Switch-Reference And Clause Chaining In Miskitu

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1. Introduction[1]

"Switch-reference" is a phrase coined by Jacobsen (1967) to describe subject-tracking mechanisms found in Hokan-Coahuiltecan languages. In subsequent literature on the topic, switch-reference (SR) has been used to refer to a class of cross-clausal dependencies, found in many indigenous American, Papua New Guinean, and Australian languages. In these languages, the coreference or non-coreference of arguments (usually subjects) of adjacent clauses is overtly marked, either by a special SR particle or by a verbal affix. Previous GB-based analyses of SR (Finer, 1985; Broadwell, 1990, e.g.) have characterized it as an A-bar binding dependency among adjacent clauses' AGR elements. However, such approaches face difficulty in accounting for SR patterns in Miskitu, a Misumalpan language spoken in eastern Nicaragua and Honduras. Miskitu displays SR in a structure known as clause-chaining: a construction involving a series of semi-independent clauses, joined together in a single sentence without overt complementizers or conjunctions. An example is found in (1) below.

(1) [Baha ulu-ka   pruk-i]   ik-amna.
    That wasp-CNSTR   hit-SameSubject kill-FUT:1
    "I will hit that wasp and (I will) kill it."

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Several facts about switch-reference in Miskitu pose a challenge for standard accounts of SR. First, Miskitu clause chains do not behave like adjunction structures, unlike the structures other SR accounts have assumed. Second, SR-marked clauses in Miskitu are temporally dependent on the final clause in a chain, a fact which AGR-based analyses of SR have no direct account for. Third, SR morphology also occurs in some complementation structures in Miskitu. Many traditional accounts of SR (e.g., Finer, 1985) assume that it is found only in adjunction structures.

This paper proposes an account of Miskitu clause chaining and switch-reference which claims that clause chains are asymmetric coordination structures, and recasts SR as a by-product of the SR-marked clauses' temporal dependence. More specifically, it proposes that the Tense nodes of the SR-marked clauses are defective and must move to a position outside the clause to be licensed. There, they are licensed by the final clause's tense operator, which also gives the SR-marked clauses their temporal interpretation. When the SR Tense nodes raise to be licensed, they take the AGRs nodes with them, putting AGRs in a position to be bound as well. The binding of AGRs results in the surface marking of SR. This process explains the peculiar temporal properties of clause chains, and it incidentally gives rise to switch-reference. It also provides an explanation of the close connection between SR and temporal reference observed in a number of SR languages (Stirling, 1993).

The rest of the paper will proceed as follows. In section 2, I will present the major facts of SR in Miskitu. In section 3, I will propose an account of Misumalpan clause chaining and switch-reference, based on proposals by Munn (1993), Borer (1989), and Stowell (1993), elaborating on ideas by Salamanca (1988) and Hale (1992). In section 4, I will discuss how the theory proposed here can account for several crosslinguistic patterns observed for SR and clause chaining phenomena. I conclude with a summary of the results in section 5.

2. The facts of SR in Miskitu[2]

As mentioned above, Miskitu exhibits switch-reference properties primarily in clause chaining constructions.[3] Clause chains in Miskitu consist of a series of clauses joined together in a single sentence. Only the final clause in a chain is fully inflected for tense and (subject) agreement. The preceding clauses are marked with participial agreement, which serves to mark SR. Examples are found in (2-3) below (example (1) above is repeated as (2)).

(2) [Baha ulu-ka   pruk-i]   ik-amna.
    [That wasp-CNSTR hit-SS]   kill-FUT:1
    "I will hit that wasp and kill it."

(3) [Pedro buk   kum   plik-an],   [naha na   sak-ram],
    [Pedro book   a   look-for-DS:3]   [this Det find-DS:2]

    Maria ra yab-an
    Maria to give-PAST:3

    "Pedro$_i$ looked for a book, you$_j$ found it, and he$_i$ gave it to Maria."

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[2] As Hale (1991) notes, Miskitu and the different varieties of Sumu appear to be identical in most aspects of their clause chaining and switch-reference systems. To the extent that the description and analysis presented here for Miskitu are correct, they should also hold for these varieties of Sumu as well.

[3] In what follows, I will be drawing heavily on examples and discussion found in Hale (1991), Salamanca (1988), and CIDCA (1985). I will also refer to field notes collected in Bluefields, RAAS, Nicaragua, in January of 1993, and Rosita, Nicaragua, RAAN, in January of 1995.

The verb of the first clause in the two-clause example in (2) is marked with same-subject (SS) SR morphology, since it has the same subject as the final clause. In the three-clause example in (3), the verbs of both initial SR-marked clauses are marked with different-subject (DS) SR morphology, since they each have a different subject from the clause following them.[4] In sections 2.1-2.3 below, I will describe the structural properties associated with SR marking in clause chains, as well as the temporal properties of SR-marked clauses and the other environments in which SR-marked clauses can occur.

2.1 Structural properties of clause chains

SR marking in clause chains in Miskitu has three main structural properties. First, SR marking in chains is calculated strictly locally. An SR-marked clause is marked for switch-reference with respect to the clause that directly follows it, regardless of whether that clause is another SR-marked clause or the main/final one. In (3) above, the subject of the first clause and the subject of the final clause of the chain are the same. However, the second clause (with a different subject, "you") intervenes between the two and forces the first clause to be marked with a DS suffix. As Finer (1985) argues for other cases of SR, this pattern suggests that Miskitu SR marking is hierarchical, with each SR-marked clause being subordinate to the one following it.

Second, SR-marked clauses are dependent on the final clause in the chain. SS- and DS-marked clauses cannot appear on their own. They must be in construction with some other clause, which is fully marked for tense and agreement.

(4) *Yang Bilwi ra wa-rika.
     I   Bilwi to go-DS-FUT:1
     "I will go to Puerto Cabezas."

SR-marked clauses are thus dependent on the final clause in a chain. Assuming that dependent clauses are subordinate to the clause they are dependent on (as e.g. with subordinate clauses in English), this suggests that all SR-marked clauses are subordinate to the final clause as well.

Third, SR-marked clauses in chains are strictly ordered with respect to the final, fully-marked clause. As with most clause-chaining languages, the clause which is fully marked for tense and subject agreement occurs finally in Miskitu chains, with the SR-marked clauses preceding them. If the SR-marked clauses do not precede the main clause, the sentence is ungrammatical, as in (1').

(1')   *Ik-amna   [baha ulu-ka   pruk-i].
     Kill-FUT:1   that wasp-CNSTR hit-SS
     "I will hit and kill that wasp."

An SR-marked clause can never appear to the right of a fully inflected clause.[5]

2.2 Temporal properties of clause chains

In addition to the structural properties they exhibit in clause chains, SR-marked clauses also have special temporal properties. The SS and DS morphology found in SR-marked clauses is participial. It is incompletely inflected for tense. The SS and DS paradigms are found in (5a) and (5b) below.

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[4] Such clause chains are common: the examples and texts compiled by Avilés (1988) contain many chains involving five clauses or more.
  [5] This generalization ignores a small class of examples noted by Hale (1991). In a footnote, Hale cites an example from Avilés (1988) in which the SR-marked clause follows the fully-inflected clause. He claims that the SR-marked clauses in such examples have an adverbial function of sorts, which may be responsible for their licensing. I will not discuss such examples here, but it is possible that the adverbial function of their SR clauses somehow provides a link with the tense of the fully-inflected clause. This link may be sufficient to license the SR-marked clause's defective tense and its SR marking. I have no further explanation for these examples, however.

(5) a. SS: -i
    b. DS: Future (DS-FUT)   Non-future (DS)
       1   -rika   -ri
       2   -rika   -ram
       3   -ka   -an

Both of the SR paradigms have defective tense inflection. The SS suffix -*i* carries no tense markings at all, and the DS suffixes only distinguish between future and non-future, collapsing present and past into a single category.[6] This tense marking is much poorer than that found in other contexts – Miskitu distinctively marks six separate tense-aspect combinations on verbs in non-SR-marked clauses (CIDCA, 1985). The agreement marking for a subset of the SR suffixes is fairly complete, however. Miskitu only marks person in its verbal morphology, so the DS paradigms are as fully inflected for agreement as any other Miskitu verbal paradigm. The SS marker carries no agreement morphology, though, since it is invariant across all persons.

The defective tense marking of SR-marked clauses is reflected in their temporal interpretation. SR-marked clauses get their temporal reference from the tense of the final clause. This is illustrated for SS clauses in (6a-b) below.

(6) a. [Baha ulu-ka   pruk-i]   ik-amna.
       [That wasp-CNSTR hit-SS]   kill-FUT:1
           "I will hit that wasp and kill it."

    b. [Baha ulu-ka   pruk-i]   ik-ri.
       [That wasp-CNSTR hit-SS]   kill-PAST:1
           "I hit that wasp and killed it."

In (6a), the hitting event described in the SR-marked clause and the killing event in the final clause are both interpreted as occurring in the future. In (6b), they are both interpreted as occurring in the past. The same pattern holds for DS chains, though the pattern is slightly more complicated: DS clauses are marked with DS-FUT morphology if the final clause has future tense, and DS morphology if it has present or past tense. In all cases, the SR-marked clauses are interpreted as bearing the same relation to utterance time (i.e., having the same tense) as the final, fully-marked clause they are associated with.[7]

2.3 SR in other contexts

In addition to appearing primarily in clause chaining constructions, SR-marked clauses can also occur as complements of certain verbs. Hale (1991) notes that verbs of perception and aspectual verbs indicating inception or termination select complements with SR morphology.

(7) a. Yang [witin nani   aisi-n]   wal-ri.
       I   [s/he PL   speak-DS:3]   hear-PAST:3
           "I heard them speak."

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[6] Salamanca (1988) refers to the future/non-future distinction found in the DS paradigm as an actual/virtual distinction, suggesting that the relevant distinction may be one of modality rather than tense. Stirling (1993) argues that a similar distinction in Amele is actually one of modality, and suggests that the same pattern might hold more broadly among Papuan clause-chaining languages. If this is true for Miskitu, then the DS paradigm also marks no tense distinctions.

[7] As Salamanca (1988) notes, the situations depicted in a clause chain are typically interpreted as occurring in the same order as the clauses in the chain, iconically. However, this tendency does not appear to be a strict entailment of SR constructions: Salamanca notes that it can be overridden by an overt adverbial like *sîm taim* ("same time"), which forces the events depicted in the chain to be interpreted as overlapping in time. This phenomenon appears to have more to do with the pragmatics of clause-chaining constructions than the syntax or semantics of SR, and I will not discuss it further here. See Salamanca (1988) for some discussion.

b. Yang   nani   [wamtla   mak-i]   ta   krik-ri.
   I   PL   [house-POSS:2   make-SS]   end   break-PAST:1
   "We began to build your house."

In the perception verb example in (7a), the people speaking are different from the person hearing, so the embedded clause is marked with DS morphology. In the aspectual verb example in (7b), the subjects of the matrix and embedded clauses are coreferent, so SS morphology is used. The embedded clauses in (7a-b) are dependent on the main clause for their temporal reference, just like SR-marked clauses in a clause chain. The events depicted in the embedded clause are interpreted as bearing the same relation to utterance time as the matrix clauses.[8] In (7a), for example, the speaking and hearing both take place in the past. The embedded clauses are also subordinate to the fully-inflected matrix clause, just as SR-marked clauses are subordinate to the fully-inflected final clause in a chain.

3. Proposal

Having reviewed the central properties of SR in Miskitu, I will now lay out an analysis of Miskitu SR structures. The analysis has three primary claims. First, it claims that clause chains, which are the primary vehicles for SR in Miskitu, are asymmetric coordination structures of the sort argued for by Munn (1993). Second, it claims that the central property of SR-marked clauses is that they lack a semantic tense operator, as in Stowell's (1993) analysis of sequence-of-tense constructions. Third, it claims that the Tense head of the SR-marked clause is anaphoric, and must move out of its clause to the empty head of the Conjunction Phrase to be licensed, much like Borer's (1989) anaphoric AGR. This movement raises AGRs along with Tense, to a position where it can be bound. This process gives rise to the marking of SR, which reflects the binding of AGRs.
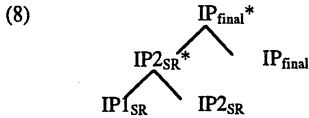
3.1 The structure of clause chains

In section 2.1, we saw evidence that clause chains are hierarchically organized. Each SR-marked clause is subordinate to the one following it and all SR-marked clauses are subordinate to the final clause in the chain. The structure of clause chains must reflect these two facts. One analysis that immediately suggests itself is that clause chains are adjunction structures, as argued by Hale (1991), for example. However, clause chains do not behave like other adjunction structures in Miskitu, as I will show in section 3.1.1 below. Instead, in section 3.1.2, I propose that Miskitu clause chains are asymmetric coordinate structures, following Salamanca (1988) and Hale (1992). The final clause in the chain is the highest conjunct, and it c-commands the preceding SR-marked clauses. Each SR-marked clause c-commands the clause preceding it, in turn.

3.1.1 Clause chains are not adjoined structures

One structure that would capture the structurally subordinate properties of clause chains is an adjoined structure. Most accounts of SR structures assume that they involve adjunction. Finer (1985) argues that SR is always found in adjoined structures, and Hale (1991) argues that Miskitu clause chains specifically involve clausal adjunction. He claims that SR-marked clauses are left-adjoined to the final clause, with further SR-marked clauses being adjoined to the clause following them:

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[8] More accurately, the sub-events described in the embedded clause form a larger event with the matrix verb, as in Romance causatives and Germanic restructuring constructions (Wurmbrand, 1997). This larger event as a whole is then located with respect to utterance time.

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(8)   IP$_{final}$*
                    /\
            IP2$_{SR}$*   IP$_{final}$
          /\
      IP1$_{SR}$ IP2$_{SR}$

However, this structure does not appear to be the correct one, at least not for Miskitu. An IP-adjunction structure incorrectly predicts that SR-marked clauses should be freely ordered with respect to the main/fully marked clause. IP-adjoined clauses can appear either to the left or the right of the main clause in Miskitu, just as in English:

(9) a. Plap-aia   sip-sna   [ai   aibap-ma   kaka]
         run-INF   can-PRES:1   [me   pay-PRES:2   if]
         "I can run, if you pay me."

    b. [Witin bal-bia   kaka] yang tak-i   wa-mna
        [he/she come-FUT:3   if]   I   leave-PROG   go-FUT:1
        "If he comes, I'll go."

As discussed in section 2.1 above, SR-marked clauses cannot follow the main clause in a chain.[9] This fact suggests that clause chains cannot involve simple adjunction.

A further argument against an adjunction structure comes from the nature of the relations among the clauses in a chain. Both Salamanca (1988) and Hale (1991) note that the connection between SR-marked clauses and the clauses they are dependent on is very loose – they are not selected by the main/final clause, nor do they modify it. As Hale (1991: 7) puts it, they are "simply clauses in sequence." SR-marked clauses therefore do not serve the semantic function other adjoined clauses do, in Miskitu or crosslinguistically, of modifying the phrase they adjoined to. As the examples in (10) show, adjoined clauses in Miskitu act as modifiers of the XP they are associated with, just like their English glosses.

(10)   a. [Witin nani   bal-bia   bara], yawan   plun   pi-bia.
            [s/he PL   come-FUT:3   when], 3PL:INCL food   eat-FUT:3
            "When they come, we(inclusive) will eat."

        b. [Witin ai wi   baku] dauk-amna.
            s/he   me tell-FUT:3   likedo-FUT:1
            "I will do it like s/he tells me to (in the manner s/he tells me to do it)."

In (10a), the *when* clause in brackets serves as a temporal modifier, providing the temporal location of the IP it is adjoined to.[10] In (10b), the *like* clause in brackets serves as a manner adverbial, modifying the VP it attaches to (McConnell-Ginet, 1982; Travis, 1988). The SR-marked clauses in chains do not modify the main/final IP in a chain, and SR-marked clauses do not appear as modifiers in these sorts of adverbial constructions

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[9] In other SR-marking languages, SR-marked clauses do appear to be free to appear on either side of the clause they are dependent on. In Choctaw, for example (Broadwell, 1990), SR-marked clauses appear both to the left and to the right of the main/fully-inflected clause. (Broadwell only provides examples of the two orders; he does not indicate whether both are possible for a single example.) This greater freedom of word-order variation suggests that SR-marking structures in these languages involve adjunction, unlike in Miskitu.

[10] I will not consider exactly how the *when* clause modifies the IP it is adjoined to in this example. The semantics of *when* clauses and temporal modifiers is complicated; see Kratzer (1989), Johnston (1994), and Musan (1995) for discussion.

in Miskitu.[11] In other SR-marking languages, such as Choctaw (Broadwell, 1990) and Arremte (Wilkins, 1988), SR-marked clauses appear productively or primarily as adverbial modifiers. (Interestingly, SR-marked clauses in these languages also appear be freely ordered with respect to the clause they are dependent on, unlike SR-marked clauses in Miskitu.) The fact that clause chains clearly do not involve modification, and that SR-marked clauses also appear to be ineligible to serve as modifiers in Miskitu, casts further doubt on the analysis of clause chains as adjunction structures.

3.1.2 Clause chains are coordinate structures

Following Salamanca (1988) and Hale (1992), I propose that clause chains are actually coordinate structures. Salamanca claims that Miskitu chains are covert cases of coordination, with the participial SR morphology taking the place of overt conjunctions. Hale goes further and suggests that clause chaining is universally a conjoined structure, covering Miskitu clause chains as well as other obviation phenomena in languages like Hopi. However, I propose that clause chains involve syntactically asymmetric coordination, with one conjunct higher in the structure and asymmetrically c-commanding the other. A coordination approach entails that the clauses in a chain are "equal," or parallel, in line with Hale's observation that they are simply "clauses in sequence." The hierarchical structure of the asymmetric coordination, however, provides the structure necessary to capture the syntactic facts described above, however.

Many researchers have claimed that clause chains either are coordinate structures or are functionally equivalent to them. For example, Roberts (1988) argues persuasively that Amele clause chains (the primary SR-marking structures in Amele) involve a covert conjunction, based on movement and extraposition facts and the interaction of chains with other subordinating conjunctions. As mentioned above, Hale (1992) argues that clause chains are universally coordination structures, based on their close functional equivalence to cases of coordination in Indo-European languages and the diachronic relationship between SR markers and conjunctions in a number of languages (e.g., in the Uto-Aztecan family).[12] I propose that this parallel is structural as well as functional, and that clause chains involve coordination in Miskitu as well. I will adopt Munn's (1993) analysis of coordination, in which the Conjunction head Conj forms a ConjP with one of the conjuncts, and this ConjP is adjoined to the other conjunct. This structure is illustrated in (11a). This analysis provides a better account of Miskitu coordination than a Spec-head structure of the sort argued for by Kayne (1994), among others. In a Spec-head structure, one conjunct is in the Spec of ConjP and the other is the complement of Conj, as illustrated in (11b).

(11) a. [$_{XP1}$ XP1 [$_{ConjP}$ Conj XP2]]
      b. [$_{ConjP}$ XP1 [$_{Conj'}$ Conj XP2]]

Miskitu is quite strictly head-final – Salamanca (1988) and Hale (1991) argue that DP, PP, CP, VP, and IP are all head-final in Miskitu. Assuming that the same is true for ConjP, the conjoined example in (12a) would have to have either the structure in (12b) (the adjoined ConjP structure) or the structure in (12c) (the Spec-head structure).

(12) a. tasba wihki pauta   b. [[tasba wihki $_{ConjP}$] pauta $_{XP2}$]
         earth and   fire
         "earth and fire"   c. [[tasba wihki $_{Conj'}$] pauta $_{ConjP}$]

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[11] With the possible exception of the small class of postposed SR marked clauses discussed briefly in fn. 5, which may be functioning as adverbial modifiers.

[12] Hale (1992) also proposes that clause chains involve asymmetric coordination, aiming to account for a similar range of facts to the ones being accounted for here. However, he adopts a Spec-head structure, like the one proposed by Kayne (1994). As discussed below, though, this structure is not appropriate for Miskitu. The account developed here, which assumes an adjoined ConjP structure (Munn, 1993), provides a better account of the Miskitu data, for reasons discussed below.

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Specifiers are uniformly to the left of the X' projection in Miskitu (Salamanca, 1988).[13] This means the Spec-head structure in (12c) is out, since it has the Specifier (containing the second conjunct) to the right of Conj'. The adjoined ConjP structure in (12b) must therefore be the correct one.

Applying this structure to clause chains, we get the following structure for a three-clause chain:

(13)
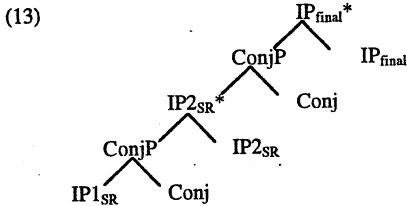
SR-marked clause 1 ($IP1_{SR}$) is contained in a ConjP which is left-adjoined to the second SR-marked clause ($IP2_{SR}$). The ConjP containing SR-marked clause 2 is left-adjoined to the final clause, and further SR-marked clauses could be left-adjoined to the initial SR-marked clause, in the case of longer chains. The Conj heads are empty, which is why there are no overt conjunctions in clause chains. (This fact will be important in the analysis of SR proposed below.)

This structure captures the hierarchical structural properties of SR in clause chains discussed in section 2.1 above. First, each clause is subordinate to the one following it, since it is left-adjoined to it. Each clause also c-commands the one preceding it, along with the Conj head of the ConjP containing it. Second, all SR-marked clauses are subordinate to the final clause. The final clause c-commands all SR-marked clauses and Conj heads in the chain. This structural relationship allows the tense operator in the final clause to c-command the other clauses in the chain, a fact which will be important in the account of SR in Miskitu argued for below.

Third, the conjoined structure also captures the fact that the dependent SR-marked clauses must appear to the left of the fully-marked clause. SR-marked clauses are contained in ConjPs adjoined to the left of the main clause. ConjPs cannot appear to the right of the conjunct they are adjoined to:

(12a') *pauta [tasba wihki]
         fire   [earth and]
         "fire and earth"

The same restriction applies to the ConjP containing the SR-marked clause. It cannot appear to the right of the constituent it is adjoined to, the main clause, for the same reason that other ConjPs in Miskitu cannot appear to the right of the constituent they are adjoined to. The ordering condition on SR-marked clauses in chains thus falls directly out of clause chains' being coordinate structures.

This coordinate analysis of clause chains receives support from the fact that clause chains can undergo across-the-board (ATB) processes. Clause chains can be relativized in an ATB fashion, as the following example from Hale (1991) shows:

(14)   Yang   plun ...   [piak-i   swi-ri   k-an]   ba swahw-an
       I   food ...   [cook-SS leave-PAST:1 be-PAST:3]   the spoil-PAST:3
       sa.
       be-PRES:3

       "The food that I had cooked and left (out) has spoiled."

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[13] See also Kayne (1994) for arguments that Specifiers are universally to the left of X'.

Since ATB effects are only found in coordinate structures, the example in (10) provides strong independent evidence that clause chains involve coordination.[14]

The conjoined analysis of Miskitu clause chains also provides a better account of their properties than adjunction-based analyses of SR-marking structures, like those discussed in 3.1.1. Such accounts will have difficulty in explaining the ATB relativization facts above, given that ATB processes are found only in coordinate structures, not simple adjoined structures. The ordering restriction on SR-marked clauses discussed above is also mysterious under an adjunction approach. It is directly explained under the conjunction structure for clause chains proposed here, however.

3.2 The nature of SR

In section 2.2, we saw evidence that SR-marked clauses lack independent temporal reference. SR-marked clauses carry defective tense marking, and they are dependent on the final clause in a chain for their tense value. Following Stowell's (1993) analysis of tense and sequence-of-tense (SOT) constructions, I propose in section 3.2.1 that SR-marked clauses lack a semantic tense operator. The lack of tense operator is why SR-marked clauses are temporally dependent on the final clause of a chain. This structural defect is reflected in their defective tense morphology, as well. In section 3.2.2, I claim that the head hosting the deficient tense morphology is anaphoric, extending Borer's (1989) analysis of anaphoric functional categories to Tense. Because the tense morphology is anaphoric, it must be licensed locally, forcing the T head hosting the morpheme to move out of the clause containing it, to be close to a tense operator which can license it. This movement process raises AGRs as well, giving rise to SR marking. The tenselessness of SR-marked clauses is therefore their central property, with SR arising as a by-product of it.

3.2.1 SR-marked clauses lack a tense operator

I will turn to SR-marked clauses' defective temporal reference first. The temporal reference of Miskitu SR-marked clauses is completely determined by the main clause they are associated with. Its tense determines where the SR-marked clauses are located with respect to utterance time. The same is true in many other SR-marking languages. In Seri (Moser, 1978; Finer, 1984), for example, SR-marked clauses carry dependent tense markers, which serve to locate the clause in time with respect to the clause following it but cannot locate it with respect to utterance time. They are only related to utterance time by appearing in conjunction with a fully-inflected main clause, just as in Miskitu. I claim that this property follows from the fact that SR-marked clauses lack a tense operator, which is what serves to locate the clause with respect to utterance time.

I adopt Stowell's (1993) approach to the structure of tense and SOT constructions. Stowell argues that the semantic content of tense and its morphology are separate. Tense morphology is generated on V or in the head of TP, and is licensed though a relationship with a semantic tense operator which c-commands it. Stowell proposes a licensing condition on tense morphology, adapted in (15) below:

(15)   Tense morphology must be c-commanded by a tense operator compatible with it.

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[14] Kyle Johnson (p.c.) points out that this example could instead be a case of parasitic gap extraction, which would be consistent with a simple adjoined structure for clause chains. Munn (1993) assimilates ATB extraction to parasitic gaps, claiming that ATB extraction is actually a special case of parasitic gapping. If this approach is correct, then the parasitic gap analysis may be compatible with the ATB analysis of these examples. Unfortunately, I do not know whether Miskitu has parasitic gap constructions. If not, it would be strong evidence in favor of viewing (14) as a case of ATB extraction, and therefore in favor of the coordination analysis of clause chains. It would also be strong evidence against Munn's analysis of ATB gaps as parasitic gaps.

In simple matrix contexts, this condition ensures that a past-tense marker must be c-commanded by a past-tense operator in the same clause, which relates the clause to utterance time.[15] If the *past* morpheme is not c-commanded by a PAST operator (as in (16b)), or is c-commanded by an incompatible PRES operator (as in (16c)), it will go unlicensed.

(16)   Mary was sick.
   a. [PAST Mary be *past* sick]
   b. *[Mary be *past* sick]
   c. *[PRES Mary be *past* sick]

An embedded clause, on the other hand, need not have a tense operator of its own under this approach. The tense operator of the matrix clause will c-command the tense morphology of the embedded clause, and it will be able to license the morphology if it is compatible with it. Stowell claims that this configuration is exactly what is found in the simultaneous reading of SOT sentences: the embedded clause lacks a tense operator. It is therefore tenseless and does not bear its own relation to utterance time. Instead, its tense morphology is licensed by the matrix tense operator, which also relates it to utterance time.

(17)   John said Mary was sick.

   a. John said, "Mary is sick."   (Simultaneous reading)
      PAST John say *past* [Mary be *past* sick]

   b. John said, "Mary was sick."   (Shifted reading)   PAST
      John say *past* [PAST Mary be *past* sick]

The matrix PAST operator licenses the embedded *past* morphology in the simultaneous reading in (17a), and it also provides the embedded clause with its temporal interpretation, in conjunction with the semantics of the embedding context. The embedded clause bears the same relation to utterance time as the matrix clause – they are both located at the same moment in the past, before utterance time.[16] Like the

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[15] I will assume a simple semantics for the tense operator, along the lines of that proposed by Kusumoto (1996). I assume that T introduces a temporal variable, which ranges over intervals and picks out the interval at which the situation depicted in the clause is true. (This variable saturates the temporal argument of the predicate in VP.) This temporal variable is what gets bound by the tense operator and related to utterance time. TP is of type $<i,t>$, a function from intervals to truth values. The tense operator is of type $<<i,t>,<i,t>>$, binding the temporal variable in the TP and creating a new function from intervals to truth values. The denotation of the PAST tense operator would be the following (taken from Kusumoto, 1996):

(i) $[[PAST]] = f: D_{<i,t>} => D_{<i,t>}$
         For all P in $D_{<i,t>}$, t in D_i and w in W, w is in f(P)(t) iff $\exists t'$ in D_i such that $t' < t$
         and w is in p(t')

The utterance time s will provide the value for the evaluation time t in the above denotation, since sentences are typically related to/evaluated with respect to utterance time. The denotation entails that a sentence will be true with respect to the utterance time s iff there is some time preceding s at which it was true. This is the way in which the past tense operator relates a clause to utterance time (evaluation time).

[16] This description of the meaning of the simultaneous reading is an oversimplification, ignoring the effects of the attitude context created by "John said" on the interpretation of the embedded clause. (For example, it sweeps aside the possibility that John's belief is false, and that Mary wasn't sick at all at the time he made his statement.) This issue is a complicated one; see Ogihara (1996) and Abusch (1997) for discussion and for differing views of the role of the embedding context in the interpretation of SOT sentences. I will not discuss this issue further here, however, since all researchers (Stowell, Abusch, Ogihara, and others) agree that the embedded clause lacks its own semantic tense operator under the simultaneous reading.

embedded clause in an SOT construction, I propose that SR-marked clauses also lack a tense operator. This defect is why they lack their own temporal reference: they have no tense operator which will serve to locate them with respect to utterance time. Their temporal reference is instead provided by the tense operator of the fully-inflected clause they are associated with. The lack of a tense operator is also why SR-marked clauses cannot appear on their own, as discussed in section 2.1 above – they must appear in conjunction with a clause containing an operator. Otherwise, their tense morphology will go unlicensed, just as in the case in (16b) above:

(18)   a. *[Baha ulu-ka   pruk-i]
           [That wasp-CNSTR hit-*SS*]
           "I will hit that wasp."

      b. [Baha ulu-ka   pruk-i]   ik-amna.
          [That wasp-CNSTR hit-*SS*]   kill-*FUT:1*   FUT
          "I will hit that wasp and kill it."

The tense operator represented by FUT in (18b) licenses the *SS* morpheme in the SR-marked clause in brackets. In (18a), there is no tense operator and the SS morphology goes unlicensed. The hypothesis that SR-marked clauses lack a tense operator also has consequences for the structure of clause chains. Under this approach, only the final clause in a chain has a tense operator, since it is the only fully-inflected clause: all the other clauses in a chain are SR-marked and therefore lack one. The final clause c-commands all the other clauses in the chain, under the asymmetric coordinate structure argued for above. Therefore, its tense operator will c-command and license the tense morphology of the SR-marked clauses, as well as that of its own clause. (We will return to the exact mechanism for licensing the SR-marked clauses' defective tense morphology in 3.2.2 below.) The tense operator also provides the temporal interpretation for the SR-marked clauses, just as the matrix PAST in simultaneous SOT constructions provides the temporal interpretation for both the matrix and embedded clauses. The final clause's tense operator locates all of the clauses in the chain with respect to utterance time. In this way, clause chains are much like SOT constructions under the simultaneous reading.[17, 18] This analysis directly explains the fact that SR-

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[17] This analysis glosses over a difference between SOT and clause-chain interpretations. Under the simultaneous reading of an SOT sentence, the situation in the embedded clause is always interpreted as overlapping with the situation in the matrix clause. In clause chains, the situations in the SR-marked and final clauses are often interpreted as occurring successively (see fn. 7). All the clauses in the chain bear the same relation to utterance time, however. This fact suggests that there is an additional factor contributing to the interpretation of the embedded clause in the SOT case -- e.g., the semantics of the matrix attitude verb, as argued by Ogihara (1996) and Abusch (1997) and mentioned in fn. 16 above. This factor is what forces the overlapping reading associated with the simultaneous SOT reading.

[18] As Kyle Johnson (p.c.) points out, the fact that the final clause's tense operator c-commands the other clauses in the chain is compatible with a number of possible CP and IP structures for SR-marked clauses. One possibility is that they lack a CP layer entirely, since they do not require one to host a tense operator. (See Stowell, 1982, for arguments based on English Control and ECM infinitives that a CP layer is required for a clause to have/host a tense operator.) Under this approach, clause chains would involve a series of conjoined IPs underneath a single CP, associated with the final clause. This analysis receives interesting support from the fact that the final clause in a chain can host a wh-question word, but an SR-marked clause cannot, as noted by Hale (1991):

  (ii) a. *[Dia   atk-ram]   aisik-am   truk kum   atk-an ?
          [what buy-DS:2] father-2   car one   buy-PAST:3
         "What did you buy and your father bought a car?"
         "You bought what and your father bought a car?"

      b. [Man   aras   kum   atk-ram]   aisak-am   dia   atkram ?
         [you   horse one   buy-DS:2] father-2   what buy-PAST:3
         "You bought a horse and your father bought what?"

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marked clauses are interpreted as having the same tense as the final clause of a chain. AGR-based theories of SR (like Finer, 1985, or Broadwell, 1990) do not have as direct an explanation of this temporal dependence. They assume that SR is primarily a relationship between AGR elements of adjacent clauses – they make no reference to Tense, and therefore have no immediate explanation of Tense-related facts. Extending such accounts by claiming that Tense binding follows AGR binding has problems, as well. In the DS case, the temporal dependence of SR-marked clauses is dissociated from their Agreement – DS clauses are fully specified for Agreement, yet they are still temporally dependent on the final clause. AGR appears to be free but Tense (and the clause's temporal reference) is still dependent. Theories which claim that SR properties derive from AGR binding will have a hard time explaining these facts.

   AGR-based theories (more specifically, Finer, 1984, 1985) also have no direct explanation of why SR-marked clauses cannot appear on their own, at least in the DS case. Finer argues that the SS marker is an A-bar anaphor, which must be bound, while the DS marker is an A-bar pronominal, which must be free. This approach correctly predicts that SS-marked clauses must be subordinate to another clause, one containing another AGR which can bind the SS marker. However, it incorrectly predicts that DS-marked clauses should be able to appear on their own. The only condition on the DS marker is that it be free, which will be satisfied if the DS-marked clause appears as a matrix clause, with nothing to bind the DS marker.[19] Under the approach here, the reason that SR-marked clauses are dependent is because they lack a tense operator and therefore cannot be temporally located on their own. SS- and DS-marked clauses are identical in this respect, so they are both equally dependent on the fully-marked clause they are associated with. It is therefore the lack of a tense operator, rather than SR morphology or the marking of switch-reference itself, that is responsible for SR-marked clauses' dependent status. In section 3.2.2, I will argue that the SR-marked clauses' lack of a tense operator is what is responsible for/drives the marking of SR, as well.

3.2.2. SR marking as anaphoric Tense

   I will now turn to the mechanisms responsible for licensing the defective SR tense morphology. In the analysis above, the tense operator associated with the final clause in a chain licenses the SR-marked clauses' tense morphology, in accordance with Stowell's tense-licensing condition. I propose that the condition in (15) governing this licensing is actually a condition on the clause's functional head T, which hosts or is responsible for checking the tense morphology. Further, I propose that the T head of SR-marked clauses is anaphoric, like the anaphoric AGR cases discussed by Borer (1989). Like anaphoric AGR (or any anaphoric category), anaphoric T must be licensed locally by an appropriate element, in this case a tense operator. Since there is no tense operator available in the SR-marked clause to license it, the T head must move out of the clause, in order to be licensed locally by the final clause's tense operator. This movement will also raise AGRs along with T to a position where it can also be bound. This binding of AGRs reflects the co-/contra-indexation of adjacent clauses' subjects, and it is what is behind SR marking. However, the marking is driven by the temporal properties of the SR-marked clause – the lack of a tense operator and the anaphoric status of T – rather than by the SR markers themselves, or the Agreement associated with them.

   I will first turn to the anaphoric status of the Tense heads of SR-marked clauses before considering how they are licensed. As discussed above, SR morphology marks no tense oppositions. As a result, SR-marked clauses can occur with fully-inflected clauses of any tense, as the examples repeated in (19) below show:

   I will not try to decide among possible structures here, however -- for present purposes, it is sufficient that the final tense operator c-commands the rest of the chain.
[19] This problem could be solved if the DS marker were actually a disjoint anaphor, like those found in Dogrib (Saxon, 1984). Such anaphors are obligatorily non-coreferent with the category binding them. Broadwell (1990) adopts this solution for Choctaw SR.

(19) a. [Baha ulu-ka   pruk-i]   ik-amna.
          [That wasp-CNSTR hit-SS]   kill-FUT:1
              "I will hit that wasp and kill it."

      b. [Baha ulu-ka   pruk-i]   ik-ri.
          [That wasp-CNSTR hit-SS]   kill-PAST:1
              "I hit that wasp and killed it."

I adopt Borer's (1989) approach to anaphoric functional categories and propose that the reason SR morphology can co-occur with any tense operator is because the T heads associated with it are anaphoric. Borer argues that AGR elements with degenerate agreement marking (like English infinitival Agreement) are often anaphoric. She claims that the referential dependency in sentences like (20) below is actually the result of the anaphoric nature of the embedded clause's AGR, rather than the status of the embedded null pronominal.

(20) Amy_i wants [CP AGR_i [pro_i t_i to leave]]
                             |_____|

The embedded AGR in (20) is empty – it hosts no phi features of its own, and it consequently does not determine the reference of the empty pro subject coindexed with it. Instead, pro's reference is determined by the subject of the matrix clause it is associated with. As the representation in (20) suggests, Borer argues that anaphoric AGR raises to C, where it is licensed. This licensing is what indirectly determines the interpretation of pro. In C, AGR is bound by an argument in the higher clause, endowing it with phi features and allowing it to license the embedded pro. The reference of pro is thus indirectly determined by the element licensing anaphoric AGR, since it bestows its features on the empty AGR head. Borer describes parallel cases of degenerate/anaphoric AGR in a number of other languages, such as Hebrew, Italian, and Korean, in which the underspecified AGR is licensed by an element in a higher clause.

Like the anaphoric AGR cases Borer discusses, as well as SE anaphors in other languages (Reinhart and Reuland, 1993), SR markers have no tense-related features or morphological content of their own. As described in section 3.2.1 above, they are also licensed by an element in a higher clause, in a manner reminiscent of the English infinitival case in (20). It thus appears likely that SR morphology is associated with an anaphoric T head. It also appears that it is primarily or, exclusively T that is anaphoric, not AGRs. As discussed in section 2.2 above, the agreement inflection found in DS-marked clauses is as complete as that found in fully-inflected main clauses in Miskitu, suggesting that the AGRs head associated with DS-marked clauses at least is not anaphoric. (We will return to the pronominal/anaphoric status of SR clauses' AGRs heads below.) I will therefore conclude that the morphological deficiency of SR tense marking reflects the anaphoric status of the Tense head hosting it.

I will now turn to how the SR-marked clauses' anaphoric T head gets licensed. Following Kusumoto (1996), I assume that the tense-licensing condition in (15) is actually a condition on the licensing of the T heads associated with tense morphology. This approach simplifies the semantic interpretation of tense and the tense operator (see fn. 15 above), and it also allows the licensing of anaphoric T to be assimilated to the licensing of anaphoric AGR, as we will see in a moment. As shown in (19) above, an SR-marked clause can be associated with any final/fully-marked clause, one containing either a PAST or a PRES tense operator. Under the analysis above, this means that any tense operator is eligible to license the SR morphology. This conclusion actually follows from the condition in (15), which states that a tense morpheme must be c-commanded by a tense operator compatible with it in order to be licensed. As reinterpreted here, (15) requires that the T head associated with the tense morpheme be c-commanded by a compatible tense operator. Since SR T heads host no tense

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morphology, and the morphemes associated with them mark no tense oppositions, they are compatible with any tense operator. Therefore, any tense operator can license them.

Anaphoric SR T is thus licensed by the tense operator of the final clause in a chain. This long-distance licensing is much like the licensing of anaphoric AGR by an argument in a matrix clause in cases like the one in (20). The embedded infinitival clause in (20) does not contain any element which can endow the empty AGR with features – the pro subject is empty as well, and there are no other c-commanding elements in the embedded clause. AGR therefore moves out of the embedded IP (its governing category and local domain; see Borer, 1989, for details) and into the empty C above it, where elements from the matrix clause can bind and license it. If C is filled and AGR cannot move there, it cannot be licensed:

(21)   *Amy$_i$ wants [CP for [pro$_i$ AGR$_i$ to leave]]

The case for anaphoric T is parallel. The SR-marked clauses containing it do not contain a tense operator which can license it. Therefore, it must be licensed by a tense operator in another clause. Interestingly, it also appears that SR T must move out of the clause containing it (also its local domain, as we will see below) to be licensed by the final clause's tense operator. Specifically, it must raise to the empty head of the ConjP which dominates the SR-marked IP. If a clause chain contains an overt Conj head, the sentence is ungrammatical:[20]

(22)   *[Baha ulu-ka   pruk-I]   an   ik-amna.
        That   wasp-CNSTR hit-SS]   and   kill-FUT:1
        "I will hit and kill that wasp."

For both anaphoric AGR and anaphoric T, the functional heads must raise out of the clauses containing them in order to be licensed by elements in another clause.
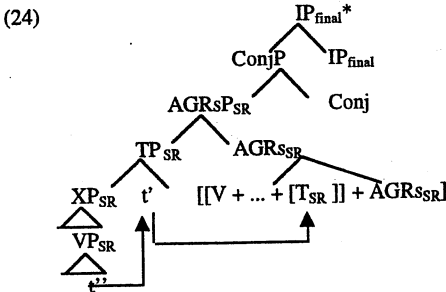
I will now briefly show exactly how anaphoric T is licensed by the final clause's tense operator. I will assume that the following definitions of the Binding Conditions apply to anaphoric T (taken from Chomsky, 1986):

(23)   a.   An indexing I is BT (Binding Theory) compatible with (a, b) if:

        (A) a is an anaphor and is bound in its local domain b
            under the indexing in I.

        (B) a is a pronominal and is free in its local domain b
            under the indexing in I.

        b.   For some domain b such that the condition in (i) is met,
             I is BT-compatible with (a, b):

        (i) a is an anaphor or pronominal, and b is the least CFC (Complete
             Functional Complex) containing a governor for a for which there is
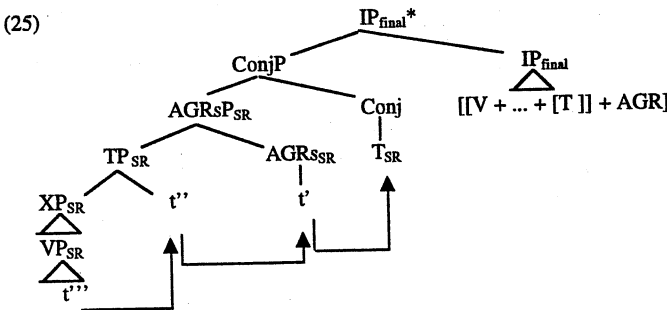   an indexing J BT compatible with (a, b).

A CFC is defined as the smallest maximal projection containing all the grammatical functions associated with that projection. In the case of a clause, the smallest CFC is the

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[20] Ken Hale (p.c.) notes that some native speakers will occasionally insert *bara* ("and") between clauses in a chain, particularly in SS chains. The speakers I asked rejected examples with the conjunctions *an* and *wihki*, but I did not test *bara*. While such examples could pose a problem for the analysis of SR proposed here, they do provide suggestive evidence in favor of the analysis of clause chains as coordinate structures presented above.

maximal projection containing the clause's subject, AGRsP. In the case of a coordinate structure, I will assume that the smallest CFC is the one containing all the conjuncts. The conditions in (23) entail that if a category a is anaphoric, it must be bound by an element b in the smallest CFC containing a governor for a. A governor is defined as a +V category which c-commands the item being governed. Anaphoric T is base-generated in the SR-marked AGRsP. It raises with V and the other functional categories to the highest projection in the SR-marked clause. For concreteness, I will assume that this projection is AGRsP (though see discussion in fn. 18 above).

(24)

$$IP_{final}^*$$

ConjP IP_{final}

AGRsP_{SR} Conj

TP_{SR} AGRs_{SR}

XP_{SR} t' $[[V + ... + [T_{SR}]] + AGRs_{SR}]$

VP_{SR}

t''

(As the tree in (24) suggests, I remain uncommitted as to the structure of the SR-marked clauses below TP.) In this configuration, V will serve as the governor for anaphoric T_{SR}, assuming that it c-commands it in the V + Infl amalgam above. AGRsP_{SR} therefore forms the local binding domain for the anaphoric T, since it is a CFC (a clause containing a subject) and it contains a governor for T (the V). The SR-marked clause contains no binder for T_{SR}, however, since it has no tense operator. Therefore, T must move out of it, to another projection where it can be licensed.

(25)

$$IP_{final}^*$$

ConjP IP_{final}

AGRsP_{SR} Conj $[[V + ... + [T]] + AGR]$

TP_{SR} AGRs_{SR} T_{SR}

XP_{SR} t''

VP_{SR} t'

t'''

T raises to fill the empty head of ConjP. Here, it is c-commanded by the final clause's tense operator, as well as the V of the main/final clause, which has also raised to the highest projection of its clause.[21] The final clause therefore constitutes a new local
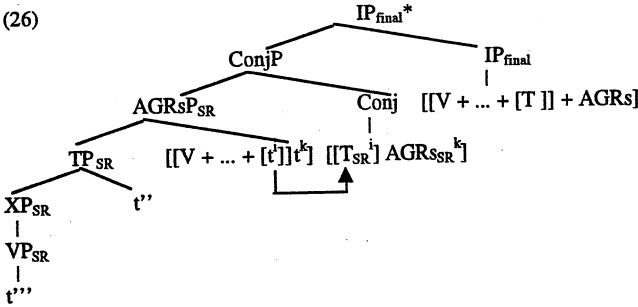
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[21] As discussed in fn. 18 above, the claim that the tense operator and the V of the final clause c-command the anaphoric T head in Conj is compatible with a variety of structures. One such structure is one in which the ConjP containing the SR-marked clauses is adjoined to the final clause at the IP level, below the final clause's CP. In such a structure, the final clause's CP will dominate all the other clauses/IPs in the chain. The final clause's V will raise to C, under standard assumptions. Assuming that the tense operator also sits in C (Stowell, 1982), both it and V will c-command all material in the chain. Another possibility with respect to the position of tense operator is that it is adjoined as an S

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domain for anaphoric T_{SR}, since it contains a governor for T (the final clause's V, which c-commands it) and is a CFC (since $IP_{final}*$ is the minimal maximal projection containing all of the conjuncts in the chain). It also contains a tense operator, which can bind and license anaphoric T.

Anaphoric T is thus licensed in its new local domain, after it raises out of the clause where it is base-generated. This licensing process is directly parallel to the one Borer (1989) posits for anaphoric AGR cases. Anaphoric AGR cannot find a suitable local licenser in the clause where it is base-generated. Therefore, it must raise to a higher position (specifically, to the head of the CP dominating it) in order to find one. There, it is governed by the V of the matrix clause it is associated with. This expands its local domain to include the matrix clause, which contains a suitable licensing element. Anaphoric T and anaphoric AGR are therefore licensed via the same process, in similar configurations, and their licensing is blocked when this process cannot apply.[22]

I will now turn to how the raising of anaphoric T gives rise to SR marking. To reach Conj, T must detach from the V stem and raise via Excorporation (Roberts, 1991). To do so, however, it must move through AGRs, given that AGRs dominates T.[23] Excorporation, like Incorporation, respects the Head Movement Constraint (Roberts, 1991; Baker, 1988), so AGRs must raise with T.[24] This movement will put AGRs in Conj along with T, as in (26):

(26)

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[22] Kyle Johnson (p.c.) points out that other cases of anaphoric AGR which Borer discusses (as well as most non-finite clauses crosslinguistically) actually involve overtly filled complementizers, which apparently do not block the movement and licensing process described here. A few of the SR cases Finer (1985) discusses also appear to have complementizer-like elements which may be separate from the SR markers themselves, and which also do not block the licensing of SR morphology. If the analysis of SR proposed here is more broadly applicable, they should block the raising and licensing of SR T, as they appear to in Miskitu. One possible approach to these facts is to claim that in these other languages, the raising and licensing processes take place covertly, while they take place at S-structure/before SPELL-OUT in Miskitu and English. For Miskitu, at least, there is evidence that the raising of T takes place overtly and has morphophonological consequences, as will be discussed below. See also Borer (1989) for discussion of anaphoric AGR licensing in Belfast English, a *for-to* dialect.

[23] Alternatively, AGRs could be a feature on T, as has recently been proposed by Chomsky (1995) and others. (See also Speas, 1991, for arguments from the verbal morphology of Navajo that T and AGRs must not be separate functional projections.) Anaphoric T could raise to be bound and bring its AGRs feature along with it. However, it is unclear how the DS case would be handled under such an approach. The T head would have to be bound, but the AGRs feature on it would have to be free. A more articulated theory of feature-checking and the relationship among features and the categories/heads hosting them might solve this problem, but I will not pursue such a solution here.

[24] See Guasti (1993) for a similar Excorporation-based analysis of Romance restructuring constructions. Guasti claims that in Italian causative constructions, one of the verbs Excorporates from an amalgamated verb cluster, therefore behaving as a separate word in the overt syntax.

The T and AGRs heads of the SR-marked clause thus move together out of the clause to Conj, independent of the V they were previously amalgamated with. The morphophonological properties of Miskitu verbal morphology provide evidence in favor of an independent [T + AGRs] constituent. Dickey (1993) argues that the inflectional complex in Miskitu verbs exhibits templatic behavior on its own, independent of the verb stem. For example, the portmanteau morpheme associated with the imperfect past tense must be no larger than one Foot, while the simple present's affix must be no larger than one syllable. This templatic behavior suggests that the verbal affix is being treated as a separate unit by the phonology at SPELL-OUT, much as Myers (1987) argues for verbal affix complexes in Shona. This behavior suggests that the [T + AGRs] amalgam is separate from the V stem at SPELL-OUT, as claimed here.[25]

As discussed above, the [V + ... + AGRs] amalgam of the main clause c-commands the T (and also the raised AGRs) of the SR-marked clause in Conj. This configuration puts the AGRs of the main clause in a position to bind the AGRs of the SR-marked clause. This binding relationship works in essentially the same way as the A-bar binding relationship Finer (1984, 1985) posited, and it is what gives rise to the overt marking of SR. Following Finer and Borer (1989), I assume that AGR elements may be either anaphoric or pronominal. In the SS case, the SR-marked clause's AGRs head is anaphoric. It bears the same index as the main/final clause's AGRs, since the two clauses' subjects have the same index. (Whenever two clauses have the same subject, their AGRs's will bear the same index, since the subject and AGRs are coindexed.) The higher AGRs will therefore bind the lower one, since they share the same index and it c-commands the lower one. In the DS case, in contrast, the AGRs head is pronominal and free. The two AGRs's are non-coindexed, since the two clauses do not have the same subject. The higher AGRs will therefore not bind the SR-marked AGRs in Conj. The SR AGRs must therefore be pronominal and free.

Thus, the higher AGRs will bind the SR-marked clause's AGRs whenever the two clauses have the same subject, making the SR AGRs anaphoric. It will not bind the SR AGRs when the two clauses have different subjects, making the SR AGRs pronominal. This analysis is supported by the morphology associated with the SS and DS markers. SS AGRs carries no person marking at all, making it morphologically impoverished, just like other anaphoric AGR cases Borer (1989) discusses. In contrast, the DS AGRs has a full agreement paradigm, suggesting that it is pronominal and independent. The morphology associated with the AGRs heads in the two cases thus reflects the head's binding status – anaphoric morphology in the case where the head is bound (the SS case) and pronominal morphology in the case where the head is free (the DS case).

This process of AGRs raising and binding will also apply if the two adjacent clauses are SR-marked ones. Each clause c-commands the ConjP and clause preceding it, as argued in section 3.1 above. For each SR-marked clause, T and AGRs will raise together to Conj in order for T_{SR} to be licensed:

(27)
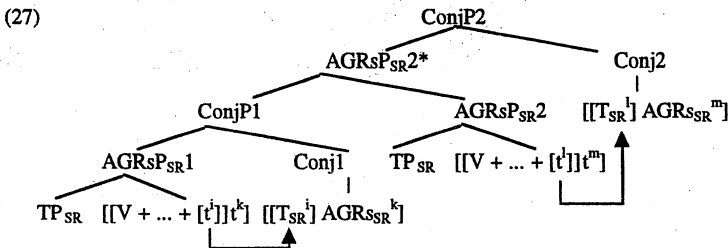
The AGRs head of $AGRsP_{SR}2$ in Conj2 c-commands the raised AGRs of

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[25] See also Kissock (1995) for evidence based on Telugu reflexive and middle marking that T and AGRs raise separately, independent of the V stem.

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AGRsP$_{SR}$1 in Conj1 in (27). The two heads will therefore enter into the same AGRs binding relationships as found in the final clause/SR-marked clause case discussed above. Since the AGRs of each clause in a chain will c-command the AGRs of the preceding one, SR-marking will proceed locally and hierarchically, as discussed in section 2.1 above.

SR-marking is hence a surface reflex of the binding of AGRs, as Finer (1984, 1985) originally suggested. However, unlike in Finer's account, AGRs binding is here a derived phenomenon, a by-product of the raising of T. Each SR-marked clause's AGRs raises with T to a position where it can be c-commanded and bound by the following clause's AGRs. Therefore, it will be marked for SR (i.e., AGRs binding) with respect to the following clause's subject and AGRs. This process captures the hierarchical SR pattern discussed in section 2.1 above. It also means that SR in Miskitu is ultimately a consequence of the fact that SR-marked clauses lack their own tense operator, since this structural defect is what motivates the SR T head's movement.

3.3 SR in complement clauses

The fact that SR-marked clauses also appear as complements of some verbs is a problem for theories such as Finer's (1985) and Foley and van Valin's (1984), which claim that SR only occurs in adjoined or peripheral structures. Finer claims that SR-marking structures are universally "weakly" subordinate ones, while Foley and van Valin use the loose structural relations found in SR-marking constructions to motivate their co-subordination clause juncture relation.[26, 27] The fact that SR morphology appears in complement clauses is a natural consequence of the theory proposed here, however. SR arises because anaphoric T must be licensed by a c-commanding tense operator in a higher clause. This structural requirement is also satisfied in complement structures. The tense operator of the matrix clause will c-command the embedded clause, licensing the embedded SR T. The matrix AGRs will also c-command the embedded AGRs, allowing it to be bound and thus giving rise to SR.[28] The fact that SR does occur in complement clauses is therefore further support for the theory proposed here, which predicts that SR morphology should be possible wherever the structural requirements necessary for binding the SR T and AGRs are met.

The fact that SR-marked clauses occur as the complements of only certain verbs also falls out from the analysis proposed here. The central property of SR-marked clauses is that they are tenseless: they lack a tense operator. The verbs selecting SR-marked clauses – aspectual and perception verbs – have been argued on independent grounds to select tenseless clauses. Wurmbrand (1997) argues that the tenseless nature of the complements of restructuring verbs in Germanic and Romance (among them

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[26] Finer's "weak" subordination may correspond to Foley and van Valin's (1984) co-subordination clause-linkage relation. Foley and van Valin note that all the SR languages they have investigated make use of switch-reference primarily or only in co-subordinate structures. They do not restrict SR to co-subordinate structures only. However, they do restrict it to what they call "peripheral" structures, which roughly correspond to the class of adjoined and coordinate structures in GB and related frameworks.

[27] In chapter 4, Finer (1984) admits that SR may also be found in complementation structures. However, as it stands, Finer's system has technical difficulties in accounting for SR in complement clauses. In order to explain some SR patterns in Hua and Yuman languages, Finer must assume that the subject of the SR-marked clause can also serve as an accessible SUBJECT for the SR marker. This assumption entails that the matrix clause's VP serves as the domain for an SR marker in a complement clause: the matrix VP contains both a SUBJECT accessible to the SR marker (the subject of the embedded clause) and a governor (the matrix V). This domain excludes the AGR of the matrix clause, and it makes the SR relationship between the two clauses' AGR's impossible. Finer proposes a potential solution to this problem in chapter 4, which he is unable to confirm, based on evidence from Chickasaw. I will not consider this solution or this problem further here.

[28] The apparent opacity of the SR-marked AGRsP which motivated the movement of SR T in clause chains must somehow be voided for T and AGRs to be licensed in situ. They may raise to an empty C position above AGRs, much as in Borer's anaphoric AGR analysis. This would entail that complement SR-marked clauses have a CP layer. Alternatively, the matrix V could directly govern AGRs, making it transparent for binding. I will not explore this problem further here. See fn. 18 for some discussion of the structure of SR-marked clauses.

perception verbs) is what is responsible for their syntactic behavior. Guasti (1993) argues based on the distribution of temporal adverbials and auxiliaries that Italian and Chichewa causative and perception verb constructions contain only one Tense projection, the one associated with the matrix/selecting verb. Aspectual verbs also appear to select tenseless complements (e.g., "John began to work/began working"), as discussed by Odijk (1985), among others. Interestingly, the causative construction in Miskitu also uses SR morphology, suggesting that it also involves a tenseless complement clause (Salamanca, 1988; Hale, 1991). Causative verbs are the other primary verbs involved in Romance and Germanic restructuring constructions. The class of structures in which SR-marked clauses occur in Miskitu are hence constructions which have been argued independently to select tenseless complements, crosslinguistically.

4. SR and clause-chaining crosslinguistically

4.1 SR crosslinguistically
    The analysis of SR proposed here provides insight into two central observations regarding SR. The first observation is that SR and tenselessness appear to be linked in the languages in which SR is found. Stirling (1993) notes that in most languages, SR marking is incompatible with absolute tense marking, i.e., marking which indicates the location of the clause with respect to utterance time. SR-marked clauses are either simple infinitives, carrying no tense inflection at all, or they carry relative tense marking, which only locates the clause in time with respect to another clause, not utterance time. Walbiri (Hale, 1976; 1978), Diyari (Austin, 1981), and Choctaw (Broadwell, 1990) are examples of languages in which SR-marked clauses are simple infinitives. Seri (Moser, 1978), Arrernte (Wilkins, 1988) and Amele (Roberts, 1988; Stirling, 1993) are languages in which SR-marked clauses carry relative rather than independent or absolute tense marking. This association between tenselessness and SR appears to hold for all of the languages I have come across: in all of the languages discussed in Austin (1981), Haiman and Munro (1983), Finer (1985), and Stirling (1993), SR-marked clauses carry either no tense marking or dependent tense marking, and they appear to be temporally dependent the fully-marked clause they are in construction with.
    This connection is illustrated most clearly in languages which mark SR in some constructions, but not others. Walpiri is such a language. Hale (1976, 1978) notes that Walbiri is an SR-marking language, with SR being marked productively in adjoined subordinate clauses. Walpiri has both finite and non-finite adjoined subordinate clauses, which typically serve an adverbial function. The two types of clauses participate differently in SR marking, however. Non-finite subordinate clauses, which are presumably tenseless, are always marked for switch-reference. Finite subordinate clauses are never marked for SR -- they do not participate in Walpiri's switch-reference system. The same appears to be true of Diyari: Austin (1981) notes that SR marking is a feature exclusive to non-finite clauses, and is not found in finite clauses, even those which appear in similar environments to those in which SR-marked non-finite clauses are found. The approach to Miskitu SR proposed here captures this correlation directly. SR-marked clauses lack a tense operator, which is what forces their T heads to move and gives rise to SR marking. SR marking is derived from the tenselessness of SR-marked clauses. The fact that SR appears to be connected to tenselessness crosslinguistically provides further support for the analysis of SR argued for here.[29]

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[29] SR also appears to be incompatible with independent mood and aspect marking, a fact I will not discuss here. For example, Mary Swift (p.c.) notes that in West Greenlandic, SR marking seems to be related to mood dependence – SR-marked clauses are not marked for mood, while most or all other clauses are. Interestingly, Greenlandic clauses are not obligatorily marked for tense, suggesting that "mood prominence" versus "tense prominence" is somehow related to what categories are involved in SR relations. In "mood prominent" languages like Greenlandic, mood marking is suppressed and mood is dependent, while in "tense prominent" languages like Miskitu, it is tense that is dependent. This correlation is intriguing, but unfortunately, I will not be able to explore it further here.

The second major observation regarding SR is that it always appears to involve subjects. Stirling (1993) notes that even in languages where SR has been extended to mark coreference of other event participants or parameters (such as objects or temporal location), it always marks SR for subjects as well. This privileged role for the subject follows straightforwardly from the approach here. The anaphoric T head raises through AGRs and gives rise to SR. Assuming that AGRs always dominates T crosslinguistically, subject SR marking (binding of AGRs) will always arise as a consequence of T movement. The T head will always have to move through AGRs to arrive at a position where it can be bound. This will always bring the AGRs head with it, putting it in a position to be bound as well and therefore giving rise to SR marking.

4.2 Clause chaining crosslinguistically

The analysis of Miskitu clause chains proposed here also explains two crosslinguistic generalizations regarding clause-chaining. First, clause chaining appears to involve many coordinate properties. Stirling (1993) notes that many researchers have claimed that clause chaining is either functionally equivalent to coordination or is actually a covert case of coordination, even though the non-final clauses in a chain are asymmetrically dependent on the final one. Roberts (1988), for example, argues convincingly that clause chaining constructions in Amele involve a covert conjunction as discussed above. The current analysis of clause chains captures both their subordinate and coordinate properties – it claims that clause chains are coordinate structures, but that they are syntactically asymmetric coordinations. This hierarchical structure allows the initial SR-marked clauses to be asymmetrically dependent on the final one, since it c-commands them and is therefore in the proper configuration to license dependent elements contained in them. In fact, the analysis proposed here may obviate the need for Foley and van Valin's (1984) cosubordination relation, discussed above, which combines both coordinate and subordinate properties. (Stirling, 1993, follows Foley and van Valin's analysis of clause chains as cosubordinate structures and develops a Categorial Grammar formalization of the cosubordination relation.) As shown for Miskitu above, an asymmetric coordinate structure can capture both kinds of properties.

The current analysis also gives a unified account for the universal properties of clause chaining described by Longacre (1985). Longacre claims that clause chains universally share two important structural properties (he also discusses a third discourse/rhetorical function, which we will not discuss here). First, the non-final clauses in the chain all depend on the final clause for their tense marking and temporal interpretation. Second, the non-final clauses are all marked for switch-reference. Longacre provides no account of why these properties should co-occur in clause chains. However, under the account here, the two are directly linked. Non-final (SR-marked) clauses have anaphoric Tense marking, and they lack their own tense operator. They are therefore dependent on the final clause to license their anaphoric Tenses and provide them with a temporal interpretation. Assuming that this dependency must be resolved through a raising process, as in Miskitu, the anaphoric T heads of the non-final clauses will raise to be licensed and consequently give rise to SR. The SR marked on non-final clauses is thus a by-product of their tense dependence on the final clause, just as in Miskitu. The apparent universality of this pattern provides further support for the clause chaining analysis proposed here.

5. Conclusion

The analysis of SR presented here recasts it as a by-product of SR-marked clauses' tense dependence. This view of SR captures the temporal properties of SR in Miskitu, and it sheds light on the crosslinguistic connection between temporal reference and SR. The structure of clause chains argued for here also provides some insight into the properties of clause chains crosslinguistically. Further research will hopefully determine whether this approach can be useful in accounting for some of the cases of anomalous SR marking Stirling (1993) discusses. She notes that in languages like Eastern Pomo,

Lenakel, and Amele, DS marking can be used to indicate changes in temporal location, modality, or even spatial location of the events depicted in the clauses marked for SR. In view of these facts, she argues that SR should be recast as a system marking agreement or disagreement between eventualities described in SR-marked clauses, rather than agreement or disagreement between the subjects of those clauses. While consideration of these cases is beyond the scope of this paper, recasting SR as essentially a case of temporal dependence is clearly a first step toward capturing these effects. Such phenomena may fall out of a well-articulated theory of the interaction of Tense and event descriptions, combined with the approach to SR and Tense-binding argued for here.[30]

ABBREVIATIONS

AGR:	Agreement	IP:	Inflectional Phrase
AGRs:	Subject agreement	NEG:	Negation
AGRo:	Object agreement	PL:	Plural
C:	Comp, Complementizer	PAST:	Past tense
CNSTR:	Construct	POSS:	Possessive
CP:	Complementizer Phrase	PRES:	Present tense
Det:	Determiner	SR:	Switch-Reference
DS:	Non-future different-subject morpheme	SS:	Same-subject morpheme
DS:FUT:	Future different-subject morpheme	T:	Tense
FUT:	Future tense	1:	1st person
INCL:	Inclusive	2:	2nd person
INF:	Infinitive	3:	3rd person
INFL:	Inflection		

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[30] Another possibility, is that SR is ultimately related to point-of-view phenomena, like those discussed by Mitchell (1986), Tenny (1998), and especially Kratzer (1997). Under such an approach, SR-marked clauses would lack a point-of-view or perspective operator, which would serve to bind not only the temporal variable associated with the clause but also the world variable (in relation to mood phenomena) and the spatial coordinates of the clause. Given that the subject of a clause is intimately involved in determining its point of view, this approach might also provide a new and interesting way of capturing the relation between subjects and SR (as well as those cases where that relation is not marked). Such an approach might also finally allow the close parallels between subjunctive obviation phenomena and SR phenomena to be collapsed under a single mechanism, given the important role that point of view plays in subjunctive clauses and subjunctive mood marking. Finally, it might provide insight into the fact that SR-marking seems to be attached to different categories in different languages, as discussed in fn. 29 above: mood in Western Greenlandic, and tense in Miskitu. Developing such an account is far beyond the scope of this paper, however, and must await a more fully-developed theory of the formal grammar of point of view in any case.

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