

# Switch-Reference as Coordination

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## Abstract

In this paper I argue for a major reassessment of switch reference phenomena, whereby a verb is marked morphologically for whether its subject is coreferent with the subject of another verb or not. While standardly conceived of as a system of reference tracking—directly or indirectly comparing the reference of two subjects—I claim that these markers do not encode reference relations at all. Rather, they are treated as the context-sensitive spell-out of a coordination head. The proposal builds on the standard assumption that the external argument is not introduced by the verb itself but by the functional head *v*. Coordination at the VP level does hence not include the external argument. If a single external argument is projected on top of the VP conjunction, a ‘same subject’ interpretation emerges by general semantic principles, with no reference comparison involved. *v*P coordination, by contrast, has no such entailment. Switch reference markers are argued to morphologically realize the coordination head in dependence on its structural environment (VP versus *v*P). The central evidence for my claim comes from so-called ‘unexpected’ switch reference marking, where a marker shows up in an environment that defies its characterization in terms of reference relations.

## 1. Introduction

The term ‘Switch Reference’ (SR) as generally used refers to the phenomenon that a verb bears a morpheme indicating whether the subject of this verb is referentially identical to or disjoint from the subject of another clause. In the former case, the marker is termed ‘same subject’ (SS) marker and the latter is designated as ‘different subject’ (DS), though other labels are occasionally found (such as

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‘proximative’ versus ‘obviative’ in Ken Hale’s terminology). Since its initial description by Jacobsen (1967) and the very influential work of Finer (1984, 1985) these markers are often taken to directly encode the reference relations between two subjects. While there exist several analyses of switch reference from a variety of theoretical perspectives in terms of binding (Finer, 1984, 1985; Nichols, 2000; Watanabe, 2000; Déchaine and Wiltschko, 2002; Pittman, 2005), Control (Borer, 1989), obviation in subjunctive mood (Avrutin and Babyonyshev, 1997), and discourse representation theory (Stirling, 1993), what most proposals have in common is that they accept the viability of the generalization above that these markers code reference relations. Starting from this common basis, they diverge as to the theoretical machinery they suggest for implementing the above generalization. At first glance, this view is warranted. Consider the data from Zuni (an language isolate spoken in New Mexico) in (1), which illustrate the canonical view on SR.

## (1) Zuni

- a. ho’ k<sup>w</sup>ayi-nan yak’o-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<sup>w</sup>ayi-p Nemme’ yak’o-nna  
 1SG.NOM exit-DS Nemme vomit-FUT  
 ‘I will go out and Nemme will throw up.’ [Nichols 2000, 6]

In (1-a) the first verb is marked with the same subject marker *-nan*; in (1-b) the verb bears the different subject marker *-p*. This correlates with the reference relations between the subjects of the two clauses. Cases such as this one have been taken as paradigmatic instances of SR.

Upon closer scrutiny, however, matters turn out to be more complex. As already noted in the original work on SR (Jacobsen, 1967), one finds cases where the alleged same subject marker occurs in clauses with disjoint subjects. Conversely, different subject markers may show up in clauses that do not contain two subjects to begin with. Examples of such ‘non-canonical’ SR marking are given in (2) and (3).

## (2) Zuni

- a. ho’ sa-k’ošo-p ho’ sa’le’ k’uhmo-k’e-nna  
 1SG.NOM dish-wash-DS 1SG.NOM dish break-CAUS-FUT  
 ‘Whenever I wash dishes, I always break a dish.’ [Nichols 2000, 7]
- b. te’či-p antewa-kya  
 arrive-DS spend.the.night-PAST  
 ‘He arrived and camped [there] for the night.’ [Nichols 1997, 26]

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

(2) shows that the alleged different subject marker *-p* in Zuni is in principle compatible with identical subjects. (3), on the other hand, shows the reverse for Yuman: What appears to be a same subject marker is compatible with clauses that obviously do not have coreferring subjects. Indeed, both DS and SS marking is possible here. If the switch reference markers did indeed encode whether the two subjects are coreferent or not, these instances of SR marking would have to be treated as a mysterious exception to the rule. Cases such as the ones in (2) and (3) become even more striking in light of the fact that they are attested in a wide variety of non-related languages, including Amele (Roberts, 1987, 1988), Seri (Marlett, 1981), Choctaw (Davies, 1986), Chechen and Ingush (Nichols, 1983*a,b*), Lenakel (Lynch, 1983), Oirata (Donohue, 2008), O’odham (Hale, 1992), Eastern Pomo (McLendon, 1975, 1978), Central Pomo (Mithun, 1993), Haruai (Comrie, 1983), Tonkawa (Jacobsen, 1967), Misumalpan (Hale, 1997), as well as various other Yuman languages in addition to Mesa Grande Diegueño (Langdon and Munro, 1979; Gordon, 1983). Any account of switch reference that abstracts away from these cases leaves a pervasive property of SR systems unaccounted for.

One possibility to handle these cases is to retain the idealized conception of SR as a reference tracking device and trace deviant occurrences of these markers back to intervening factors. Needless to say, as long as these confounding factors and their interaction with the SR system proper are not made explicit, the sheer frequency of cases such as (2) and (3) remains disconcerting. Another possibility, to my knowledge unexplored so far, is to take the cases of non-canonical SR marking at face value and dispense with the notion of SR as a referencing device altogether. Under this approach the distribution of the SR markers is conditioned by factors unrelated to subject reference. The apparent correlation between the occurrence of the SR markers and certain reference relations must then be traced back to a conspiracy of other factors. The challenge for such an approach is to identify these factors and make their interaction explicit.

The present paper sets out to elaborate the second possibility. Thus, I will argue that the alleged SR markers do not encode reference relations at all. Rather, they are the context-dependent spell-out of coordination heads. In a nutshell, my proposal centers around the observation that all types of categories, each comprising its own amount of internal structure, may be conjoined. If two VPs are conjoined only one *v* head is projected (above the coordination phrase). Given that the agents is introduced by *v*, the whole structure comprises only a single agent (namely, above the conjunction). This subject is then, by general semantic principles, interpreted

as the agent of both VPs. It follows that an element spelling out the coordination in a VP conjunction necessarily goes hand in hand with an interpretation of the two VPs as having one and the same subject. It is important to note that, first, this element is insensitive to nominal reference, and second, no coreference relations are employed to begin with. Since there is only one subject in the whole structure, notions of subject coreference do not apply. By contrast, *v*P coordination involves two *v*'s and, consequently, two subjects (one in each conjunct). All else being equal, a second marker realizing the coordination head in a *v*P context does hence not entail any reference relations between the subjects, leading to 'unexpected' DS marking as in (2).

The upshot of the analysis developed here is that the descriptive phenomenon of switch reference—in the sense above, *viz.* verbal marking of reference relations between nominals—is theoretically non-existent. This conclusion supports the modular view that morphological marking and semantic interpretation are not directly linked but mediated only via the syntactic structure which both apply to. As a consequence, morphology and semantics are tied to each other rather loosely. 'Unexpected' SR marking supplies a direct confirmation of this hypothesis. By treating these abundant pattern of switch reference marking as basic, a major re-assessment of the phenomenon itself results. The patterns unexpected under previous treatments then emerge as entirely canonical.

The paper is structured as follows: Section 2 will set the stage for the proposal by briefly outlining the background assumptions this work is couched in. Section 3 forms the core of the article. I will exemplify and analyze the SR system of two languages, Amele and Seri. The main focus of this section is to flesh out the account and show how the system handles cross-linguistic variation. Section 4 adopts a broader perspective on SR systems and shows how some recurring properties of SR fall out of the analysis in a natural way. Lastly, section 5 draws a conclusion.

## **2. Theoretical background**

This section illustrates the conceptual background assumptions that the present analysis rests on. Its main ingredients are a realizational theory of morphology, agent-severed syntactic structures, and an event-based semantic interpretation.

I will develop my proposal in terms of Distributed Morphology (DM; see Halle

and Marantz 1993, 1994; Noyer 1992, 1997).<sup>1,2</sup> In the grammatical architecture adopted in DM, morphology applies post-syntactically. In other words, syntax operates on morpho-syntactic feature bundles without phonological specification. After the syntactic derivation is terminated, vocabulary items are inserted into the syntactic structure (*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 specification may receive identical morphological marking, DM employs underspecification of vocabulary items. Markers may only be inserted if they fulfill the *Subset Principle* in (4), viz. if their morpho-syntactic feature specification constitutes a subset of the features of the relevant syntactic head. Once underspecification is employed, a marker may fulfill the Subset Principle for more than one context. Consequently, 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 (5) 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.

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<sup>1</sup>See Harley and Noyer (1999, 2003), and Embick and Noyer (2007) for an overview of Distributed Morphology.

<sup>2</sup>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., Lieber, 1980; Williams, 1981; Selkirk, 1982; Di Sciullo and Williams, 1987). Second, as will become clear from the discussion of Amele in section 3.1, 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 do not provide the means to capture this behavior (inferential theories include A-Morphous Morphology [Anderson 1992], Network Morphology [Corbett and Fraser 1993], and Paradigm Function Morphology [Stump 2001; Steward and Stump 2007]). 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.

(4) *Subset Principle*

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

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

(5) *Specificity*<sup>3</sup>

A marker  $M_1$  is more specific than a marker  $M_2$  iff  $M_1$  contains more morpho-syntactic features than  $M_2$ .

To illustrate, consider the abstract morpho-syntactic specification  $\Gamma$  in (6-a) and the three markers in (6-b), which compete for insertion into  $\Gamma$ .

- (6) a.  $\Gamma = \{+\alpha, -\beta, +\gamma\}$
- b. /a/  $\leftrightarrow$  [+ $\alpha$ ]  
        /b/  $\leftrightarrow$  [- $\beta$ , + $\gamma$ ]  
        /c/  $\leftrightarrow$  [- $\alpha$ , + $\gamma$ ]

According to requirement (i) of the Subset Principle (4), /c/ is excluded from the competition as  $\{-\alpha, +\gamma\} \not\subseteq \Gamma$ . 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  $\Gamma$ .

Next, it can be demonstrated on the basis of coordination marking that the syntactic configuration may affect the morphological exponence a given head receives. Various languages show a dependence of morphological coordination marking to the narrow syntactic context (cf. Haspelmath, 2005). Thus, different conjunctions are employed for, e.g., VP and NP coordination. To illustrate, consider the data in (7), taken from Somali.

## (7) Somali

- a. rooti iyo khudrat  
    bread CONJ fruit  
    ‘bread and fruit’
- b. wuu cunay oo cabbay  
    FOC.3SG.MASC eat CONJ drink  
    ‘He ate and drank.’

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<sup>3</sup>For this formulation of Specificity see Halle (1997).

- c. macallin-ku wuxuu joogaa dugsi-ga, carruur-ta-na  
 teacher-ART FOC.3SG.MASC be school-ART children-ART-CONJ  
 waxay ku cayaarayaan dibed-da  
 FOC.3PL PREV play outside-ART  
 ‘The teacher is in the school, and the children are playing outside.’

[Berchem 1991, 324-327]

(7) demonstrates how the overt form of the conjunction may vary depending on the category of the conjoined elements: The coordination is *iyō* in a nominal environment (7-a), *oo* between two VPs (7-b), and *-na* if two clauses are coordinated as in (7-c). The same has also been observed for, e.g., the Oceanic language Xârâcùù (Moyses-Faurie and Lynch, 2004), Chamorro (Austronesian), Maori (Polynesian), and Yapese (Micronesian), and the Gur language Yapese (Haspelmath, 2007).<sup>4</sup>

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 (7) the syntactic head is the same; it is only the spell-out that varies.

Syntactically, I follow the dominant view in contemporary generative 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; Pyllkkänen, 2002, 2008). Severing the external argument from the verb yields a phrasal node that does not contain the subject (namely, *VP*). This in turn opens up the possibility of conjoining two subject-less constituents without violating the  $\theta$ -criterion or some such requirement.<sup>5</sup>

As for the semantic interpretation of agent-severed verb structures, I adopt the event-based approach developed by Kratzer (1996). Kratzer proposes that *v* (her *voice* head) and *VP* are combined semantically via *event identification* in (8).<sup>6</sup>

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<sup>4</sup>Also see example (63) from Fongbe.

<sup>5</sup>I will adopt here without discussion the view that the external argument, but not the internal argument, is severed from the verb. The analysis remains largely unaffected if, in addition, the internal argument is introduced by a functional head as well, as, e.g., in Borer (2005). See, however, Kratzer (2003) for arguments against severing patients from their verbs as well.

<sup>6</sup>Event identification has a broader domain of application than just to handle agent-introducing functional heads. It is also needed for adverbial modification and the like.

(8) *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  $v$  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*, which has the phrase structure in (9). The relevant steps of the semantic interpretation are given in (10).

(9) [<sub>VP</sub> Mary  $v$  [<sub>VP</sub> likes John ] ](10) *Semantic computation for (9):*<sup>7</sup>

a. Terminal nodes:

$$\begin{array}{ll}
 \llbracket \text{like} \rrbracket_{\langle e, \langle s, t \rangle \rangle} & = \lambda x_{\langle e \rangle} \lambda e_{\langle s \rangle}. \text{LIKE}(x)(e) \\
 \llbracket v \rrbracket_{\langle e, \langle s, t \rangle \rangle} & = \lambda x_{\langle e \rangle} \lambda e_{\langle s \rangle}. \text{AGENT}(x)(e) \\
 \llbracket \text{John} \rrbracket_{\langle e \rangle} & = \text{JOHN} \\
 \llbracket \text{Mary} \rrbracket_{\langle e \rangle} & = \text{MARY}
 \end{array}$$

b. Non-terminal nodes:

$$\begin{array}{ll}
 \llbracket \text{VP} \rrbracket_{\langle s, t \rangle} & = \llbracket \text{like} \rrbracket (\llbracket \text{John} \rrbracket) \\
 & \stackrel{\text{F.A.}}{=} \lambda e_{\langle s \rangle}. \text{LIKE}(\text{JOHN})(e) \\
 \llbracket \bar{v} \rrbracket_{\langle e, \langle s, t \rangle \rangle} & = \llbracket v \rrbracket \llbracket \text{VP} \rrbracket \\
 & \stackrel{\text{E.I.}}{=} \lambda x_{\langle e \rangle} \lambda e_{\langle s \rangle}. \text{LIKE}(\text{JOHN})(e) \wedge \text{AGENT}(x)(e) \\
 \llbracket v\text{P} \rrbracket_{\langle s, t \rangle} & = \llbracket \bar{v} \rrbracket (\llbracket \text{Mary} \rrbracket) \\
 & \stackrel{\text{F.A.}}{=} \lambda e_{\langle s \rangle}. \text{LIKE}(\text{JOHN})(e) \wedge \text{AGENT}(\text{MARY})(e)
 \end{array}$$

The  $v\text{P}$  denotation in (10) may be paraphrased as ‘the set of all events such that John is liked in this event and Mary is the agent of this event’.<sup>8</sup> Put differently, Mary is the agent of a ‘John-liking’ event. Thus, despite not being an argument of the verb *like*, by means of event identification one nevertheless achieves the desired interpretation that Mary is the one who likes John.

If a clause does not contain an agent (e.g. in the case of unaccusative verbs) I assume  $v$  nevertheless to be present, if only for syntactic reasons. Semantically, it is interpreted vacuously, i.e. as the identity function. I will term a  $v$  head that

<sup>7</sup>‘F.A.’ abbreviates functional application. ‘E.I.’ designates event identification.

<sup>8</sup>Following Kratzer (1996), I assume the event operator to be existentially bound higher up in the tree, presumably in the T domain. The closing-off of event variables will be irrelevant for what is to come and is hence neglected. See Kratzer (2003) for discussion.

introduces an agent argument as ‘complete’ ( $v_{\text{comp}}$ ) and refer to  $v$  that does not so as ‘defective’ ( $v_{\text{def}}$ ). It is of course expected that this distinction coincides with syntactic properties, such as the ability to assign accusative case (Burzio, 1986, 2000) or, maybe, phasehood (see Chomsky, 2000, 2001).

In sum, in this section I have laid out the theoretic background assumptions adopted here. First, morphology applies post-syntactically and in a realizational fashion; second, subjects are not arguments of the lexical verb but instead introduced by a functional head; and third, event-based semantic representations. Against this background, let us turn to the main proposal by examining two switch reference systems on the basis of which the present account will be developed.

### 3. Proposal

In this section I will lay out the main claims of this paper by investigating the SR systems of Amele and Seri, which are sufficiently different from each other to develop the system in some breadth and show how cross-linguistic variation can be accounted for.

#### 3.1. Amele

Amele is spoken in Papua New Guinea and has been documented in Roberts (1987, 1988, 1990, 2001). I will proceed by first laying out the empirical generalizations of the Amele SR system and then go on to develop an account for them.

##### 3.1.1. Empirical evidence

Amele exhibits a switch reference system in serial verb constructions. These constructions are made up of an arbitrarily long sequence of *medial* verbs, followed by one *final* verb. The medial verbs contain markers for  $\phi$ -agreement, the sequentiality or simultaneity of the depicted events and, most importantly, bear SR markers. 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  $\phi$ -agreement, mood, and tense/aspect. The morphological exponence of these features is complex and not relevant for present purposes. The reader is referred to Roberts (1990) for illustration and discussion. Roberts (1988) demonstrates convincingly that these serial verb constructions involve coordination as they clearly differ from subordinate clauses with respect to various syntactic diagnostics. This observation is at variance with an approach to

SR in terms of binding such as *Finer* (1984, 1985) since in coordination structures elements embedded in the conjoined constituents do not c-command elements of the other conjunct. If c-command is a necessary prerequisite for binding, as standardly assumed, binding configurations should not arise in coordinate constructions and an SR-system should not be possible, quite contrary to fact. I will follow *Roberts'* coordination analysis here.<sup>9</sup> A generalization that will prove crucial for the present account is that while in DS structures several subjects may appear, SS structures contain only one subject.

Examples for the Amele SR system are provided in (11) and (12).<sup>10</sup>

- (11) a. Ija hu-m-ig sab j-ig-a  
 1SG come-SS-1SG food eat-1SG-TOD.P  
 'I came and ate the food.'
- b. Ija ho-co-min sab ja-g-a  
 1SG come-DS-1SG food eat-2SG-TOD.P  
 'We came and you ate the food.' [Roberts 1988, 49]
- (12) a. Ho bu-busal-en dana age qo-in  
 pig SIM-run.out-3SG-DS man 3PL hit-3PL-REM.P  
 'As the pig ran out the men killed it.' (*realis*)
- b. Ho bu-busal-eb dana age qo-u-b  
 pig SIM-run.out-3SG-DS man 3PL hit-CONTR-3SG  
 'The men would have killed the pig as it ran out.' (*irrealis*)  
 [Roberts 1988, 55]

(11-a,b) are examples of SS/DS marking in sequential aspect, i.e. the activities depicted by the verbs take place consecutively. Notice that  $\phi$ -agreement is marked on both verbs, whereas only the final verb bears tense marking. (12-a,b), by contrast, are instances of SR marking in simultaneous aspect. Note here that the exponence of the DS marker is sensitive to the mood of the final verb. Thus, in (12-a) the DS marker takes the form *-en*, while in (12-b) the DS marker surfaces as *-eb*.

As mentioned above, SR marking in Amele is restricted to serial verb constructions. No SR marking takes place in subordinate clauses, as (13) attests. (13-a) exemplifies complement clauses, (13-b) illustrates relative clauses. Thus, subordination structures become ungrammatical as soon as an SR marker is attached to them, as in the respective examples in (ii).

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<sup>9</sup>A coordination structure is also argued for by *Comrie* (1983), *Haiman* (1983), and *Franklin* (1983) for various other SR languages.

<sup>10</sup>The following abbreviations are used: CONTR=contrafactual mood, Q=question marker, R=realis, REM.P=remote past, TOD.P=today's past, YEST.P=yesterday's past.

- (13) a. (i) Ija dana age ija na ho qo-ig-a d-ug-a  
 1SG man 3PL 1SG of pig hit-3SG-TOD.P know-1SG-TOD.P  
 ‘I know the men killed my pig.’  
 (ii) \*Ija dana age ija na ho qo-co-bil d-ug-a  
 1SG man 3PL 1SG of pig hit-DS-3PL know-1SG-TOD.P
- b. (i) Ho mel heje o-i-a eu ene nij-i-a  
 pig boy illicit take-3SG-TOD.P that here lie-3SG-TOD.P  
 ‘The pig that the boy stole is here.’  
 (ii) \*Ho mel heje o-co-b e ene nij-i-a  
 pig boy illicit take-DS-3SG that here lie-3SG-TOD.P  
 [Roberts 1988, 54]

Furthermore, SR marking must not co-occur with an overt coordination such as *qa* ‘but’ or *ca* ‘and’. (14) shows that the SR markers have to be absent if a coordination is employed. In other words, SR markers and coordinations are in complementary distribution. Notice incidentally that the use of a coordination yields tense marking on both verbs. Thus the asymmetry between medial and final verbs witnessed in SR marking structures disappears. Both tense specifications are in principle independent of each other as shown in (14-c).

- (14) a. Ho busale-i-a qa dana age qo-ig-a  
 pig run.out-3SG-TOD.P but man 3PL hit-3PL-TOD.P  
 ‘The pig ran out but the men killed it.’ [Roberts 1988, 55]
- b. \*Fred ho-co-b / ho-ho-b qa/ca uqa sab  
 Fred come-DS-3SG SIM.come-DS-3SG but/and 1SG food  
 j-igi-an  
 eat-3SG-FUT  
 [Roberts 1988, 58]
- c. Fred cum ho-i-an qa Bill uqadec  
 Fred yesterday come-3SG-YEST.P but Bill tomorrow  
 h-ugi-an  
 come-3SG-FUT  
 ‘Fred came yesterday but Bill will come tomorrow.’ [Roberts 1988, 52]

In all examples considered so far, DS marking correlates with a change of the subject. Conversely, SS marking implied two identical subjects. Upon closer investigation, this apparent connection breaks down to some extent. First, DS marking is in fact possible with identical subjects. Second, verb series that do not contain identical subjects nevertheless receive SS marking under certain conditions.

As for the first case, viz. ‘unexpected’ DS marking, clauses with two identical subjects may nevertheless optionally receive DS marking. These instances of DS marking implies a slightly different semantic interpretation than their SS coun-

terpart. As Roberts (1988, 60) states, DS marking in these cases entails “deictic changes [...] in the area of world, time, or place reference points” between the events of the two verbs. Native speakers indicate that “something has changed” or “a new situation”. The events referred to by the two verbs are thus interpreted as disconnected. This meaning is absent if SS marking is employed. In this case, the two events are tightly connected. If the subjects of the two verbs is identical, the choice of SS versus DS marking is optional, bringing about the observed semantic consequences.<sup>11</sup> Relevant examples for this usage of the DS marker are provided in (15).

- (15) a. Eu 1977 jagel November na odo-co-b cul-ig-en  
 that 1977 month November in do-DS-3SG leave-1PL-3SG-REM.P  
 ‘That was in November 1977 that he<sub>i</sub> did that and then he<sub>i</sub> left it for us.’
- b. Age ceta guldo-co-bil l-i bahim na tac-ein  
 3PL yam carry-DS-3PL go-(SS) floor on fill-3PL-REM.P  
 ‘They carried the yams on their shoulders and went and filled up the yam store.’
- c. Mike uqa car tuli-do-co-b jic tod-u b-i  
 Mike 3SG car start-3SG-DS-3SG road follow-(SS) come.up-(SS)  
 Sioba na jo cemenug ono uqa car heew-ce-b  
 Sioba of house near there 3SG car hold-DS-3SG  
 taw-en  
 stand-3SG-REM.P  
 ‘Mike started the car and then followed the road up to Sioba’s house and held the car as it stood there near the house.’ [Roberts 1988, 61]

All examples in (15-a-c) contain DS marking with coreferring subjects. Correspondingly, the two events are interpreted as disconnected in time or space.

Conversely, ‘unexpected’ SS marking, viz. in verb series without identical subjects, is attested as well. If one of the two conjuncts is a weather verb or an impersonal construction, SS marking is used. DS marking is available as well, though leading to a causative interpretation.

Consider first weather verbs. If one conjunct in an SR structure contains a weather verb, SS marking is used, despite the fact that the entire structure only contains one subject. See (16).

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<sup>11</sup>As Roberts (1988, 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.”

- (16) Ija co-cob-ig wa hedo-i-a  
 1SG SIM-walk-1SG.SS water finish-3SG-TOD.P  
 ‘As I walked along the rain stopped.’ [Stirling 1993, 87]

The second instance of unexpected SS marking are impersonal constructions. Syntactically, they consist of (i) an experiencer DP which triggers object agreement; (ii) certain nominals describing physical experiences,<sup>12</sup> 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 (17).

- (17) Ija wen t-ei-a  
 1SG hunger 1SG.DO-3SG.SUBJ-TOD.P  
 ‘I was hungry.’ [Roberts 2001, 201]

In (17), the verb shows 3SG subject agreement. The experiencer DP *ija* ‘1SG’ triggers object agreement. Thus, the experiencer is most plausibly analyzed as an internal argument, i.e. an argument of the verb, not *v*. An agent is simply not projected, hence the structure involves  $v_{\text{def}}$ . The default 3SG subject agreement is, I suppose, a pure last resort phenomenon, viz. default agreement in the absence of a suitable goal DP.<sup>13</sup> If an impersonal construction forms part of an SR-marked structure, SS is employed, as exemplified in (18).

- (18) a. Ege co-cob-ob wen g-en  
 1PL SIM-walk-1PL.SS.R hunger 1PL.DO-3SG.REM.P  
 ‘As we walked we became hungry.’ [Roberts 2001, 228]  
 b. Ija ta-taw-ig ija am-i wal-do-i-a  
 1SG SIM-stand-1SG.SS I eye-1SG spin-3SG-3SG-TOD.P  
 ‘As I stood my eye(s) spun (= I became dizzy).’ [Stirling 1993, 86]

In both (16) and (18) SS marking is non-canonical as these structures do not contain

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<sup>12</sup>Some of these nominals only occur in impersonal constructions and may not be used productively.

<sup>13</sup>The emerging structure is thus identical to passives or unaccusative verbs. In this respect it may be noteworthy that Amele has a ‘pseudo-passive’ construction Roberts (1987) with much the same properties. (i) gives an example.

- (i) Na qet-ade-i-a  
 tree cut-3PL-3SG-TOD.P  
 ‘The trees have been cut down; someone has cut down the trees.’ [Stirling 1993, 244]

two identical subjects, simply because one conjunct does not comprise a subject to begin with.

As always in Amele, one may replace the SS marker in (16) and (18) with the DS marker, leading to a semantic difference. If DS marking is employed with weather verbs or impersonal constructions, a causative reading is obligatory as (19) at-tests.<sup>14</sup>

- (19) a. ?Ija co-cob-igin wa hado-i-a  
 1SG SIM-walk-1SG.DS water finish-3SG-TOD.P  
 ‘As I walked along something made the rain stop.’ [Stirling 1993, 90]
- b. Ege co-cob-oqon wen g-en  
 1PL IM-walk-1PL.DS.R hunger 1PL.DO-3SG.REM.P  
 ‘As we walked something made us hungry.’ [Roberts 2001, 228]
- c. Ija ta-taw-igin ija am-i wal-do-i-a  
 1SG SIM-stand-1SG.DS I eye-1SG.POSS spin-3SG-3SG-TOD.P  
 ‘As I stood something caused my eye(s) to spin.’ [Stirling 1993, 89]

Having established the main empirical generalizations of SR marking in Amele, I will propose an analysis in terms of coordination.

### 3.1.2. *Analysis*

As the point of departure for analyzing the observations made above, I suggest we take the cases of ‘unexpected’ DS and SS marking, problematic for most previous treatments, as revealing about the nature of SR systems. Given that both DS and SS marking may occur in structures that have identical subjects and structure that have not, I contend that there is in fact no direct connection between SR marking and the reference relations between the subjects. As the presence of either marker entails nothing about the reference relations of the subjects, the most straightforward analysis is one that does not treat these items as reference tracking devices at all. Instead, I will argue that these elements are mere instantiations of a coordination head, which receive context-sensitive spellout depending on the category of the syntactic elements it has been merged with. As an initial piece of evidence for such an analysis, recall from (14) above that SR marking and overt coordinations stand in complementary distribution. This now follows without further ado. SR markers being realizations of a coordination head, they compete with other coordination markers such as *qa* ‘but’ for insertion into the same syntactic head. There

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<sup>14</sup>Causative interpretation of weather verbs such as (19-a) may be judged odd for pragmatic reasons but that has no bearing on the matter at hand.

can never exist more than one of these markers in a given coordination as there is only insertion place available.

At the outset, let us suppose that, unless otherwise stipulated, all verbal projections may be conjoined. This process is substantially restricted by the general requirement that the conjuncts have to have the same status (the so-called *Law of Coordination of Likes*; Williams 1978). Thus, the three possible coordination structures in (20) do occur.<sup>15,16</sup>

- (20) a.  $[\&P \text{ VP } [\frac{\_}{\&} \&^\circ \text{ VP } ] ]$   
 b.  $[\&P \text{ vP } [\frac{\_}{\&} \&^\circ \text{ vP } ] ]$   
 c.  $[\&P \text{ TP } [\frac{\_}{\&} \&^\circ \text{ TP } ] ]$

Of course, ‘&P’ is merely a convenient shorthand for a more complex label. As is widely known, conjunctions as a whole behave syntactically just as the conjoined elements do. Thus, the ‘&P’ in (20-a) counts as a VP for all syntactic respects and may therefore merge with *v*.

A simplified representation for the semantic interpretation of  $\&^\circ$  is given in (21).<sup>17</sup>

$$(21) \quad \llbracket \&^\circ \rrbracket_{\langle\langle s,t \rangle, \langle\langle s,t \rangle, \langle s,t \rangle \rangle\rangle} = \lambda P_{\langle s,t \rangle} \lambda Q_{\langle s,t \rangle} . P \wedge Q$$

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<sup>15</sup>I will presuppose here without discussion that coordination structures are asymmetric, with the first conjunct in the specifier position of the coordinator  $\&^\circ$  and the second conjunct in its complement position (cf. Munn, 1993; Kayne, 1994; Zoerner, 1995; Johannessen, 1998; Progovac, 1998*a,b*; de Vos, 2005). Alternative structures, including flat ones as proposed in, e.g., Jackendoff (1977) and Chomsky (1981), work equally well.

<sup>16</sup>For reasons of simplicity, I will ignore CP coordinations, although of course they may be attested as well. See footnote 20.

<sup>17</sup>While restricting the type of the conjuncts to  $\langle s,t \rangle$  is sufficient for present purposes it is clearly too restrictive to account for coordination in general. As a more elaborate definition consider, e.g., the one in (i), adapted from Partee and Rooth (1983, 363).

- (i) *Conjoinable type*  
 a. *t* is a conjoinable type  
 b. if  $\tau$  is a conjoinable type, then for all  $\sigma$ ,  $\langle \sigma, \tau \rangle$  is a conjoinable type.

With the definition in (i) in place and defining  $\sigma$  as a variable over all conjoinable types the semantics of coordination can be defined as in (ii).

$$(ii) \quad \llbracket \&^\circ \rrbracket_{\langle \sigma, \langle \sigma, \sigma \rangle \rangle} = \lambda P_{\langle \sigma \rangle} \lambda Q_{\langle \sigma \rangle} [P \wedge Q]$$

The definition in (ii) also captures nominal coordination if the type of the conjuncts is lifted to  $\langle\langle e,t \rangle, t \rangle$ , so that, e.g.,  $\llbracket \text{John} \rrbracket = \lambda P [P(\text{JOHN})]$ . Thus, *John and Mary* can be represented as  $[\lambda P(\text{JOHN}) \wedge \lambda Q(\text{MARY})]$ , which, by (22), is itself of type  $\langle e,t \rangle$ .

As for functional application of coordination structure, I assume the identity function in (22) (Krifka, 1990, 162).

- (22) If  $\alpha$ ,  $\alpha'$  are two expressions of type  $\langle\sigma,\tau\rangle$  which can be conjoined by Boolean conjunction  $\wedge$ , and if  $\beta$  is an expression of type  $\sigma$ , we have:  
 $[\alpha \wedge \alpha'](\beta) = \alpha(\beta) \wedge \alpha'(\beta)$ .

The denotation of the two  $v$  heads is given in (23).

- (23)  $\llbracket v_{\text{comp}} \rrbracket_{\langle e, \langle s, t \rangle \rangle} = \lambda x_{\langle e \rangle} \lambda e_{\langle s \rangle} \cdot \text{AGENT}(x)(e)$   
 $\llbracket v_{\text{def}} \rrbracket_{\langle \langle s, t \rangle, \langle s, t \rangle \rangle} = \lambda P_{\langle s, t \rangle} \cdot P$

On the morphological side, the specifications for the relevant markers are provided in (24).

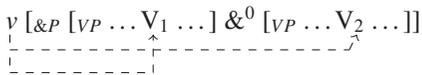
- (24) *Vocabulary items*  
 /DS/  $\leftrightarrow$  [ $\&^\circ$ ,  $vP_{\text{comp}} \_\_ vP_{\text{comp}}$ ]  
 /SS/  $\leftrightarrow$  [ $\&^\circ$ ]  
 /qa/  $\leftrightarrow$  [ $\&^\circ$ , TP  $\_\_$  TP]

The shorthands /SS/ and /DS/ in (24) abbreviate a complex cluster of phonological properties of the SS and DS marker. Depending on the context, these markers may be realized as segmental morphemes or reduplication. I will abstract away from these complications and work with the more convenient labels in (24) instead. All three vocabulary items in (24) are realizations of a coordination head. Two of them are further specified for the context of insertion. Thus, /DS/ may only be inserted into a  $\&^\circ$  head which has merged to two  $vP_{\text{comp}}$ , viz. which has one  $vP_{\text{comp}}$  in its complement position and one in its specifier. In the same vein, the coordination *qa* ‘but’ realizes  $\&^\circ$  if it conjoins two TPs. Finally, the alleged SS marker is underspecified with respect to the context of the coordination head. It constitutes the elsewhere marker.

With the semantics and morphology in place, let us turn to the syntactic specifications of the heads under considerations. I will presuppose that  $v$  contains  $\phi$ -probes that agree with the subject and the object. Tense and aspect information is located on T. As for spellout of  $v$ 's  $\phi$ -probes, suppose they are realized on V. Various technical possibilities proposed in the DM literature may be used to achieve this, *inter alia* morphological merger, local dislocation, lowering etc. (cf., e.g., Marantz, 1984, 1988; Halle and Marantz, 1993, 1994; Bobaljik, 1994; Embick and Noyer, 2001; Embick, 2007; Embick and Noyer, 2007). For the sake of concreteness, I will adopt a lowering analysis, according to which T, hosting the  $\phi$ -features, is merged with V post-syntactically (but before vocabulary insertion). This treatment, going back to Chomsky's (1957) mechanism of *affix hopping*, is extensively discussed and justified by Embick and Noyer (2001). As a consequence, in a simple

transitive clause  $\phi$ -agreement surfaces on V phonologically. In a VP coordination structure I suppose verbal agreement to be realized on both verbs, as depicted in (25). Notice that a mechanism largely equivalent to the one in (25) is independently necessary to account for the behavior of case percolation in coordinations. Thus, if a coordination of, e.g., two DPs occurs in object position then case is realized on both DPs separately rather than at the coordination phrase as a whole, as is evident in languages with overt case morphology. Whatever the precise characterization turns out to be, a process that percolates properties assigned to the &P as a whole down to the individual conjuncts is thus independently called for. I take the very same mechanism to be responsible for (25). Here as well a property assigned to &P as a whole percolates down to the heads of the two conjuncts. Only (25), percolating the agreement information down to *both* V's, conforms to the Law of Coordination of Likes.<sup>18</sup>

(25) *Phonological realization of verbal agreement*



The last point concerns the morphological placement of the coordination head. All else being equal, one would expect it to occur between the two clauses. Inspection of, e.g., (11) reveals that this is not correct: Rather than after the complex verb of the final clause, the marker shows up between the stem and the agreement affix. I will treat this phenomenon as a syntax-morphology mismatch, as familiar from work in Distributed Morphology. The *local dislocation* operation in (26), operating on a linearly adjacent exponents, inverts the order between the exponent spelling out the coordination head and the agreement marker (the reader is again referred to Embick and Noyer 2001 for discussion and justification).<sup>19</sup>

(26) *Local dislocation*

AGR \* SR → SR \* AGR

With these ingredients in place, consider first an instance of ‘canonical’ SS marking in (27) (= (11-a)), which I propose has the structure in (28). Under the present analysis, (27) constitutes an instance of VP coordination. Only one  $\nu$  projects,

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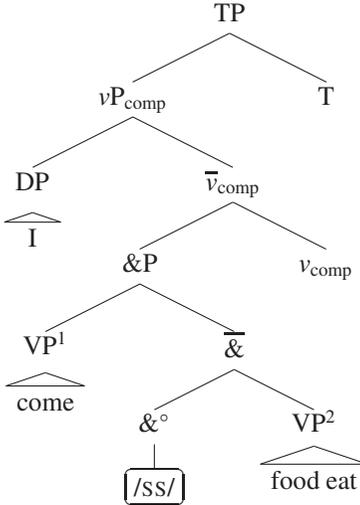
<sup>18</sup>An interesting prediction is made for cases where  $\phi$ -agreement is not realized on V, but rather on  $\nu$ . It should occur twice in DS structures but only once in SS structures. Such patterns are indeed attested in several languages. See section 4.3.

<sup>19</sup>The symbol ‘\*’ designates linear ordering.

hence the structure only contains one subject which is interpreted as the agent of both verbs.

- (27) Ija hu-m-ig sab j-ig-a  
 1 SG come-SS-1 SG food eat-1 SG-TOD.P  
 ‘I came and ate the food.’

- (28) *Analysis of (27)*



Since  $\&^\circ$  in (28) stands in a local relationship with two VPs, out of the vocabulary items in (24) only the elsewhere marker /SS/ fulfills condition (i) of the Subset Principle in (4) and, being trivially the most specific marker, is hence inserted. It surfaces as *-m* in (27). The semantic computation is provided in (29), including various intermediate steps for ease of exposition.

- (29) *Semantic interpretation of (28):*
- $$\begin{aligned}
 \llbracket \text{VP}^1 \rrbracket &= \lambda e. \text{COME}(e) \\
 \llbracket \text{VP}^2 \rrbracket &= \lambda e'. \text{EAT}(\text{FOOD})(e') \\
 \llbracket \&P \rrbracket &= [\lambda e. \text{COME}(e)] \wedge [\lambda e'. \text{EAT}(\text{FOOD})(e')] \\
 \llbracket \bar{v} \rrbracket &= \llbracket v_{\text{comp}} \rrbracket \llbracket \&P \rrbracket \\
 &\stackrel{\text{E.I.}}{=} \lambda x \lambda e''. \text{AGENT}(x)(e'') \wedge \\
 &\quad [\lambda e. \text{COME}(e) \wedge \lambda e'. \text{EAT}(\text{FOOD})(e')](e'') \\
 &\stackrel{(22)}{=} \lambda x \lambda e''. \text{AGENT}(x)(e'') \wedge \\
 &\quad [\lambda e. \text{COME}(e)](e'') \wedge [\lambda e'. \text{EAT}(\text{FOOD})(e')](e'') \\
 \llbracket \bar{v} \rrbracket &\stackrel{\text{F.A.}}{=} \lambda x \lambda e''. \text{AGENT}(x)(e'') \wedge \text{COME}(e'') \wedge \text{EAT}(\text{FOOD})(e'') \\
 \llbracket vP \rrbracket &= \lambda e''. \text{AGENT}(\text{I})(e'') \wedge \text{COME}(e'') \wedge \text{EAT}(\text{FOOD})(e'')
 \end{aligned}$$

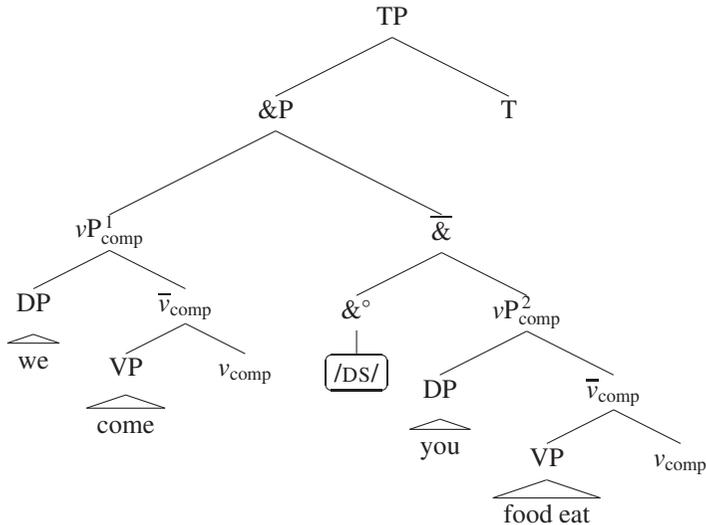
The final semantic representation asserts that there is a single event of both coming and eating, the agent of which is the speaker. It thus captures the fact that the speaker is interpreted as the agent of both verbs, as desired. It is important to note that the analysis of (27) does not involve coreference. Instead, there is only one subject to begin with, so no reference tracking takes place. Also notice that the appearance of the SS marker is only very loosely and indirectly tied to the specific interpretation of the clause. The semantic and morphological interface deal with the structure in (28) in their own way, insensitive to each other. The apparent connection between marking and interpretation only arises because certain structures bear certain markers and receive a certain interpretation.

As a second example, consider instances of ‘expected’ DS marking, viz. DS marking with disjoint subjects. An example is (11-b), repeated here as (30).

- (30) Ija ho-co-min sab ja-g-a  
 1SG come-DS-1SG food eat-2SG-TOD.P  
 ‘We came and you ate the food.’

As is evident, (30) contains two subjects, hence two  $v_{comp}$  have to be projected, conjoined by a coordination. The syntactic structure is given in (31).

- (31) *Analysis of (30)*



Of the three vocabulary items in (24), /DS/ and /SS/ fulfill requirement (i) of the Subset Principle. /DS/ is more specific than /SS/ and hence inserted into the coordination head. On the semantic side, interpretation proceeds as illustrated in (32).

(32) *Semantic interpretation of (31):*

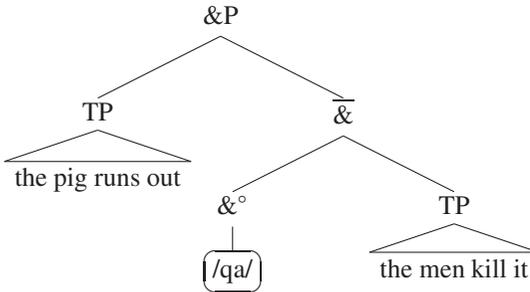
$$\begin{aligned} \llbracket vP^1 \rrbracket &= \lambda e. \text{AGENT}(\text{WE})(e) \wedge \text{COME}(e) \\ \llbracket vP^2 \rrbracket &= \lambda e'. \text{AGENT}(\text{YOU})(e') \wedge \text{EAT}(\text{FOOD})(e') \\ \llbracket \&P \rrbracket &= \lambda e [\text{AGENT}(\text{WE})(e) \wedge \text{COME}(e)] \wedge \\ &\quad \lambda e' [\text{AGENT}(\text{YOU})(e') \wedge \text{EAT}(\text{FOOD})(e')] \end{aligned}$$

&P thus denotes a conjunction of two separate events, each with its own agent. Again, there exists no direct link between the interpretation and the morphological marking a structure receives.

Let us now turn to an instance of TP coordination, as exemplified by (14-a), repeated below for convenience. The structure of (33) is given in (34).

(33) Ho busale-i-a                      qa dana age qo-ig-a  
 pig run.out-3SG-TOD.P but man 3PL hit-3PL-TOD.P  
 ‘The pig ran out but the men killed it.’

(34) *Syntactic structure of (33)*



In a conjunction of two TPs, /ss/ and /qa/ in (24) form a subset of the feature specification, hence /qa/ is inserted due to Specificity. As already hinted at above, this analysis immediately accounts for the observation that the alleged SR markers and coordinations in traditional terminology stand in complementary distribution. Both the SR markers as well as canonical coordinations compete for the same position, so that insertion of either one of them bleeds insertion of the others. Furthermore, treating (33) as TP coordination entails the existence of two T projections, each of which may be independently specified. This first accounts for the fact that tense morphology surfaces on both verbs, as apposed to SR structures, which involve only one T head and concomitantly mark tense only on the final verb. Second, the specifications of these T heads is independent of each other, deriving the possi-

bility of tense mismatches in TP coordination structures, as exemplified by (14-c) above.<sup>20</sup>

By denying the existence of any direct link between semantic properties such as reference relations and morphological exponence, the present systems straightforwardly extends to cases of so-called ‘unexpected’ SR marking. First, consider DS marking occurring with identical subjects. Examples of this pattern can be found in (15) above. (15-a) is repeated here as (35).

- (35) Eu 1977 jagel November na odo-co-b cul-ig-en  
 that 1977 month November in do-DS-3SG leave-1PL-3SG-REM.P  
 ‘That was in November 1977 that he<sub>i</sub> did that and then he<sub>i</sub> left it for us.’

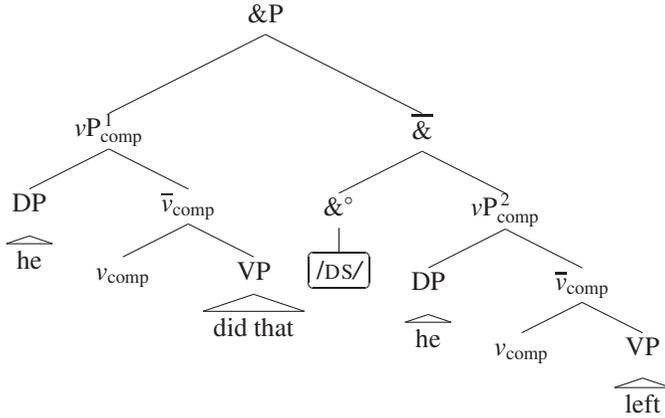
I propose that the structure of (35) is just that assigned to DS marking in general, i.e. *vP* coordination. The only relevant difference to (30) is that the two subjects happen to be interpreted as coreferential, with no binding or reference tracking involved. As evident from the structure in (36), there exist two subject pronouns that merely happen to be assigned the same referent. The semantic representation of the &P node is given in (37).

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<sup>20</sup>There is some indication that *qa* ‘but’ may also conjoin CPs as the two conjuncts may vary with respect to their clause type. The example in (i) involves an assertive and an interrogative conjunct. Under the assumption that clause type is a feature of C each conjunct has to contain a separate C projection.

- (i) Ho busale-i-a                    qa dana age qo-i-ga                    fo?  
 pig run.away-3SG-TOD.P but man 3PL hit-3PL-TOD.P Q  
 ‘The pig ran away but did the men kill it?’ [Roberts 1988, 52]

As this matter does not directly bear on the question of switch reference, I will neglect it here. Such a difference in clause type is not possible in SR structures, as expected under the present analysis.

(36) *Syntactic structure of (35)*

$$(37) \quad \llbracket \&P \rrbracket = \lambda e[\text{AGENT}(\text{HE})(e) \wedge \text{DO}(\text{THAT})(e)] \wedge \lambda e'[\text{AGENT}(\text{HE})(e') \wedge \text{LEAVE}(e')]$$

In (36), no referential dependency is established between both pronouns. Coreferentiality merely arises as the consequence of the variable assignment function, which maps both instances of *he* onto the same individual. It thus follows that coreference is not mandatory in these cases, i.e. disjoint reference remains an option. This is correct as we are dealing with DS structures here.

A comparison of the semantics of  $vP$  coordination structures with two coreferent subjects, such as (36), and instances of VP coordination reveals that there is a subtle difference with respect to the distribution and scope of the event variables. They are not logically equivalent. To see this, compare VP coordination (with concomitant SS marking) in (38-a) and  $vP$  coordination with identical subjects in (38-b).

- (38) a. *Semantics for VP coordination (e.g., (29)):*  
 $\llbracket vP \rrbracket = \lambda e[\text{AGENT}(\alpha)(e) \wedge \llbracket VP \rrbracket(e) \wedge \llbracket VP \rrbracket(e)]$
- b. *Semantics for  $vP$  coordination with coreferent subjects (e.g., (37)):*  
 $\llbracket \&P \rrbracket = [\lambda e[\text{AGENT}(\alpha)(e) \wedge \llbracket VP \rrbracket(e)] \wedge \lambda e'[\text{AGENT}(\alpha)(e') \wedge \llbracket VP \rrbracket(e')]]$

The first difference between (38-a) and (38-b) is that in (38-a) the whole structure contains only one agent, while there are two agents in (38-b), which merely happen to be coreferent. Secondly, (38-a) only contains one event variable  $e$ . (38-b), by contrast, comprises two event variables,  $e$  and  $e'$ . Thus, low (=VP) coordination entails event unification in the sense that both verbs hold of a *single* event. In high (=vP) coordination structures each verb ranges over a separate event. This consequence of the system follows from a fundamental asymmetry between the semantics of  $v$  and  $\&^o$ .  $v$  is combined with VP by means of event identification (8).

As a result, there is only one event that holds of all the subparts of both  $v$  and VP because a single event variable is applied to  $\llbracket v \rrbracket$  and  $\llbracket VP \rrbracket$ . If  $\llbracket v \rrbracket$  and  $\llbracket VP \rrbracket$  contain distinct unbound event variables, they are unified at the  $\bar{v}$  level. In other words, event identification, and therefore  $v$ , leads to event unification in the sense above.  $\&^\circ$ , on the other hand, has no such property. As defined in (21), it does not yield event identification as there is no event variable ranging over both conjuncts. Thus, event distinctions between both conjuncts are preserved at the &P level. From this asymmetry between  $v$  and  $\&^\circ$  it follows that VP coordination plus subsequent event identification (via  $v$ )—as in (38-a)—yields a single event ranging over both VPs. If two vPs are coordinated, on the other hand, event identification takes place below the conjunction. There is hence no event variable ranging over the two conjuncts. Consequently, both verbs designate distinct events—as in (38-b). In sum, the differences between (38-a) and (38-b) follow directly from their structural differences that I am proposing is also responsible for the disinction between DS and SS marking.

The semantic difference between high and low coordination in (38) immediately accounts for the native speakers' judgment regarding the relation between genuine SS structures and DS structures with coreferring subjects. As noted above, SS marking yields a tight connection between both verbs. If DS marking is employed, both activities are instead interpreted as disconnected and partly unrelated. Under the present analysis, this follows as a direct consequence of the semantic asymmetry between  $\&^\circ$  and  $v$  along the lines suggested above. In the case of SS marking, VP coordination is employed. By the above reasoning, this yields a single event representation: Both verbs describe the same event, hence the two activities are tightly connected (38-a). DS marking, by contrast, involves vP coordination, resulting in a two event interpretation: Both verbs designate separate events, hence are interpreted as disconnected (38-b). Thus, the syntactic difference between both structures yields scopal relations that are empirically corroborated.

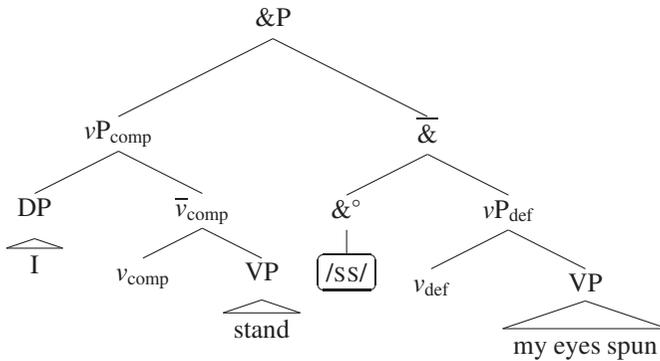
At this point, the natural question arises as to whether the denotation of  $\&^\circ$  may be subject to cross-linguistic variation. If this is the case, then some languages might interpret  $\&^\circ$  as involving event unification. In such languages, VP coordination and vP coordination with coreferent subjects would emerge as semantically identical. In the next section on Seri, I will argue that such languages are indeed attested. Specifically, I will argue that the semantic identity between these two structures leads to pragmatic blocking of one of them.

In sum, under the present approach, so-called 'unexpected' DS marking emerges as an entirely regular instance of the Amele switch reference system. As nothing excludes structures with high coordination and accidentally coreferring subjects, they could only be blocked by additional assumptions. This conclusion has of course only been reached because the present analysis separates DS marking from reference relations.

The last structure to be discussed for Amele is ‘unexpected’ SS marking. As exemplified by (16) and (18), SS marking is possible in the absence of coreferring subjects if one of the two conjuncts is a weather verb or an impersonal construction. As both do not involve agent arguments, I treat them as involving a projection of defective *v*. Consider the analysis of (18-b) (= (39)) in (40).<sup>21</sup>

- (39) Ija ta-taw-ig ija am-i wal-do-i-a  
 1SG SIM-stand-1SG.SS I eye-1SG spin-3SG-3SG-TOD.P  
 ‘As I stood my eye(s) spun (= I became dizzy).’

- (40) *Syntactic structure of (39)*



Only the elsewhere marker  $/SS/$  fulfills the Subset Principle for  $\&^{\circ}$  as  $/DS/$  requires the existence of two  $vP_{comp}$ . Consequently, the SS marker realizes high coordination involving impersonal constructions and weather verbs. The semantic representation is given in (41).

- (41)  $[[\&P]] = \lambda e[\text{AGENT}(I)(e) \wedge \text{STAND}(e)] \wedge \lambda e'[\text{SPIN}(\text{MY EYES})(e')]$

Notice that the DS marker is blocked in (40) only because one of the two  $vPs$  is defective. Thus, if an impersonal construction or a weather verb could be made to combine with  $vP_{comp}$ , thus involving an agent, DS marking should ensue. As it turns out, causative constructions involve exactly the correct properties. Following Pykkänen (2002, 2008), I assume that causative heads introduce a causing event, which may then receive an agent modification by projecting  $v_{comp}$ . As (19) above shows, a causative reading of the impersonal or weather verb construction leads

<sup>21</sup>Notice that *ija* ‘1SG’ does not control subject agreement on the second verb (in fact, no agreement at all) but possessive agreement on *am* ‘eye’. It is thus fairly clear that it is not the subject of the clause and hence irrelevant for all present purposes. It thus stands in stark contrast to the first *ija*, which behaves just as is expected for a subject.

to DS marking. As causatives involve a causer argument and therefore  $v_{\text{comp}}$ , this observation follows from the system proposed here, providing further support for it.

### 3.1.3. Summary

In this section I have laid out my main proposal on the basis of the Amele switch reference systems. As I have shown, the system captures a wide range of empirical observations and accounts for ‘expected’ and ‘unexpected’ SR patterns alike. Since the proposal dispenses with a direct link between morphological exponence and semantic interpretation, from the present perspective all these patterns are equally ‘expected’. As nothing prohibits generating identical subjects in both  $v$ Ps, ‘unexpected’ SR marking follows as the normal state of affairs. ‘Unexpected’ SS marking, on the other hand, is derived by the fact that the SS marker is the elsewhere marker, showing up whenever other markers are barred from insertion. A welcome side effect of the present analysis is that it provides us with an account for why there is only one subject in SS structures: Involving low coordination, there is only one subject projected.

## 3.2. Seri

Having developed an account for SR marking in Amele, I will now turn to the SR system in Seri, a language isolate spoken in Mexico (Moser, 1978; Marlett, 1981, 1984; Farrell et al., 1991). The Seri SR system differs from the generalizations reached for Amele in an interesting way. I will show how the proposed analysis can be extended to cover the Seri facts as well. Doing so will illustrate how the present analysis might cope with cross-linguistic variation. In a nutshell, I will argue that there exist two loci of parametric variation. First, the coordination head may receive a different semantic interpretation, and second, the precise morpho-syntactic specification of the vocabulary items that realize coordination heads are idiosyncraic and therefore subject to cross-linguistic variation. Thus, by allowing for slight variations on the semantic and morphological interfaces the theory proposed here attains enough flexibility to capture quite some range of cross-linguistic differences.

3.2.1. *Empirical evidence*

In Seri, DS is marked by *ta* in realis mood and *ma* in the irrealis. SS marking, on the other hand, is indicated as the absence of any overt marker. See (42) for illustrating examples.<sup>22</sup>

- (42) a. mi-nail kom m-po-k-i:xk (\*ta)-X ?ata:p  
 2POSS-skin the 2SG.SUBJ-IR-AUG-wet DS-UT mucus  
 ko-m-si-a: ?a=?a  
 3OBL-2SG.SUBJ-IR-be AUX=DECL  
 ‘If you wet your skin, you will get a cold.’
- b. ?im-t-kašni \*(ma) ?p-yo-o:?a  
 1SG.OBJ-R-bite DS 1SG.SUBJ-DI-cry  
 ‘Since it bit me, I cried.’ [Farrell et al. 1991, 434]

As (42-a) shows, if the two agents are identical, SS marking has to be used, i.e. DS marking is ungrammatical. This contrasts with Amele where, as we have seen in the previous section, such ‘unexpected’ DS marking is possible. If, on the other hand, the two subjects are disjoint, DS marking has to be used, as in (42-b). Thus, the Seri SR system differs from Amele in that the DS marker only appears if the two subjects are indeed disjoint in reference.

Seri is similar to Amele in that subordination structures may not be marked for SR. Furthermore, if one of the two clauses is passive or unaccusative (i.e. involving  $v_{\text{def}}$  in the present analysis), DS marking is used, as illustrated in (43). Notice that this requirement for DS marking holds independently of actual reference relations. Thus, in (43-a) DS marking has to be used in spite of the fact that the derived subject of the passive clause and the subject of the second clause are identical, adding further support for severing SR marking from reference relations.

- (43) a. ?p-po-a:?-kašni \*(ta)-X ?p-si-o:?a ?a=?a  
 1SG.SUBJ-IR-PASS-bite DS-UT 1SG.SUBJ-IR-cry AUX=DECL  
 ‘If I am bitten, I will cry.’ [Farrell et al. 1991, 434]
- b. t-om-meke ma ?-yo-m-asi  
 RL-NEG-warm DS 1SG.SUBJ-DIST-NEG-drink  
 ‘Since it wasn’t warm, I didn’t drink it.’ [Marlett 1981, 195]
- c. t-ápka ma i?p-y-íim  
 DEP.PAST-rain DS 1SG.SUBJ-PAST-sleep

<sup>22</sup>The following abbreviations are used in the Seri data: DEP.PAST=dependent past, DI=distal realis mood/tense, IR=irrealis mood/tense, OBL=oblique, R=realis mood/tense, US=unspecified subject, UT=unspecified time.

‘When it rained, I slept.’

[Moser 1978, 116]

(43) establishes that DS marking is obligatory if one of the two conjuncts involves  $v_{def}$ . This differs from Amele, where SS marking is necessary in this case. Compare the weather verb construction in Amele (16) and Seri (43-c). If both conjuncts are passivized or unaccusative (hence if both conjuncts involve  $v_{def}$ ), SS marking has to be used instead, as illustrated by (44). Again, SS marking appears regardless of the reference relations between the elements of the two clauses. To take an example, in (44-b) the derived subjects are  $?a:t$  ‘limberbush’ and  $?e:poł$  ‘ratany’, obviously not coreferential. Despite the lack of coreference in (44-b), SS marking is obligatory.

- (44) a.  $ta:\zeta$  po-p-asi  $?ak\zeta$  s-ka-mi:? $?a-?a$   
 3PRO IR-PASS-drink somewhere IR-US-not.exist AUX-DECL  
 ‘If that is drunk, one will die.’ [Marlett 1981, 196]
- b.  $?a:t$  ki? p-a:? $?-ka:$  (\*ta)-X  $?e:poł$  ki? mos  
 limberbush the IR-PASS-look.for DS-UT ratany the also  
 $si-a:?\text{-}ka:$   $?a=?a$   
 IR-PASS-look.for AUX=DECL  
 ‘If limberbush is looked for, white ratany should also be looked for.’  
 [Farrell et al. 1991, 434]

The last empirical generalization to be made is that, as in Amele, SR marking stands in complementary distribution with conventional coordination marking. Thus, although the sentences in (45) clearly involve distinct subjects, the presence of the coordination *Xo* ‘but’ prohibits DS marking. I contend that this identical pattern found in Amele and Seri is hardly coincidental. As discussed above, deriving it becomes straightforward if SR markers *are* coordinations.

- (45) a. [yoo-fp] Xo [ $?-yo-m-a??o$ ]  
 PAST-arrive but 1SUBJ-PAST=NEG-see  
 ‘He arrived, but I didn’t see him.’
- b. [pak  $?aXXox$  im-askam-i? $?a$ ] Xo [pak  $?aXXox$   
 some shore NEG-enter-PL-TM but some shore  
 k-askam-i? $?a$ ]  
 NOM-enter-PL-TM  
 ‘Some didn’t come to the shore, but others did come to the shore.’  
 [Finer 1985, 39]

In sum, the Seri SR systems differs from Amele in several respects. First, DS marking is impossible with identical subjects. Second, if one of the two clauses invokes  $v_{def}$ , DS marking is employed. Third, DS marking is replaced by SS marking if

both clauses involve defective  $v$  heads. With respect to other properties, on the other hand, the Seri facts are consistent with Amele: SR marking does not occur in subordination structures, SR marking stand in complementary distribution with conventional coordinations, and, most notably, as soon as the whole set of environments that trigger DS or SS marking is taken into account, there does not seem to exist any clear implicational relation between morphological marking and reference relations.

### 3.2.2. Analysis

The previous section has established that SR system in Seri shows a number of properties not found in Amele. This section aims at demonstrating how the main threads of the analysis developed for Amele can be carried over to Seri. I propose that the observed differences reduce to interface properties, i.e. the way that semantics and morphology deal with a given syntactic structure.

To anticipate the conclusion, I propose that Seri differs from Amele in just two respects: Firstly, the specification of the vocabulary items is slightly different, and secondly, the interpretation of the coordination head contains an additional event variable ranging over both conjuncts.

Consider first the vocabulary specification in (46). The only relevant difference to the set of markers assumed for Amele in (24) above is that /DS/ has a broader distribution. It not restricted to combinations of two non-defective  $v$ 's but rather may show up between just any type of  $v$ Ps.

- (46) *Vocabulary items*  
 /DS/  $\leftrightarrow$  [ $\&^\circ$ ,  $vP$ \_\_ $vP$ ]  
 /SS/  $\leftrightarrow$  [ $\&^\circ$ ]  
 /Xo/  $\leftrightarrow$  [ $\&^\circ$ , TP\_\_TP]

On the semantic side of the system I suggest that Seri differs slightly from Amele in assigning the coordination head the denotation in (47).

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

In (47) the event variable within the conjuncts  $P$  and  $Q$  are existentially closed off. The *sum* and *join* of these two events (written as  $e' \oplus e''$ ) then forms the event  $e$  which is the only open event variable at the  $\&P$  level.<sup>23</sup> Technical details apart, the crucial difference between the Amele denotation for  $\&^\circ$  given in (21) and the Seri

<sup>23</sup>For general discussion of the *sum* operator ' $\oplus$ ', see Link (1983), Bach (1986), and Krifka (1990).

one in (47) is that in Amele there are two unbound event variables at the &P level, whereas in Seri there is only one. Recall from the discussion on page 128 that the Amele constellation led to a systematic scopal difference between VP and  $\nu$ P coordination. Because of the different denotation in (47) no such scopal difference arises in Seri. I will argue that this property of the Seri system leads to the absence of ‘unexpected’ DS marking.

To illustrate how this systems deals with certain coordination structures consider first VP coordination, as exemplified by (42-a), repeated as (48) below.<sup>24</sup>

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

The relevant syntactic structure for (48) is (49).

- (49) [ $\nu$ P you  $\nu$  [ $\&$ P VP<sup>1</sup> &<sup>o</sup> VP<sup>2</sup> ] ]

As only /SS/ fulfills the Subset Principle in (49), it is inserted morphologically. Semantic interpretation proceeds straightforwardly. The denotations of  $\nu$ P and &P are given in (49).

- (50)  $[[\&P]] = \lambda e \exists e', e''. e = e' \oplus e'' \wedge [[VP^1]](e') \wedge [[VP^2]](e'')$   
 $[[\nu P]] = \lambda e [AGENT(YOU)(e) \wedge \exists e', e'' [e = e' \oplus e'' \wedge [[VP^1]](e') \wedge [[VP^2]](e'')]]$

(50) asserts that there is an event  $e$  consisting of two subevents  $e'$  and  $e''$  such that the hearer is the agent of  $e$  and the two VPs denote the respective subevents  $e'$  and  $e''$ .<sup>25</sup>

As a second example consider  $\nu$ P coordination, as exemplified by (42-b) (=51). The structure is sketched in (52).

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<sup>24</sup>As in Amele, VP coordination structures in Seri involve verbal marking for morpho-syntactic features that are most plausibly situated on a higher functional head. I will adopt the analysis advanced for Amele in (25), namely that spell-out of these features takes place on a lower head and percolates down to both conjuncts.

<sup>25</sup>Of course, (50) is not an adequate semantic form of (48) for the simple reason that (48) involves an implication. A more faithful rendering would replace the last ‘ $\wedge$ ’ with ‘ $\rightarrow$ ’. This seems unproblematic under present assumptions as the head &<sup>o</sup> takes the two VP propositions as arguments and may therefore define several distinct semantic relations between them, one of which is entailment. See section 4.2 for discussion.

(51) *ʔim-t-kašni* \**(ma)* *ʔp-yo-o:ʔa*  
 1SG.OBJ-R-bite DS 1SG.SUBJ-DI-cry  
 ‘Since it bit me, I cried.’

(52) [ &P [ <sub>vP<sup>1</sup></sub><sub>comp</sub> *it bit me* ] &° [ <sub>vP<sup>2</sup></sub><sub>comp</sub> *I cried* ] ]

(52) involves two complete vPs with disjoint subjects. The most specific marker fulfilling the Subset Principle is /DS/, which is hence inserted. The final semantic representation is as in (53).

(53) [ &P ] =  $\lambda e \exists e', e'' . e = e' \oplus e'' \wedge \text{AGENT}(\text{IT})(e') \wedge \text{BITE}(\text{ME})(e') \wedge$   
 $\text{AGENT}(\text{I})(e'') \wedge \text{CRY}(e'')$

(53) states that there is an event consisting of two subevents, the agents of which are disjoint. In principle, nothing prevents the two agents from being coreferential. This constellation would yield DS marking with coreferent subjects, as observed in Amele. In Seri, however, this possibility is not attested (see (42-a)). Thus, there exists a systematic difference between Amele and Seri which so far does not yet fall out of the system.

In order to develop an account for the unavailability of DS marking with (accidentally) coreferring subjects in Seri compare the semantic representation for low coordination in (54-a) and for high coordination with two identical subjects in (54-b).

- (54) a. *Semantics for VP coordination (e.g., (48)):*  
 $\llbracket \text{VP} \rrbracket = \lambda e [\text{AGENT}(\alpha)(e) \wedge \exists e', e'' [e = e' \oplus e'' \wedge \llbracket \text{VP} \rrbracket(e') \wedge \llbracket \text{VP} \rrbracket(e'')]]$
- b. *Semantics for vP coordination with two coreferent subjects (not attested):*  
 $\llbracket \&P \rrbracket = \lambda e \exists e', e'' [e = e' \oplus e'' \wedge \text{AGENT}(\alpha)(e') \wedge \llbracket \text{VP} \rrbracket(e') \wedge$   
 $\text{AGENT}(\alpha)(e'') \wedge \llbracket \text{VP} \rrbracket(e'')]$

According to (54-a) there is an event  $e$  with an agent  $\alpha$  consisting of two subevents  $e'$  and  $e''$ . (54-b), by contrast, asserts an event comprising two subevents whose agents happen to be  $\alpha$ . As for their truth conditions, (54-a) and (54-b) are identical. In order to deduce this result I take it for granted that the agent relation is *cumulative* (see Kratzer 2003 for argumentation).<sup>26</sup> A relation  $R$  is cumulative if the fact that  $R$  holds of an entity  $x$  at event  $e$  and of an entity  $y$  at event  $e'$  entails that  $R$  holds of the *sum* of  $x$  and  $y$  at the *sum* event of  $e$  and  $e'$ . This is defined more precisely in (55).

<sup>26</sup>On the notion of cumulativity see Krifka (1992, 1998).

(55) *Cumulativity* (Kratzer, 2003)

$$\lambda R_{(e,(s,t))} \forall e \forall e' \forall x \forall y [[R(x)(e) \wedge R(y)(e')] \rightarrow R(x \oplus y)(e \oplus e')]$$

As Kratzer (2003) argued, the AGENT relation fulfills the cumulativity requirement (55). We therefore can derive (54-a) from (54-b) along the following lines. By (54-b), we know that  $\text{AGENT}(\alpha)(e') \wedge \text{AGENT}(\alpha)(e'')$ . By (55), this entails  $\text{AGENT}(\alpha \oplus \alpha)(e' \oplus e'')$ . The join operator is idempotent, hence  $\alpha \oplus \alpha = \alpha$ . Furthermore, by (54-b) we know that  $e = e' \oplus e''$ . Thus, we infer  $\text{AGENT}(\alpha)(e)$ , thereby arriving at (54-a) (since ‘ $\wedge$ ’ is associative, rebracketing is straightforward). We have thus shown that high coordination with identical subjects is semantically equivalent to low coordination in the sense that the former entails the latter. Put differently, any  $\nu\text{P}$  coordination structure with coreferring subjects may be semantically equivalently expressed via VP conjunction. The only relevant difference between the two is that in (54-b) the agent identity is accidental whereas in (54-a) it is systematic.

Based on this insight, we can now account for the ungrammaticality of  $\nu\text{P}$  coordination with coreferring subjects by adopting the reasoning initially put forward by Reinhart (1983a,b) and proposing that it is just the semantic equivalence between (54-a) and (54-b) that blocks (54-b). Reinhart (1983a,b) argues that the impossibility of a bound reading of a pronoun in cases standardly falling under Principle B of Chomsky (1981) does in fact not follow from some principle of narrow syntax or semantics. Rather, it is the mere possibility of having a bound element (i.e. an anaphora) in this position with an indistinguishable semantic representation. Thus, if a referential dependency can be systematically coded by an anaphor, it has to be. If a pronoun is used instead then the two positions are interpreted as involving disjoint reference.<sup>27</sup>

This reasoning carries over to the relation between (54-a) and (54-b). Here as well, two structures yield identical semantic representations. (54-a) codes agent identity in a systematic way, while in (54-b) agent identity merely follows accidentally. By parity of reasoning, the former structure blocks the latter if they are semantically equivalent. This is the case in (55). Therefore, the logic of Reinhart’s approach carries over to these cases as well and provides us with an account for why Seri does not allow ‘unexpected’ DS marking in the way Amele does. Since  $\nu\text{P}$  coordination leads to a disjoint agent interpretation, (42-a), involving referential identity, has to be analyzed as VP coordination and therefore may only receive SS marking. This disjoint reference effect in  $\nu\text{P}$  coordinations is however not hard-wired in the

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<sup>27</sup>For additional discussion see, e.g., Grodzinsky and Reinhart (1993) and Heim (1993).

narrow grammatical component. It is hence not necessary, in fact impossible, to render the alleged SR markers sensitive to coreference relations.<sup>28</sup>

The upshot of this argumentation is that accidental referential identity is blocked if it can be brought about systematically in a semantically equivalent form. This holds for Seri by the reasoning above. The requirement of semantic equivalence is, however, not met in Amele as here the denotation of (21) does not involve sum formation. Hence, as argued on page 128, VP coordination leads to event unification and the existence of only one event variable at the  $\nu$ P level.  $\nu$ P coordination, by contrast, gives rise to a representation comprising two in principle unrelated event variables, each holding of one VP. Hence, the two coordination sites do not yield semantic equivalence. It is this semantic distinctness that prevents blocking of either structure by the other.

Having implemented ‘canonical’ SS and DS marking as well the non-existence of ‘unexpected’ DS marking let us finally turn to the impact of defective  $\nu$  heads on coordination marking. The first relevant case is a combination of one defective and one non-defective  $\nu$ P. An example of this pattern in (43-a), repeated here as (56). DS marking has to be employed, regardless of coreference relations.<sup>29</sup>

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<sup>28</sup>A related line of reasoning is to trace the preference for low coordination back to its lower structural complexity. Low coordination makes use of only one  $\nu$  head while high coordination employs two such heads. If both structures yield equivalent interpretations one might take the simpler one to block the more complex one. As an approximation consider *Input Optimization* in Optimality Theory. The following definition is adapted from Prince and Smolensky (1993/2004, 225f.).

(i) *Input Optimization*

Suppose that several different inputs  $I_1, I_2, \dots, I_n$  when parsed by a grammar  $G$  lead to corresponding outputs  $O_1, O_2, \dots, O_n$ , all of which are realized as the same semantic form  $\Lambda$  – these inputs are all *semantically equivalent* with respect to  $G$ . Now one of these outputs must be the most harmonic, by virtue of incurring the least significant violation marks: suppose this optimal one is labelled  $O_k$ . Then the learner should choose, as the underlying form for  $\Lambda$ , the input  $I_k$ .

While Prince and Smolensky (1993/2004) formulate (i) as referring to phonological instead of semantic equivalence they nevertheless suggest that input optimization may also block overly complex syntactic structures. Another similar proposal, at least in spirit, is Chomsky (1981) *Avoid Pronoun*.

<sup>29</sup>In fact, matters are slightly more complex. As noted by Farrell et al. (1991), SS marking may actually appear if the subject of the unergative is interpreted as arbitrary in reference. Compare (56) to (i).

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

The contrast between (56) and (i) at first glance gives the impression that subject reference after all does play a role in determining switch reference marking, in contrast to the core of the present analysis.

- (56)  $\text{?p-po-a: ?-kašni} \quad *(\text{ta-X} \quad \text{?p-si-o: ?a} \quad \text{?a=?a}$   
 1SG.SUBJ-IR-PASS-bite DS-UT 1SG.SUBJ-IR-cry AUX=DECL  
 ‘If I am bitten, I will cry.’

The relevant syntactic structure for (56) is (57). As  $\&^\circ$  stands in the immediate environment of two vPs, it is realized by the DS marker.

- (57)  $[\&P [\text{vP } \text{v}_{\text{def}} [\text{VP } \text{bite } I ] ] ] \&^\circ [\text{vP } I \text{ v}_{\text{comp}} [\text{VP } \text{cry} ] ] ]$

Coordination of two structures that can be analyzed as invoking  $\text{v}_{\text{def}}$  entails the usage of the SS marker, as exemplified by (44-b)=(58).

- (58)  $\text{?a:t} \quad \text{ki ? p-a: ?-ka:} \quad (*\text{ta-X} \quad \text{?e:po! ki ? mos}$   
 limberbush the IR-PASS-look.for DS-UT ratany the also  
 $\text{si-a: ?-ka:} \quad \text{?a=?a}$   
 IR-PASS-look.for AUX=DECL  
 ‘If limberbush is looked for, white ratany should also be looked for.’

If both conjuncts do not project an agent argument then VP coordination is possible as depicted in (59). Only /SS/ is attachable here.

- (59)  $[\text{vP } \text{v}_{\text{def}} [\&P \text{ VP } \&^\circ \text{ VP } ] ]$

A question that remains to be answered is whether in constructions involving two agentless conjuncts such as (58) DS marking is possible as well. Recall that the implementation of Reinhart’s approach makes crucial use of coreference, i.e. accidental coreference is blocked if the same reading can be brought about systematically. Obviously, this reasoning does not immediately extend to cases such as (58) for the simple reason that there are no agents to which the principle could apply. Put differently, a general principle restricting reference relations does not apply to cases where there are no reference relations at all. Thus, all else being equal, the pragmatic reasoning above should not block high coordination of two defec-

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Closer inspection reveals, however, that (i) finds a principled explanation under the assumption that the arbitrary reference effect in the second clause follows because there is no agent projected to begin with. Under this account, (i) instantiates a conjunction of two VPs, followed by a single  $\text{v}_{\text{def}}$  (see below). Semantic calculation reveals the representation in (ii):

- (ii)  $\lambda e \exists e' \exists e'' [e = e' \oplus e'' \wedge \text{EAT}(\text{IT})(e') \wedge \text{CRY}(e'')]$

(ii) contains an event of crying, which is not associated with an agent. The arbitrary reference effect is then simply a consequence of world knowledge, much in the same way as a crying event also entails a point in time and space. None of this is however represented in the syntactic or semantic structure.

tive *v*Ps, detectable by DS marking.<sup>30</sup> There is indeed some indication that this is correct, as (60)—combining an unaccusative and a passivized verb—attests. Notice incidentally that DS marking is employed although the two subjects are clearly coreferent. The structure for (60) is given in (61).

(60) *ʔap kiʔ t-oʒi ma yo-p-aʔit*  
 deer the RL-die DS DIST-PASS-eat  
 ‘Whenever a deer died, it was eaten.’ [Marlett 1981, 196]

(61) [ &P [<sub>v</sub>P *v*<sub>def</sub> VP ] &° [<sub>v</sub>P *v*<sub>def</sub> VP ] ]

### 3.2.3. *Summary*

In this section I have laid out an analysis of the SR marking in Seri. Seri differs from Amele in several respects. First, if two subjects are coreferent, SS marking is obligatory. Second, a combination of a complete *v* and a defective *v* leads to DS marking. I have argued that these properties result from slight variations in the way the interfaces deal with a given syntactic structure. The first locus of parametrization lies in the morpho-syntactic specification of vocabulary items. The second difference between both systems is whether coordination semantically involves the application of a join operation, thereby leading to event unification. If it does, as in Seri, low and high coordination with identical subjects result in equivalent semantic representations. By familiar reasoning put forward in independent contexts, low coordination then blocks high coordination.

### 3.3. *Interim summary*

I have developed the core of the present analysis, according to which the descriptive notion of switch reference is not mirrored theoretically in any relevant sense. Despite appearance, SR marking does not involve reference tracking. Under the perspective adopted here, the whole phenomenon is a mirage, boiling down to morphology and semantics applying independently to a certain structure but essentially blind to each other. The main thrust of the argument comes from ‘unexpected’ SR marking. These cases are ‘unexpected’ only under the misleading conception of SR as a reference tracking device. Once it is recognized that no reference relations are at stake, these patterns fall out as entirely regular and ‘expected’. I take it to be a con-

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<sup>30</sup>This conclusion does not hold if the preference for low coordination over high coordination with coreferent subjects is traced back to considerations of structural complexity (see footnote 28).

ceptual virtue that the present approach does not make use of referential indices, as their theoretical status is dubious at best (cf. Chomsky, 1995). Moreover, the proposal adheres the *Inclusiveness Principle*, as it does not introduce new information during the course of the derivation. Finally, the phenomenon of SR, despite appearing ‘exotic’, merely reduces to the fact that the spellout of a coordination is context-sensitive in Amele and Seri while in English it is not. Underlyingly, the structures and mechanisms are identical.<sup>31</sup>

#### 4. Extensions

The last section laid out my main proposal that SR reduces to the context-sensitive spellout of a coordination head on the basis of two case studies. In this section I will zoom out and tackle more general properties of SR systems and show how they relate to my core proposal. First, I will outline additional evidence that the SR marker is indeed the instantiation of a coordination head. Second, it has been commonly observed that SR markers are also systematically sensitive to the semantic relation holding between the two propositions. This fact can be easily implemented into the present analysis. Third, by the central distinction between high and low coordination, the present proposal attributes less functional structure to SS than to DS configurations. I will provide some tentative evidence that this is correct. The fourth part considers apparently problematic cases of alleged SR marking between clearly subordinate clauses. Finally, the phenomenon of switch references is related to serial verb constructions more generally. I will argue for the view that serial verb constructions are identical to SR structures with the minor difference of a zero spellout of the coordination.

##### 4.1. SR marking and coordinations: Further issues

One piece of evidence for the claim that SR markers are the mere instantiations of coordination heads was provided by the observation that SR marking stands in complementary distribution with canonical coordinations in both Amele and Seri. This fact follows straightforwardly if these elements all compete for insertion into the same syntactic &° head. Additional evidence that this characterization is on the right track comes from the observation that often different coordinations are used depending on whether the two clauses descriptively stand in a same subject or different subject relation. Examples are given in (62) and (63). (62) exem-

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<sup>31</sup>Also see section 4.5 for further discussion.

plifies SR marking in the Pama-Nyungan language Pitjantjatjara, (Bowe, 1990); (63) illustrates Fongbe, a Niger-Congo language also known as Fon (Lefebvre and Brousseau, 2002; Lefebvre, 2004).

- (62) Pitjantjatjara  
 palunyalu junku junku nyangka nyuma purlkarriku ka  
 and-SS put-FUT put-FUT and-DS cake-ABS become.big-FUT and-DS  
 paalku ka jilka ngamu ngarranyjamaalpa  
 cook-FUT and-DS child-ABS near not.stand  
 ‘and (they) would put (it) out and the cake would spread and they would  
 cook (it) and the children would not stand by.’ [Stirling 1993, 16]

- (63) Fongbe  
 a. Kòkú wá b̀̀ Ìsíbá yì  
 Koku arrive CONJ Asiba leave  
 ‘Koku arrived and-then Asiba left.’  
 b. Kòkú ò̀̀ nù b́́ nù sìn  
 Koku eat thing CONJ drink water  
 ‘Koku ate and-then drank water.’ [Lefebvre 2004, 125]

In both examples a coordination is sensitive to whether the two conjuncts involve a same or different subject configuration. Classic approaches to SR marking in terms of reference tracking must decide whether these elements are SR markers, coordinatoinis or portemanteaus and furthermore provide diagnostics to distinguish between these elements. The present account captures these data without further ado. If SR markers are simply the spellout of coordination heads it is an arbitrary choice to gloss them either as pure SR markers, coordinations or portmanteau morphemes expressing both SR and coordination information. All three classifications boil down to notational variants of one and the same element. Thus, the present proposal avoids the pitfalls attached to deciding whether *b̀̀* and *b́́* in (63) are SR markers or coordinations. They are both, because SR markers *are* coordinations. Further evidence for identifying SR markers with coordinations comes from the Uto-Aztecan language O’odham (Hale, 1983). In O’odham the alleged SS marker may also be used as a coordination of two nominals. This is exemplified in (64).<sup>32</sup>

- (64) O’odham  
 a. Ñ ’alidag ’o gegosid g gogs c ha-’i’icud g kakawyu  
 my child AUX feed ART dog CONJ them-water ART horses  
 ‘My kid feeds the dog and waters the horses.’

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<sup>32</sup>OBVAUX abbreviates for ‘obviative auxiliary’ and, according to Hale, signals a switch in topic.

- b. Ñ-'alidag 'o gegosid g gogs k g ñ-we:nag  
 my-child AUX feed ART dog OBVAUX ART my-sibling  
 ha-'i'icud g kakawyu  
 them-water ART horses  
 'My kid feeds the dog and my brother waters the horses.' [Hale 1983, 305]
- c. mi:loñ c 'u:w-hal c ha:l 'o 'e'eşa  
 watermelon CONJ cantaloupe CONJ squash AUX plant:USIT  
 'He plants watermelons and cantaloupes and squash.' (ibid.: 300)

(64-a) and (b) show that the coordinating element varies depending on whether the two subjects are identical or not (compare *c* in the first example with *k* in the second one). They might thus equally well be glossed as SR markers. The crucial item for the present discussion is (64-c), which shows that the SS marker *c* might also conjoin nominal elements. This is a puzzling observation for all analyses that assume SR markers to code reference relations, be it directly or indirectly. It is, however, a natural state of affairs under the present treatment. In O'dham, the marker *c* is simply sufficiently underspecified to realize &° in both nominal and VP contexts.

In sum, I have offered additional arguments for the claim that SR markers are the mere realization of coordination. Evidence comes from the observation that (i) SR markers systematically stand in complementary distribution with 'conventional' coordinations, (ii) coordinations may be sensitive to SR distinctions, and (iii) the alleged SR markers may appear in coordination of nominal elements as well.

#### 4.2. Interpropositional relations

A commonly noted property of SR systems is that the markers not only distinguish between VP and vP coordination (i.e. tracking reference relations in standard approaches) but furthermore often encode specific semantic relations between the two clauses. This may be illustrated by the examples in (65) from Kiowa (Watkins, 1984, 1993; McKenzie, 2007).

(65) Kiowa

- a. Ø=hébà-chè èm=sáu  
 3SG=enter.PF=when.SS 3SG.RFL=sit.down.PF  
 'When she<sub>i</sub> came in, (she<sub>i/\*j</sub>) sat down.'
- b. Ø=hébà-è èm=sáu  
 3SG=enter.PF=when.DS 3SG.RFL=sit.down.PF  
 'When she<sub>i</sub> came in, (she<sub>\*i/j</sub>) sat down.'
- [McKenzie 2007, 1f]

Table 1. Kâte switch reference markers (Payne, 2006, 301)

	OVERLAP ("while")	SUCCESSION ("then")
SAME SUBJECT	-huk	-ra
DIFFERENT SUBJECT	-ha	-∅

The noteworthy fact about (65) is that the respective SR markers do not only conjoin the two clauses but also restrict the range of possible relations holding between the two events to temporal overlap.

This point is even clearer in languages making use of several SS and DS markers, each of which imposes its own limitations on the interpretation space. One such system is instantiated by the Papua New Guinean language Kâte (Longacre, 1972). The set of SR markers in Kâte is given in table 1, relevant examples are provided in (66).

## (66) Kâte

- a. Fisi-huk na-wek  
arrive-SS ate-3SG  
'As he<sub>i</sub> arrived, he<sub>i</sub> was eating.'
- b. Fisi-ra na-wek  
arrive-SS ate-3SG  
'He<sub>i</sub> arrived, then he<sub>i</sub> ate.'
- c. Mu-ha-pie kio-wek  
speak-DS-3PL weep-3SG  
'As they spoke, he was weeping.'
- d. Mu-∅-pie kio-wek  
speak-DS-3PL weep-3SG  
'After they spoke, he wept.'

[Payne 2006, 301]

(66-a,b) contain distinct SS markers, each defining its own temporal relation between the two clauses. An analogous contrast is observed for DS marking in (66-c,d).

As a matter of fact, systems invoking several SS and DS markers can grow quite complex. Consider for illustration the facts of the Caribbean language Panare as summarized in table 2 (cf. Payne, 1991, 2006).

The same state of affairs is also attested *inter alia* in Pitjantjatjara, Tundra-Yukaghir (Syberia; Maslova 2003), Eastern Promo (McLendon, 1975), and Cashinahua (Panoan; Montag 2005).

The present system straightforwardly extends to such cases as well. If, as I argue, the SR markers spell out a syntactic head that takes two propositions (or, more precisely, functions from events into truth values) as arguments, one may enrich

Table 2. Panare switch reference markers (Payne, 2006, 302)

Morpheme (verb suffix)	Temporal relation	Reference relations	Other relations expressed
-s'éjpe	Succession	Actor=Actor	purpose
-s'é'nape	Succession	Absolutive=Patient	result
-ñépe	Succession	Actor≠Actor	movement/purpose
-npan	Overlap	Actor=Actor	none
-tááñe	Overlap	Actor≠Actor	none
-jpómën	Anteriority	Actor=Actor	reason

the semantics of this head by defining relations over the two propositions. This move is unproblematic as the present analysis treats SR markers as belonging to neither of the two clauses but rather constituting the glue that links them together. For illustration, consider the Kâte system in table 1 above. Suppose now that the basic meaning of the coordination head is as in Seri (see (47)). To account for the Kâte facts, all that is necessary is to distinguish two coordination heads, each of which specifies the temporal relation between the two subevents in a different way, as in (67). (67-a) semantically requires the two elements to take place at the same time ( $t_{e'} = t_{e''}$ ), while (67-b) entails temporal succession of the two events ( $t_{e''} > t_{e'}$ ). Both heads may then freely combine with two VPs or  $\nu$ Ps, giving rise to the four cases in (66).<sup>33</sup>

<sup>33</sup>  $t_{e''} > t_{e'}$  reads as 'e'' takes place at an earlier point in time than e''. Notice that  $P$  corresponds to the complement (i.e. the constituent which combines first with  $\&^\circ$ );  $Q$  is the specifier of  $\&^\circ$ . Therefore, the ordering has to be  $t_{e''} > t_{e'}$  rather than the reverse.

The join operator ' $\oplus$ ' is necessary here because the events described by the two VPs need to be temporally ordered and hence have to be distinguishable. An immediate implication of the join operator is that  $\nu$ P coordination with coreferent subjects leads to a semantic representation that can equally well be achieved by VP coordination (recall the reasoning on page 137). This leads us to predict that Kâte does not allow DS marking with identical subjects.

For the sake of illustration, (i) summarizes the resulting semantic representations for the four cases at hand.

- (i) a.  $[_{\nu P} \alpha [_{\&P} VP_1 \&_1 VP_2 ] ]$  (=66-a):  
 $[[\nu P]] = \lambda e [\text{AGENT}(\alpha)(e) \wedge \exists e', e'' [e = e' \oplus e'' \wedge [[VP_2]](e') \wedge [[VP_1]](e'') \wedge t_{e'} = t_{e''}]]$
- b.  $[_{\nu P} \alpha [_{\&P} VP_1 \&_2 VP_2 ] ]$  (=66-b):  
 $[[\nu P]] = \lambda e [\text{AGENT}(\alpha)(e) \wedge \exists e', e'' [e = e' \oplus e'' \wedge [[VP_2]](e') \wedge [[VP_1]](e'') \wedge t_{e''} > t_{e'}]]$
- c.  $[_{\&P} [_{\nu P} \alpha VP_1 ] \&_1 [_{\nu P} \beta VP_2 ] ]$  (=66-c):  
 $[[\&P]] = \lambda e \exists e', e'' [e = e' \oplus e'' \wedge \text{AGENT}(\alpha)(e') \wedge [[VP_2]](e') \wedge \text{AGENT}(\beta)(e'') \wedge [[VP_1]](e'') \wedge t_{e'} = t_{e''}]$
- d.  $[_{\&P} [_{\nu P} \alpha VP_1 ] \&_2 [_{\nu P} \beta VP_2 ] ]$  (=66-d):  
 $[[\&P]] = \lambda e \exists e', e'' [e = e' \oplus e'' \wedge \text{AGENT}(\alpha)(e') \wedge [[VP_2]](e') \wedge \text{AGENT}(\beta)(e'') \wedge [[VP_1]](e'') \wedge t_{e''} > t_{e'}]$

(67) *Coordination heads in Kâte*

- a.  $[[\&_1]] = \lambda P_{\langle s,t \rangle} \lambda Q_{\langle s,t \rangle} \lambda e_{\langle s \rangle} [e = e' \oplus e'' \wedge P(e') \wedge Q(e'') \wedge t_{e'} = t_{e''}]$   
 b.  $[[\&_2]] = \lambda P_{\langle s,t \rangle} \lambda Q_{\langle s,t \rangle} \lambda e_{\langle s \rangle} [e = e' \oplus e'' \wedge P(e') \wedge Q(e'') \wedge t_{e''} > t_{e'}]$

Each of the four conceivable combinations is then morphologically realized by a specific marker, given in (68).

(68) *Vocabulary items for Kâte*

- /huk/  $\leftrightarrow$   $[\&_1, \text{VP} \_ \text{VP}]$   
 /ha/  $\leftrightarrow$   $[\&_1, \text{vP} \_ \text{vP}]$   
 /ra/  $\leftrightarrow$   $[\&_2, \text{VP} \_ \text{VP}]$   
 / $\emptyset$ /  $\leftrightarrow$   $[\&_2, \text{vP} \_ \text{vP}]$

The present proposal thus extends to cases of interpositional relations by enriching the set of available syntactic heads. Each of these heads may then receive a specific semantic interpretation and a designated spellout, thereby yielding the observed sensitivity of the SR markers to interclausal relationships. I have developed an explicit proposal for Kâte and by the same reasoning analogous systems may be developed for other languages as well.

## 4.3. Asymmetries in functional structure

A predication that sets apart the present conception of SR from the majority of previous treatments arises from the assumption that SS constructions, by involving only one  $v$  head, comprise less functional structure than DS configurations, which project two separate  $v$ 's. As  $v$  is standardly assumed also to enter into Agree relations, we expect there to exist languages without verbal  $\phi$ -agreement in SS constructions, but with such agreement in DS constructions. This pattern has in fact already been encountered in the Kâte data in (66), and is furthermore attested in Kewa (Franklin, 1983), Lenakel (Lynch, 1983), Ono (Gordon, 1983), and Ancash Quechua (Cole, 1983).

The overarching pattern in the Kâte data in (66) above is that if SS marking is employed, only the final verb codes subject agreement. If DS marking is used, both verbs inflect for  $\phi$ -features. This is expected under the assumption that it is  $v$  that agrees with the subject and into which morphological insertion takes place. As VP coordination (thus, SS marking) structures involve only one  $v$ , agreement is spelled out only once. DS marking, by contrast, is analyzed as vP coordination, thus comprising two separate  $v$ 's.<sup>34</sup>

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<sup>34</sup>In various other languages, such as Amele and Seri, SS and DS structures are not differentiated

Importantly, to the best of my knowledge the opposite pattern—more morphological marking in SS than in DS constructions—is not attested. This follows straightforwardly from present assumptions as DS marking invokes more functional material than SS marking.

A related point concerns the general observation that SS-marked clauses generally contain only one subject. Given that external arguments are introduced by a functional head (as has been assumed throughout this paper), this observation is traced back to the same asymmetry. VP coordination contains only one *v* head, hence projects only one agent.

#### 4.4. Coordination versus subordination

Classical approaches to SR such as *Finer* (1984, 1985) rely on the binding theory as their theoretical tool. Since the binding principles as proposed by *Chomsky* (1981) crucially involve c-command as the central structural relation, it is often assumed in analyses of switch reference that c-command holds between the two clauses. This standpoint is also adopted in the Agree-based implementation of *Watanabe* (2000) because Agree as well presupposes c-command. In an explicit reply to *Finer* (1985), *Roberts* (1988) demonstrates that in *Amele* SR marking is attested in structures not involving clausal subordination. The present analysis has the far-reaching implication that SR marking may not only occur in coordinate constructions but is in fact confined to them. It thus makes the strong claim that SR marking does not appear in cases of clausal subordination. In this section, I will argue that there is indeed tentative evidence that SR is restricted to coordination structures. The crucial evidence comes from structures unambiguously involving subordination. These cases show an empirical behavior different from SR marking and arguably involve logophoricity.

Recall at the outset that there exist structures involving SR marking that empirically do not pattern with subordinate constructions. This was the case in *Amele* and *Seri*. Furthermore, SR marking is blocked from subordination structures in these two languages. So at least in some languages, SR marking is clearly restricted to non-subordination constructions.

Instances of alleged adjunction constructions do not argue against the present approach, given that specific propositional relations between the two sentences may

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along these lines. This identity in morphological marking can be implemented by dissociating the locus of the syntactical Agree operation from the point of morphological exponence, i.e. by a morphological lowering operation, which—by the general symmetry requirement on conjunctions—affects both conjuncts. See the discussion on page 122.

be implemented as suggested in section 4.2: Since the coordination head takes two propositions as arguments, it may contribute the additional semantic relation. No adjunction structure *per se* is necessary to accomplish this.<sup>35</sup>

In order to establish the point whether SR marking is possible in subordination structures or not, one needs to examine unambiguous cases of subordination, i.e. cases where one of the two clauses stands in the scope of an element of the other clause. If such a scope relation is fulfilled it is evident that the two clauses cannot simply be coordinated.

I will proceed by briefly describing the SR system in Imbabura Quechua (Cole, 1982, 1983; Jake, 1983; Hermon, 1985, 2001). Imbabura Quechua has been claimed to involve SR marking in both coordinated as well as subordinated constructions (cf., e.g., Cole, 1983). Following Stirling (1993), I will argue that the apparent SR marking is subject to fundamentally different principles in both cases. The conclusion to be drawn is that in subordinate structures logophoricity is at work, hence ‘real’ reference tracking.

Coordinate structures in Imbabura Quechua use the SS marker *-shpa*; DS is marked by *-jpi*. Consider the examples in (69).

- (69) a. Utavalu-man chaya-shpa, ñuka mama-ta riku-rka-ni  
 Otavalo-to arrive-SS my mother-ACC see-PAST-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-PAST-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 (70) seems to suggest that SR marking also holds in subordinate constructions.

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

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<sup>35</sup>Munn (1993) treats coordination as phrase-structurally identical to adjunction. Under this view, constructions involving adjunction do of course not pose an argument against a coordination analysis.

Notice first that a different set of markers is employed in (69) and (70). Whereas in (69), SR is marked by *-shpa* and *-jpi*, respectively, in the subordination structures (70)-*ngapaj* and *-chun* are used. More important is the fact that the closely related language Ancash Quechua has SR marking only in the former environment and not in subordination structures (Cole, 1983, 3). This is a first hint that the two constructions are sufficiently distinct to deactivate them separately.

Upon closer scrutiny, it turns out that despite the appearance in (70) the alleged subjunctive SR markers *-ngapaj* and *-chun* differ from *-shpa/-r* and *-pti* in crucial respects. To appreciate this observation, consider (71).

(71) Imbabura Quechua

- a. ali-mi      [[ $\emptyset/\bar{n}uka/kan/*pay$ }] Juzi-wan parla-ngapaj]  
 good-EVID { $\emptyset/I/you/*he$ } José-with speak-SS.SUBJUNCTIVE  
 ‘It is good that one/I/you/\*he speak with José.’
- b. ali-mi      [[ $pay/\emptyset/*\bar{n}uka/*kan$ }] Juzi-wan  
 good-EVID { $he/\emptyset/*I/*you$ } José-with  
 parla-chun]  
 speak-DS.SUBJUNCTIVE  
 ‘It is good that he/\*one/\*I/\*you speak with José.’ [ibid.: 6f]

(71-a) shows that in subordination structures *-ngapaj* may be used if the subject of the embedded clause is first or second person or arbitrary in reference. The marker *-chun*, on the other hand, indicates that the subject is referentially dependent on another argument, as illustrated by (71-b). Witness also that the ‘same subject’ marker *-ngapaj* in no sense encodes subject coreference as the embedded clause is the sole argument of the matrix predicate *ali* ‘good’.

A suitable pair to make clear the differences between subordinate and coordinate structures is provided by (72) and (73). While (72) illustrate the range of possible interpretations for the subjunctive, (73) shows the same for coordinate structures.

(72) SUBORDINATION

- a. wawa-ka mama mikuchiy tukushka-mi      [ama  
 child-TOP mother fed      became-EVIDENTIAL not  
 { $\emptyset/\bar{n}uka/kan/*Juzi$ } kijari-ngapaj]  
 { $\emptyset/I/you/*José$ } complain-SS.SUBJUNCTIVE  
 ‘The child<sub>i</sub> was fed by the mother in order that one/he<sub>i</sub>/I/you/\*José  
 not complain.’

- b. wawa<sub>i</sub>-ka mama mikuchiy tukushka-mi [ama  
 child-TOP mother fed became-EVID not  
 {Juzi/\*pay<sub>i</sub>/\*ñuka/\*kan} kijari-chun]  
 {José/\*he/\*I/\*you} complain-DS.SUBJUNCTIVE  
 ‘The child<sub>i</sub> was fed by the mother in order that José/\*he<sub>i</sub>/\*I/\*you not  
 complain.’

- (73) COORDINATION  
 {ñuka/kan} mana wasi-pi ka-{jpi/\*shpa} wawa-ka mama mikuchiy  
 {I/you} not house-in be-{DS/\*SS} child-TOP mother fed  
 tukushka-mi  
 became-EVIDENTIAL  
 ‘While I/you was/were not in the house, the child was fed by the mother.’  
 [Cole 1983, 8f]

(72-a) 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 (72-b). 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 (73) 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 (72). It is clear from this cursory overview that the alleged SR markers in coordinate and subordinate structures are subject to a considerably different distribution. Subjunctive SR marking in Imbabura Quechua does not behave as SR marking generally does and even within a single language is sufficiently different empirically to necessitate a distinct treatment at some level of analysis. The conclusion I draw from this is that there exists no SR marking in subjunctive clauses. In other words, the mechanisms leading to marking by *-shpa/-r* and *-jpi* on the one hand and *-ngapaj/-chun* on the other are unrelated. Only coordination structures involve SR marking. Subordination, by contrast, seems to encode logophoricity (Sells, 1987). Clauses involving logophoric subjects are thus marked by *-ngapaj*, while other subjunctive clauses bear *-chun*. Its relation with SR marking is only a remote one. The subject of the first clause may act as logocentric with the effect that logophoric bounding may take place in same subject environments as in (70). It is, however, not restricted to these environments and also appears with inherently logocentric first

and second person DPs. This sets it apart from SS marking, which is restricted to identical subjects (cf. (73)).<sup>36</sup>

The conclusion to be reached from this discussion is that apparent instances of switch reference marking in subordinate clauses may be misleading and not involve SR at all. The crucial piece of empirical evidence for this claim is that the markers in the two environments are subject to quite different distributional patterns. Needless to say, it may very well turn out that the facts observed in Imbabura Quechua are not representative. Further typological evaluation of this claim is, however, beyond the scope of this paper.

#### 4.5. Serial verb constructions

Recall from section 3.1 that switch reference markers in Amele occur in serial verb constructions. A natural question to be raised in this context is how this account relates to verb serialization more generally, viz. instances of verb series without SR marking. The zero hypothesis in light of the present account is that such constructions as well involve coordination with the superficial difference that the coordination head is left unpronounced.

(74), taken from Saramaccan, a creole language spoken in Suriname (Veenstra, 1996), illustrates verb serialization without SR marking.

- (74) Saramaccan  
 A sindjó nján  
 3SG sit.down eat  
 ‘He sat down and ate.’ [Muysken and Veenstra 2006, 235]

More generally, in their survey of verb series Muysken and Veenstra (2006, 238) note that there may exist only one grammatical subject. Furthermore, only one tense/aspect specification is allowed for the two (or more) verbs, which may appear on either verb or on both verbs simultaneously, then obligatorily agreeing. These properties are immediately accounted for once it is assumed that verb serialization, like SS marking structures, involve VP coordination.

An important argument against a coordination analysis of verb series is due to Jansen et al. (1978) and Sebba (1987). They show that serial verb constructions allow asymmetric extraction as illustrated in (75). As Ross (1967) *Coordinate Struc-*

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<sup>36</sup>For discussion of further difference between SR marking and logophoricity as well as on how to distinguish between the two, see Stirling (1993, 50-56, ch.6).

*ture Constraint* prohibits asymmetric extraction out of coordination structures, so the argument goes, verb series may not be analyzed as coordination.

(75) Saramaccan

- a. andí<sub>i</sub> a téi t<sub>i</sub> kóti dí beéé?  
 what 3SG take cut DET bread  
 ‘What did he cut the bread with?’
- b. andí<sub>i</sub> a téi dí fáka kóti t<sub>i</sub>?  
 what 3SG take DET knife cut  
 ‘What did he cut with the knife?’ [Muysken and Veenstra 2006, 258]

It has, however, long been noticed that there are exceptions to the Coordinate Structure Constraint even in English. Particularly revealing in the present context are instances of so-called *pseudo-coordination* such as (76).<sup>37</sup>

(76) What<sub>i</sub> did John go to New York and buy t<sub>i</sub>?

It has been argued by de Vos (2005) and Harris (2011) that cases as (76) involve regular coordination. Following Harris (2011), the crucial property allowing asymmetric extraction is that coordination applies low, i.e. at the VP or V level. If this analysis is on the right track, asymmetric extraction from conjuncts is possible if the conjoined structure is sufficiently small. In light of the present account, serial verb constructions involve VP coordination. Thus, from the present point of view the extraction pattern found in (75) is not only no counter-argument against a coordination analysis but is even expected to hold in light of the English (76).<sup>38</sup>

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<sup>37</sup>While (76) contains a verb of movement in the first conjunct, asymmetric extraction does not appear to be restricted to them. Other relevant examples are given in (i) (Lakoff, 1986).

- (i) a. How much can you drink and still stay sober?  
 b. That’s the kind of firecracker that I set off and scared the neighbors.

<sup>38</sup>Conflating English pseudo-coordination and verb series of course also leaves questions open. In English pseudo-coordination structures, such as (76), extraction is only possible from the final conjunct whereas in verb series both conjuncts are transparent for movement. Notice first that this restriction does not extend to the cases mentioned in the last footnote. Furthermore, as discussed by Muysken and Veenstra (2006), cases of apparent extraction from non-final conjuncts might be accommodated by assuming (i) that there exists a null operator in the final conjunct, and (ii) that movement applies in an Across-the-Board fashion. Thus, the structure for (75-a) would be as in (i) (where ‘ec’ = empty category).

- (i) WH<sub>i</sub> [VP<sub>1</sub> V ec<sub>i</sub>] [VP<sub>2</sub> V ec<sub>i</sub> XP]

For further discussion see Muysken and Veenstra (2006) and references cited there. Also see Larson

A second consequence of the unified approach to switch reference and verb series now emerging is that it is no longer puzzling why verb series, if indeed involving coordination, never realize this coordination overtly. From the present view, this property arises as a consequence of idiosyncratic classification. I contend that the coordination *can* receive overt spellout. In this case, however, the construction as a whole is termed ‘pseudo-coordination’ (if the spell-out is context-insensitive) or ‘switch reference’ (if sensitive to its context) and then commonly treated as a phenomenon unrelated to verb series. Against the background of the analysis pursued here I suggest that this division is of no theoretical significance. Underlyingly, verb serialization, pseudo-coordination, and switch reference are one and the same. Differentiation only takes place on the morphological side. These differences boil down to idiosyncratic marker specifications and are ultimately superficial. In short, then, verb serialization is just switch reference with the switch reference markers left out.

While the prospect of unifying switch reference and serial verb constructions in general has some appeal to it, I hasten to emphasize that the literature has unearthed various properties of verb series that are not readily accommodated within such a view (cf., e.g., Baker, 1989; Collins, 1997, 2002; Aboh, 2009). The data discussed by these authors suggest that at least some serial verb constructions differ systematically from covert coordination structures. Of course, the present proposal leads one to expect that the coordination head conjoining to verbal projections may also be silent, but that does not entail that all instances of verb serialization must be implemented in such a way. It is thus perfectly conceivable that (a subset of) verb series is best treated along altogether different lines. Evaluating this proposal would lead us to far afield and I will leave this matter for future research.

#### 4.6. Section summary

This section has explored some consequences of the view that SR markers are the spellout of coordination heads. I have argued that SR markers are commonly observed to associate with coordinations and that, furthermore, SR markers may constitute coordinating elements even in the nominal domain. A second advantage of the view developed here is that one can easily implement cases of SR markers specifying distinct semantic relations between the two events. Thirdly, the view that DS and SS structures differ in their amount of functional material captures an asymmetry with respect to verbal agreement and the fact that subjects are only realized

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(2003) for potentially relevant Norwegian cases that allow extraction from either of the two conjuncts as well as various similarities between serial verb constructions and coordinations.

once in SS configurations. I have also raised the point that cases of switch reference in true subordination structures are doubtful at best. A case study of Imbabura Quechua has revealed that the mechanisms at work in coordination and subordination constructions are sufficiently diverse to warrant treating them as separate phenomena. If these results are on the right track, apparent SR marking in subordinate structures may generally be an instance of logophoricity. Needless to say, more work is necessary to establish this point more firmly. Finally, I considered the relation between switch reference and verb serialization. I have reached the conclusion that both constructions are syntactically identical, with only minor differences regarding the phonological realization of the coordination head. Furthermore, I have touched upon the question of whether the present analysis may be extended to verb series more generally. This matter is of course an empirical one and the exact boundaries of the proposal remain to be established.

## 5. Concluding remarks

In this paper I have proposed a new perspective on switch reference systems. In contrast to standard approaches, which—despite their theoretical difference—stick to the generalization that the appearance of the switch reference markers is tied to reference relations, I have explored some of the consequences of reducing these markers to the mere context-sensitive spell-out of a coordination head. Having thus eliminated any direct link between morphological marking and semantic interpretation, semantics and morphology only correlate with each other in virtue of the fact that both operate on the same syntactic structure. As a consequence, the connection between both is rather loose, a prediction that I take to be corroborated by the widely observed instances of ‘unexpected’ switch reference marking. On the empirical side, the present view puts considerably emphasis on these cases of so-called ‘unexpected’ switch reference marking. While deviant in previous approaches, they now emerge as entirely regular instantiations of a more abstract system. Conceptually, the analysis has the welcome side-effects of handling the data without global computation, as no reference comparison between two nominals takes place. It is hence compatible with a phase-based notion of locality. Furthermore, it does not involve binding indices or some equivalent means since no syntactic principle imposes restrictions on reference relations, thus adhering to the Inclusiveness Principle. Differences between Amele and, say, English only arise through the interfaces. Underlyingly, the structures and mechanisms at work are identical.

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