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Interaction Between Discourse Functions and Agreement in Setawana*

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1. Introduction

In this paper we examine the interaction between discourse function and agreement in Setawana, a northern dialect of Setswana.¹ In particular, we explore the grammatical and anaphoric agreement properties of Setawana subject and object markers from the Lexical-Functional Grammar (LFG) perspective of Bresnan and Mchombo (1987) (henceforth B&M). The paper focusses on subject and object asymmetries in Setawana and their treatment within the framework developed by B&M. We discuss a number of analyses of the Setawana data, including the hypothesis that both the subject marker (SM) and object marker (OM) are incorporated pronominals, and that the subject marker (SM) is not ambiguously a grammatical agreement marker as it is in Chicheŵa.

In section two we discuss a variety of pro-drop, word order and wh-extraction phenomena in Setawana and locate the Setawana subject marker (SM) and object marker (OM) within the typology of agreement-marker/discourse function interactions. In the third section we present additional evidence for our analysis by examining Setawana cleft constructions, the role of question words in passives and clefts, and the behavior of adverbials, tone and present indicative tense forms.

We conclude with a discussion of the problematic issues that this analysis of Setswana raises for B&M and for linguistic theory in general.

Our analysis and the work of B&M is conducted within the framework of Lexical Functional Grammar as developed in Bresnan (1982). Because this framework may be unfamiliar to the reader we summarize some of its distinctive components below, and refer the reader for further detail to the articles in Bresnan (1982), particularly Kaplan and Bresnan (1982).

Lexical Function Grammar (LFG) describes an utterance in terms of several distinct representations. The constituent structure (c-structure) represents the surface constituency relationships that hold between the words of an utterance, whereas the functional structure (f-structure) represents the function-argument structure of an utterance. The c-structure is a conventional tree structure with words as its terminals, and the f-structure is a recursive attribute-value structure, which resembles the hierarchical ‘frame’ structures used in knowledge-representation systems. The c- and f-structures that are associated with the utterance Mary chases John are given in Figure 1.

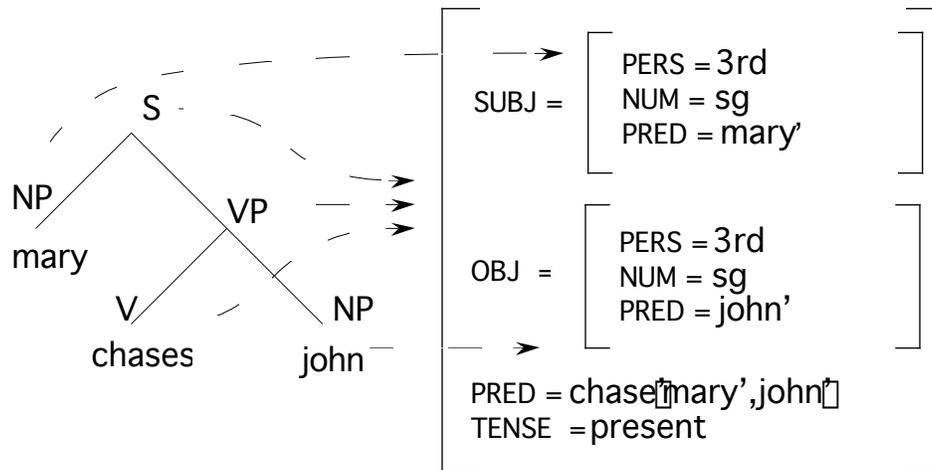


Figure 1: Sample c- and f-structures.

C-structures are specified using context-free phrase-structure rules and lexical entries, and the associated f-structures are specified by annotations that appear on these rules and lexical entries. The f-structures associated with a given c-structure are not determined via a derivational relationship, but by constraints simultaneously imposed by the syntactic, morphological and lexical structure of the language. If there is no f-structure which simultaneously satisfies all of the constraints, then there is no f-structure for the utterance and that utterance is ill-formed.

This can be made formally precise, as was done in Kaplan and Bresnan (1982) and Johnson (1988), but the relationship between c-structure and f-structure can also be understood at a less formal and more intuitive level as well. We view each c-structure node as associated with an element of the f-structure of the utterance as a whole; the arrows in Figure 1. show the association in this example. This association is formally a mathematical function; i.e. while each c-structure node is

The phrase structure rule in (2b) allows a VP node to be expanded as a V optionally followed by an NP. The OBJ annotation on that NP requires the attribute-value element associated with that NP to be the value of the OBJ attribute of the attribute-value element associated with the VP. By convention a category without annotation in phrase structure rules is interpreted as requiring the same attribute-value element to be associated with it and its mother, so in this rule the same attribute-value element will be associated with the V node and its VP mother.

Our analysis incorporates B&M's notions TOP(ic) and FOC(us). TOP refers to the constituent that has already been under discussion, while FOC refers to the constituent that is newly introduced into the discourse. While all grammaticalized topics will have a TOP discourse function, all discourse topics will not necessarily be grammatically marked, and the same holds for FOC items. Constituents that typically carry the TOP discourse function include topicalized elements, while constituents that typically carry the FOC discourse function include interrogative constructions. B&M hypothesize that incorporated pronominals are topic-oriented; that is, they can only anaphorically link to items filling the TOP function. Since question-words are assumed to fill the FOC function, an incorporated pronominal cannot link to a question word.

Critical to both TOP and FOC is that they must satisfy the Extended Coherence Condition; i.e. both TOP and FOC must be linked to predicate argument structure by either being functionally identified with or anaphorically linked to an argument. Functional identification takes place via the f-structure equation annotations in

phrase-structure rules and lexical entries in the manner described above, while anaphoric linking only takes place between an anaphoric element such as a pronominal and a discourse-salient entity.

2. Discourse properties of the Setawana SM and OM

In this section we argue that, in terms of the typology of agreement markers developed by B&M, the Setawana SM and OM are both pure anaphoric agreement markers, and that a lexical NP filling the OBJ function must be adjacent and following the main verb.

2.1 Pro-drop Phenomena

Setawana, like Chicheŵa, exhibits what is commonly called 'pro-drop' phenomena for both subject and object argument NPs, as shown in (3). This suggests that the SM and OM are either optionally or obligatorily incorporated pronominal elements.

- (3) ó-e-bídítse
 SM-OM-lashed
 's/he lashed it'

2.2 Word Order Variation

B&M used the variation of word order freedom in Chicheŵa with respect to the presence or absence of the OM to support their claim that the Chicheŵa OM is an incorporated pronoun. Here we use the variation of word order freedom in a similar way to determine the properties of the SM and OM in Setawana.

(4) shows the grammaticality of the different word order permutations of a simple transitive clause without an object marker.

- (4a) Thabo ó-bidítsé ntsá
 Thabo SM-lashed dog
 'Thabo lashed the dog'
- (4b) ó-bidítsé ntsá Thabo
- (4c) *ntsa o-biditse Thabo
- (4d) *o-biditse Thabo ntsa
- (4e) *Thabo ntsa o-biditse
- (4f) *ntsa Thabo o-biditse

(5) shows the grammaticality of the different word order permutations of a simple transitive clause when an object marker is included.

- (5a) Thabo ó-e-bídítse ntsá
 Thabo SM-OM-lashed dog
 'Thabo lashed it, the dog'
- (5b) ó-e-bídítse ntsá Thabo
- (5c) ntsá ó-e-bídítse Thabo
- (5d) ó-e-bídítse Thabo ntsá

(5e) Thabo ntsá ó-e-bídítse

(5f) ntsá Thabo ó-e-bídítse

The pattern of grammaticality with respect to word order variation and object marking is summarized in (6).

(6)

Order	Without OM	With OM
SVO	yes	yes
VOS	yes	yes
OVS	*	yes
VSO	*	yes
SOV	*	yes
OSV	*	yes

This is the same word-order distribution pattern found by B&M for Chicheŵ a; it also appears in several other Bantu languages (e.g. Kiswahili - Wald 1979; Xhosa - Visser 1985; Makua - Stucky 1983, 1985; Kihaya - Byarushengo, Hyman & Tenenbaum 1976; Byarushengo & Tenenbaum 1976; Zulu - Wald 1979).

Following B&M, if we suppose that a lexical NP can only fill the OBJ function when it is adjacent and to the right of the V (i.e. the c-structure rule expanding VP is as given in (7)), we account for the ungrammaticality of (4c)-(4f).

(7) VP \emptyset V $\begin{bmatrix} \text{NP} \\ \text{OBJ} \end{bmatrix}$

On the other hand, when the OM is present it fills the OBJ function and links anaphorically to the NP that fills the TOP function. If we assume that the TOP function is not associated with an adjacency restriction such as that associated with the OBJ function, we can account for the increase in word order freedom associated with the presence of the OM.

Thus the word order data provide evidence that the OM is either optionally or obligatorily an anaphoric agreement marker, and that a lexical NP that fills the OBJ function must be adjacent to and follow the main verb.

2.3 Question Word Constructions

B&M hypothesize that question words obligatorily fill the FOC function, and as such cannot serve as the antecedents for anaphoric agreement markers. They thus provide a means to test whether the agreement markers are purely anaphoric agreement markers.

(8a) shows that a question word may fill the OBJ function. The ungrammaticality of (8b) follows if we assume that the OM is purely anaphoric in nature, i.e. a pronominal (filling the OBJ function) which cannot anaphorically link to the question word that fills the FOC function for the reasons discussed above. (8c) and (8d) show that a question-word cannot be functionally identified with or anaphorically linked to the SUBJ function. In this regard Setawana differs from Chichew̃ a; B&M report the Chichew̃ a equivalent of (8c) to be grammatical.

- (8a) Thabo ó-bónye máng?
 Thabo SM-saw who
 'Who did Thabo see?'
- (8b) *Thabo o-m-monye mang?
 Thabo SM-OM-saw who
 'Who did Thabo see?'
- (8c) *mang o-bonye Thabo? ²
 who SM-saw Thabo
 'Who saw Thabo?'
- (8d) *o-bonye Thabo mang?
 SM-saw Thabo who
 'Who saw Thabo?'

The following examples show that this pattern (i.e. WH-words cannot appear linked to either a SM or an OM) also holds in main clause questions where the questioned element is located in a complement clause. (8h) shows how a cleft construction can be utilized to form an acceptable subject question.

- (8e) John ó-dúméla góre Bill ó-súnné máng?
 John SM-believe that Bill SM-kissed who
 'Who does John believe Bill kissed?'

- (8f) *John o-dumela gore Bill o-mo-sunne mang?
 John SM-believe that Bill SM-OM-kissed who
 'Who does John believe Bill kissed?'
- (8g) *John o-dumela gore mang o-sunne Mary?
 John SM-believe that who SM-kissed Mary
 'Who does John believe kissed Mary?'
- (8h) John ó-dúméla góre ké máng yó ó-súnne-ń g Mary?
 John SM-believe that be who RM SM-kissed-REL Mary
 'Who does John believe kissed Mary?'

Examples (8i) - (8l) show that the same pattern also holds with embedded questions.

- (8i) John ó-nágana góre Bill ó-súnné máng?
 John SM-wonder that Bill SM-kissed who
 'John wonders who Bill kissed?'
- (8j) *John o-nagana gore Bill o-mo-sunne mang?
 John SM-wonder that Bill SM-OM-kissed who
 'John wonders who Bill kissed?'
- (8k) *John o-nagana gore mang o-sunne Mary?
 John SM-wonder that who SM-kissed Mary
 'John wonders who kissed Mary?'

- (81) John ó-nágana góre ké máng yó ó-súnne-ń g Mary?
 John SM-wonder that be who RM SM-kissed-REL Mary
 'John wonders who kissed Mary?'

Just as for example (8b) involving the OM, the ungrammaticality of (8c) and (8d) would follow if we assumed that the SM is a purely anaphoric agreement marker. But if the SM is a purely anaphoric agreement marker then given the morphological requirement that every tensed verb have a SM, it follows that the SM is the subject of every tensed sentence. This appears to be a rather strange conclusion, since it implies that lexical NPs are never subjects in Setawana. We discuss below our attempts to find alternative evidence bearing on this hypothesis.

3. Additional Phenomena

In this section we discuss some additional phenomena that support our analysis of the SM and OM as pure anaphoric agreement markers and the adjacency requirement for lexical OBJ-filling NPs.

3.1. Relative Clauses and Clefts

B&M analyze the relative marker (RM) in relative clauses as an element filling the TOP function which may serve as the antecedent of an anaphoric agreement marker inside the relative clause. If our analysis of the SM and OM in Setawana is correct, the SM and OM should both be able to anaphorically link to the RM in a relative clause, i.e. to function as so-called 'resumptive pronouns'. Moreover, if the resumptive pronoun is omitted, as in (9b) and (9d), the sentence should be

ungrammatical, since the f-structure of the relative clause is incomplete (or unfilled). The data in (9) shows that this is in fact the case.³

- (9a) moń na yó ó-kóbíle-ń g ntsá ó-ilé ngak-éng
 man RM SM-chased-REL dog SM-went doctor-loc
 'The man who chased the dog went to the doctor'
- (9b) *monna yo kobile-ng ntsa o-ile ngak-eng
 man RM chased-REL dog SM-went doctor-loc
 'The man who chased the dog went to the doctor'
- (9c) moń na yó ntsá é-mo-kóbíle-ń g ó-ilé ngak-éng
 man RM dog SM-OM-chased-REL SM-went doctor-loc
 'The man who the dog chased went to the doctor'
- (9d) *monna yo ntsa e-kobile-ng o-ile ngak-eng
 man RM dog SM-chased-REL SM-went doctor-loc

Similarly, in a Cleft construction, the RM fills the TOP function of the embedded clause, and is thus a potential antecedent for anaphoric linkage. If our analysis is correct, both the SM and OM should be able to anaphorically link to the RM in a Cleft construction. Again, the data in (10) shows that this is in fact the case.

- (10a) ké moń na yó ó-kóbíle-ń g ntsá
 be man RM SM-chased-REL dog
 'It was the man that chased the dog'

- (10b) ké moń na yó ntsá é-mo-kóbílé-ng
 be man RM dog SM-OM-chased-REL
 'It was the man that the dog chased'

3.2 Question Words in Passive and Cleft Constructions

In this section we discuss the appearance of question words in Passive and Cleft constructions.

In the analysis of the Cleft construction by B&M the FOC position of the cleft cannot directly link to an anaphoric agreement marker in the embedded clause, but the anaphoric agreement marker can anaphorically link to the RM filling the TOP function, which in turn can be functionally identified with the element that fills the Cleft's FOC function. Given our analysis of the SM and OM as pure anaphoric agreement markers, we predict that they should be able to link, albeit indirectly, to a question word in a Cleft construction focus position. As we see in (11), this is in fact the case for both subject and object clefts.

- (11a) ké máng yó ó-kóbíle-ń g ntsá?
 be who RM SM-chased-REL dog
 'Who was it that chased the dog?'

- (11b) ké máng yó ntsá é-mo-kóbíle-ń g?
 be who RM dog SM-OM-chased-REL
 'Who was it that the dog chased?'

Similarly, a question word should be able to appear as the OBL argument of a Passive construction, in which it is not required to anaphorically link to the SM that fills the surface subject argument. This is in fact the case. Thus, even though the direct subject question in (12a) (=8c) is ungrammatical (as it is also in Dzamba (Bokamba 1981)), the passivized version in (12b) is completely acceptable.

- (12a) *mang o-bonye Thabo?
 who SM-saw Thabo
 'Who saw Thabo?'
- (12b) Thabo ó-bóny-we ké máng?
 Thabo SM-saw-PASS OBL who
 'Thabo was seen by who?'

The standard technique for constructing Agent questions in Setawana (and other Sotho languages (Sesotho - Demuth 1989)) is to use either a Cleft or a Passive construction. Louwrens (1982) notes that post-verbal positions are used to introduce new discourse information in the closely related dialect of Sepedi: this follows from our analysis of the Setawana SM as a pure anaphoric agreement marker which is unable to link to Focus elements.

3.3 Sentence Adverbials

Further evidence for the adjacency requirement for lexical OBJ NPs comes from considering sentences with sentence adverbials. (13a) is ungrammatical because Thabo fills the OBJ function, yet is not adjacent to the verb. In (13b) the OM fills

the OBJ function and the lexical NP Thabo fills the TOP function, which does not have an adjacency requirement. Thus (13b) is grammatical.

(13a) *ke-bonye maabane Thabo
SM-saw yesterday Thabo
'I saw Thabo yesterday'

(13b) ke-m-mónyé maabáne Thabo
SM-OM-saw yesterday Thabo
'I saw Thabo yesterday'

3.4 Tonal Retraction

One of the arguments adduced by B&M to show that the TOP NP in Chicheŵ a is in fact VP external involved tonal retraction in phrase final position. A similar phenomenon, involving tone lowering in phrase final position can also be observed in Setswana, as shown in (14).⁴ In particular, the lowering of the final low tone on the verb in (14a), (14c) and (14d) suggests that the verb is phrase-final in these cases, as predicted by our analysis.

(14a) ke-bátá góre bóngwánaké bá-ithúte.
SM-want COMP children POSS SM-study
'I want my children to study'

(14b) ke-bátá góre bóngwánaké bá-ithuté Setswána.
SM-want COMP children POSS SM-study Setswana
'I want my children to study Setswana'

- (14c) ke-bátá góre bóngwánaké bá-sé-ithúte Setswána.
 SM-want COMP children POSS SM-OM-study Setswana
 'I want my children to study it, Setswana'
- (14d) ke-bátá góre bá-sé-ithúte bóngwánaké.
 SM-want COMP SM-OM-study children POSS
 'I want them to study it, my children'

3.5 Long/short Present Tense Forms

Setswana possesses two forms of the present indicative tense marker. When a present indicative verb is phrase final in VP, a present tense marker -a must appear immediately after the SM. This holds for both intransitive and potentially transitive verbs, as shown in (15a) and (15b) respectively. However, if the verb is not phrase final in VP, e.g. if the verb has a complement object NP (15d) or S (15e), or if the verb is in another tense or mood (15e)⁵ no present tense marker appears (Cole 1955, p. 244). As predicted by our analysis, the present tense marker must be used if the verb has an OM, as in (15c).

- (15a) ke-a-siáná
 SM-PRES-run
 'I am running'
- (15b) ke-a-réka
 SM-PRES-buy
 'I am buying'

- (15c) ke-a-é-réka kólói
SM-PRES-OM-buy wagon
'I am buying a wagon'
- (15d) ke-réká kólói
SM-buy wagon
'I am buying a wagon'
- (15e) ke-bátá góre bóngwánaké ba-réke
SM-want COMP children POSS SM-buy
'I want my children to buy'

4. Discussion

In this paper we have shown that 1) the Setawana OM, like that of Chichewê a, is an incorporated pronoun; it does not function as a grammatical agreement marker. However, we have also demonstrated that Setawana does not show the subject-object asymmetries normally expected of Bantu languages: Rather, we have shown that the Setawana SM, like the OM, is a pure anaphoric agreement marker (i.e. an incorporated pronoun). This typological characteristic, while predicted by B&M, raises some problematic issues which are still to be resolved. This first question is that of the phrase structure of Setawana, while the second pertains to the status of the Setawana SM. Each of these issues is discussed briefly below.

4.1 The Phrase Structure of Setawana

B&M discuss two different phrase structure systems with respect to Chicheŵ a, and present arguments showing that Chicheŵ a phrase structure has a flat, rather than a hierarchical structure. With respect to the Setawana case, the relevant phrase structure rules are the flat structure shown in (16) and the hierarchical structure (17).

$$(16) \quad S \rightarrow \boxed{\boxed{\text{NP}}_{\text{SUBJ}}}, VP, \boxed{\boxed{\text{NP}}_{\text{TOP}}}$$

$$(17) \quad S \rightarrow \boxed{\boxed{\text{NP}}_{\text{TOP}}}, S$$

$$S \rightarrow \boxed{\boxed{\text{NP}}_{\text{SUBJ}}}, VP$$

Because B&M's arguments for the flat structure crucially rely on the Chicheŵ a SM exhibiting grammatical as well as anaphoric agreement (in particular, that a question word can fill the SUBJ function) these arguments cannot be used to determine which structure is correct for Setawana.

Note also that because we have analyzed the Setawana SM as a pure anaphoric agreement marker, the optional NP expansion associated with the SUBJ function in the rules in (16) and (17) can never be used.

4.2 The Status of the SM

One of the unusual things about this analysis is that the SM is analyzed as a pure anaphoric agreement marker. This, together with the obligatoriness of the SM on

tensed verbs, implies that no lexical NPs ever fill the SUBJ function of tensed verbs in Setawana.

Bresnan (p.c.) has suggested to us that this is a somewhat bizarre conclusion, and that the SM in Setawana might in fact be an ambiguous agreement marker (ambiguous between grammatical and anaphoric agreement), but that independently the SUBJ function is merged with the TOP function. This merging can be accomplished by means of the f-structure equation $(SUBJ) = (TOP)$, which could be located in the lexical entry for the SM itself, or as part of the annotations on the rule that introduces the NP that fills the SUBJ function.

We have been unable to empirically distinguish Bresnan's proposed analysis from our own. The type of data that would distinguish the analyses would involve some phenomenon that required an NP to be in SUBJ position for it to occur.

Without data capable of empirically determining the difference, it is difficult to resolve the issue of the alternative analysis. On the one hand, claiming that there are no lexical NPs filling the SUBJ function in tensed clauses correctly describes the distribution of question words in Setawana, accounts for Louwrens's (1982) observations about the discourse functions of Passive, and requires no modification to B&M's typology of agreement markers.

On the other hand, Bresnan's modified analysis, which relies on the merging of SUBJ and TOP functions, seems more satisfactory in that it allows there to be NPs filling the SUBJ function in Setawana. On the other hand, it also involves either

extending the typology of agreement markers to include a new type of agreement marker, or else adding an extra annotation to the phrase structure rules.

Note that extending the typology of agreement markers in the fashion suggested by Bresnan may not be so implausible.

(18a) and (18b) show the f-structure equations that appear in lexical entries for purely grammatical and purely anaphoric SUBJ agreement markers respectively.

(18a) Grammatical agreement

(SUBJ NUM) = ...

(SUBJ PERS) = ...

(18b) Anaphoric agreement

(SUBJ PRED) = 'PRO'

(SUBJ) = (TOP)

(SUBJ NUM) = ...

(SUBJ PERS) = ...

The lexical entry for an ambiguous SUBJ agreement marker, (18c) differs from (18a) and (18b) in that the two equations by which (18b) differs from (18a) are optional in (18c). That is, the equational specification in (18c) is intermediate between that of (18a) and (18b).

(18c) Ambiguous agreement

((SUBJ PRED) = 'PRO'

(SUBJ) = (TOP))

(SUBJ NUM) = ...

(SUBJ PERS) = ...

Interestingly, the lexical entry proposed by Bresnan, shown in (18d), would simply be another instance of an agreement marker whose equational specification is intermediate between that of a purely grammatical and a purely anaphoric marker.

(18d) Setawana SM

((SUBJ PRED) = 'PRO')
 (SUBJ) = (TOP)
 (SUBJ NUM) = ...
 (SUBJ PERS) = ...

If this line of reasoning is correct, we might expect there to be languages which possess a fifth kind of agreement marker, that also lies intermediate between purely grammatical and purely anaphoric agreement markers, as shown in (18e), which is unambiguously pronominal, but only optionally links to TOP.

(18e) Hypothesized Agreement Marker

(SUBJ PRED) = 'PRO'
 ((SUBJ) = (TOP))
 (SUBJ NUM) = ...
 (SUBJ PERS) = ...

4.3 Conclusion

In sum, this paper has examined the interactions between discourse function and agreement in Setawana. Using the notions of Topic and Focus as developed in B&M, we have shown that Setawana subjects and objects are symmetrical with regard to their pronominal properties; both the subject marker (SM) and the object marker (OM) can be analyzed as pure anaphoric pronouns. These conclusions

raise some problematic issues regarding the phrase structure of Setawana and the status of the subject marker (SM). Perhaps further theoretical developments and future empirical research on other languages of the Sotho family, which show many of the same typological characteristics as those discussed for Setawana, will help resolve some of these questions.

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¹ The data for this paper is based on the Setawana dialect of Setswana. Those familiar with Sekgatla, Sefurutshe and other dialects of Setswana will recognize that Setawana differs in several important respects. Firstly, Setawana allows for pre-verbal and post-verbal NPs, while Sekgatla and Sefurutse have a much stronger preference for pre-verbal (topicalized) NPs. Secondly, Setawana exhibits some tonal characteristics that differ from those of Sekgatla and

Sefurutshe. While many of the word order judgements examined in this paper are context sensitive, the constraints on word order are systematically more restrictive in 'Standard' Setswana which apparently does not allow post-verbal topics (see Demuth, forthcoming).

² As a direct question (8c) is completely ungrammatical, but it is marginally acceptable as an echo question. This could be because question words in Echo Question constructions are not behaving as purely Focus elements, but rather have a partially anaphoric behavior, linking to the element in the preceding discourse that requires clarification.

³ A slightly different analysis must hold for Sesotho, where relative clauses take object resumptive PNs, but not subject resumptive PNs. Thus, in Sesotho, the equivalent of (9b) is grammatical.

⁴ See Clements (1988) for an analysis of Sesotho tone which is similar to most Setswana dialects in the VP phrase final tone lowering phenomena.

⁵ -a also occurs in the negative perfect, even with verbal adjuncts ha k^hea r^heka k^holoi 'I didn't buy a/the car'.