj, hax ihmoocta*
 coffee the hot just 1SG-PROX-look.at
 ‘I think the coffee is hot.’ [Marlett 2010: 395]

Third, SR is barred from adjunction constructions:

⁹ A second clause-conjoining element, *x* ‘or’, behaves alike. As Steve Marlett (p.c.) informs me, there is no designated elements corresponding to *and*.

- (22) *Roberto quih siifp caha yax, comcaac coi hax caaha iyooaj*
 Roberto the IR-arrive AUX-DCL because person.Seri.PL the INTNS they.get.ready
 ‘Since Roberto will arrive, the people are getting ready.’ [Marlett 2010: 931]

3.1.4 Structural deficiency

There is some evidence that the clauses combined via SR marking lack higher functional projections. Seri overtly marks clause type by means of the sentence final particles *ha*¹⁰ (‘declarative’) and *ya* (‘interrogative’), as shown in (23).

- (23) a. *Ihpsitax aha*
 1SG-IR-go AUX-DCL
 ‘I will go.’
 b. *Insitax haa-ya?*
 2SG-IR-go AUX-QM
 ‘Will you go?’
 c. *Haso ha*
 net DCL
 ‘It is a net.’
 d. *Haso-ya?*
 net-QM
 ‘Is it a net?’ [Marlett 2010: 766–7]

In addition, the auxiliary (*?a*) is plausibly a tense marker, as it coincides with a future interpretation.

- (24) a. *Imiipox*
 3S.3O-PROX-pull.out
 ‘S/he pulls it out.’
 b. *Isiipox aha*
 3S.3O-IR-pull.out AUX-DCL
 ‘S/he will pull it out.’
 c. *Isiipox haa-ya?*
 3S.3O-IR-pull.out AUX-QM
 ‘Will s/he pull it out?’ [Marlett 2010: 108–10]

Both the clause type markers *ha/ya* and the future marker (*?a*) are barred from clauses marked for switch-reference, as shown in (25). They are only licit after the final verb (cf. (15a), (17a), and (19)).

- (25) *Minl quih pozatx (*aha) ta (*aha) x, insooha*
 2POSS-finger-PL the IR-have.glochids AUX-DCL DS AUX-DCL UT 2SG-IR-cry
aha
 AUX-DCL
 ‘If your fingers get thorns in them, you will cry.’ [Steve Marlett, p.c.]

Other tense markers show the same behavior: Future and past tense may also be marked by the modals *siihi* and *iihi*, respectively. As confirmed to me by Steve Marlett (p.c.), these elements are also barred from clauses bearing switch-reference markers.

This observation suggests that the Seri SR system does not link full-fledged clauses. Under the standard assumption that clause typing and tense are located on high heads in the clausal spine, their single appearance in SR constructions indicates that SR operates *below* the sentence level. Given that clause typing is a property of C, and tense a property of T, we can conclude that at least the first clause in (25) lacks both C and T. Interestingly, no such restriction holds for adjunction constructions: In (22) clause type is marked within the adjoined clause. This fact would be unexplained if SR operated over clausal adjunction structures (as argued by [Finer 1984](#) and [Watanabe 2000](#)).

¹⁰ The particle *ha* has the allomorph *iha* after consonants. [Farrell et al. \(1991\)](#) transcribe it as *?a* instead of *ha*, as in (15a).

Table 1. Verbal mood prefixes in Seri (Marlett 2010:599)

MOOD		dependent	independent
REALIS	(simple)	<i>po-</i> , <i>si-</i>	<i>si-</i>
	subjunctive		<i>tm-</i>
IRREALIS	(simple)	<i>t-</i>	<i>t-</i>
	distal		<i>yo-</i>
	proximal		<i>mi-</i>
	emphatic		<i>xo-</i>

A second piece of evidence for the view that SR does not connect entire clauses in Seri comes from the behavior of mood prefixes. Verbs in Seri are obligatorily marked for realis or irrealis mood and, possibly, finer distinctions within the two moods. Importantly, the realis/irrealis value of clauses connected by SR must be identical. Table 1 gives an overview of the two moods and their morphological markings. Note that despite the labels *distal*, *proximal*, and *emphatic*, the nature of the further distinctions in the irrealis mood are obscure.¹¹

Verbs that bear an SR marker only make a two-way distinction between realis and irrealis mood (they recruit their forms from the ‘dependent’ column in table 1). Verbs in final clauses, i.e. clauses linked to another clause by SR but not themselves bearing an SR marker, distinguish between the various forms in the ‘independent’ column. For example, in (16a) both clauses occur in the realis. The final verb *o:ʔa* ‘cry’ is further marked for distal.

Importantly, both clauses obligatorily have the same realis/irrealis feature. Linking a realis and an irrealis clause is not possible. If each SR-linked clause contained its own mood projection, this restriction would be unexplained. By contrast, if we take SR to combine only partial clauses (VPs and *v*Ps), mood concord can be captured by locating the mood projection above the two clauses. Since under this view both clauses are in the scope of a single mood projection, the matching requirement follows as both mood markers are instantiations of the same mood feature. As discussed in greater detail below, the fact that mood morphology shows up on both verbs can be implemented by invoking a syntactic Agree operation, which transmits mood into both conjuncts. Mood concord thus provides a further argument that the structures linked to each other by SR are smaller than they seem to be at first sight.¹²

To recap, the main properties of the Seri SR system are as follows:

- a) If both clauses are active, the distribution of the SR markers correlates with reference relations.
- b) If exactly one clause is passivized, DS-marking occurs.
- c) If both clauses are passivized, SR marking mirrors the reference relations between the logical subjects.

¹¹ Marlett (2010:§17.3.1) observes that the ‘distal’ and ‘proximal’ seems to correspond to tense, aspect, habituality, inchoativity, and sometimes are freely interchangeable without meaning change. The ‘emphatic’ is not transparently related to mood, tense or aspect either. Given that the exact nature of the further distinctions made by the final verb within realis and irrealis mood is thus unclear, it is not obvious how these distinctions are best implemented. It is conceivable that, e.g., the marker *tm-* in table 1 is a portmanteau for realis mood and subjunctive, licensed whenever the heads bearing the realis and subjunctive feature are linearly adjacent. If, by assumption, the subjunctive is projected above the conjunction and not lowered via Agree, this environment will be fulfilled for only the final verb. Hence, the portmanteau markers in the ‘independent’ column in table 1 are only applicable for final verbs. While this analysis derives the observable facts, pending further insights into the nature of the independent forms it remains a speculation.

¹² An additional test to track the size of the clauses involved in SR marking would be speaker-oriented adverbs. As these are commonly taken to be generated fairly high in the clausal spine (cf. Cinque 1999), they are predicted not to be possible in each individual clause. However, as Seri does not have speaker-oriented adverbs this prediction is trivially borne out (Steve Marlett, p.c.).

- d) SR marking is barred from structures with an overt coordinator as well as from complementation and adjunction structures.
- e) SR clauses are syntactically deficient, lacking mood, tense and clause type properties.

3.2 Analysis

The gist of the analysis to be developed for these generalizations will be that the SR structures seen above are instances of VP or ν P coordination, the SR markers being the spellout of the coordination head depending on the height of coordination.

As laid out in section 2.1, conjuncts are required to be semantically alike but may mismatch in their syntactic category. In the agent-severed semantic system adopted here (recall section 2.4), VPs and ν Ps are both interpreted as event predicates. They can hence be conjoined. This gives rise to the four coordination patterns in (26).¹³

- (26) a. [ν P DP [ν ' ν [&P VP & $^\circ$ VP]]]
 b. [&P [ν P DP [ν ' ν VP]] & $^\circ$ [ν P DP [ν ' ν VP]]]
 c. [&P [ν P DP [ν ' ν VP]] & $^\circ$ VP]
 d. [&P VP & $^\circ$ [ν P DP [ν ' ν VP]]]

The exponents available for realizing the coordination head in the various structures in (26) are listed in (27).

- (27) / \emptyset / \leftrightarrow [& $^\circ$]
 /ma/ \leftrightarrow [& $^\circ$, __ ν P, realis]
 /ta/ \leftrightarrow [& $^\circ$, __ ν P, irrealis]

According to (27), the conjunction head is realized as / \emptyset / in the default case, i.e. if no other exponent fulfills the Subset Principle. The markers *ma* and *ta*, on the other hand, require the presence of a ν P in realis or irrealis mood, respectively.¹⁴

These initial assumptions provide a handle on capturing various empirical generalizations. First, it derives the fact that SR marking does not occur in either complementation (21) or adjunction constructions (22), as these do not involve a coordination head. Second, it accounts for the fact that the switch-reference markers stand in complementary distribution with other conjoining elements such as *Xo* 'but' (cf. (20)). This restriction follows because the SR marker itself is treated as the element combining the two clauses. Thirdly, because conjunction applies low (i.e. at the VP or ν P level), the above observation that marking of clause type and tense is not possible in the first clause follows (see (25)) as there are no separate T or C projections in each conjunct. Fourthly, as the Mood projection resides above ν P, the entire conjunction structure ends up in the scope of a single Mood head. This derives the observation that the mood values of both clauses have to match.

There is an apparent problem, however. The assumption that Mood is not projected within each conjunct but above the entire conjunction is at odds with the observation that both verbs in, e.g., (15a) are morphologically marked for mood. On the one hand, the matching requirement suggests that there is only one realis/irrealis projection to begin with; on the other hand, the

¹³ Nothing in my proposal crucially requires asymmetric coordination of ν P and VP. A feasible alternative would be to project a semantically vacuous (defective) ν above VP and make the realization of coordination sensitive to the types of ν that are conjoined. In light of the fact that distinct syntactic projections may be conjoined as long as their semantic type is alike makes conjunction of ν P and VP the zero assumption.

¹⁴ While the exponents in (27) are the ones relevant for SR marking, there are additional ways of realizing a coordination head in Seri. In a nominal environment it is spelled out as *xah* (cf. Marlett 2010: §25.1).

fact that mood shows up on both verbs morphologically seems to require two mood features. Situations of this type are not unprecedented. First, syntactic heads may affect the spellout of elements within their c-command domain. A well-known example are auxiliaries in English, which condition the realization of the next-lower verb. Several modes of analysis have been proposed, including Chomsky's (1957) AFFIX HOPPING or post-syntactic MERGER operations (Bobaljik 1994, Embick and Noyer 2001). Other analytical options include UPWARD AGREE (Baker 2008, Bjorkman 2011) in the sense that features of a higher head are transmitted to a lower head, where they may be overtly realized. For concreteness, I will adopt a proposal by Matushansky (2008), according to which functional heads may assign a feature to their complement, which is percolated down to the terminals, where it receives morphological exponence. This accounts for the fact that certain syntactic features (mood in the case at hand) are realized in a position lower than their syntactic source.¹⁵ Second, due to the general parallelism constraint on coordination (cf. Williams's 1978 LAW OF COORDINATION OF LIKES) it is reasonable to assume that a feature will be percolated into both conjuncts. Independent evidence for this view comes from coordinated noun phrases in object position. In these cases, object case morphology consistently shows up on both conjuncts, requiring the case feature to be assigned into both conjuncts. Similarly, if the complement of the Mood head contains a conjunction, the mood feature will be assigned across-the-board. In sum, then, the mood information stems from a functional head above the level of conjunction, which agrees with ν and thereby transmits this information into both conjuncts.

The following system emerges: The syntactic structure comprises only one Mood projection taking both VPs/ ν Ps in its scope. The Mood head agrees with its complement, assigning its mood value to elements within the complement, including V and ν . Morphologically, the mood feature receives its realization on V. This system manages to capture both the matching requirement and the fact that mood is realized on each verb. Since ν as well contains a mood feature as a result of this Agree operation, the spell-out of the coordination head may be sensitive to the mood feature of the entire clause. Like the categorial feature, mood on V/ ν locally affects vocabulary insertion into the coordination head.¹⁶

A similar situation holds for verbal agreement. It is obvious from the examples above that verbal agreement is marked on each verb. There are several ways of implementing this fact. For the sake of concreteness, I will presume that the verbal ϕ -probe is situated on ν . The ν head then agrees with its complement, assigning these ϕ -features to V, where they are morphologically spelled out. As before, if the complement of ν contains a coordination (i.e. in SS clauses), this Agree targets both verbs.¹⁷

On the semantic side of the system, the coordination head is interpreted as in (28), where ' \oplus ' is the mereological sum operator (Link 1983, 1998).¹⁸

$$(28) \quad \llbracket \& \rrbracket_{\langle \langle s,t \rangle, \langle \langle s,t \rangle, \langle s,t \rangle \rangle \rangle} = \lambda P_{\langle s,t \rangle} \lambda Q_{\langle s,t \rangle} \lambda e_{\langle s \rangle} \exists e', e'' : e = e' \oplus e'' \wedge P(e') \wedge Q(e'')$$

¹⁵ A reviewer wonders why mood is lowered but tense and clause type are not. I am not aware of a principled reason for this asymmetry and will stipulate it as an arbitrary property of the system. Technically, Mood agrees with its complement but T and C do not. In an upward agree approach, ν is furnished with an unvalued mood feature only.

¹⁶ There is some independent evidence that the realization of a coordination head may be sensitive to features other than the category of the conjuncts: The Papuan language Takia, for instance, employs different coordinators for human and non-human nouns. In the Austronesian language Nêlêmwa the animacy of the conjuncts affects the form of the conjunction (Haspelmath 2004:12).

¹⁷ Notice that there is, of course, no requirement inherent to the system for these Agree operations to take place. If no Agree applies, features associated with ν will be spelled out once in VP coordination structures but twice in ν P coordinations. Such patterns are indeed attested. They will be discussed in §6.2.

¹⁸ For help with the semantics of coordination I am grateful to Rajesh Bhatt, Seth Cable, and Henry Davis.

(28) forms the mereological sum of two events e' and e'' and applies each of these two subevents to one conjunct (Krifka 1990). The denotation of v , adopted from Kratzer (1996), is repeated in (29).¹⁹

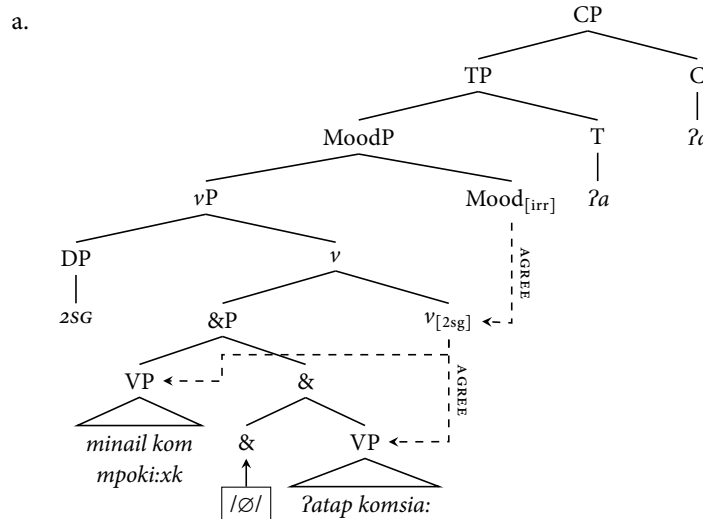
$$(29) \quad \llbracket v \rrbracket_{\langle e, \langle s, t \rangle \rangle} = \lambda x_{\langle e \rangle} \lambda e_{\langle s \rangle} : \text{AGENT}(x)(e)$$

Let us apply this system to some examples. First, consider a structure with SS-marking, as (30) (=15a).

- (30) *mi-nail kom m-po-k-i: xk (*ta)-X ?ata:p ko-m-si-a: ?a=?a*
 2POSS-skin the 2SG.S-IR-AUG-wet DS-UT mucus 3OBL-2SG.S-IR-be AUX=DCL
 'If you wet your skin, you will get a cold.'

In the system proposed here, (30) is an instance of VP coordination, as given in (31a), which receives the interpretation in (31b).

- (31) Structure of (30)



- b. $\llbracket vP \rrbracket = \lambda e \exists e' \exists e'' : \text{AGENT}(\text{YOU})(e) \wedge$
 $e = e' \oplus e'' \wedge \text{WET-YOUR-SKIN}(e') \wedge \text{GET-A-COLD}(e'')$

Since coordination applies very low in (31a), there is only one v projection and hence only one external argument. Furthermore, the structure contains only one instance of Mood, T and C, all of which take the two conjuncts in their scope. Crucially, since the coordination head is in the local vicinity of two VPs, it is spelled out by the zero exponent, given the set of vocabulary items in (27). Semantically, each VP denotes a set of events, one of wetting your skin (e'), one of getting a cold (e''). Coordination forms the set of their sum events (e). The v projection then introduces the external argument of this sum event, which is interpreted as the agent of the sum event e and, consequently, of the subevents e' and e'' .²⁰

Morphologically, T and C are realized in their base position and hence occur only once, in clause-final position. The mood feature, by contrast, is assigned to v and V via Agree (indicated

¹⁹ Recall from the discussion in section 2.4 that agentivity plays no direct role in this system. The analysis operates on syntactic positions rather than θ -roles *per se*.

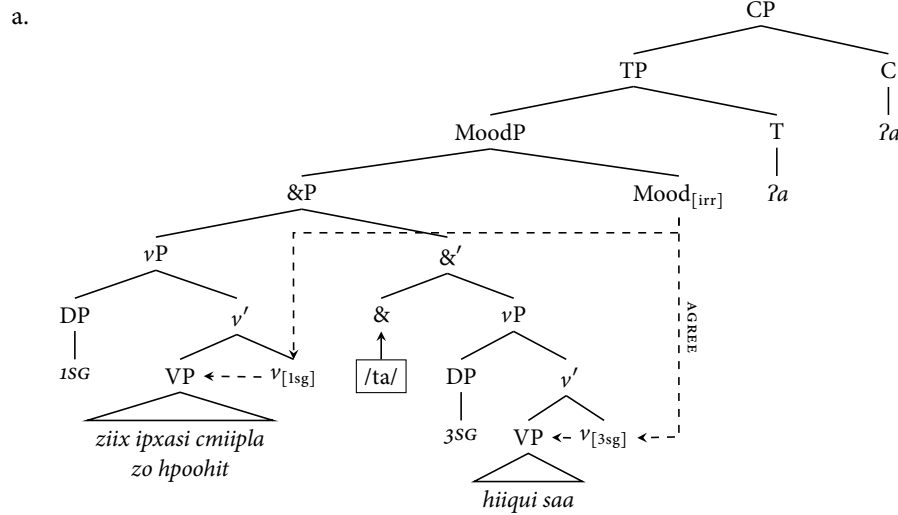
²⁰ Notice that (30), due to irrealis mood, involves a conditional interpretation. The emergence of conditional interpretations in coordination structures is well-attested (Culicover and Jackendoff 1997).

by dashed lines). The v head ϕ -agrees with the external argument and agrees with V for these ϕ -features. Each main verb ends up containing both mood as well as ϕ -feature information, which feed morphological realization.²¹

As a second example, consider a DS-structure, such as (32) (=16c). Here coordination applies slightly higher, at the ν P level, cf. (33a).²²

- (32) *Ziix ipxasi cmiipla zo hpoohit ta x, hiiqui saa aha*
 thing 3POSS-flesh SN-bad a 1SG-IR-eat DS UT it.will.harm.me AUX-DCL
 ‘If I eat rotten meat, it will do me harm.’

- (33) Structure of (32)



- b. $[[\&P]] = \lambda e \exists e' \exists e'' : e = e' \oplus e'' \wedge [AGENT(I)(e') \wedge EAT-ROTTEN-MEAT(e')] \wedge [AGENT(IT)(e'') \wedge DO-ME-HARM(e'')]$

Each ν P conjunct contains a separate external argument. The coordination head has a ν P containing an irrealis feature (as a consequence of Agree with Mood) in its local context and is hence spelled out as *ta*. The semantic representation obtained from (33a) is given in (33b): Each of the two subevents has its own agent.

Note at this point that this system straightforwardly accounts for the fact that SS-marking is not possible if both clauses have distinct external arguments (recall (16a)). If both clauses have referentially distinct agents, each conjunct has to contain its own external argument and therefore its own ν projection. This in turn entails that the conjuncts have to be at least ν Ps. Using the SS-marker / \emptyset /—which requires two VPs—is never an option in this configuration.

We do not, however, have an explanation thus far for the necessary absence of DS-marking if both clauses have identical subjects, as in (15a). The problem is that, in principle, nothing precludes the coordination of two ν P with two separate subjects which are accidentally coreferential. The problem is particularly obvious for (16b). It instantiates coordination of two ν P's, resulting in DS-marking. In principle, nothing excludes the subject of the second clause *mójocam* ‘PROX-flee.PL’ from referring to the Seris, simply because in the present analysis the SR markers

²¹ I have not included the element *X* ‘UT’ in the structure in (31a), mainly because the nature of this element is unclear (Marlett 2010: 132).

²² Marlett (2010) uses a different transcription than Marlett (1981) and Farrell et al. (1991), which I have left unchanged. Marlett’s (2010) *aha* ‘AUX-DCL’ corresponds to the latter two’s *?a=?a*.

are not tied to coreference relations to begin with. Coreference of subjects is, however, impossible. So far, then, the account overgenerates. We need to exclude ν P coordination with coreferring subjects.

To develop a solution to this problem, we first observe that VP coordination on the one hand and ν P coordination with coreferent subjects on the other are semantically equivalent. Low coordination (like (31a)) yields an interpretation according to which the agent of the entire sum event e is identified. High (ν P) coordination with coreferent subjects produces the reading that both subevents e' and e'' have an agent, which happens to be the same. Intuitively, both mean the same. This intuition can be made more precise by assuming that the agent relation is subject to CUMULATIVITY (34) and MAPPING TO OBJECTS (35), which hold if $R = \text{AGENT}$.

(34) CUMULATIVITY (Kratzer 2003)

$$\lambda R_{\langle e, \langle s, t \rangle \rangle} \forall e \forall e' \forall x \forall y \left[[R(x)(e) \wedge R(y)(e')] \Rightarrow R(x \oplus y)(e \oplus e') \right]$$

'If a relation R holds between events e and e' and objects x and y , respectively, R also holds between the sum of e and e' and x and y .'

(35) MAPPING TO OBJECTS (Krifka 2001)

$$\lambda R \forall x \forall e, e' \left[R(x)(e) \wedge e' \leq e \Rightarrow \exists y [y \leq x \wedge R(y)(e')] \right]$$

'If a relation R holds between an event e and an object x , all subparts of e bear R to some subpart of x .'

Cumulativity (34) applied to the agent relation states that if, e.g., John is the agent of some event e and Mary is the agent of some event e' , then 'John \oplus Mary' is the agent of ' $e \oplus e'$ ': If John ate an apple and Mary ate a banana, then John and Mary ate an apple and a banana. Mapping to objects (35) applied to agents asserts that if there is an agent x of some event e then each subevent of e has a subpart of x as an agent: If John and Mary ate an apple and a banana, then either John or Mary or John and Mary ate an apple.

Against the background of these two principles, consider the abstract semantic representations obtained for VP coordination and ν P coordination with coreferential subjects, notated as ' α ':

(36) VP coordination

- a. $[\nu_P \alpha [\nu' \nu [\&P \text{VP}_1 \&^\circ \text{VP}_2]]]$
- b. $\lambda e \exists e' \exists e'' : \text{AGENT}(\alpha)(e) \wedge e = e' \oplus e'' \wedge [\text{VP}_1](e') \wedge [\text{VP}_2](e'')$

(37) ν P coordination with coreferent subjects (α)

- a. $[\&P [\nu_P \alpha [\nu' \nu \text{VP}_1]]] \&^\circ [\nu_P \alpha [\nu' \nu \text{VP}_2]]]$
- b. $\lambda e \exists e' \exists e'' : e = e' \oplus e'' \wedge$
 $[\text{AGENT}(\alpha)(e') \wedge [\text{VP}_1](e')] \wedge [\text{AGENT}(\alpha)(e'') \wedge [\text{VP}_2](e'')]$

Given (34) and (35), it can be demonstrated that (36b) and (37b) entail each other: If one of them is true, the other is as well. Suppose the external argument is 'I' (1SG). Then (37b) contains the statement $[\text{AGENT}(I)(e') \wedge \text{AGENT}(I)(e'')]$. By (34), this entails $[\text{AGENT}(I \oplus I)(e' \oplus e'')]$. Since we know that $e' \oplus e'' = e$ and since sum formation is idempotent ($x \oplus x = x$), this can be rewritten as $[\text{AGENT}(I)(e)]$, which yields (36b). Thus, (37b) entails (36b). Conversely, (35) applied to the $[\text{AGENT}(I)(e)]$ part of (36b) implies $[\exists y : y \leq I \wedge \text{AGENT}(y)(e')]$ and $[\exists y : y \leq I \wedge \text{AGENT}(y)(e'')]$. Since 'I' is an atomic individual, for all y holds that if $y \leq I$, then $y = I$. Consequently, we obtain $[\text{AGENT}(I)(e')]$ and $[\text{AGENT}(I)(e'')]$, which yields (37b). Thus, (36b) entails (37b). Taken together, (36b) and (37b) imply each other and are thus equivalent.

This means that the structural difference between (36) and (37) is not mapped onto a semantic difference.

In a number of studies on the behavior of nominal coordination, Heycock and Zamparelli (2000, 2003, 2005) adopt a general economy constraint on coordination structures, according to which conjunction has to take place as low as possible. This transderivational principle, stated in (38), is taken to be a subcase of a substantially more general economy condition on syntactic structures (Chomsky 1995, Rizzi 1997, Bresnan 2001, Grimshaw 2001, 2008 among many others).²³

(38) ECONOMY OF COORDINATE STRUCTURES

Given semantic equivalence, minimize structure.

Notice that *v*P coordination involves more syntactic material than VP coordination structures as the former, but not the latter, contains two *v* projections and two external arguments. The principle (38), coupled with the insight that (36) and (37) are semantically equivalent, renders impossible structures with high coordination and coreferent subjects. Put differently, (37) is illicit because the same semantic interpretation can be obtained from conjoining at the VP level. As a consequence, *v*P coordination, and hence DS-marking, is only possible if the resulting reading may not be generated by VP coordination. As seen above, this is only the case if the two external arguments are referentially distinct. As the overall effect, the equivalence of (36) and (37) combined with structural optimization (38) excludes DS-marking with coreferent subjects. It is worth noting at this point that this line of reasoning makes the following prediction: DS-marking with coreferential subjects should be possible if the resulting interpretation is distinct from the interpretation obtained by VP coordination. The discussion of Amele in the next section will show this prediction to be borne out.²⁴

As we have seen in the empirical discussion above, the SR system shows some curious interactions with subject-less clauses. If one of the two clauses does not project an external argument, DS-marking is used. If both clauses are passivized, it is the reference relation between the obligatorily unexpressed external arguments that controls SR marking. As detailed immediately, the coordination-based account developed so far straightforwardly extends to these facts.

Consider first the combination of a passivized and a non-passivized verb, as in (39) (=17a). DS-marking is mandatory despite the fact that both surface subjects are coreferent.

- (39) *ʔp-po-a:ʔ-kaʃni* **(ta)-X* *ʔp-si-o:ʔa* *ʔa=ʔa*
 1SG.S-IR-PASS-bite DS-UT 1SG.S-IR-cry AUX=DCL
 'If I am bitten, I will cry.'

²³ A reviewer asks whether the principle in (38) would rule out TP coordination in favor of *v*P coordination. It does not. In contrast to *v*, T is a scope-bearing element. If a single T ranges over an entire conjunction of two *v*P's, the semantic result is plausibly different from a conjunction of two TPs, where each T takes scope over exactly one *v*P.

Relatedly, Marcel den Dikken has pointed out to me the example in (i). Given the principle (38), (i) should be an instance of VP coordination. Nevertheless, the second conjunct contains a floating quantifier, which, under some analyses (e.g., Sportiche 1988), requires a Spec*v*P position to be stranded in.

- (i) The children [entered the house] and [*all* gave their daddy a kiss]

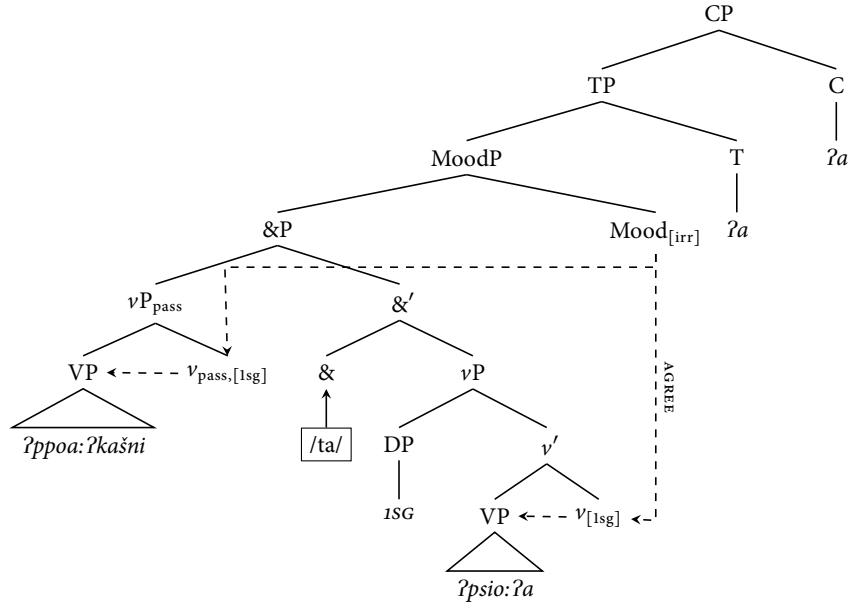
A stranding analysis of floated quantifiers has been called into question for independent reasons (see Bobaljik 2003 and references cited therein). There is evidence that floating quantifiers at least may be parsed as VP-adjuncts. This allows (i) to have a VP coordination structure with the second conjunct carrying the quantifier as an adverb.

²⁴ Various ways of blocking structures because they are semantically equivalent to another structure have been proposed. Hornstein (2007) rules out DS-structures with coreferent subjects by a version of Chomsky's (1981) AVOID PRONOUN. A similar reasoning is employed by Camacho (2010). A conceivable pragmatic account would be based on Reinhart (1983a,b). The gist of Reinhart's analysis is that if a certain reading can be systematically expressed it has to be. VP coordination inherently entails a same subject interpretation, while *v*P coordination does not.

I submit that (39) has the structure in (40a), receiving the interpretation in (40b). I assume passive clause to contain a defective v_{pass} projection, hosting a ϕ -probe and being morphologically spelled out as the passive exponent $a:?$. Like other types of v , it agrees with V. Semantically, I take it to be interpreted as an existential statement over an agent (see (41)). It does not syntactically introduce an external argument. Being of type $\langle s, t \rangle$, it combines with the VP via PREDICATE MODIFICATION (42) (cf. Heim and Kratzer 1998).

(40) Structure of (39)

a.



b. $\lambda e \exists e' \exists e'' : e = e' \oplus e'' \wedge [\text{BITE-ME}(e') \wedge \exists x : \text{AGENT}(x)(e')] \wedge [\text{AGENT}(I)(e'') \wedge \text{CRY}(e'')]$

(41) $\llbracket v_{\text{pass}} \rrbracket_{\langle s, t \rangle} = \lambda e_{\langle s \rangle} \exists x_{\langle e \rangle} : \text{AGENT}(x)(e)$

(42) PREDICATE MODIFICATION

If α is a branching node, $\{\beta, \gamma\}$ is the set of α 's daughters, and $\llbracket \beta \rrbracket$ and $\llbracket \gamma \rrbracket$ are both in $D_{\langle s, t \rangle}$, then

$$\llbracket \alpha \rrbracket = \lambda e_{\langle s \rangle} : \llbracket \beta \rrbracket(e) = \llbracket \gamma \rrbracket(e) = 1$$

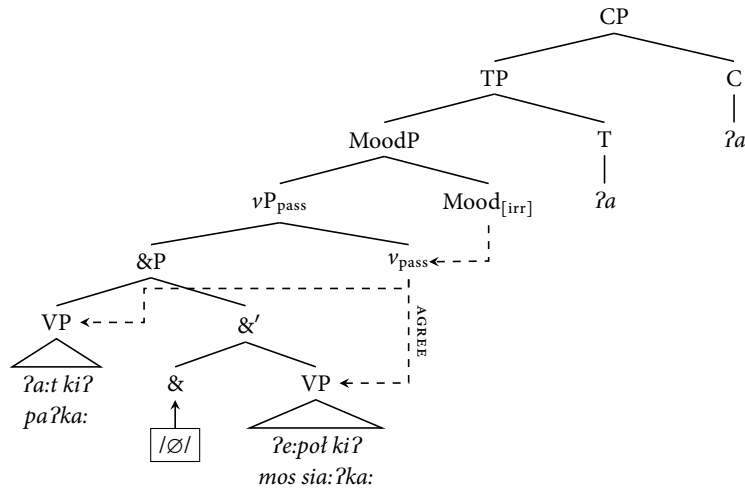
The coordination head in (40a), being in the context of a v projection and an irrealis feature, is realized as *ta*. Reference comparison plays no role in determining the distribution of this marker, so the fact that the two surface subjects are coreferent is irrelevant.

Let us contrast this with the combination of two passivized clauses in (43) (=19). Recall from the discussion above that in (43) SS-marking and a 'same agent' interpretation entail each other. The structure for (43) is given in (44a), receiving the interpretation in (44b).

(43) ʔa:t $ki\text{ʔ } p\text{-a:ʔ-ka:}$ $(*ta)\text{-X}$ $\text{ʔe:poʔ } ki\text{ʔ } mos \text{ si-a:ʔ-ka:}$ ʔa=ʔa
 limberbush the IR-PASS-look.for DS-UT ratany the also IR-PASS-look.for AUX=DCL
 'If limberbush is looked for, white ratany should also be looked for.'

(44) Structure of (43)

a.



- b. $\lambda e \exists e' \exists e'' \exists x : \text{AGENT}(x)(e) \wedge e = e' \oplus e'' \wedge$
 $\text{LOOK-FOR-LIMBERBUSH}(e') \wedge \text{LOOK-FOR-RATANY}(e'')$

Since we are dealing with VP coordination in (44), the conjunction is spelled out by the zero marker. Furthermore, the fact that the two clauses in (43) are interpreted as having the same logical subject follows from (44) in the following way: As coordination takes place below v_{pass} , the existential quantification over the agent argument introduced by v_{pass} (41) ranges over the sum event e . By a reasoning exactly parallel to other instances of VP coordination (e.g., (31)), this agent will be construed as the agent of the subevents e' and e'' .

It is worth mentioning that this analysis provides a reply to an argument advanced by Farrell et al. (1991). Farrell et al. argue on the basis of sentences like (43) that switch-reference must be assumed to operate on underlying active clauses, which are then transformationally mapped onto the passive surface structures. Departing from the idea that switch-reference compares, in some way, the reference between syntactically projected arguments, the ‘same agent’ interpretation of (43) entails that the underlying subjects must be syntactically present at some point of the derivation, which the SR system applies to. This result entails, so the argument goes, that passive clauses in general cannot be born as such but are derived from underlying active clauses. Farrell et al. conclude that (43) requires special active-to-passive transformations and thus provides a substantial challenge for mono-stratal theories of syntax, which do not divide into a phrase structure and a transformation component. As current theorizing qualifies as mono-stratal in this respect, the force of the argument remains. To my knowledge, it has never been shown how (43) can be captured in a mono-stratal system. The present analysis achieves this. By the reasoning above, it derives the same subject entailment without the need to resort to an underlying active structure. As the system does not compare the reference of syntactically present arguments but derives coreference effects as a by-product of coordination height, there is no need to postulate an underlying active clause comprising these arguments. Hence, no active clauses underlying (43) need to be accessed.²⁵

²⁵ Very similar facts are observed if one verb is marked with the ‘unspecified subject’ marker *ka-*, as in (i). Here the use of the SS-marker entails that the unspecified subject of *o: ?a* ‘cry’ is coreferential with the underlying subject of *a ?it* ‘eat’ (cf. Farrell et al. 1991, Marlett 2010: 311):

- (i) *po-p-a ?it (*ta)-X si-ka-o: ?a ?a = ?a*
 IR-PASS-eat DS-UT IR-US-cry AUX=DCL
 ‘If it is eaten, one will cry.’

Before closing this section, let us note briefly that as coordination may apply iteratively we expect chains of switch-reference marked clauses to be possible. This is correct. An example is given in (45). The structure of (45) is given in (46).

- (45) *Ctam himcap eenim z itcooz ma, itaht (*ma),*
 man that knife a 3S.3O-R-steal DS 3S.3O-R-see-PL DS
cöiyacoaxoj
 3IO-3S.3O-DIST-remove-PL
 ‘That man stole a knife; they saw him and took it away from him.’ [Marlett 2010:125]

- (46) [CP [TP [MoodP [&P [vP ctam himcap eenim z itcoox]
 &° [vP 3PL v [&P [vP itaht] &° [vP cöiyacoaxoj]]]] Mood°] T°] C°]

The first coordination head in (46), being in the context of a vP and realis mood, is realized as *ma*; the second head conjoins two VPs and is hence phonologically zero. Given that all instances of coordination in (46) are below Mood°, T°, and C°, we predict all clauses in a chain of SR clauses to match in mood. This is correct (see Marlett 2010:117). Furthermore, we expect the future auxiliary *?a* and the clause type markers to only appear after the right-most verb. This is also correct (Marlett 2010:125). Notice finally that mood is realized on all three verbs in (45). The first two verbs are marked for ‘realis’, and the final verb for the special ‘distal’ form of realis mood (cf. table 1).

The Seri data discussed in this section are illuminating because they involve a close association between SR marking and reference relations in some cases and a rather loose connection in others. Approaches that directly link SR to subject reference relations do not readily accommodate cases where SR marking departs from reference relations, e.g. if one the verbs is passivized (e.g., (39)). On the other hand, theories that altogether disregard nominal reference as a relevant factor for SR face problems accounting for the tight relations between the two in, e.g., (15) and (16). In the present account, SR marking and reference relations are independent results of certain syntactic structures. They are thus linked, but only indirectly so. This indirect link provides an explanation for why sometimes the two go hand in hand, while at other times they diverge.

4 Case study 2: Amele

Amele, spoken in Papua Guinea and documented in the work of John Roberts (1987, 1988a, 1988b, 1990, 1997, 2001), exhibits a SR system that is remarkably similar to that of Seri in some respects and interestingly different in others. This section discusses the main generalizations of the SR system in Amele and develops an implementation within the general account proposed here. Doing so will also reveal ways of dealing with cross-linguistic variation.

As Marlett (2010: §17.3.5) observes, the passive marker *po-* and the unspecified subject marker *ka-* are in complementary distribution: While only transitive verbs may be marked for passive, the unspecified subject marker is confined to intransitive verbs. A straightforward way of handling (i) is to treat the passive and the unspecified subject marker as allomorphs. While the former spells out v_{pass} on transitive verbs, a passive of an intransitive verb is marked by *ka-*. Under this analysis, (i) has the same structure as (44a) modulo the valency of second verb. Thus, (i) instantiates VP coordination under v_{pass} , giving rise to (ii).

- (ii) $\lambda e \exists e' \exists e'' \exists x : e = e' \oplus e'' \wedge \text{EAT-IT}(e') \wedge \text{CRY}(e'') \wedge \text{AGENT}(x)(e)$

As in (43), subject identity is induced without the need for a distinct underlying structure.

4.1 Empirical properties

The Amele SR system is confined to serial verb constructions, which consist—following the terminology of Roberts (1987, 1988a)—of an arbitrarily long sequence of *medial* verbs, followed by one *final* verb, which differ in a number of ways. The medial verbs contain markers for ϕ -agreement, the sequentiality or simultaneity of the depicted events and, most importantly, bear SR marking. In addition, verbs that are marked for simultaneity and DS appear in one of two forms, depending on whether the final verb is in realis or irrealis mood. The final verb, on the other hand, encodes ϕ -agreement, mood, and tense/aspect. The morphological exponence of these features is complex and not relevant for our present purposes.²⁶ Roberts (1988a) demonstrates that these serial verb constructions involve coordination and clearly differ from subordinate clauses with respect to various syntactic diagnostics. A generalization that will prove important for the present account is that while in DS-structures several subjects may appear, SS-structures contain only one subject.

4.1.1 ‘Canonical’ SR marking

Examples illustrating the generalizations above are provided in (47) and (48). (47a) is an example of SS-marking in a construction receiving a same subject interpretation. Conversely, (47b) illustrates DS-marking in a structure containing two distinct subjects. As (48) demonstrates, SS-marking is not possible if there are two distinct subjects.²⁷

- (47) a. *Ija hu-m-ig sab j-ig-a*
 1SG come-SS-1SG food eat-1SG-TODP
 ‘I came and ate the food.’
- b. *Ija ho-co-min sab ja-g-a*
 1SG come-DS-1SG food eat-2SG-TODP
 ‘I came and you ate the food.’ [Roberts 1988a: 49]
- (48) **Ija co-cob-ig uqa q-ite-i-a*
 1SG SIM-walk-1SG.SS 3SG hit-1SG.O-3SG-TODP
 ‘As I walked he hit me.’ [Roberts 1988b: 78]

4.1.2 ‘Unexpected’ DS marking

The apparent correlation between SR marking and subject reference relations breaks down in certain environments. As (48) illustrates, SS-marking is not possible if there are two distinct external arguments. The reverse, however, does not hold. Unlike Seri, Amele exhibits ‘unexpected’ DS-marking with two coreferent subjects. The examples in (49) instantiate this.

²⁶ Cf. Roberts (1990) for illustration and discussion.

²⁷ Amele parallels Seri in that the DS-marker is sensitive to the mood of the entire clause chain. Compare the realis (ia) to the irrealis (ib). In the former the agreement/DS portmanteau is *-en*, while in the latter it is *-eb*. I will assume that, much like in Seri, mood is transmitted into both conjuncts via Agree and there affects the spellout of other features:

- (i) a. *Ho bu-busal-en dana age qo-in* (realis)
 pig SIM-run.out-3SG.DS man 3PL hit-3PL-REMP
 ‘As the pig ran out the men killed it.’
- b. *Ho bu-busal-eb dana age qo-u-b* (irrealis)
 pig SIM-run.out-3SG.DS man 3PL hit-CONTR-3SG
 ‘The men would have killed the pig as it ran out.’ [Roberts 1988a: 55]

- (49) a. *Eu 1977 jagel November na odo-co-b cul-ig-en*
 that 1977 month November in do-DS-3SG leave-1PL-3SG-REMP
 ‘That was in November 1977 that he_i did that and then he_i left it for us.’
- b. *Od-i-me-ig eu na cuha fe-ce-bil hib na age meen qaig*
 do-PRED-SS-2PL that of Sunday see-DS-2PL later 2PL stone shoot
gaban-du-me-ig ihoc f-i-me-ig
 gather-3SG-SS-2PL enough see-PRED-SS-2PL
 ‘Do that and then later take a look and you will see that the money you have collected
 will be enough.’ [Roberts 1988a: 61, Roberts 1987: 304]

If the two clauses contain identical subjects, both SS- and DS-marking is possible.²⁸ A slight semantic difference accompanies the choice. As Roberts (1988a: 60) states,

often it is obvious that the change being indicated is deictic rather than syntactic and that these deictic changes are in the area of world, time, or place reference points. For example, a change of time marked by the SR system is often backed up by a temporal expression; a change of place marked by the SR system occurs most frequently with verbs of motion, and a change of location can also be indicated by a locative expression; a change of world marked by the SR system is normally a switch from an intended or proposed action to the real action itself or vice versa...

In, e.g., (49a) there is a temporal gap between ‘his doing that’ and ‘his leaving it for us’, indicated in the translation by the word *then*. Similar observations apply to (49b), where the second verb *fe* ‘see’ bears the DS-marker despite the fact that the subject of both clauses is 2PL. Again, the meaning contributed by DS-marking is one of temporal disconnectedness. It is absent if SS-marking is employed. In this case, the two events are tightly connected (cf. (47a)). It is evident that this contrast has nothing to do with the reference relations between subjects.

4.1.3 Impersonal clauses

Similarly to Seri, the Amele SR system behaves unexpectedly if one of the clauses does not contain an external argument. The two languages differ, however, in their precise behavior in these cases. If the non-agentive clause is the second one, SS-morphology appears on the verb. If the non-agentive verb is in the first clause, DS-marking is used. Consider weather verbs first. In (50) the second clause contains a weather verb. As a consequence, SS-marking is used, although there are no elements in both clauses that could potentially be coreferential.

- (50) *Ija co-cob-ig wa hedo-i-a*
 1SG SIM-walk-1SG.SS water finish-3SG-TODP
 ‘As I walked along the rain stopped.’ [Roberts 1987: 300]

Impersonal constructions, which do not contain an external argument, behave in the same way. Syntactically, these structures consist of (i) an experiencer DP which triggers object agreement; (ii) certain nominals describing physical experiences,²⁹ and (iii) a verbal element consisting only of 3rd person singular subject agreement, object agreement and tense. The construction is discussed extensively by Roberts (2001). An example for an impersonal construction is given in (51).

- (51) *Ija wen t-ei-a*
 1SG hunger 1SG.O-3SG.S-TODP
 ‘I was hungry.’ [Roberts 2001: 201]

²⁸ As Roberts (1988a: p. 61 fn. 20) puts it “where the category SS is clearly established across a string of clauses, the speaker has the option of using the DS marker for a higher-level discourse function to indicate other deictic changes.”

²⁹ Some of these nominals only occur in impersonal constructions and may not be used productively.

In (51), the verb shows 3SG subject agreement. The experiencer DP *ija* ‘1SG’ triggers object agreement. Stirling (1993: §5.4) concludes that the experiencer nominal *ija* ‘1SG’ in (51) is generated within VP. Given that the verbal agreement system treats *ija* like a VP-internal object rather than an external argument, I will adopt Stirling’s (1993) view. Furthermore, in the absence of evidence to the contrary, I will assume that no external argument is projected in (51). The default 3SG subject agreement is, I suppose, a pure last resort phenomenon, viz. default agreement in the absence of a suitable agreement controller. Presence of an impersonal construction in the second clause triggers SS-marking, as exemplified in (52), entirely parallel to (50). Coreferentiality between arguments is no prerequisite.³⁰

- (52) a. *Ija ta-taw-ig ija am-i wal-do-i-a*
 1SG SIM-stand-1SG.SS 1SG eye-1SG.POSS spin-3SG-3SG-TODP
 ‘As I stood my eye(s) spun (= I became dizzy).’ [Stirling 1993: 86]
- b. *Mi he-du-me-i ceta wal me-ce-b ceta eu huni-me-i ...*
 put finish-3SG-SS-3SG yam ripe become-DS-3SG yam that dig.up-SS-3SG
 ‘He finished doing that and then since those yams were ripe he dug them up ...’
 [Roberts 1987: 302]

In (52b) the first verb *hedumei* is marked SS despite the fact that the following clause *ceta wal meceb* has no coreferential subject.

Interestingly, if the order between the impersonal verb and the agentive verb is reversed, DS-marking has to be used, regardless of the actual reference relations. Roberts (2001: 239) states that if the impersonal clause precedes the personal clause, “then the impersonal clause is marked DS, even if the experiencer nominal of the impersonal clause is coreferential with the subject of the controlling active clause.” In other words, it is the linear order between the impersonal clause and the agentive clause that conditions whether DS- or SS-marking is used. Consider the example in (53).

- (53) *Ija co-cob-ig ija wen-te-ce-b sab j-ig-a*
 1SG SIM-walk-1SG.SS 1SG hunger-1SG-DS-3SG food eat-1SG-TODP
 ‘As I walked, I became hungry, and I ate.’ [Stirling 1993: 88]

(53) contains three verbs. The first verb *co-cob-ig* ‘SIM-walk-1SG.SS’ takes an external argument, the second verbal construction *wen-te-ce-b* ‘hunger-1SG-DS-3SG’ is impersonal (as evident from the fact that *ija* ‘1SG’ controls object agreement and subject agreement is the default 3SG), thus taking no external argument, and the third verb *j-ig-a* ‘eat-1SG.TODP’ is another agent-taking verb. If the impersonal clause follows the agentive clause SS-marking is used. If it precedes it, DS-marking emerges. The fact that linear order of adjacent clauses may in principle have an impact on SR marking is entirely unexpected under all approaches that take identity—be it identity of subject reference or identity of topic situations—to be the fundamental factor underlying SR marking. The reason is that identity is inherently symmetric. Thus, if identity between some properties of two clauses A and B are compared, the outcome is not affected by the order of comparison: If the agent of A is identical to the agent of B, then the reverse necessarily holds as well. There is no obvious way of capturing the contrast in (53) in terms of identity vs. non-identity simply because of what identity means.³¹

³⁰ If comparison of verbal agreement was at stake in determining the emergence of the SR markers (as claimed by Finer 1984, Watanabe 2000, Camacho 2010), we would naturally expect DS-marking in (50) as well as (52), given that subject agreement is 1SG in the first clause of, e.g., (50) and 3SG in the second clause.

³¹ One might entertain the possibility that the medial clause *ija wen-te-ce-b*, being impersonal, is simply ignored for SR marking. Roberts (1987: 299) argues that this is not a tenable analysis. As seen in, e.g., (52a), the verb preceding

It is well-established that coordination structures are syntactically asymmetric (see section 2.1). It is this structural asymmetry that underlies the impact of linear order between agentive and non-agentive verbs on SR marking. If one conjunct occupies the complement position of $\&^\circ$ while the other resides in its specifier, the contrast in (53) follows if the spellout of $\&^\circ$ is sensitive to its complement only (this will be implemented by means of the vocabulary items in (64) below). This reasoning provides an argument in favor of an approach in which the distribution of the SR markers is conditioned by the syntactic structure (which may be asymmetric), rather than directly by semantic identity requirements (which are never asymmetric).

As a last remark, structures such as (50) or (52), which otherwise receive SS-marking, may optionally bear the DS-marker. The semantic impact of DS-marking is that the impersonal verb is then interpreted as being caused. Examples are given in (54).

- (54) a. *?Ija co-cob-igin wa hado-i-a*
 1SG SIM-walk-1SG.DS water finish-3SG-TODP
 ‘As I walked along something made the rain stop.’
 b. *Ija ta-taw-igin ija am-i wal-do-i-a*
 1SG SIM-stand-1SG.DS I eye-1SG.POSS spin-3SG-3SG-TODP
 ‘As I stood something caused my eye(s) to spin.’ [Roberts 1987: 300]

In sum, there are two very salient distributional differences between the switch-reference systems of Seri and Amele. First, ‘unexpected’ DS-marking—viz., DS-marking with two identical subjects—is possible in Amele but not in Seri (compare (49) to (15)). Second, combinations of agentive and non-agentive clauses receive DS-marking in Seri (see (17)) and—depending on linear order—DS- or SS-marking in Amele.

4.1.4 The structure of SR clauses

As in Seri, there is evidence that the clauses combined via switch reference are not syntactically complete. In all cases of SR marking in Amele only the final verb is marked for tense. Semantically, this tense feature takes scope over the entire verb chain, as illustrated in (55).

- (55) a. *Ho busale-ce-b dana age qo-ig-a*
 pig run.out-DS-3SG man 3PL hit-3PL-TODP
 ‘The pig ran out and the men killed it.’
 b. *Ho busale-ce-b dana age qo-qag-an*
 pig run.out-DS-3SG man 3PL hit-3PL-FUT
 ‘The pig will run out and the men will kill it.’ [Roberts 1988a: 52]

Furthermore, the clauses may not differ in their clause type, i.e. combining a declarative with an interrogative clause by means of SR is not possible.

- (56) a. *Ho busale-ce-b dana age qo-ig-a fo?*
 pig run.out-DS-3SG man 3PL hit-3PL-TODP QM
 ‘Did the pig run out and did the men kill it?’
 b. **Ho busale-ce-b fo dana age qo-ig-a*
 pig run.out-DS-3SG QM man 3PL hit-3PL-TODP [Roberts 1988a: 52]

the impersonal verb is SS-marked even if the impersonal verb is final. It can thus not simply be ignored. In a cross-linguistic survey of switch-reference in Papuan languages, Roberts (1997) notes that this pattern of SR marking is fairly widespread. There is thus plausibly more to it than just some idiosyncratic quirk in the grammar of Amele.

Analogously, imperative clause type may only be marked on the final verb and concomitantly takes scope over the entire verb series (Roberts 1997:138). The same holds for mood, polarity, status and aspect (Stirling 1993:187–9).

Amele shares with Seri the property that SR marking is not possible in complementation configurations. As (57) attests, SR marking in the case of clausal complementation leads to ill-formedness.

- (57) a. *Ija dana age ija na ho qo-ig-a d-ug-a*
 1SG man 3PL 1SG of pig hit-3SG-TODP know-1SG-TODP
 ‘I know the men killed my pig.’
 b. **Ija dana age ija na ho qo-co-bil d-ug-a*
 1SG man 3PL 1SG of pig hit-DS-3PL know-1SG-TODP [Roberts 1988a: 54]

Another common feature of both Seri and Amele is that SR marking stands in complementary distribution with other clause linking elements, such as *qa* ‘but’ or *ca* ‘and’.

- (58) a. *Ho busale-i-a qa dana age qo-ig-a*
 pig run.out-3SG-TODP but man 3PL hit-3PL-TODP
 ‘The pig ran out but the men killed it.’
 b. **Fred ho-co-b / ho-ho-b qa/ca uqa sab j-igi-an*
 Fred come-DS-3SG SIM-come-DS-3SG but/and 3SG food eat-3SG-FUT
 [Roberts 1988a: 55,58]

Note that, in contrast to SR constructions, both verbs are marked for tense in (58a). As shown by (59a), these tense features may also mismatch, strongly suggesting the presence of separate T projections in both conjuncts. Furthermore, if the two clauses are conjoined via *qa* or *ca*, they may mismatch in clause type. An example is provided in (59b). As we have seen above, neither mismatch is possible in SR constructions.

- (59) a. *Fred cum ho-i-an qa Bill uqadec h-ugi-an*
 Fred yesterday come-3SG-YESTP but Bill tomorrow come-3SG-FUT
 ‘Fred came yesterday but Bill will come tomorrow.’
 b. *Ho busale-i-a qa dana age qo-i-ga fo?*
 pig run.away-3SG-TODP but man 3PL hit-3PL-TODP QM
 ‘The pig ran away but did the men kill it?’ [Roberts 1988a: 52]

In a direct response to Finer (1985), Roberts (1988a) develops a number of arguments that SR-marked structures in Amele are syntactically coordinated rather than subordinated. In other words, if one clause is syntactically adjoined to the other, SR marking is ruled out. Some additional arguments are advanced by Roberts (1997). First, observe that adjunction structure (60) lacks SR-marking.

- (60) *Ija ja hud-ig-a eu nu uqa sab mane-i-a*
 1SG fire open-1SG-TODP that for 3SG food roast-3SG-TODP
 ‘Because I lit the fire she cooked the food.’ [Roberts 1988a: 55]

In addition to the absence of SR marking in adverbial clauses, word order provides a second argument against an analysis of clauses bearing SR as adjoined to a matrix clause (as was suggested by Finer 1984, 1985). The examples in (61) demonstrate that the marked clause may not be center-embedded within the unmarked clause. Rather, both clauses have to appear strictly adjacent to each other. (62) demonstrates the same restriction to hold for clauses conjoined with *qa*.

- (61) a. [*Ho busale-ce-b*] [*dana age q-oiga*]
 [pig run.out-DS-3SG] [man 3PL hit-3PL-TODP]
 ‘The pig ran out and the man killed it.’
 b. **Dana age [ho busale-ce-b] q-oiga*
- (62) a. [*Ho busale-i-a*] *qa* [*dana age qo-ig-a*]
 [pig run.out-3SG-TODP] but [man 3PL hit-3PL-TODP]
 ‘The pig ran out but the men killed it.’
 b. **Dana age [ho busaleia] qa qoiga* [Roberts 1997:178]

Interestingly, no such restriction holds for adjoined clauses in general. As Roberts (1987:70–2; 1997:177–8) notes, it is in fact most common for adverbial clauses akin to (60) to occur between the subject and the verb of the matrix clause. This is precisely the position that SR clauses are barred from. It is not clear how this contrast can be derived if switch-reference clauses are syntactically adjoined to the matrix clause in the same way as adverbial clauses. A coordination analysis of SR structures in Amele captures the distributional parallels between (61) and (62) and at the same time accounts for the distributional differences between clausal adjunction and SR structures.

A last contrast between clausal adjunction and SR structures is witnessed in (63). While a proper noun in the matrix subject position is not affected by a coreferential subject of an adjunct clause (63a), exactly this constellation is ruled out in SR structures (63b). If both sentences in (63) had the same underlying adjunction structure, this contrast would be mysterious.

- (63) a. *Uqa_i sab j-igi-an nu Fred_i ho-i-a*
 3SG food eat-3SG-FUT PURP Fred come-3SG-TODP
 ‘Fred came to eat food.’
 b. **Uqa_i hu-me-i Fred_i sab je-i-a*
 3SG come-SS-3SG Fred food eat-3SG-TODP
 ‘He_i came in and Fred_i ate the food.’ [Roberts 1988b: 80]

I conclude from these facts, following Roberts (1988a) and contra Finer (1984), that the SR system in Amele does not operate on adjunction structures but involves coordination.³²

In sum, the SR system of Amele has the following hallmark properties:

- If two agentive clauses with distinct subjects are combined, only DS is possible.
- If two agentive clauses with identical subjects are combined, SS and DS is possible, with semantic effects.
- If the second clause is impersonal, SS is obligatory.
- If the first clause is impersonal, SR-marking is not affected.

³² As pointed out by a reviewer, Roberts (1988a: 52–3) claims that SR structures show a curious asymmetry with respect to negation: While it is possible to negate either the final verb alone or both medial and final verb, it is impossible to negate the medial verb without negating the final verb. It is not clear whether this generalization is correct. Roberts (1997:181–2) gives examples of negation taking scope over only the medial verb and explicitly states that “it is possible to negate a SS/DS medial clause independently from the final clause” (p. 181). If this is true, SR structures pattern like ‘canonical’ coordination and the problem disappears.

- (i) a. *Ho qee by-busal-en dana age qo-ig-a*
 pig not DUR-run.out-3SG.DS man 3PL hit-3PL-TODP
 ‘Before the pig ran out the men killed it.’ (*lit.* ‘While the pig had not run out the men killed it.’)
 b. *Ho busale-ce-b dana age qee qo-l-oin*
 pig run.out-DS-3SG man 3PL not hit-NEGP-3PL
 ‘The pig ran out and the men did not kill it.’ [Roberts 1997:181, Roberts 1988a: 52]

- e) SR does not occur in structures with an overt coordinator or in clausal complementation and adjunction.
- f) SR clauses are syntactically deficient, lacking tense.

4.2 Analysis

A coordination-based analysis accounts without further ado for the fact that SR marking is absent in complementation and adjunction structures ((57), (60)) and that it is not combinable with *qa* ‘but’ (58b) in the same way it does for Seri. Furthermore, the word order restriction in (61) follows from the fact that one conjunct may not be embedded within the other. Having conjunction apply low—i.e., below the TP level—derives the restriction on single tense and clause type marking ((55), (56)).

The distributional differences between the Amele and the Seri SR system require additional elaboration, to which we now turn. The set of relevant vocabulary items is given in (64).³³ The ‘different subject’ exponent */DS/* spells out a coordination head if its sister is a *vP*. If its sister is of category *VP*, the conjunction is realized by the ‘same subject’ marker */SS/*. The marker *qa* is the elsewhere spellout. It is important to note that only the conjunct in the complement position has an impact on morphological realization.

- (64) */DS/* ↔ [$\&^\circ$, [$_\$, *vP*]]
/SS/ ↔ [$\&^\circ$, [$_\$, *VP*]]
/qa/ ↔ [$\&^\circ$]

As in Seri, I assume the probes for subject agreement to reside on *v*, which agrees with its complement for these features. Tense is taken to be a feature of *T* and realized there. A glance at, e.g., (47a) makes it clear that the SR marker does not appear strictly between the two clauses but rather sandwiched between the root and the agreement marker of the first verb. It is not uncommon for conjunctions to appear within a conjunct. A well-known instance is Latin *-que*, which cliticizes into the right conjunct. Embick and Noyer (2001) treat the behavior of *-que* as a syntax-morphology mismatch: The syntactic coordination head is generated between both conjuncts but, morphologically, dislocated to the first potential host to its right. I will apply the same line of reasoning to account for the placement of the switch-reference markers in Amele. The (string-based) local dislocation operation (65) reverses the order of a coordination head and an agreement head to its left if they are adjacent to each other, as designated by the symbol ‘*’.³⁴

- (65) [*AGR* * $\&^\circ$] → [$\&^\circ$ * *AGR*]

Semantically, the coordination head receives the same interpretation as in Seri, repeated in (66) (=28) for convenience.

- (66) $[[\&]]_{\langle\langle s,t \rangle, \langle\langle s,t \rangle, \langle s,t \rangle \rangle\rangle} = \lambda P_{\langle s,t \rangle} \lambda Q_{\langle s,t \rangle} \lambda e_{\langle s \rangle} \exists e', e'' : e = e' \oplus e'' \wedge P(e') \wedge Q(e'')$

³³ The morphology of the Amele SR markers is highly complex. In some environments it is a separate marker, in others it fuses with the person agreement marker, in still others it is morphologically elided. I will abstract away from these complications by referring to the underlying forms as */SS/* and */DS/*. For morphological details see Roberts (1987: §2.1.3).

³⁴ There is no indication that the placement of the SR marker is a constitutive part of the the SR system. In an overview study, Roberts (1997) notes that out of the Papuan languages in his database that mark both SR and subject agreement, 18 had the order SR+AGR, while 33 showed AGR+SR.

By assumption, the interpretation of the agent-introducing ν head in Amele differs slightly from the one in Seri. Compare (67) with (29) above.

$$(67) \quad \llbracket \nu \rrbracket_{(e,(s,t))} = \lambda x_{(e)} \lambda e_{(s)} : \text{AGENT}(x)(e) \wedge \text{CONT}(e)$$

(67) states that, in addition to introducing an agent of some event e , $\llbracket \nu \rrbracket$ induces a CONTINUITY requirement on this event, according to which the event has to be spatiotemporally continuous. In other words, its running time is gapless, cf. (68), where ‘ τ ’ refers to an event’s running time.

$$(68) \quad \llbracket \text{CONT} \rrbracket_{(s,t)} = \lambda e \forall t \forall t' \forall t'' \left[[t \in \tau(e) \wedge t' \in \tau(e) \wedge t > t'' > t'] \Rightarrow t'' \in \tau(e) \right]$$

If e is continuous, then if t and t' belong to e ’s running time, then all t'' lying between t and t' are also in e ’s running time.³⁵

The effect of (67) is the following: An important part of the discussion of Seri (see (36) and (37)) was the discovery that VP coordination and ν P coordination with coreferent subjects are semantically equivalent, leading to blocking of the latter structure due to the economy constraint (38). The denotation of ν in Amele (67) does more than just introducing an agent. As will be shown immediately, the continuity requirement it carries also results in truth-conditional differences between VP and ν P coordination structures as it interacts with event sum formation in non-trivial ways. Due to (67), the structural difference between VP and ν P coordination is mapped onto a semantic contrast, which prevents blocking. This reasoning provides the basis for the possibility of ‘unexpected’ DS-marking in Amele (such as (49)) as well as its semantic properties.

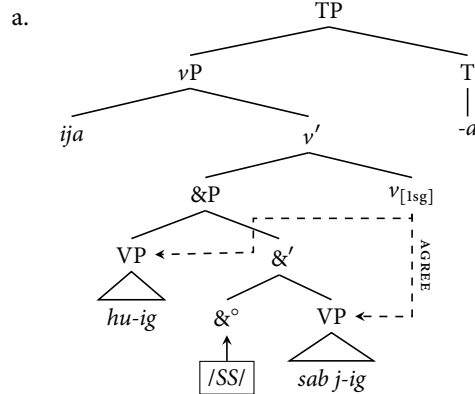
Let us go through some concrete examples. First, consider a VP coordination structure, such as (69) (= (47a)).

$$(69) \quad \begin{array}{l} Ija \quad hu-m-ig \quad \quad \quad sab \quad j-ig-a \\ \text{1SG come-SS-1SG food eat-1SG-TODP} \\ \text{‘I came and ate the food.’} \end{array}$$

The syntactic structure I suggest for (69) and the resulting semantics are given in (70). The fundamental analysis is exactly parallel to VP coordination structures in Seri.

³⁵ As it stands, this is a very general claim, and adjustments might turn out to be necessary. As far as I can see, the continuity requirement is consistent with the data provided in Roberts (1987). Whenever a verb designates an event that is spatiotemporally disconnected, it is repeated via either DS-marking, TP-coordination, or juxtaposition of full sentences. Whether this strong restriction can be maintained or has to be modified will ultimately have to be settled by targeted semantic fieldwork.

(70) Structure of (69)



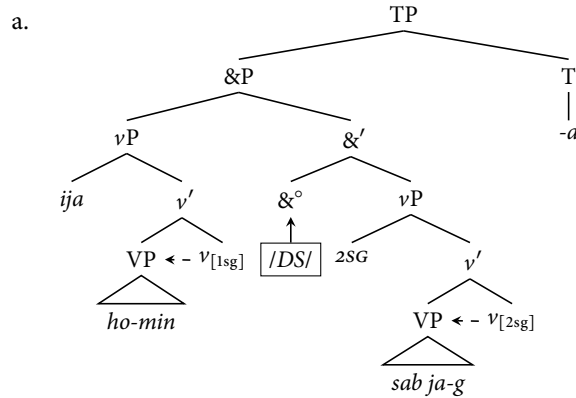
b. $\lambda e \exists e' \exists e'' : e = e' \oplus e'' \wedge \text{AGENT}(\text{I})(e) \wedge \text{CONT}(e) \wedge \text{COME}(e') \wedge \text{EAT-FOOD}(e'')$

The coordination head, having a VP node as its sister, is realized by the SS-marker, in accordance with (64). Tense is merged above the conjunction, taking the entire verb chain in its scope and, being spelled out in its syntactic position, appears to the right of the final verb. As v is brought in above coordination, its continuity requirement is predicated over the entire sum event e . Since e 's running time is thus gapless, not only must the two subevents e' and e'' also be gapless but, more importantly, there may also not be a gap between e' and e'' . This in turn means that e' and e'' have to be spatiotemporally connected to each other. Descriptively, the events designated by the two verbs have to be closely linked to each other.

Contrast this example with an instance of vP coordination, as in (71) (= (47b)), whose proposed structure is given in (72).

(71) *Ija ho-co-min sab ja-g-a*
 1SG come-DS-1SG food eat-2SG-TODP
 'I came and you ate the food.'

(72) Structure of (71)



b. $\lambda e \exists e' \exists e'' : e = e' \oplus e'' \wedge [\text{AGENT}(\text{I})(e') \wedge \text{COME}(e') \wedge \text{CONT}(e')] \wedge [\text{AGENT}(\text{YOU})(e'') \wedge \text{EAT-FOOD}(e'') \wedge \text{CONT}(e'')]$

Here the conjunction has a vP node as its sister and is consequently spelled out by the DS-marker. In the structure (72) coordination takes place above the v projection. This syntactic property has the semantic effect that the continuity requirement holds of the two subevents e' and e'' but not

of their sum e (compare (72b)). Thus, while e' and e'' are continuous, nothing is asserted about e . Specifically, nothing in the representation (72b) excludes a spatiotemporal gap between e' and e'' . The two subevents need not be connected to each other.

The above remarks boil down to the observation that the scopes of ν and $\&^\circ$ interact in truth-conditionally relevant ways: If coordination applies below ν the subevents are required to be connected. Otherwise, they are not. This contrast also holds if the two external arguments in ν P coordination structures are coreferent. Consider the semantic interpretations resulting from VP coordination (73b) and ν P coordination with coreferent subjects (74b).

(73) *VP coordination*

- a. $[\nu_P \alpha [\nu' \nu [\&P VP_1 \&^\circ VP_2]]]$
 b. $\lambda e \exists e' \exists e'' : e = e' \oplus e'' \wedge \text{AGENT}(\alpha)(e) \wedge \text{CONT}(e) \wedge [\text{VP}_1] \wedge [\text{VP}_2]$

(74) *ν P coordination with two coreferent subjects (α)*

- a. $[\&P [\nu_P \alpha [\nu' \nu VP_1]] \&^\circ [\nu_P \alpha [\nu' \nu VP_2]]]$
 b. $\lambda e \exists e' \exists e'' : e = e' \oplus e'' \wedge [\text{AGENT}(\alpha)(e') \wedge \text{CONT}(e') \wedge [\text{VP}_1]] \wedge$
 $[\text{AGENT}(\alpha)(e'') \wedge \text{CONT}(e'') \wedge [\text{VP}_2]]$

In (73b) continuity holds of the entire sum event; in (74b) it does not. By the reasoning above, e' and e'' are spatiotemporally connected in (73) but not in (74). This contrast gives rise to the semantic difference between SS-marking and DS-marking with identical subjects discussed on the basis of the examples in (49) above. We have seen there, on the basis of examples like (49), that ‘unexpected’ DS-marking implies the two activities to be disconnected in time or space, while SS-marking requires them to be closely related to each other. This observation follows from the contrast between (73) and (74). Under the present analysis, SS-marking translates into VP coordination. As stated in (73b) the two subevents have to be spatiotemporally connected. In DS-configurations, on the other hand, no such requirement holds (cf. (74b)) and hence, given the availability of VP coordination and general principles of pragmatic strengthening, it must not hold. Notice that this semantic difference follows directly from the structural difference between VP and ν P coordination that lies at the heart of my proposal coupled with the denotations in (66) and (67). A second consequence of the contrast between (73) and (74) is that high coordination with coreferent subjects will not be blocked by the economy principle (38), because (73b) is not semantically equivalent to (74b). Unlike Seri, then, DS-marking with coreferent subjects is not ruled out in Amele precisely because of the independently observed semantic difference between SS- and DS-marked structures with respect to continuity.

For the sake of completeness, let us contrast VP and ν P coordination with coordination at higher levels, as in (75) (= (59a)).

- (75) a. *Fred cum ho-i-an qa Bill uqadec h-ugi-an*
 Fred yesterday come-3SG-YESTP but Bill tomorrow come-3SG-FUT
 ‘Fred came yesterday but Bill will come tomorrow.’
 b. $[\&P [\text{TP}_1 \nu_P \text{T}_{[\text{YESTP}]}] \&^\circ [\text{TP}_2 \nu_P \text{T}_{[\text{FUT}]}]]$

Since neither the DS- nor the SS-marker are applicable, the coordination is spelled out by the elsewhere marker *qa* in TP and CP coordination cases.³⁶ The observation that *qa* and the SR markers are in complementary distribution (recall (58b)) follows immediately because both realize the same head and hence insertion of one bleeds insertion of the others. It furthermore

³⁶ Note that *qa* is not displaced and surfaces between the two clauses. The dislocation operation (65) only applies if a coordination is string-adjacent to an agreement marker. With the tense exponent *-an* ‘YESTP’ intervening between the two, the coordination stays where it is generated.

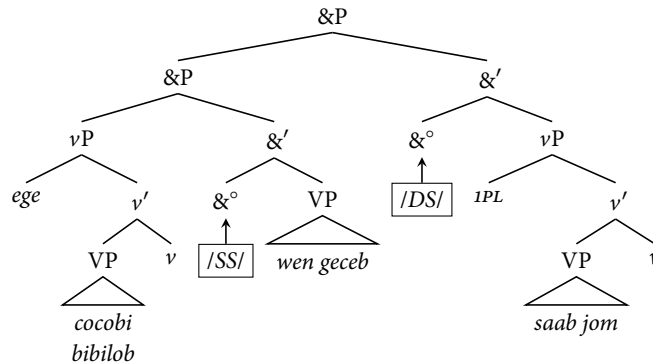
follows that tense is realized twice in coordination structures with *ca/qa*—including a possible mismatch between the tense values (as in (59a))—but only once in SR constructions. In the same vein, clause type may mismatch in CP coordination structures, realized by *ca/qa*, but has to be identical in the SR structure. Stirling (1993:197) takes the fact that tense is marked twice in instances of canonical coordination like (75) but only once in SR cases like (69) and (71) to demonstrate that SR may not be conflated with coordination. As we have seen, this argument does not apply to the particular coordination analysis presented here. If SR is conceived of as *low* coordination, the difference is derived in a principled manner.

A further piece of evidence to be accounted for is the behavior of impersonal constructions. As seen above in (50)–(53), if an agentive clause is followed by an impersonal or a weather verb constructions, SS-marking is used. If the linear order is reversed, DS-marking appears. This asymmetry is accounted for because the vocabulary items in (64) are, by assumption, only specific to the sister node of the coordination head. If the elements in the complement and the specifier in the coordination projection bear distinct labels, reversing their position affects vocabulary insertion because in each case the complement of $&^\circ$ has different properties, which affects vocabulary insertion. The example (53), repeated here as (76), contains an agentive verb, followed by an impersonal verb, followed by another agentive verb. While the first verb bears SS-marking, the second verb is marked for DS.

- (76) *Ege co-cob-i bi-bil-ob wen g-ece-b saab j-om*
 1PL SIM-walk-APPL SIM-sit-1PL.SS hunger 1PL.O-DS-3SG.S food eat-1PL.S.REMP
 ‘As we walked along we became hungry and ate food.’

It has, I propose, the nested coordination structure in (77). The right-most coordination head in (77) has a *vP* as its sister and is hence realized by the DS-marker. The second coordination head, by contrast, has a *VP* as its complement and hence receives spellout as the DS-marker.³⁷

- (77) Structure of (76)



The last point to be handled is illustrated by example (54): If an agentive verb is followed by an impersonal verb and DS-marking is used, the impersonal clause receives an interpretation as being caused. In the present system, appearance of the DS-marker entails that the impersonal clause contains an agent-introducing *v* head. By themselves, impersonal verbs are semantically and/or syntactically incompatible with an agent argument. The only way of interpreting such

³⁷ In principle, coordination nesting could also have been the other way around, i.e. as in (i). Nothing hinges on the choice.

(i) [$&P$ [vP *ege cocobi bibilob*] $&^\circ$ [$&P$ [VP *wen geceb*] $&^\circ$ [vP *saab jom*]]]

Table 2. Contrasting Seri and Amele

property	Seri	Amele	analysis
– <i>functional deficiency</i>	yes	yes	coordination applies below Asp/Mood/T/C
– <i>complementary distribution to ‘coordination’</i>	yes	yes	SR markers and ‘coordination’ compete for the same head
– <i>‘unexpected’ DS marking</i>	no	yes	ν P coordination with coreferent subjects is equivalent to VP coordination in Seri and hence blocked
– <i>SR marking is symmetric</i>	yes	no	SR markers are specified for both conjuncts in Seri but only for complement in Amele

structures, then, is to project a causative head on top of the impersonal verb. This causative head introduces a causative event, which may then receive an agent modification (i.e. a causer) by projecting ν . The essential projection of a causative event in the second conjunct leads to the observed reading in (54) of being caused.

4.3 Summary: Contrasting Seri and Amele

A low coordination account derives a number of common properties of switch-reference in Seri and Amele. It captures the observation that in both systems SR marking is excluded from complementation and adjunction structures, and that SR-linked clauses are functionally deficient for tense and clause type. It also derives that in both languages SR marking stands in complementary distribution with ‘canonical’ coordination.

Differences between the two systems are attributable to differences in the denotation assigned to ν and the morpho-syntactic specification of the SR markers. In Seri, having the ν denotation (28), VP coordination and ν P coordination with coreferent subjects come out as semantically equivalent. In conjunction with the economy condition (38) this leads to blocking of DS-marking with coreferent subjects. In Amele, by contrast, ν is interpreted as (66). As a consequence, ν interacts with coordination height in truth-conditionally relevant ways, thus deriving an independently observed semantic difference between SS-marking and DS-marking with coreferent agents. This difference, in turn, prevents (38) from blocking ‘unexpected’ DS-marking.

The differences in the specification of the SR markers in Seri and Amele have consequences for the selection of markers in cases of asymmetric coordination. The most direct contrast is visible if an agentive clause is followed by a non-agentive one. In Seri (e.g., (17)), the DS-marker appears, while in Amele (e.g., (50), (52)) the SS-marker is used. Table 2 provides an overview of the similarities and differences between Seri and Amele and how they are accounted for within the present system.

5 Case study 3: Kiowa

As detailed in the previous sections, SS-marking in both Seri and Amele emerges in instances of VP coordination, while ν P coordination leads to DS-marking. If all SR systems reduced to this contrast, SS-marking with distinct subjects should be non-existent. This is incorrect. Kiowa provides a relevant example.³⁸ Here SS-marking with distinct subjects is possible (cf. Watkins 1984, 1993, McKenzie 2007, 2010). The account developed so far does not accommodate this

³⁸ I am indebted to two reviewers for bringing the Kiowa facts to my attention.

finding. This section proposes an extension of the present system to the Kiowa facts. In a nutshell, the relevant contrast with respect to morphological alternations will not be between VP and ν P coordination, but rather higher up in the tree, viz., between TP and CP.

5.1 Empirical properties

At first approximation, the Kiowa SR markers $g\grave{o}$ and $n\grave{o}$ behave like the SR markers seen in the previous sections. The SS-marker $g\grave{o}$ occurs when the two subjects are coreferent, while the DS-marker $n\grave{o}$ appears when they are not, as in (78).

- (78) a. $t^h\grave{a}l\acute{i}$: \acute{a} - $d\grave{o}n$ - $m\grave{o}$ $g\grave{o}$ $h\grave{a}g\acute{y}\grave{a}$ \acute{a} - $t^h\grave{o}n$
 boy 3PL.S:SG.O-search-IPF SS perhaps 3PL.S:SG.O-find.PF
 ‘They were searching for the boy and might have found him.’
 b. \acute{e} : $d\grave{e}$ $n\acute{o}$: $-k\acute{u}t$ $y\acute{q}$ - $d\acute{o}$: $n\grave{o}$ \acute{e} : $d\grave{e}$ $\acute{a}m$ - $k\acute{u}t$ $y\acute{a}n$ - $d\acute{o}$:
 this my-book 1SG:PL.O-be DS this your-book 2SG:PL.O-be
 ‘These books are mine and those books are yours.’ [Watkins 1984: 237]

Note that in (78a), despite SS-marking, the first clause is non-perfective, while the second one is perfective. This is a first indication that an analysis involving coordination below an aspect projection is not on the right track for Kiowa. Moreover, as noticed by Watkins (1984, 1993), the apparent correlation between the use of the SR markers and subject reference relations breaks down in certain cases.³⁹ First, the DS-marker $g\grave{o}$ may appear with coreferent subjects, as in the imperative clause (79a). Second, the SS-marker may show up when the two subjects are clearly distinct in reference, as shown in (79b).

- (79) a. ma - $h\acute{e}$: be $g\grave{o}$ $c\acute{o}y$ $m\acute{a}$ - $t^h\grave{o}$:
 2DL-enter.IMP DS coffee 2DL.S:SG.O-drink.IMP
 ‘Come in and have some coffee.’
 b. $Kathryn$ $g\acute{y}a$ - $g\acute{u}t$ $g\grave{o}$ / $n\grave{o}$ $Esther$ - $\acute{a}l$ $g\acute{y}a$ - $g\acute{u}t$
 Kathryn 3SG.S:PL.O-write.PF SS DS Esther-too 3SG.S:PL.O-write.PF
 ‘Kathryn wrote a letter and Esther wrote one too.’ [Watkins 1993: 148,159]

As noted by both Watkins (1993) and McKenzie (2007) the choice of the SS- or the DS-marker is not arbitrary but has semantic effects. Using $g\grave{o}$ in (79b) entails that the letters were written for the same purpose, as part of a unifying plan. Coreference of arguments or the identity of the addressee of the letters is not necessary for SS-marking to be licit (McKenzie 2007). Consider (80a) and (80b). In both sentences, no two arguments are coreferential, but nevertheless the SS-marker $g\grave{o}$ is licit.

³⁹ There are four other SR markers in Kiowa, which I will not discuss here. The markers $-c\acute{e}$ (also written $-ch\acute{e}$) and $-t\acute{e}$ interestingly do not show unexpected SR marking:

- (i) a. \emptyset - $h\acute{e}b\grave{a}$ = $ch\acute{e}$ $\acute{e}m$ - $s\acute{a}u$ b. \emptyset - $h\acute{e}b\grave{a}$ = $t\acute{e}$ $\acute{e}m$ - $s\acute{a}u$
 3SG-enter.PF=when.SS 3SG.REFL-sit.down.PF 3SG-enter.PF=when.DS 3SG.REFL-sit.down.PF
 ‘[When she_i came in], she_{i/*j} sat down.’ ‘[When she_i came in], she_{i/*j} sat down.’
 [McKenzie 2010: ex. (2)]

McKenzie (2007, 2010) claims that $-c\acute{e}$ and $-t\acute{e}$ are subordinating conjunctions and that the lack of unexpected SR results from this status. The third set of markers is $k\acute{o}t$ and $\acute{o}t$, which seem to largely pattern like $g\grave{o}$ and $n\grave{o}$, only adding semantic content (cf. Watkins 1993). Incidentally, McKenzie (2007) claims that the SR markers $g\grave{o}$ and $n\grave{o}$ may also be used in subordination configurations but does not provide a motivation for this claim.

- (80) a. *Kathryn yǎ-gút* *gò Esther Tom gà-gút*
 Kathryn 3SG:1SG:3PL-write.PF SS Esther Tom 3SG.S:PL.O-write.PF
 ‘Kathryn wrote me a letter and Esther wrote one to Tom.’
 b. *Carnegie-cà à-tháu-tháu* *gò ám Norman-cù mà-bá-tháu*
 Carnegie-at 1SG-stay.PF-FUT SS you Norman-to 2DL-go.PF-FUT
 ‘I will stay in Carnegie and you two will go to Norman.’ [McKenzie 2007: ex. (10),(12)]

McKenzie (2007, 2010) analyzes these facts within the framework of SITUATION SEMANTICS (Kratzer 1989, 1998, 2010). He proposes that what the switch-reference markers in Kiowa track is identity vs. non-identity of TOPIC SITUATIONS. Topic situation indicate the part of the world that a given proposition is true over. If the SS-marker is used in (79b), both events of letter-writing must be part of the same topic situation, as part of a common plan, purpose, etc. The DS-marker induces no such requirement, thus depicting the writing of the two letters as unrelated. Note that because situations do not have to be spatiotemporally continuous, there may be a temporal gap between the two events. It is mere thematic coherence that holds situations together (see McKenzie 2007 for discussion).⁴⁰

5.2 Analysis

Suppose that McKenzie’s (2007, 2010) characterization in terms of topic situations is correct. For the sake of simplicity, let us simply assume that the proposition of a clause is functionally applied to a topic situation somewhere in the higher regions of the clausal spine (i.e. higher than tense and aspect). For concreteness, suppose that C induces existential closure of situation variables, and thereby contributes a topic situation, which I will designate as ‘ s_{top} ’. Once we allow coordination to take place either above the introduction site of this topic situation (i.e., at the CP level) or below it (at the TP level or below), we end up with exactly the semantic contrast that McKenzie (2007, 2010) ascribes to the contrast between SS- and DS-marking in (79b). In the case of CP coordination, both conjuncts will contain their own topic situation. If, by contrast, two TPs are coordinated, the entire conjunction will be predicated over a single topic situation. As before, the SR markers merely track the syntactic height of coordination, and are thus only indirectly correlated with the topic situation difference. They do not themselves contribute this difference. Consider the vocabulary items in (81).

- (81) /nò/ ↔ [$\&^\circ$, CP __ CP]
 /gò/ ↔ [$\&^\circ$]

Semantically, I assume that TPs denote properties of situations, i.e. they are of type $\langle s,t \rangle$.⁴¹ TP coordination gives rise to the following semantics.

Consider a case of TP coordination as in (82a) first, which is interpreted as in (82b).

- (82) a. [_{CP} C [_{&P} TP₁ &^o TP₂]]

⁴⁰ Similar facts have been observed in Lakhota (Dahlstrom 1982), Süpyiré (Carlson 1987), and Central Pomo (Mithun 1993). All of these languages allow SS-marking with disjoint subjects. Whether they fall under McKenzie’s generalization for Kiowa or whether the similarity is only apparent is, however, an open question.

⁴¹ This of course raises the question how we get from properties of *events* at the *vP* level to properties of *situations* at the TP level. I will adopt Kratzer’s (2010) view that events are a subtype of situations and are hence of the same ontological type (namely, $\langle s \rangle$). I will nevertheless follow common practice and designate situations by using the symbol *s*.

$$\begin{aligned}
\text{b. } \llbracket \text{C} \rrbracket &= \lambda P : P (s_{top}) \\
\llbracket \&P \rrbracket &= \lambda s \exists s' \exists s'' : s = s' \oplus s'' \wedge \llbracket \text{TP}_1 \rrbracket (s') \wedge \llbracket \text{TP}_2 \rrbracket (s'') \\
\llbracket \text{CP} \rrbracket &= \llbracket \text{C} \rrbracket (\llbracket \&P \rrbracket) \\
&= \left[\lambda s \exists s' \exists s'' : s = s' \oplus s'' \wedge \llbracket \text{TP}_1 \rrbracket (s') \wedge \llbracket \text{TP}_2 \rrbracket (s'') \right] (s_{top}) \\
&= \exists s' \exists s'' : s_{top} = s' \oplus s'' \wedge \llbracket \text{TP}_1 \rrbracket (s') \wedge \llbracket \text{TP}_2 \rrbracket (s'')
\end{aligned}$$

Morphologically, the coordination is spelled out as $g\dot{\circ}$. According to the interpretation in (82b), both conjuncts end up as parts of a single situation, namely s_{top} . This is precisely the interpretation that the sentence in (79b) receives if $g\dot{\circ}$ is present. A second effect of analyzing SS-structures as TP coordinations is that it furnishes an account of the aspect mismatch in (78a), as both conjuncts contain separate aspectual information.

Contrast this with CP coordination, as in (83). Notice that here the coordination takes two arguments of type $\langle t \rangle$. Hence, only a standard Boolean interpretation is possible.

$$\begin{aligned}
(83) \text{ a. } & \llbracket \&P \text{ CP}_1 \&^\circ \text{ CP}_2 \rrbracket \\
\text{b. } & \llbracket \text{CP}_1 \rrbracket = \llbracket \text{TP}_1 \rrbracket (s_{top_1}) \\
& \llbracket \text{CP}_2 \rrbracket = \llbracket \text{TP}_2 \rrbracket (s_{top_2}) \\
& \llbracket \&P \rrbracket = \llbracket \text{TP}_1 \rrbracket (s_{top_1}) \wedge \llbracket \text{TP}_2 \rrbracket (s_{top_2})
\end{aligned}$$

In (83), each conjunct contains a C projection, which leads to the use of the marker $n\dot{\circ}$. Furthermore, each conjunct contains its own topic situation. Consequently, the two situations are not construed as part of a unifying topic situation. Because of the availability of (82), pragmatic strengthening prevents them from being parts of a single topic situation. This is the interpretation that sentence (79b) receives if $n\dot{\circ}$ is used.

The desired semantic correlate of the markers $g\dot{\circ}$ and $n\dot{\circ}$ may thus be derived in a way exactly parallel to Seri and Amele: A contrast in the height of coordination leads to both morphological as well as semantic effects. If this line of reasoning is on the right track, there is nothing special about the contrast between VP and ν P coordination as the same effects may be observed for other functional projections. Under this analysis, the label ‘switch-reference’ is appropriate for Kiowa, as Kiowa instantiates the same abstract alternation pattern as other, more canonical, SR systems, such as Seri.

6 Some further issues

Having elaborated the system on the basis of three case studies in the previous sections, I turn to more general properties of switch-reference systems and see how they relate to the proposal made here. The following issues will be discussed: SR markers occurring in nominal coordination structures (§6.1), differences between SS- and DS-structures in the amount of functional morphemes (§6.2), the possibility of asymmetric extraction out of SR constructions (§6.3), and some apparent and real limits of a coordination-based approach to switch-reference (§6.4).

6.1 SR markers as nominal conjunctions

As the present account identifies switch-reference markers with coordinations (the former being a way of spelling out the latter), one naturally expects cases of SR markers conjoining other

elements than clausal projections. Specifically, there should exist languages that use their SR markers to coordinate nominals. This prediction is borne out.

One such example is Kiowa. As (84) attests, nominals are conjoined by the SS marker *gò*. This fact follows without further ado from the set of vocabulary items (81). The marker *gò*, being the elsewhere spellout of a coordination head, also appears between nominals.

- (84) a. *k'ýá:hj: 0-dj:-mê: gò t'áp gò sógu:da gò mɔ:t^hqçq:hj: ...*
 man 3SG-be-HSY ss deer ss swifthawk ss coyote
 ‘There was a man and a deer and a swifthawk and a coyote ...’
 b. *negó kó:debqhon gò sé:gɔy p'è:-kɔ:gɔ é:n-penmɔ*
 DS.then Gotebo ss Saingko smile-while 3DL.S:PL.O-butcher.IPF
 ‘And so Gotebo and Saingko continued butchering with amused smiles.’

[Watkins 1993: 148]

Any account treating the SR marker and the coordinators in (84) as fundamentally different is forced to acknowledge a conspiracy to prevent them from occurring together. First, the homophony between the coordination in (84) the SS-marker must be viewed as accidental. Second, as both Watkins (1993) and McKenzie (2007, 2010) assume that SR-marking may appear in coordination constructions, it has to be stipulated that the conjunction is overt if and only if there is no SR marker. By contrast, if they are treated as the same element, their complementary distribution follows straightforwardly.

An analogous state of affairs is observed in O'odham (Hale 1983). The SS-marker *c* in (85a) is also used to conjoin nominals, as in (85c).⁴²

(85) O'odham

- a. *Ñ 'alidag'ò gegosid g gogs c ha-'i'icud g kakawyu*
 my child AUX feed the dog ss them-water the horses
 ‘My kid feeds the dog and waters the horses.’
 b. *Ñ-'alidag'ò gegosid g gogs k g ñ-we:nag ha-'i'icud g kakawyu*
 my-child AUX feed the dog DS the my-sibling them-water the horses
 ‘My kid feeds the dog and my brother waters the horses.’
 c. *mi:loñ c 'u:w-hal c ha:l'ò 'è'èsa*
 watermelon CONJ cantaloupe CONJ squash AUX plant:USIT
 ‘He plants watermelons and cantaloupes and squash.’

[Hale 1983: 300, 305]

6.2 Functional difference between DS and SS structures

In the present analysis, DS-marked structures comprise more syntactic material than SS-structures. The former contain two *v* heads, while the latter contain only one. Because of *v*'s ϕ -features being transmitted to V and realized there, this structural contrast is blurred. We do, however, expect to find languages in which *v* is realized in situ. In these languages, DS-constructions are predicted to contain more functional material than SS-structures. This prediction is borne out. Stirling (1993: 43) observes “a general tendency for DS-marked clauses to show a greater resemblance to independent clauses than SS-marked ones.” As an illustration, consider the Ancash Quechua data in (86). While only one verb is marked in the SS-case (86a), both verbs bear ϕ -agreement in the DS-structure (86b). In other words, DS-structures contain verbal agreement that SS-structures lack.

⁴² In yet other languages, there is at least a strong resemblance between elements conjoining NPs and SR markers (Chuave, Gende, Siane, Gahuku, Hua, Fore, Gimi, Kanite; cf. Haiman 1983: 111–2, Roberts 1988b: 83–5).

(86) Ancash Quechua

- a. *chakra-chaw urya-shpa, pallamu-rqu-u wayta-kuna-ta*
 field-in work-ss pick-RECP-1 flower-PL-ACC
 ‘While I worked in the field, I picked flowers; I worked in the field and picked flowers.’
- b. *chakra-chaw urya-pti-i, María pallamu-rqu-n wayta-kuna-ta*
 field-in work-DS-1 María pick-RECP-3 flower-PL-ACC
 ‘While I worked in the field, María picked flowers.’ [Cole 1983:3]

The contrast in (86) follows under the assumption that, in contrast to Seri and Amele, ϕ -agreement on v is spelled out in situ in Ancash Quechua. As DS-structures contain two v 's, while SS-structures contain only one, the asymmetry above follows. Notably, the contrast seems to go only in one direction. I do not know of a language in which SS-structures receive more overt marking than DS-structures. If this is generally true, it supports the view that DS-structures are syntactically more complex than SS-structures.⁴³

6.3 Extractability

Based on Choctaw, Broadwell (1997, 2006) raises an interesting problem for a coordination analysis of SR structures:⁴⁴ Extraction out of only one clause is possible, in apparent violation of the COORDINATE STRUCTURE CONSTRAINT (CSC, see Ross 1967). The SR markers *-cha* and *-na* are illustrated in (87).

- (87) a. *Ofi pashohli-li-cha/*-na tamaha ia-li-tok*
 dog rub-1NOM-SS/*-DS town go-1NOM-PST
 ‘I patted the dog and went to town.’
- b. *Tobi apa-li-na/*-cha tāchi ish-pa-tok*
 bean eat-1NOM-DS/*-SS corn 2NOM-eat-PST
 ‘I ate beans, and you ate corn.’ [Davies 1986:170]

Broadwell (1997, 2006) observes a peculiar difference between SR structures such as (87) and ‘canonical’ clausal coordination with the conjunction *anóti* ‘and’, as in (88).

- (88) *John-at taloowa-tok anóti Bill-at hilh-aachī-h*
 John-NOM sing-PST and Bill-NOM dance-IR-TNS
 ‘John sang and Bill will dance.’ [Broadwell 2006:285]

Broadwell demonstrates that structures with *anóti* are subject to the CSC, which prohibits extraction out of only one conjunct. (89a) is ungrammatical because *katah-oosh* ‘who-FOC.NOM’ has been asymmetrically moved out of the second conjunct. Crucially, switch-reference structures allow this extraction step, as (89b) shows. Given that Choctaw obeys the CSC, Broadwell’s argu-

⁴³ Several other languages behave like Ancash Quechua in that they exhibit subject agreement in DS-structures but lack it in SS-structures. Within Papua, Kâte (Payne 2006:301), Ono (Haiman 1983:108), Usan, Fore, Chuave (Haiman and Munro 1983:x–xi), Lenakel, Tanna (Lynch 1983:211,217), Tauya (MacDonald 1990:221–3), and Kewa (Franklin 1983:40) behave in this way. Outside of Papua, it has been reported for Kolyma Yukaghir (Maslova 2003:370–3).

In addition to spelling out v in situ (as in Quechua) and spelling it out on V (as in Seri and Amele), a third possibility is conceivable. Suppose that a head higher than v —say, Tense—agrees with its complement and that the tense feature is realized on v . In such a system, SS-structure would receive only one instance of tense marking, DS-structures would contain two instances that obligatorily have to match, and TP/CP coordination would contain two potentially mismatching instances of tense marking. This is arguably the situation in Hua (cf. Haiman 1983:121).

⁴⁴ The view that sentences such as (87) have an underlying coordination structure is adopted by Davies (1986).

ment goes, the grammaticality of (89b) strongly suggests that it is not a coordination structure. He concludes that SR does not operate on coordinate structures.⁴⁵

- (89) a. **Katah-ooshi John-at taloowa-tok anōti t_i hilha-tok?*
 who-FOC.NOM John-NOM sing-PST and dance-PST
 ‘Who_i did John_j sing and t_i dance?’
 b. *Katah-ooshi John-at taloowa-na t_i hilha?*
 who-FOC.NOM John-NOM sing-DS dance
 ‘Who_i did John_i sing and t_i dance?’

Under the present analysis, both (89a) and (89b) are coordinate structures. They only differ in the size of the conjuncts (TP/CP in (89a); *v*P in (89b)). Interestingly, there is some independent evidence that extractability is indeed affected by the size of the conjuncts. As is well-known, the CSC may be systematically violated in English in PSEUDO-COORDINATION constructions (Lakoff 1986).

- (90) a. What_i did John go to the store and buy t_i?
 b. How much_i can you drink t_i and still stay sober?
 c. That’s the kind of firecracker_i that I set off t_i and scared the neighbors.

Harris (2011) argues that the sentences in (90) contain regular coordination but of a low syntactic projection (the same conclusion is reached by de Vos 2005). Harris (2011) takes the CSC to be a semantic constraint on event structure. He suggests that (mereological) conjunction below the introduction site of *viewpoint aspect* allows asymmetric extraction. Higher conjunction, by contrast, blocks it. Harris takes T to be the head introducing viewpoint aspect. This system gives rise to the following situation: VP and *v*P coordination may in principle allow extraction out of only one conjunct; CP and TP coordination does not. This insight, coupled with the present coordination-based view on switch reference, derives the contrast in (89). The switch reference case (89a) allows extraction precisely because it involves low coordination.⁴⁶

More evidence for the view that the size of conjuncts has an effect on the possibility of asymmetric extraction is provided by Turkish, which has two major ways of conjoining clausal constituents. The coordinator *ve* conjoins full-fledged clauses with separate tense marking on all conjoined verbs:

⁴⁵ In Seri asymmetric extraction out of SR constructions is also possible (Steve Marlett, p.c.). Amele does not exhibit *wh*-movement to the left periphery in general. It is, however, possible to have *wh*-element in only one clause. If it is taken to move covertly, (i) makes the relevant point:

- (i) *Wa na no-co-min eeta ija q-it-i j-ec dain?*
 water in go.up-DS-1SG what 1SG hit-1SG-PRED eat-INF CAP
 ‘What will eat me if I don’t get out of the water?’

[Roberts 1987: 26]

Of course, if this extraction pattern is cross-linguistically stable, Broadwell’s argument gains additional force.

⁴⁶ Incidentally, it is empirically unclear whether asymmetric extraction out of only the first clause is possible in Choctaw. (i) attests that having a *wh*-element in only the first clause is licit, it is not clear at this point whether chain-preserving *wh*-movement takes place in (i) or no movement in all (given that *wh*-movement is optional in Choctaw). One way of teasing these possibilities apart would be to put an adverb between the focus position and the base generation site of the subject. Unfortunately, no empirical data bearing on this point are presently available (G. Broadwell, p.c.).

- (i) *Katah-oosh taloowa-na John-at hilhah?*
 who-FOC:NOM sing-DS John-NOM dance
 ‘Who sang and then John danced?’

[George Broadwell, p.c.]

- (91) *Hasan iş-in-e git-ti ve Ali ev-in-e dön-dü ve ben park-ta kal-dı-m*
 Hasan work-3SG-DAT go-PST and Ali home-3SG-DAT return-PST and I park-LOC
 stay-PST-1SG
 ‘Hasan went to work and Ali returned home and I stayed in the park.’ [Kornfilt 1997:112]

The element *-(y)Ip*, on the other hand, requires the subjects to be identical, and only the second verb to be marked for tense, as in (92).

- (92) a. *Hasan iş-in-i bit-ir-ip ev-in-e git-ti*
 Hasan work-3SG-ACC end-CAUS-CONJ house-3SG-DAT go-PST
 ‘Hasan finished his work and went home.’
 b. **Hasan iş-in-i bit-ir-ip Ali ev-in-e git-ti*
 Hasan work-3SG-ACC end-CAUS-CONJ Ali house-3SG-DAT go-PST
 ‘Hasan finished his work and Ali went home.’ [Kornfilt 1997:391]

The necessary subject identity along with the single tense marking requirement is strongly reminiscent of the SR phenomena discussed here. Kornfilt (1997) suggests that the relevant difference between *ve* and *-(y)Ip* lies in the height of the conjoined constituents: While *-(y)Ip* conjoins VPs, *ve* combines with full clauses. Adopting this analysis, we are dealing with a contrast between coordination below T (*-(y)Ip*) and above T (*ve*). Notably, having a *wh*-element in only one conjunct is licit with low coordination only, as the contrast in (93) attests.

- (93) a. ??*Ahmet magaza-ya git-ti ve ne al-d?*
 Ahmet store-DAT go-PST and what buy-PST
 b. *Ahmet magaza-ya gid-ip ne al-d?*
 Ahmet store-DAT go-CONJ what buy-PST
 ‘What did Ahmet go to the store and buy?’ (Seda Kan, p.c.)

If Kornfilt (1997) is correct in treating (93a) as high and (93b) as low coordination, (93) supplements Harris’s (2011) analysis of pseudo-coordination: Asymmetric *wh*-dependencies—be they overt or covert—are possible out of small conjuncts (below T) but not out of larger ones.

I take these results to show that tying the contrast in (89) to the size of the conjuncts is at least a reasonable conjecture. There are, however, salient differences between pseudo-coordination and SR structures that a full account would have to deal with. The most pressing contrast is that extraction out of pseudo-coordination depends on the verb in the first conjunct, while no such restriction is reported for Choctaw. At present, I do not have an account for this difference. Although the precise mechanisms are currently unclear, low coordination appears to allow asymmetric extraction more freely than high coordination. Against this background, the Choctaw contrast in (89) is not as unexpected for a coordination analysis of (89b) as it appears at first sight.

6.4 Some limits of a coordination account

Most syntactic approaches to SR reject the view that SR operates in coordinate structures. Finer’s (1984, 1985) classic approach crucially relies on clausal adjunction structures. Both Broadwell (1997) and Watanabe (2000) follow Finer’s analysis in this respect. Semantic approaches, on the other hand, are less inclined to treat adjunction structures as a prerequisite for a SR system. Both Stirling (1993) and McKenzie (2007, 2010) share the view that SR is not in principle incompatible with adjunction structures.

The present proposal is clearly at variance with, e.g., *Finer's* (1984, 1985) view that SR never operates on coordinate structure. *Finer* (1985: 39) acknowledges that “[i]n many of the languages under discussion, it is quite unclear whether coordination or subordination is the operative structure” and it turns out that there are very few explicit arguments against a coordination analysis. *Finer* (1984) argues, based on evidence from *Seri* and *Amele*, that SR cannot operate in coordinate structures here since the SR marker may not appear if there is a clause-conjoining element present (cf. (20) and (58b)). We have already seen that this complementary distribution is fully compatible with a coordination-based analysis once the SR markers are reanalyzed as the spell-out of the coordination head itself. Another argument—due to *Linker* (1987) and *Broadwell* (1997)—is based on evidence from *Choctaw* but completely parallel to the situation observed in *Amele* above: If two clauses are conjoined by the ‘canonical’ coordinator *anóti*, each verb is marked for tense. In SR constructions, by contrast, only the final verb is (compare (55) and (59a)). As we have already seen, this argument does not apply to the particular coordination approach presented here: If SR marking involves syntactically small conjuncts without a separate tense projection, this situation falls out immediately. Various arguments against a coordination analysis of SR structures thus do not apply to the particular coordination structures suggested here as it incorporates the view that coordination applies at a low level, and that the SR markers are identified with the coordination head.

There are, however, real limits to the present approach. The literature contains several cases of switch-reference marking that are not plausibly analyzed as involving coordination and thus fall out of the scope of the present proposal. Such instances of switch-reference marking have to be accounted for by other means than the one proposed here. Hence, the upshot of this section is to highlight the fact that the descriptive label of ‘switch-reference’ probably does not correspond to a uniform theoretic notion. Consequently, different instances of switch-reference are to be treated in different theoretical terms.

To illustrate some limits of a coordination-based account, I will briefly outline the SR system of *Imbabura Quechua* (see *Cole* 1983 for an overview). *Imbabura Quechua* has been claimed to involve SR marking in both coordinated as well as subordinated constructions (cf., e.g., *Cole* 1983). The appearance of SR marking in subordination constructions will turn out to be problematic for a coordination account and must be attributed to other mechanisms. Closer inspection reveals certain distributional differences between SR marking in coordinating and subordinating constructions, providing independent support for the idea that the two types of ‘switch-reference’ are not theoretically uniform.

Coordinate structures in *Imbabura Quechua* use the SS marker *-shpa*; DS is marked by *-jpi*. Examples are provided in (94).

(94) *Imbabura Quechua*

- a. *Utavalu-man chaya-shpa, ñuka mama-ta riku-rka-ni*
 Otavalo-to arrive-SS my mother-ACC see-PST-1
 ‘When I arrived in Otavalo, I saw my mother.’
- b. *Juzi Utavalu-man chaya-jpi, paypaj wasi-man ri-rka-ni*
 José Otavalo-to arrive-DS his house-to go-PST-1
 ‘When José arrived in Otavalo, I went to his house.’

[*Cole* 1983: 5]

Given that subjunctive mood indicates subordination, the set of data in (95) seems to suggest that SR marking also holds in subordinate constructions.

- (95) a. *Utavalu-man shamu-rka-ni ñuka mama-ta visita-ngapaj*
 Otavalo-to come-PST-1 my mother-ACC visit-SS.SBJV
 ‘I came to Otavalo to see my mother.’
- b. *Juzi-ta Utavalu-man kacha-rka-ni paypaj mama-ta visita-chun*
 José-ACC Otavalo-to send-PST-1 his mother-ACC visit-DS.SBJV
 ‘I sent José to Otavalo to see his mother.’ [Cole 1983: 6]

Since neither example in (95) entails that anyone visited his mother, rendering, e.g., (95a) as ‘I came to Otavalo and visited my mother’ is inadequate. This suggests that we are dealing with true subordination. Notice that a different set of markers is employed in (94) and (95). Whereas in (94), SR is marked by *-shpa* and *-jpi*, respectively, in the subordination structures (95) *-ngapaj* and *-chun* are used. Moreover, closely related languages like Ancash Quechua and Huallaga Quechua have SR marking only in the former environment and not in complementation structures (Cole 1983:3). This suggests that the principles underlying the two constructions are sufficiently distinct to allow the existence of one without the other.

Upon closer scrutiny, it turns out that despite appearances in (95) the alleged subjunctive SR markers *-ngapaj* and *-chun* differ from *-shpa* and *-jpi* in crucial respects. To appreciate this observation, compare (96) and (97).

- (96) a. *wawa-ka mama mikuchiy tukushka-mi* [ama { \emptyset /ñuka/kan/*Juzi}
 child-TOP mother fed became-EVID not { \emptyset /I/you/*José}
kijari-ngapaj]
 complain-SS.SBJV
 ‘The child_i was fed by the mother in order that one/he_i/I/you/*José not complain.’
- b. *wawa_i-ka mama mikuchiy tukushka-mi* [ama {Juzi/*pay_i/*ñuka/*kan}
 child-TOP mother fed became-EVID not {José/*he/*I/*you}
kijari-chun]
 complain-DS.SBJV
 ‘The child_i was fed by the mother in order that José/*he_i/*I/*you not complain.’
- (97) {ñuka/kan} *mana wasi-pi ka-{jpi/*shpa}* *wawa-ka mama mikuchiy tukushka-mi*
 {I/you} not house-in be-{DS/*SS} child-TOP mother fed became-EVID
 ‘While I/you was/were not in the house, the child was fed by the mother.’ [Cole 1983: 8f]

Example (96a) attests that subjunctive SS marking is possible not only if the two subjects are coreferent but also if the second subject is interpreted arbitrarily and even if it is first or second person. Conversely, subjunctive DS marking is not available even if the first subject is third person and the second subject first person, as shown by (96b). This is not only surprising from the point of view of SR marking in general, it is furthermore evidently distinct from non-subjunctive SR marking. As (97) attests, the combination of a third person and a first/second person subject may only lead to DS marking in coordinate structures, in stark contrast to (96).

The data in (96) suggest that a verb marked with *-ngapaj* has a discourse-given subject, while the subject of verbs bearing *-chun* is discourse-new. An analysis in terms of LOGOPHORICITY (Sells 1987) comes to mind but will not be explored here.⁴⁷

Given that the two instances of ‘switch-reference’ in (96) and (97) are plausibly due to independent mechanisms, the fact that a coordination account covers (97) but not (96) is not itself problematic. I take this state of affairs to show that, generally, a full understanding of

⁴⁷ For discussion of further difference between SR marking and logophoricity as well as on how to distinguish between the two, see Stirling (1993: 50–6; §6). For Imbabura Quechua, Stirling (1993: 306) notes that the subjunctive ‘SR’ markers only occur under special verbs which can be considered logocentric.

switch-reference in the descriptive sense depends on the combination of various theoretical means and is unlikely to be reducible to any one of them.⁴⁸

The position that the alleged switch-reference marking in complementation and coordination environments in Quechua (and Choctaw, see fn. 48) constitute theoretically distinct phenomena is, of course, reinforced by the morphological difference between the markers used in each case. The view is challenged by, e.g., several Yuman languages, including Maricopa (Gordon 1983) and Mojave (Munro 1979), which employ the same markers (i.e. *-k* and *-m*) in both environments. For our present concerns, it suffices to note that the markers *-k* and *-m* in Yuman are infamous for their breathtakingly wide distribution. They may appear on nominals to mark various cases, are used to mark tense/aspect contrasts, and are used as verbal class markers (Gordon 1979). It is not at all clear whether all occurrences of these markers should be treated in the same way. If so, it is not evident what their common function is supposed to be. If not, the unity of switch-reference marking in subordinate and coordinate structures may be deceptive.

7 Conclusion and outlook

This paper has suggested a new take on switch-reference phenomena. Its main contribution is the view that certain instances of switch-reference operate below the clause level, coming about by coordination of different layers of clause structure. The switch-reference markers, under this view, are the syntactically conditioned spellouts of the coordination head. The analysis advanced here diverges from previous accounts in a number of respects: First, identity vs. non-identity of some level of representation (be it agent reference, topic situations, or the like) is only indirectly associated with the switch-reference markers. As a whole, the system correlates, to a certain extent at least, morphological marking and semantic properties and one may take this overall property to be the functional motivation for such a system to exist. In contrast to previous analyses, however, none of the individual subcomponents directly states this link. Viewing the interpretive impact of switch-reference marking as emerging from the interplay of the individual components yields a system flexible enough to simultaneously capture the association of SR marking with subject reference relations as well as cases of ‘leakage’, where the correlation systematically breaks down. Such ‘unexpected’ SR marking is by no means aberrant; it emerges precisely because the link between morphological marking and semantic interpretation is only indirect.

⁴⁸ The same point can be made for Choctaw. In addition to *-cha/-na* (cf. §6.3), there are the two markers *-t* and *-n* (or nasalization, indicated by /*˘*/), which apparently track reference in complementation structures:

- (i) a. *John-at anokfilli-h pisachokma-ka-t*
 John-NOM think-TNS goodlooking-COMP-SS
 ‘John_i thinks that he is goodlooking.’
 b. *John-at anokfilli-h pisachokma-kā*
 John-NOM thinks-TNS goodlooking-COMP.DS
 ‘John_i thinks that s/he_j is goodlooking.’

[Broadwell 2006: 269]

Because *anokfilli* is non-presuppositional, a coordination structure does not yield the correct interpretation. The same situation holds in the related language Chickasaw (Munro 1983) as well as in unrelated languages, for example, in Australia (cf. Austin 1981 for an overview). Camacho (2010) shows that the SR markers in the Pano language Shipibo are sensitive to a number of factors that are not obviously accounted for in terms of coordination height. For instance, several SR markers track the valencies of the verbs involved. Furthermore, there may be tense mismatches between the two clauses. Finally, some markers entail the subject of one clause to be coreferent to the object of the second clause. Interestingly, Camacho (2010) extends his analysis of Shipibo to *-t* and *-n* in Choctaw, the markers remaining unaccounted for under the present approach. Finally, there are switch-reference systems that make use of an overt coordination marker in addition to the SR marker, e.g., Lenakel (Lynch 1983: 212) and Hopi (Camacho 2003: 43–6).

A second hallmark property of the system developed here is that it identifies a syntactic position (Spec,*v*P) as the locus of switch-reference marking. This contrasts with other approaches, which take verbal agreement (Finer 1984, Broadwell 1997, Watanabe 2000, Camacho 2010) or agentivity (Stirling 1993) as the notion relevant to the SR system. While SR controllers might behave as a natural class with respect to agreement and/or agentivity, they do so in virtue of being generated in Spec,*v*P. Agentivity or agreement properties themselves are, however, orthogonal to the SR system. As we have seen, this seems correct.⁴⁹

A third difference between the present account and previous ones is that switch-reference is not taken to operate between full-fledged clauses. Rather, I have argued SR to involve coordination of small clausal constituents that, as a consequence, lack functional material found in full clauses. As a consequence, switch-reference clauses are often not marked for categories associated with high functional projections—such as tense, mood, or clause type—or, if Agree with lower heads takes place, involve obligatory concord between the two clauses linked by switch-reference. The empirical evidence for this type of functional defectiveness is pervasive. Obligatory single marking of tense or aspect is reported for Imbabura and Ancash Quechua (Cole 1983), Choctaw (see the discussion in section 6.4), Kewa (Franklin 1983), Maricopa (Gordon 1979, 1983), and several Caucasian languages (Nichols 1983b: 246). Concord of tense or aspect is also widely found in Papuan languages (Binandere, Daga, Enga, Fore, Koita, Washkuk, Zia, Tauya; cf. Roberts 1997: 144–8). Obligatory concord in mood is attested for Nobonob, Anjam, and Bargam (Roberts 1997: 148–52). If such SR systems are addressed by coordination low enough to be in the scope of Mood, T, and C the sheer pervasiveness of such restrictions receives a principled explanation.

An interesting question, brought to my attention by Marcel den Dikken, concerns polarity. As illustrated in fn. 32 above, Amele allows the two conjoined clauses in SR constructions to be marked for negation independently of each other. A language that disallows low negation (i.e. at the VP or *v*P level) is predicted by the account put forth here to disallow such separate marking of polarity. Rather, polarity should take scope over all the clauses in an SR construction, just like tense.

Finally, while the position that switch-reference may be associated with coordination structures is by no means new (e.g., Comrie 1983, Franklin 1983, Haiman 1983, Camacho and Elías-Ulloa 2001, Camacho 2003), the current proposal takes this view a step further in that it identifies switch-reference with the coordination structure. Thus, there is no sense in which the switch-reference system *operates on* coordination structures. Rather, switch-reference systems of the type investigated here *reduce to* coordination. Coordination in, e.g., English is promiscuous, combining with virtually all types of phrases. The same holds for Amele and Seri: There is only a single syntactic coordination head combining with a wide array of syntactic constituents. The crucial difference between English on the one hand and Seri and Amele on the other is morphological. In English the syntactic head is always spelled out as *and*, regardless of its context. In Seri and Amele, by contrast, this head receives a different realization depending on its environment. As far as the syntactic representation is concerned, there is no sense in which switch-reference in these languages exists side by side with coordination. Switch-reference systems as the ones discussed here *are* instances of coordination.

By considering and contrasting the SR systems of Seri, Amele, and Kiowa, I have developed ways of accommodating cross-linguistic variation within the general framework presented here. First, the morphological specification of the SR markers may differ, giving rise to slightly different distributional patterns. Second, the semantic interpretation assigned to the terminal elements may be subject to variation. Depending on the exact denotation, the structural difference between

⁴⁹ Recall from fn. 7 and 30 that the usage of the SR markers does not plausibly correlate with verbal subject agreement in Amele.

SS- and DS-structures may or may not be mapped onto a semantic one. This parameter gives rise to further semantic distinctions between the two structures and, concomitantly, yields or prevents blocking effects. Third, the structural layers that correlate with a morphological contrast may differ. While the relevant contrast lies between VP and *v*P coordination in Seri and Amele, I have proposed that it correlates with TP and CP coordination in Kiowa. Given these loci of variation, the general idea of correlating the morphological realization of the coordination head with differences in the height of conjunction is given substantial flexibility and allows application to several, seemingly diverse SR systems.

Despite this flexibility, it is evident that there are residual cases, as discussed in section 6.4. This by no means a surprising situation. ‘Switch-reference’ being largely a descriptive notion may well be found to not correspond to a natural class in theoretical terms. Moreover, given that there are several independent theoretical concepts involved in reference tracking, e.g. mechanisms of reflexivization, logophoricity, etc., which may give rise to patterns superficially similar to a coordination analysis.

In closing, I would like to point out some additional configurations that are not derivable in the system developed here. Examples are given in (98). I do not know of any system exhibiting such properties.

- (98) a. markers that are (descriptively) sensitive to reference relations between the subject of one clause and the object of another
 b. markers tracking the reference relations between objects but not subjects
 c. markers requiring subjects to be identical but allowing tense/mood/clause type to mismatch in the two clauses
 d. languages that realize subjects twice in SS-structure while still demanding referential identity between them

In addition to systems that are excluded in a coordination account the proposal makes an interesting prediction, pointed out to me by Coppe van Urk (p.c.). If not only the external argument is severed from the verb but indirect objects as well (Pylkkänen 2008), the present analysis leads one to expect coordination below the Appl-level. In this case the external argument as well as the indirect argument would have to obligatorily match and be realized only once but the direct object would be free to vary across the two clauses. In a similar vein, if it is assumed that a verb’s internal argument is introduced by a functional head as well (as in Borer 2005), one might expect a language with a SR marker that appears is two verbs share all of their arguments. I am not currently aware of a language that would bear out either of these predictions.

8 References

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9 Abbreviations used in the glosses

ACC	accusative	NEGP	negative past tense
APPL	applicative	NOM	nominative
AUG	augment	O	object
AUX	auxiliary	OBL	oblique
CAP	certain apprehensive mood	PASS	passive
CAUS	causative	PF	perfective
COMP	complementizer	PL	plural
CONJ	conjunction	PON	proposition/oblique nominalizer
CONTR	contrafactual mood	POSS	possessive
DAT	dative	PRED	predicative marker
DCL	declarative	PROX	proximal
DEP.PST	dependent past	PST	past
DIST	distal	PURP	purpose
DL	dual	QM	question marker
DS	different subject	R	realis
DUR	durative aspect	RECP	recent past
EVID	evidential	REFL	reflexive
FOC	focus	REMP	remote past tense
FUT	future	S	subject
HSY	hearsay	SBJV	subjunctive
IMP	imperative	SG	singular
INF	infinitive	SIM	simultaneous action
INTNS	intensifier	SN	subject nominalizer
IO	indirect object	SS	same subject
IPF	imperfective	TNS	tense
IR	irrealis	TODP	today's past tense
LOC	locative	TOP	topic
NEG	negation		

US	unspecified subject	UT	unspecified time
USIT	usitative	YESTP	yesterday's past tense