

# ON DIRECTIONALITY AND THE STRUCTURE OF THE VERB PHRASE: EVIDENCE FROM NUPE

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*Abstract.* We propose a movement account of why some verb phrases seem to be head-final in the Nupe language whereas others seem to be head-initial. Several converging arguments are given that verbs come before their complements in the underlying structure. Apparent counterexamples come from the presence of identifiable functional heads within the verb phrase structure that attract NPs to their specifier position. Two such heads are distinguished:  $\text{Agr}_0^0$ , which attracts an NP nonlocally for purposes of licensing accusative Case, and  $\text{Infin}^0$ , which attracts the closest NP to check an EPP feature regardless of whether it is Case marked. We briefly compare our analysis to remnant movement analyses to sharpen the typology of leftward movement in natural language. We conclude that the success of Kayne's (1994) approach to word order depends on uncovering and cataloging the triggers of these movements.

## 1. Introduction: Word Order Parameters and How to Investigate Them

One of the oldest and most successful parameters is the one that distinguishes head-initial languages from head-final languages. The observation that these two kinds of languages differ in a systematic cluster of ways has its roots in Greenberg 1963 and was discussed in explicitly parametric terms by Stowell (1981). Stowell's version attributed the difference to variation in the X-bar convention: some languages contain the rule  $X' \rightarrow X YP$ , whereas others contain the rule  $X' \rightarrow YP X$ . Ideally, these statements should govern the formation of all phrases, notably including verb phrases. Roughly half the languages of the world use the X-YP order, and half use YP-X (Tomlin 1986).

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The Nupe spelling employed in this article conforms to the modern orthography and thus differs slightly from the classic orthographies of Banfield (1914) and Banfield and Macintyre (1915). In what follows, high tone is marked with an acute accent over the vowel and low tone by a grave accent. Mid tones are unmarked. Abbreviations used in the glosses of example sentences include the following: AGR, agreement; FOC, focus; FUT, future; ITER, iterative; LOC, locative; NEG, negation; PERF, perfect; PL, plural; PRES, present; PRT, particle; PURP, purposive.

Kayne (1994) proposes a very influential revision of this parameter. He claims that there is no variation in the underlying phrase structure but that complements always follow heads in natural human languages. He pays for this more restrictive view of phrase structure by having a more permissive view of movement. Objects come before verbs in, say, Japanese because the direct-object NP or some larger phrase that contains it moves leftward, past the verb, into a specifier position. His movement theory is permissive in two respects. First, a wider range of categories undergo movement than in previous theories; for example, IPs as well as DPs move to [Spec,CP] to derive clause-complementizer orders in various languages. Second, a wider range of landing sites for movement is tolerated, with new functional categories being freely introduced as the hosts of movement. The theory becomes more restrictive in one domain but less restrictive in another, as is often the case.

Kayne's reanalysis of the headedness parameter gained immediate support from languages like Dutch (Zwart 1993) and German, which have notoriously mixed word-order properties. However, the question is still open as to whether it also applies to purer head-final languages like Japanese or Turkish or Quechua. On the one hand, there is always a way to generate the word order in question (see, for example, Julien 2002). On the other hand, derivations become quite complex, often with no clear gain in empirical coverage. This impasse is unlikely to be resolved until the Kaynian program develops a more restricted theory of movement, to complement its very restrictive theory of phrase structure and linear order. Only then will possible word orders be correctly distinguished from impossible word orders, and testable predictions emerge distinguishing Kayne's antisymmetry theory from the classical view.

One way to chip away at this big issue, we suggest, is by careful study of the relatively few languages of the world that have both object-verb and verb-object word orders. In addition to the well-studied continental West Germanic languages, there is a pocket of such languages in West Africa. The relevance of Vata, Gbadi, and Kpelle to generative theories of phrase structure was first pointed out by Koopman (1984). Nupe, a Kwa language of Nigeria, is another language of this general kind. Like Vata and Gbadi, whether verb-object order or object-verb order appears depends on the tense/aspect of the clause and whether certain elements that have modal or aspectual meanings are present, as shown in (1) (Banfield & Macintyre 1915, George 1975, Cormack & Smith 1994, Manfredi 1997).

- (1) a. Musa à si dukun.  
 Musa FUT buy pot  
 ‘Musa will buy a pot.’
- b. Musa á dukun si.  
 Musa PERF pot buy  
 ‘Musa has bought a pot.’
- c. Musa má dukun si.  
 Musa know pot buy  
 ‘Musa knows how to buy a pot.’
- d. Musa yá eci yin si.  
 Musa begin yam PRT buy  
 ‘Musa began to buy yams.’

Languages like Nupe are important because movement must play a role in accounting for their word order. It is very implausible to say all the structures in (1) are base-generated. That claim would be tantamount to saying that both  $X' \rightarrow X YP$  and  $X' \rightarrow YP X$  apply to the same phrase ( $V'$ ) in a single language, depending on the content of some other head not even contained in the  $V'$ . Such an ad hoc analysis has never been seriously considered in the generative literature. So, movement must be involved in either (1a) or (1b) (or both). Suppose that we can figure out the exact nature of these movements. Then we will be able to work toward a more restricted theory of movement than Kayne’s, and we will be in a position to evaluate whether the same kinds of movements are at work in forming uniform head-final languages like Japanese and Turkish under an antisymmetric approach.

In this paper, we endeavor to take the first modest step in this direction. In particular, we seek to determine precisely what combination of head movements and phrasal movements underlie the word order alternations in (1) in Nupe. We will show that the Nupe facts are not well accounted for by either a pure head movement analysis similar to the one that Koopman (1984) proposed for Vata and Gbadi or by a remnant VP movement approach similar to Nkemnji’s (1995) analysis of Nweh. Rather, OV orders in Nupe crucially involve both verbal head movement and leftward movement of NPs, we claim. In fact, (1b) and (1c,d) turn out to be two subtly different constructions, with somewhat different NP movements at work. Although most of what we say will be particular to Nupe, we believe that this is as it should be. Grand theoretical proposals like Kayne’s must ultimately live or die on the fine details of particular languages. We hope that by refining the typology of which movements do (and do not) create surface OV orders, the field as a whole will be in a better position to find out whether it in fact lives or dies.

The remainder of the paper is organized as follows. Section 2 gives a detailed analysis of the perfect construction in (1b), which is formed by a combination of moving the direct object leftward for Case licensing and the blocking of verb movement by the particle *á*. Section 3 gives a detailed

analysis of what we call the “modal auxiliary construction” in (1c,d). Again, verb movement is blocked by a functional particle (*vin*), but in this case NP movement is triggered by an EPP feature that attracts any NP regardless of Case. Section 4 mounts three arguments that, once all movement is factored away, the core VP is head-initial in Nupe. Section 5 briefly contrasts our Nupe analysis with languages that are properly analyzed by remnant VP movement (Nweh and Lokaa). We claim that there is a clear cluster of differences between the two superficially similar derivations. Section 6 concludes with a few general morals.

## 2. The Nupe Perfect Construction

### 2.1 Previous Analyses

We begin with a brief review of Koopman’s (1984) influential (pre-Kaynian) analysis of the Vata facts in (2), which was used as a model for an analysis of the Nupe facts in (1) by Cormack and Smith (1994). We can then see where the extension of this analysis to Nupe breaks down.

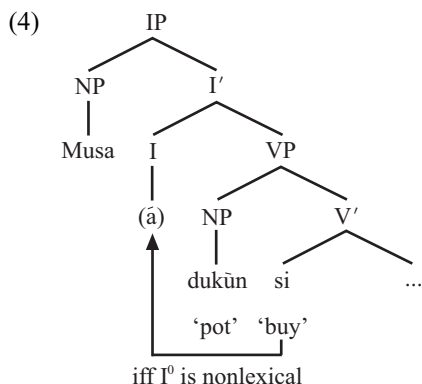
- (2) a. à lì saká. (Vata)  
       we ate rice  
       ‘We ate rice.’
- b. à lā saká Ì. (Vata)  
       we PERF rice eat  
       ‘We have eaten rice.’

Koopman claimed that VP is always head-final in Vata, but I/Tense is head-initial. Spelling out  $I^0$  as a freestanding particle produces the word order in (2b) directly. If  $I^0$  is not a free-standing particle but rather an empty head or an affix, then the verb moves out of VP into the  $I^0$  position. This places it before the object and other VP-internal material, producing the apparently head-initial word order seen in (2a). Koopman’s analysis did not address all the mysteries of mixed word-order patterns; in particular, it did not explain why IPs should be head-initial and VPs head-final. But it did successfully explicate the seemingly inconsistent behavior of verbal projections, using only the now-familiar device of head movement. No exotic phrasal movement of either NPs or remnant VPs was required.

Cormack and Smith (1994) extended Koopman’s analysis to Nupe directly. Simple transitive sentences in a variety of tenses have SVO order, as shown in (3) (see also George 1975). (Note that the simple past tense is not marked by any overt morpheme.)

- (3) a. Musa yà etsu èwò.  
 Musa give chief garment  
 ‘Musa gave the chief a garment.’  
 b. Musa à ba nakàn.  
 Musa FUT cut meat  
 ‘Musa will cut meat.’  
 c. Musa è lá èbi.  
 Musa PRES take knife  
 ‘Musa is taking the knife.’

But when the perfect marker *á* is present, one finds object-verb order instead, as already shown in (1b). Cormack and Smith (1994) follow Koopman in concluding from this range of data that IP is head-initial in Nupe and VP is head-final. They assume that perfect *á* is a lexical item residing in I<sup>0</sup> and that verbs move to this position if and only if I<sup>0</sup> does not contain an independent lexical item. This analysis is summarized in (4).<sup>1</sup>



<sup>1</sup> Partially similar word orders are found in some other languages of the area, notably Bambara (Koopman 1991), Yoruba (Przedzicki 2000), and Gungbe (Aboh 1998). However, the specific tenses that trigger OV order in these languages are different, as are the word orders found in double-object constructions and the interactions with *wh*-movement.

An anonymous reviewer asks whether the same word-order alternations occur in embedded clauses as in matrix clauses in Nupe. The answer is clearly yes: one sees VO order in simple clauses and OV order in perfect clauses, even in the presence of an overt complementizer. This is shown in (i).

- (i) a. Musa ta ya Gana gan wun si dukùn.  
 Musa say to Gana that he buy pot  
 ‘Musa told Gana that he bought a pot.’  
 b. Musa ta ya mi gan Gana á dukùn si.  
 Musa say to me that Gana PERF pot buy  
 ‘Musa said to me that Gana has bought a pot.’

Thus, the alternation is not comparable to V2 in Germanic. Whatever movements are involved are internal to the VP domain and do not interact with the complementizer space.

Cormack and Smith support their analysis by pointing out that Nupe has other apparently head-final projections. For example, DPs seem to be head-final (see (5a)), as are PPs headed by the locative particle *o* (see (5b)), along with certain modal particles (see the purposive particle *zì* in (31) below), and a few other phrase types not illustrated here (focus phrases, negative phrases).

- (5) a. *egi nana zì*  
 child this PL  
 ‘these children’ (demonstrative, number)
- b. *Musa lá lítafi ta [è̀sákó o].*  
 Musa take book be.on table LOC  
 ‘Musa put the book on the table.’ (locative [P?])

Cormack and Smith conclude that Nupe is a predominantly head-final language, and this makes it reasonable to think that VPs are head-final as well. This argument is not very strong, however. Not all projections look unequivocally head-final in the language. Complementizers, for example, are clearly head-initial (see (9f) below). We argue below that *o* in (5b) is not an adposition at all but rather a Case marker; true PPs in Nupe are head-initial as well. Moreover, there are familiar Kaynian analyses of examples like (5a) in terms of NP movement to [Spec,DP]; see Aboh 1998 on Gungbe and Nkemnji 1995 for Nweh, among others. So it is far from clear what the predominant word order is in Nupe. We do not take up the issue of word order in nonverbal projections further in this paper but concentrate on the crucial case of VP and its associated functional projections.

## 2.2 Evidence for an Enriched Verb Phrase Structure

Some rather straightforward considerations show that the simple analysis of Nupe sketched in (4) cannot be the whole story. The first involves the nature of the tense markers. As shown in (3), all tense/aspect markers in Nupe other than perfect *á* go along with verb-object order. Cormack and Smith (1994) assume that these tense markers are prefixes on the verb. As such they would be compatible with V-to-I movement; indeed they could be considered the triggers for such an operation. But adverb placement facts suggest that this is incorrect. VP-initial adverbs come between the tense marker and the verb in Nupe (as in English), not after the tense + verb combination (as in French), nor before the tense marker. Example (6) shows this for the future marker *à*; the same pattern holds for the present tense marker *è̀*.

- (6) *Musa (\*dàdà) à dàdà ba (\*dàdà) nakàn.*  
 Musa (quickly) FUT quickly cut (quickly) meat  
 ‘Musa will quickly cut the meat.’

Example (6) suggests that *à* is not a prefix on the verb but rather an independent particle.<sup>2</sup> If so, then, the verb clearly does not move to I<sup>0</sup> (which we call T[ense]), even though it comes before the object. The same adverb necessarily comes before the perfect particle *á*, as shown in (7).

- (7) Musa dàdà á nakàn du.  
 Musa quickly PERF meat cook  
 ‘Musa has quickly cooked the meat.’

The contrast between (6) and (7) shows that perfect *á* does not occupy the same I/T position that future *à* and present *è* do; rather, it must occupy some lower head. Thus, the structure must be more elaborate than (4).

What position does *á* occupy in sentences like (7)? We claim that it is generated in the *v* head position proposed by Chomsky (1995) (see Larson 1988 and Hale & Keyser 1993 for the major precursors to Chomsky’s structure). This head is present in all transitive and unergative clauses, where it plays a role in assigning the external  $\theta$ -role to the underlying subject, forming structures like [T [DP<sub>agent</sub> *v* [VP ... V ... ]]]. Whether it is also present in unaccusative clauses is more controversial; we assume that it is present but does not assign a  $\theta$ -role in that context, following Bowers (1993) and Baker (2003), among others. In addition to putting *á* in the right hierarchical position, this view fits well with the fact that *á* seems to be a reduced form of the verb *lá* ‘take’. Verbs meaning ‘take’ are among the most common “light verbs” (cf. *Chris took a bath* vs. *Chris bathed*), and the natural home for light verbs is the *v* node. Thus, an example like (7) has a structure roughly like (8), which is an expansion of (4).<sup>3</sup>

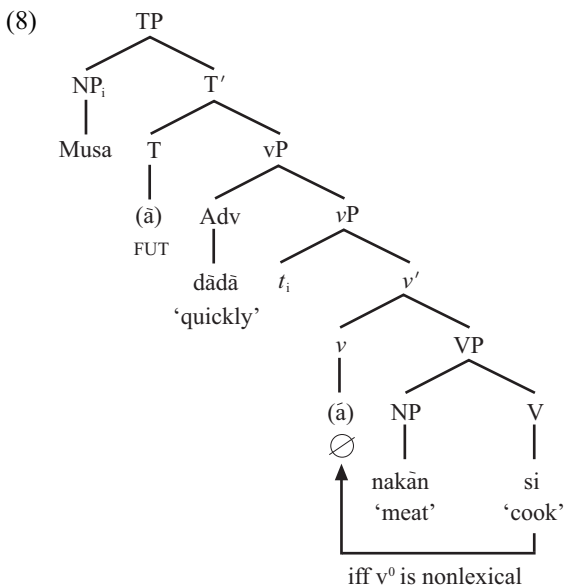
<sup>2</sup> An anonymous reviewer points out that the element *dàdà* in (6) could be analyzed as a “preverb” or verbal auxiliary (as in Smith 1967, 1970) rather than as an adverb. If so, then future *à* could still be analyzed as a prefix that is attached to the auxiliary. We admit that we do not have decisive evidence against this alternative. We have been influenced by the fact that verbs can raise past similar “preverbs” in Edo into the T<sup>0</sup> position. This shows that the Edo equivalents are adjoined adverbs, not heads (see Stewart 2001:182–188, Baker & Stewart 1998). Nupe does not have the same V-to-T raising construction (we claim), so this argument cannot be replicated directly. Even so, the contrast between (6) and (7) still shows that future *à* and perfect *á* differ in syntactic position, which is our main point.

Additional evidence that future *à* and progressive *è* are independent tense particles and not affixes comes from serial verb constructions, which have two distinct verbs in a single verb phrase. A single tense marker appears in such constructions in Nupe, and it has scope over both verbs, as shown in (i).

- (i) Musa è du eci (\*è) kun.  
 Musa PRES cook yam PRES sell  
 ‘Musa is cooking and selling yams.’

This is what one would expect if *è* is an independent tense particle (cf. English *Musa will cook yams and sell them*). If it were a prefix on the verb, then either it should be repeated on the second verb (cf. English *Musa cooked yams and sold/\*sell them*) or the sentence should be ruled out in that tense (cf. Stewart 2001:179).

<sup>3</sup> It is a good guess that Nupe’s perfect tense evolved from a serial verb construction source, such as ‘Musa take food cook’. See Stahlke 1970 for this kind of development in Yatye, another



This revision is, of course, still compatible with the essence of the Koopman-Cormack-Smith idea that VP is head-final apart from head movement. The crucial question to clarify this is, then, what is the internal structure of the node labeled VP in (8)? To get evidence that bears on this, we must consider a wider range of verb phrase structures. When we do this, we quickly see that the VP does not appear very head-final at all. Although it is true that the direct object of a monotransitive verb comes before the verb in perfect clauses, virtually every other constituent comes after the verb in perfect sentences, just as in simple clauses. This is illustrated in (9). Example (9a) shows that with ditransitive verbs like *yá* 'give', one object precedes the verb, but the second one follows it. Example (9b) shows that oblique locative complements come after the verb as well. The sentences in (9c) and (9d) illustrate that unselected locative adjuncts and adverbs, respectively, follow the verb. Example (9e) exemplifies the fact that the second verb of a serial verb construction (SVC) also follows the first verb. Finally, (9f) shows that embedded clauses come after the verb in perfect clauses.

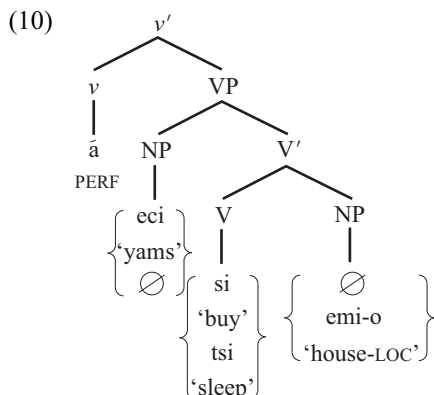
West African language. The word order found in double-object constructions makes it clear that this is not a normal SVC in current Nupe, however (contrast (11) with (15)), as does the mysterious extraction restriction mentioned in footnote 4.

The alternative to our view (pointed out to us by two anonymous reviewers) would be to locate *á* in the head of an Aspect projection. It may be possible to restate our analysis within this alternative theory. We do not develop this option, however, partly because *á* seems to express the *perfect* in Nupe, not the clearly aspectual category of *perfective* (see Comrie 1976 on the distinction). Also, we know of no independent evidence that an Aspect node is syntactically present in Nupe. Our view is thus slightly more economical, given that *v* is needed anyway within our framework (e.g., to introduce the external argument).



- (9) a. Musa á etsu yà èwò.  
 Musa PERF chief give garment  
 ‘Musa has given the chief a shirt.’ (double-object construction)
- b. Musa á tsi kata o.  
 Musa PERF lie house LOC  
 ‘Musa has lied down in the house.’ (locative complement)
- c. Musa á nakàn du efo cigban o.  
 Musa PERF meat cook hole tree LOC  
 ‘Musa has cooked meat under the tree.’ (locative adjunct)
- d. Musa á nakàn ba sanyin.  
 Musa PERF meat cut quietly  
 ‘Musa has cut the meat quietly.’ (right-edge adverb)
- e. Musa á èwò fo li.  
 Musa PERF garment wash be.clean  
 ‘Musa has washed the garment clean.’ (VP<sub>2</sub> of SVC)
- f. Musa á gan yà Gana ganan wun si dukùn.  
 Musa PERF say to Gana that he buy pot  
 ‘Musa said to Gana that he bought a pot.’ (CP complement)

Overall, a greater variety of phrase types come after the main verb than before it, even in perfect sentences. This gives the impression that the VP in Nupe is head-initial, not head-final. No more than a single NP ever precedes the main verb in this construction, and that NP must bear structural Case. Second objects of double-object constructions (DOCs) and the locative objects of posture and motion verbs arguably bear inherent case, rather than structural Case, and these NPs come after the verb. (In DOCs, the verb’s one structural Case is taken by the first object, we assume; posture and motion verbs are unaccusative and thus cannot assign structural Case at all.) These facts are nicely accounted for if we say that the phrase that contains the verb at Spell-Out is head-initial, and the Case-marked object is in the specifier of this projection. The simplest phrase structure that has these qualities is (10).



This dovetails nicely with the “shell structure” of the verb phrase that has become standard since Larson (1988). A common property of such structures is that the direct object is not the complement of the verb, but rather the specifier of the lowest verb projection, with locatives, other PPs, and adverbs generated in the complement position. Given that the object is a specifier, it is expected to come before the head on all accounts.

### 2.3 The Perfect of Double-Object Constructions

A closer look at DOCs, however, suggests that even (10) is a bit too simple, and points toward one further complication. In the perfect of a DOC, the goal NP precedes the main verb, and the theme NP follows it, as shown in (9a); the reverse order #*Musa á èwò yà etsu* (Musa PERF garment give chief) is impossible.<sup>4</sup> Example (11) illustrates this pattern with another ditransitive verb.

- (11) a. *Musa tan kata woda bòókù.*  
 Musa paint house paint white  
 ‘Musa painted the house with white paint.’
- b. *Musa á kata tan woda bòókù.*  
 Musa PERF house paint paint white  
 ‘Musa has painted the house with white paint.’
- c. \* *Musa á woda bòókù tan kata.*  
 Musa PERF paint white paint house  
 ‘Musa has painted the house with white paint.’

The same pattern is also found with the ditransitive verb *wu* ‘teach’. These facts could be accommodated using the structure in (10), if one says that the goal argument of a ditransitive verb is generated in [Spec,VP] and the theme argument of a ditransitive verb is generated as the complement of V. Many linguists assume exactly this (Speas 1990, Harley 2002, etc.), but certain facts about serial verb constructions (SVCs) tell against it.

First, we review some minimal background assumptions about SVCs in languages of this area, drawn from previous work. Stewart (2001) argues that in nearby Edo, the second VP in one type of SVC (the resultative variant) consists of only a *V'*—a verb and perhaps its complement, but no specifier, adjunct, or functional structure. This claim is based on the evidence summarized in (12). Example (12a) shows that the projection of the second verb can contain a locative complement. There is, however, no specifier

<sup>4</sup> This is a slight simplification. The surface string is, in fact, marginally possible, but only as a serial verb construction, not as a perfect construction. Thus, focus movement can apply to this string, as it can to other SVCs, but it cannot apply to perfect constructions, including (11b) (cf. fn. 3). The *á* in such strings must thus be a reduced form of the serial verb *lá* ‘to take’, rather than a true perfect marker. See also footnote 3.

position before this second verb, as shown by the fact that the “floated quantifier” *tòbòrè* (which can adjoin to empty categories in [Spec,VP]) cannot appear there (cf. (12b); Stewart 2001:51–54). Nor can a functional aspect particle come before the second verb in this type of SVC, as shown in (12c). Not even an adverb can adjoin to the projection of the second verb alone; any adverb in the structure must be understood as modifying the first verb as well as the second (see (12d)). (Stewart shows that resultative SVCs contrast with certain other kinds of SVCs in exactly these three respects.)

- (12) a. Òzó gié Úyì yó (èkì). (Edo)  
 Ozo send Uyi go market  
 ‘Ozo sent Uyi away (to the market).’
- b. Òzó sùá ògò \*[—tòbòrè] dé. (Edo)  
 Ozo push bottle itself fall  
 ‘Ozo pushed the bottle so that it fell (\*by itself).’
- c. Òzó sùá ògò (\*ghá) dé. (Edo)  
 Ozo push bottle ITER fall  
 ‘Ozo pushed the bottle so that it fell (\*repeatedly).’
- d. # Òzó gbé àkhé [guòghò ègìégìé]. (Edo)  
 Ozo hit pot break quickly  
 Not: ‘Ozo hit the pot, causing it to break quickly.’  
 (OK: ‘Ozo quickly hit the pot, causing it to break.’)

Not all of Stewart’s arguments for this conclusion can be replicated for Nupe (Nupe has no equivalent of *tòbòrè*, for example), but those that can be replicated give the same results. The second verb of this kind of SVC can select a locative complement (see (13a,b)), but it cannot be preceded by a tense/aspect particle (see (13c)). Moreover, a phrase-final adverb modifies the whole verb phrase complex, not the second verb alone (see (13d)).

- (13) a. Musa tun egi lo dzuko.  
 Musa send child go market  
 ‘Musa sent the child to the market.’
- b. Musa cé èbi ta èsákó o.  
 Musa throw knife be.on table LOC  
 ‘Musa threw the knife onto the table.’
- c. Gana fo èwò ( \*è/\*dada) li.  
 Gana wash garment PRES/quickly be.clean  
 ‘Gana washed the garment so that it became (\*is becoming) clean (\*quickly).’
- d. # Musa dà tákùn gwa ya sanyin.  
 Musa push rock hand fall quietly  
 Not: ‘Musa pushed the rock so that it fell quietly.’  
 (OK only as: ‘Musa quietly pushed the rock down.’)

We thus conclude that the second verbal projection in a resultative-type SVC in Nupe also consists of at most a verb and its complement.<sup>5</sup>

We now apply this result to the structure of double-object constructions, which has been controversial throughout the history of generative grammar. Part of the controversy has centered on whether the [V NP<sub>1</sub> to NP<sub>2</sub>] configuration is the base-generated one, with [V NP<sub>2</sub> NP<sub>1</sub>] derived by transformation (Larson 1988; Baker 1996, 1997), or whether [V NP<sub>2</sub> NP<sub>1</sub>] is base-generated (Aoun & Li 1989, Marantz 1993, Carstens 2002, and much literature on Japanese), or whether they both are (Jackendoff 1990, Speas 1990:83–90, Pesetsky 1995, Harley 2002). We cannot give even a brief overview of the huge literature on this topic here. But we can use the generalization that the second VP of a resultative SVC consists of only a verb and its complement with no plausible landing sites for movement as a test to see which argument of a ditransitive verb acts like its complement underlyingly in Nupe. The results are unambiguous: the goal argument can appear in construction with a verb like *yà* ‘give’ or *tan* ‘paint’ in the second VP of an SVC, but the theme argument cannot, as shown in (14) and (15).<sup>6</sup>

<sup>5</sup> There is an important point of disagreement here with Carstens (2002). She assumes that the projection of the second verb in an SVC always contains a *v*P node as well as a VP node. This *v* head can then be the target of a head movement internal to the second verb phrase, affecting word order. However, she has no direct evidence for the presence of this head. Carstens motivates its presence on theoretical grounds, claiming that it is required to license accusative Case (p. 22), but then she is forced to posit a *v* head even with unaccusative second verbs that do not assign Case (p. 23). Moreover, the second, even more basic function of *v* is to assign an external  $\theta$ -role, but theoretical problems concerning control force Carstens to deny that *v* does this in SVCs (pp. 27–28). Stewart (2001) shows that unaccusative verbs but not transitive verbs can be the second verb of an SVC with resultative meaning in Edo, so strings like ‘Ozo shoot Uyi die’ are good but examples like ‘Ozo shoot Uyi kill’ are not. The simplest account of this is to say that the second verb phrase consists of a VP but not a *v*P in this construction.

<sup>6</sup> An anonymous reviewer asks whether *ya* in (14a) could be a preposition meaning ‘to/for’ instead of a serial verb containing ‘give’. The question is reasonable for historical reasons, given that ‘for’ and ‘give’ are homophonous in Nupe. Evidence that (14a) is a true SVC comes from embedding it in a purposive construction. The head-final purposive morpheme comes before benefactive (and instrumental) PPs (see (ia)) but after the second verb of an SVC (see (ib)). Examples like (14a) clearly pattern with SVCs in this respect, as shown in (ic).

- (i) a. Musa bé etun lo zì yà mi.  
Musa come work do PURP for me  
‘Gana came to work for me.’
- b. Gana bé èwò yin fo li zì.  
Gana come garment PRT wash be.clean PURP  
‘Gana came to wash the garment clean.’
- c. Musa bé èwò si yà etsu zì.  
Musa come garment buy give chief PURP  
‘Musa came to buy a garment and give it to the chief.’  
(cf. \*Musa bé èwò si zì yà etsu.)

This tells against Carstens’s (2002:41) conjecture that structures like (14a) and (15a), which she admits as being anomalous for her analysis, are really PP constructions, with *yà* ‘give’ acting as an adposition.

- (14) a. Musa lá cigbè yà nangi.  
 Musa take medicine give goat  
 ‘Musa took medicine and gave it to the goat.’  
 b. #Musa wan nangi yà cigbè.<sup>7</sup>  
 Musa catch goat give medicine  
 ‘Musa caught the goat and gave it medicine.’
- (15) a. Musa lá woda bòókù tan kata.  
 Musa take paint white paint house  
 ‘Musa took white paint and painted the house with it.’  
 b. \*Musa si kata tan woda bòókù.  
 Musa buy house paint paint white  
 ‘Musa bought the house and painted it with white paint.’

Baker (1989) first pointed out this contrast and its significance for Yoruba; since then it has been replicated for Edo (Stewart 2001:130) and other languages. The contrast shows that it is the goal that is base-generated in  $V'$ , rather than the theme. The fairly straightforward analysis in (10) thus cannot be maintained. The order of objects in (14a) and (15a) is exactly the opposite of the order of objects in (9a) and (11a). This suggests that there must be an instance of NP-movement in (9a) and (11a), as well as in ordinary DOCs—just as Larson (1988) proposed (see also Baker 1996, 1997). This NP movement takes place not just in Nupe but also in English and other languages with  $[V\ NP_{goal}\ NP_{theme}]$  structures.

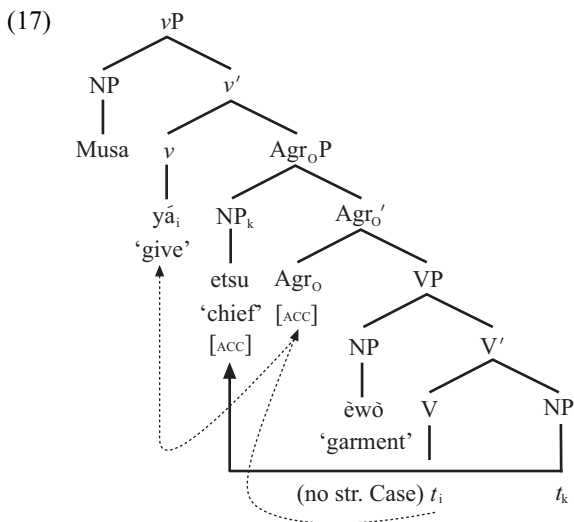
The NP movement in DOCs can be worked into the theory by adding the fairly standard assumption that objects, like subjects, undergo movement to the specifier of a functional projection to have their Case checked in Nupe (and other languages; see Chomsky 1991). This functional category must be located below  $\nu$  (the position of the verb in simple sentences and of  $\acute{a}$  in perfect clauses) and above VP (where the theme object originates). We call this verb phrase-internal functional category  $AgroP$ , following Koizumi (1995), although the label of the category is not crucial (similar heads have been called “inner aspect” by Travis [1991], “linker” by Baker & Collins [2003], and so on).

<sup>7</sup> This string is grammatical, but only with a different kind of structure than the one we are now envisioning. It is possible as a kind of purposive clause, meaning that ‘Musa caught the goat in order to give it medicine’. A purpose clause can be distinguished from a true SVC in at least three ways: (a) The event named by the second verb of a purposive construction is not asserted to have occurred, whereas the event named by the second verb of a true SVC (in the past tense) is asserted to have occurred. The medicine-giving event in (14b) is not asserted. (b) The purposive clause is an island for extraction, whereas the second verbal projection of a true SVC is not. Thus, one can say in Nupe a sentence with the gloss ‘What FOC Musa take medicine give’, but not ‘\*What FOC Musa catch goat give’. (c) The purposive clause comes after the final purposive particle *zì* (Musa come goat *yin* catch *zì* give medicine), whereas the SVC comes before *zì* (see fn. 6). Note also that English has Nupe-like purposive constructions (*I bought that pot to give to Chris*) but not Nupe-like true SVCs.

In clauses with monotransitive verbs, there is no question about which NP moves to [Spec,Agr<sub>O</sub>P], given that there is only one. In intransitive clauses that have no NP or only an NP that bears inherent locative case, nothing moves into this position. In ditransitive clauses, however, there is a real issue as to how the movement takes place. The result we are looking for is that the lower of the two NPs—the goal NP generated inside V'—moves to [Spec,Agr<sub>O</sub>P], crossing over the theme NP generated in [Spec,VP]. This movement can be squared with Chomsky's Minimal Link Condition, stated in (16).

- (16) Target K attracts feature F if F is the closest feature that can enter into a checking relation with a sublabel of K. (Chomsky 1995:297)

Alongside the system of structural Case, there is also the possibility of an NP receiving so-called inherent Case. Inherent Case is thematically restricted; theme arguments can receive it, but goal arguments cannot (perhaps because only theme arguments depend directly on the verb for their  $\theta$ -role; see Baker 1988). Suppose, then, that inherent Case does not technically count as a Case feature at all in the sense of the Minimalist checking theory. This has two consequences. First, it means that the inherently Case-marked theme does not have to move to undergo checking; it can stay in its base position in [Spec,VP] throughout the derivation. Second, the theme does not count as an intervener; the closest Case feature to the uninterpretable Case/agreement feature on Agr<sub>O</sub><sup>0</sup> is the uninterpretable accusative Case feature borne by the goal NP. The goal is not the closest NP to Agr<sub>O</sub><sup>0</sup>, but it is the closest NP that is specified for the same feature as Agr<sub>O</sub><sup>0</sup>. Attracting it thus satisfies Shortest Move:



There is nothing peculiar to Nupe in this analysis; it is just a slight reworking of dative-shift analyses like Larson (1988) and Baker (1988) into more current terms. A simple Nupe DOC like (3a) is then formed by moving the V ‘give’ into *v* by way of Agr<sub>O</sub><sup>0</sup>, as in English.

The only thing we need to add, then, is how this analysis of DOCs interacts with the perfect in Nupe. This is quite straightforward. The perfect marker *á* is generated in *v*, as always. This prevents the lexical verb ‘give’ from moving into *v*, forcing it to stay lower. As a result, the verb follows the goal object. It does, however, come before the theme object, which we take to be in [Spec,VP], on the force of (14) and (15). Therefore, the lexical verb ‘give’ must move from its base position V, into the Agr<sub>O</sub> head. This captures in structural terms the fact that the lexical verb in Nupe perfect constructions comes immediately after at most one NP, and that NP must have structural accusative Case.<sup>8</sup> The generalization in (18), then, seems true for Nupe.

- (18) The Nupe verb raises to the highest head position within *vP* that is not lexically filled.

We want to emphasize that the Agr<sub>O</sub> projection we introduced in (17) is far from novel. Others have been led to posit such a head for reasons that have nothing to do with alternations in verb-object order. For example, a variety of African languages have an overt particle that appears between the two NPs in a DOC; the list includes Niger-Congo languages like Kinande (see (19)) and Yoruba, as well as Khoisan languages like Julhoan and =Hoan (see Baker & Collins 2003; note also that particles often appear here even in English [Kayne 1985]).

- (19) Mo-n-a-h-ere omukali y’-eritunda. (Kinande)  
 AFF-1SS-T-give-EXT woman.1 lk.1-fruit.5  
 ‘I gave a fruit to a woman.’

This particle is a more obvious realization of the intermediate head we are calling Agr<sub>O</sub><sup>0</sup>, which functions as a Case licenser within the *vP* shell structure. Thus, the Agr<sub>O</sub> head is not just cooked up to be a landing site for verb movement in Nupe but has solid crosslinguistic motivation.

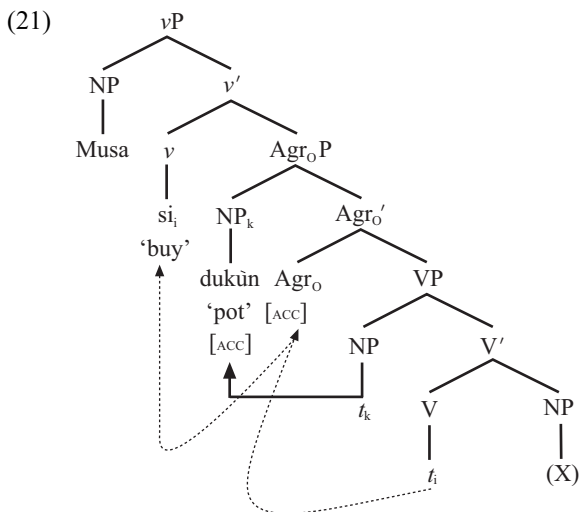
Before moving on, we need to face a question of implementation: Does Agr<sub>O</sub>P exist in monotransitive clauses too, or is the simpler structure in (10) enough? It could be that in monotransitive clauses the theme moves to [Spec,Agr<sub>O</sub>P] for Case checking and the verb moves at least to Agr<sub>O</sub><sup>0</sup> and then on to *v*<sup>0</sup> if it is not filled with *á*. Alternatively, it could be that no Agr<sub>O</sub>P

<sup>8</sup> Alternatively, if one said that *á* was an Aspect head, and AspectP dominates *vP*, then one must say that Agr<sub>O</sub>P comes between AspectP and *vP*, and the verb moves at least to *v*<sup>0</sup> (and perhaps also to Aspect<sup>0</sup>). This alternative has the same topology as our analysis, but it is shifted slightly higher up in a more articulated clause structure.

is generated, accusative Case is assigned to the theme in situ, and the verb moves to  $v^0$  only. Both derivations arrive at the same word order, so the decision needs to be made primarily on theoretical grounds. We adopt the more standard assumption that Agr<sub>OP</sub> is present in all transitive structures. This is consistent with the view that the sole object of a simple transitive verb has structural accusative Case (licensed in [Spec,Agr<sub>OP</sub>]) rather than inherent accusative Case (licensed in [Spec,VP]). It also fits well with the observation that languages like Mohawk that show overt object agreement with the goal phrase in a DOC also show overt object agreement with the theme phrase in a simple transitive construction. Thus, we posit the descriptive generalization in (20). This is a version of Burzio's Generalization (Burzio 1986) adapted to our general assumptions; it says that an accusative Case licenser (Agr<sub>O</sub>) is present if and only if the clause is transitive, containing both an object (generated in VP) and a subject (generated in vP).

- (20) If the head of VP is transitive (c-selects an NP argument), and the vP that most immediately dominates it contains an argument, then there is a single Agr<sub>OP</sub> projection that contains VP and is contained in vP.

The structure of a monotransitive construction then is:



We shall see some Nupe-internal support for the hypothesis that Agr<sub>OP</sub> is found with simple transitive verbs in the next section.<sup>9</sup>

<sup>9</sup> We note in passing that our case-driven account of object shift in Nupe contrasts sharply with the semantically motivated analysis of Manfredi 1997, in which principles of event composition and scope-taking force object movement and induce object-verb word order. Although Manfredi claims that semantic considerations are more plausible triggers of OV shift than syntactic motives, we remain open to the possibility that both syntactic and semantic forces conspire to trigger OV order in Nupe.



### 3. The Nupe Modal Auxiliary Construction

Another context in which Nupe shows OV order is when a modal auxiliary verb like *má* ‘know how to’, *bé* ‘come’, or *yá* ‘begin’ is present (see (1)).<sup>10</sup> A simple example is repeated in (22).

- (22) Musa má dukun si.  
 Musa know pot buy  
 ‘Musa knows how to buy a pot.’

This construction has not been clearly distinguished from the perfect construction in previous work (e.g., George 1975, Cormack & Smith 1994). And indeed, when one looks at only the simplest transitive and intransitive verbs, there is no obvious need to distinguish them. One could say that in addition to perfect *á*, *má*, *bé*, and *yá* are other elements that are generated in *v*, and hence block movement of the main verb past the accusative object and into *v*. But when one considers a fuller range of VP structures, a clear distinction between the two structures emerges. The modal auxiliary construction thus gives us a slightly different window on the factors that can cause object-verb word order in Universal Grammar.

#### 3.1 Word Order in Modal Auxiliary Constructions

The most striking word-order difference between modal auxiliary constructions and perfect clauses is in DOCs. Both objects of a ditransitive verb come between the modal auxiliary and the main verb, as shown in (23) (this is the only possible order of these elements).

- (23) Musa yá etsu èwò (yin) yà.  
 Musa begin chief garment PRT give  
 ‘Musa began to give the chief a garment.’

<sup>10</sup> Although we focus on only three modal auxiliary verbs in this paper, a number of additional predicates manifesting similar distributional properties exist in the language

- (i) a. Musa yí cènkafa \*(yin) du.  
 Musa continue rice PRT cook  
 ‘Musa is still cooking the rice.’  
 b. Musa è wá cènkafa \*(yin) du.  
 Musa PRES want rice PRT cook  
 ‘Musa wants to cook rice.’

The reader may notice that the predicates we call “modal auxiliaries” seem to be a subset of the restructuring predicates found in languages like Italian. If the special property of restructuring verbs is that they take VP-complements rather than full clauses, then there is indeed an important syntactic similarity on our analysis. Nevertheless, we refrain from calling the modal auxiliary construction a restructuring construction because its syntactic peculiarities in Nupe are not captured by the intuition that the structure counts as a single clause at some level of analysis, in a way that has guided much research on restructuring since Rizzi 1982.

Example (23) contrasts with perfect clauses, where the main verb comes between the two objects (see (9a)). A second difference comes with verbs like 'lie' that take locative complements. In perfect clauses, the locative complement follows the verb (see (9b)), but in modal auxiliary constructions, the locative complement must come before the verb, as shown in (24).

- (24) Musa yá kata (yin) ci.  
 Musa begin house PRT lie  
 'Musa began to lie down in the house.'

Apparently, then, OV word order cannot be attributed to the interaction of accusative Case checking and verb movement, the way it is in perfect constructions.

The sentences in (23) and (24) might be interpreted as evidence for a head-final VP in Nupe, after all. But that conclusion would be premature. When we consider verb phrase-internal constituents other than NPs, we find the same V-X order in modal auxiliary constructions that we saw in perfect constructions. True PPs, adverbs, resultative VPs in an SVC, and CPs all come after the main verb, as shown in (25).

- (25) a. Musa yá nakàn \*(yin) ba bè èbi yin.  
 Musa begin meat PRT cut with knife PRT  
 'Musa began to cut the meat with a knife.' (PP adjunct)
- b. Musa yá nakàn \*(yin) ba sanyin.  
 Musa begin meat PRT cut quietly  
 'Musa began to cut the meat quietly.' (adverb)
- c. Musa yá èwò \*(yin) fo li.  
 Musa begin garment PRT wash be.clean  
 'Musa began to wash the garment clean.' (VP<sub>2</sub> of SVC)
- d. Musa yá \*(yin) gan yà mi ganan wun si nakàn.  
 Musa begin PRT say give me that he buy meat  
 'Musa began to say to me that he bought meat.' (CP)

The generalization, then, is that all NPs precede the main verb in modal auxiliary constructions, regardless of Case, and all non-NPs follow it. This is different from what one finds in rigidly head-final languages, such as Japanese (see also section 5 on Nweh and Lokaa).

To defend this generalization, some clarification of the status of locative expressions is needed. These are realized as an NP followed by the particle *o* in Nupe, as shown in (26).

- (26) Lítáfí ta èsákó o.  
 book be.on table LOC  
 'The book is on the table.'

A natural first reaction would be to analyze these constituents as PPs, with *o* as the adpositional head. If so, then *o* is a postposition, differing in its

headedness from other prepositions in Nupe, which come before their complements ((25a), for example). Unlike in verb phrases, word order in PPs would be conditioned entirely by the lexical content of the P<sup>0</sup> node; allowing individual lexical items to determine base word order in this way would be an undesirable loosening of the theory. A more attractive option is to say that *o* is an exponent of locative Case, not a true adposition. Then the fact that it alone follows NP is not so surprising, given that there is a strong crosslinguistic tendency for Case markers to be suffixes, not prefixes. NP+*o* constituents also behave differently from PPs with respect to A' movement. When NP+*o* constituents are moved leftward for focus, the *o* can be omitted; if it is not omitted, then it must be pied-piped with the moved NP, appearing as a special form *bo*. In contrast, when the object of a true preposition in Nupe is extracted, the preposition cannot be dropped, but it can be stranded. The difference is illustrated in (27).

- (27) a. Èsákó kici (bo) Gana lá èbi ta o.  
 table which LOC Gana take knife be.on FOC  
 'Which table did Gana put the knife on?'  
 b. Ke Musa ba nakàn \*(bè) yin o.  
 what Musa cut meat with PRT FOC  
 'What did Musa cut the meat with?'

The fact that *o* is carried along under movement is consistent with it being a suffix. The fact that it can be omitted is consistent with it being a Case-marker, which does not play a crucial semantic role in the structure (e.g., it is not a  $\theta$ -marker). Example (27b) might be equated with the fact that accusative Case is lost on the *wh*-word *who* in a common dialect of American English if and only if *who* undergoes overt *wh*-movement:

- (28) a. Who was talking to whom/?who?  
 b. Who/?\*whom were you talking to?

In some instances, this locative Case is assigned by the intransitive verb; in others like (9c) we can take it to be assigned by a null preposition (compare Emonds's [1985] analysis of dative Case in languages like German).

This distinction between true prepositions and Case markers gives us the conceptual resources to analyze the contrast between (24) and (25a): locative Case-marked nominals come before the main verb in modal auxiliary constructions and PPs come after it. This is a special case of the broader generalization that all NPs come before the V and all other categories come after it in this construction. Note also that the locative Case-marker is sometimes lost when the order is locative-verb, as can be seen by comparing (24) and (26).<sup>11</sup> This can be seen as an instance of the same phenomenon as

<sup>11</sup> When the nonfinite particle *yin* is overt, the dropping of *o* is obligatory, for reasons that are unclear. When *yin* is omitted, the locative marker can appear on the moved locative NP. We return later to discuss the distribution of *yin*.

the *o* particle sometimes being lost in *wh*-movement constructions like (27a). This is an early hint that locative-verb order is the result of moving the NP in a way that is akin to other, less controversial leftward movements.

### 3.2 Functional Heads in Modal Auxiliary Constructions as Movement Triggers

The modal auxiliary construction also differs from the perfect construction in at least two other ways. First, modal auxiliary constructions often contain a functional particle *yin* that comes before the main verb. No such particle is found in simple clauses or perfect clauses. This element can be seen in many of the examples already given. The details vary somewhat from modal auxiliary to modal auxiliary. When the auxiliary is *yá* ‘begin’ and the second verb is intransitive, this particle is obligatory, as shown in (29a). This particle is also required when the main verb is transitive; in that case, it necessarily comes between the direct object and the verb (see (29b)). The *yin* is, however, optional on the surface when the embedded main verb is a locative (see (29c)) or a ditransitive verb (see (23)).

- (29) a. Elúgi yá \*(yin) fù.  
bird begin PRT fly  
‘The bird began to fly.’
- b. Musa yá eci \*(yin) si. (\*Musa yá yin eci si.)  
Musa begin yam PRT buy Musa begin PRT yam buy  
‘Musa began to buy yams.’
- c. Musa yá kata (yin) le. (\*Musa yá yin kata (o) le.)  
Musa begin room PRT sleep Musa begin PRT house LOC sleep  
‘Musa began to sleep in the room.’

Even with these verb classes, however, the *yin* becomes obligatory when the locative object or second object of a ditransitive verb is extracted by focus movement:<sup>12</sup>

- (30) a. èwò Musa yá etsu \*(yin) yà o. (cf. (23))  
garment Musa begin chief PRT give FOC  
‘It was a garment that Musa began to give to the chief.’
- b. kata Musa yá \*(yin) ci o. (cf. (29c))  
house Musa begin PRT lie FOC  
‘It was a house that Musa began to lie in.’

<sup>12</sup> The fact that extraction is possible at all from a modal auxiliary construction constitutes another significant difference between modal auxiliary constructions and perfect clauses. Recall that *wh*-movement out of perfect clauses is ruled out (fn. 4)—a fascinating fact that we have no explanation for.

Descriptively, *yin* is required except when it is immediately preceded by an overt NP with inherent Case. We return to this quirky-looking generalization briefly below.

The particle *yin* also appears in constructions with the motion verb *bé* ‘come’, and it has the same distribution. Additionally, a second particle *zì* appears somewhere after the main verb when *bé* is present. This is illustrated in (31), as well as some of the previous examples.

- (31) Musa bé èbi \*(yin) lá zì.  
 Musa come knife PRT take PURP  
 ‘Musa came in order to take the knife.’

Finally, the modal auxiliary verb *má* ‘to know how to’ never appears with *yin* (or *zì*) regardless of the argument structure of its verbal complement:

- (32) a. Elúgi má (\*yin) fù.  
 bird know PRT fly  
 ‘The bird knows how to fly.’  
 b. Musa má kèkè (\*yin) tú.  
 Musa know bike PRT ride  
 ‘Musa knows how to ride a bike.’

Thus, some kind of selectional relationship clearly holds between the modal auxiliary verb and the particle *yin*.

This leads us to perhaps the most basic difference between the modal auxiliary constructions and perfect constructions, which is that the modal auxiliaries seem to be full-fledged verbs in their own right. At least one of them, *bé* ‘come’, can appear on its own as a main verb (e.g., *Mi bé* ‘I came’; Smith 1967:13). Modal auxiliary verbs can also appear in different tenses, as one would expect if they were full verbs, rather than tense/mood/affix particles (e.g., *Mi á bé* ‘I will come’). Most instructively, they can co-occur with the perfect marker *á*, as shown in (33).

- (33) Elúgi á yá \*(yin) fù.  
 bird PERF begin PRT fly  
 ‘The bird has begun to fly.’

Given our analysis in section 2, the *á* in (33) occupies the *v* node. The modal auxiliary verb *yá* which follows it must, therefore, occupy a V position. This is tantamount to saying that it is a full lexical verb in its own right. This distributional evidence converges with the lexical-semantic fact that *yá*, *bé*, and *má* have substantial meanings—the kinds of meanings that are often expressed by full-fledged verbs rather than functional heads in other languages.

We can use these observations to develop a structural analysis of the modal auxiliary construction and consider its implications for the theory of word order. Because *yá*, *bé*, and *má* are full verbs, they are qualified to select

a complement. Similar verbs in English select nonfinite clausal complements of various kinds. We assume that the same is true in Nupe and that *yin* is the head of a tense-like functional projection, broadly similar to *to* in English. Because it marks the clause as nonfinite, we refer to it as heading an Infinitive Phrase (InfinP). We further assume that the same structural head is present in the complement of *má* ‘know how to’, even though it does not show up overtly. This is a matter of low-level selection for different forms of the same basic structure; it is no more significant than the fact that some verbs in English select *to*-infinitives, some bare infinitives, and some *-ing* gerunds (e.g., *I made Chris cry* versus *I caused Chris to cry*; *I started to cry* versus *I finished crying*). (Additionally, *bé* also selects *zi*, the purposive head. We take this as further evidence that selection is at work in these constructions but do not analyze this particular particle further.)

A further question is how much verb phrase structure is present in the complement of the modal auxiliary structure. Clearly, the VP projection is present, which includes the lexical verb and all its complements and modifiers. Is a *vP* projection present as well? We tentatively assume that the answer is no. The absence of a *vP* projection immediately explains the fact that no lexical subject ever appears inside the complement of the modal auxiliary verb; rather, the subject of the modal auxiliary verb is interpreted as the doer of the action named by the embedded verb as a result of the lexical semantics of the modal auxiliary (cf. Chierchia 1984). The absence of a *vP* projection also explains the fact that a perfect clause cannot be embedded under a modal auxiliary, as shown in (34).

- (34) \*Elúgi à má á fù èsun.  
 bird FUT know PERF fly tomorrow  
 ‘The bird will know how to have flown by tomorrow.’

The ungrammaticality of such a sentence follows immediately from the fact that *á* is inserted in the *v* node, together with the assumption that *Infin*<sup>0</sup> in Nupe selects VP, not *vP*.<sup>13</sup> All together, then, we assume that the basic

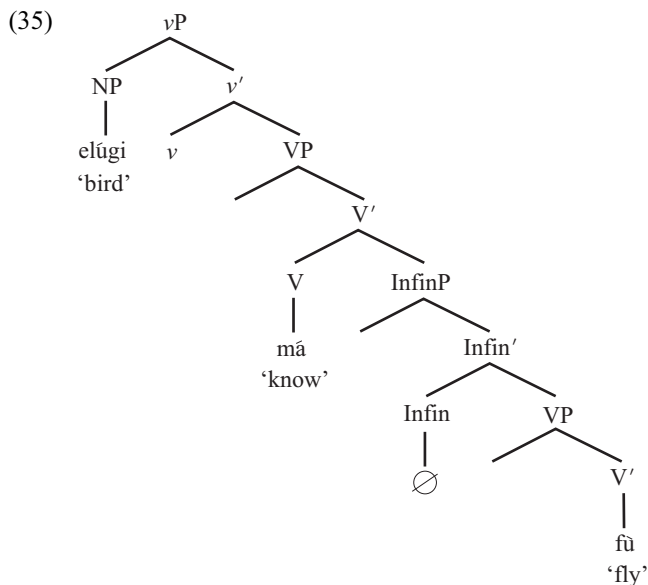
<sup>13</sup> The alternative would be to say that *vP* is present in the complement of the modal auxiliary verb, and PRO is generated in its specifier position and undergoes obligatory control. The sentence in (34) would then have to be ruled out on semantic grounds, not syntactic grounds. We have no deep objection to this alternative but take the text version because it is slightly simpler for the data at hand.

Our analysis of modal auxiliaries as main verbs predicts that it should be possible to stack them, given the recursive VP-under-VP nature of the structure in (35). All the examples of such stacking we have constructed are ruled out, however. For example:

- (i) \*Musa má yá cènkafo du.  
 Musa know begin rice cook  
 ‘Musa knows how to begin to cook rice.’

We assume that such sentences are unacceptable because the modal auxiliaries are semantically incompatible with one another, not because there is anything wrong with the syntactic structure. Perhaps if we had studied more verbs of this class in detail, acceptable examples would have come to light.

structure of a modal auxiliary construction before movement is (35), with the modal verb selecting *InfinP* and *Infin*<sup>0</sup> selecting VP.



Now we can use this structure to explain the word-order properties of modal auxiliary constructions that are our primary concern. Recall that word order in modal auxiliary constructions contrasts with that of perfect constructions in that NPs in the former but not in the latter come before the embedded verb regardless of whether they have structural Case. Moreover, these NPs show up not only to the left of the verb but must also appear to the left of the *Infin* particle *yin*, as seen in many examples so far (e.g., (29b,c)). Thus, it is natural to say that the NP moves at least to [Spec,*InfinP*]. The fact that special word order is correlated with the appearance of the special head *yin* makes perfect sense if we say that *yin* attracts an NP to check a feature. Unlike  $\text{Agr}_O^0$ , this attraction seems to have nothing to do with Case features. Rather, it is induced by something more like an EPP feature; the *Infin* head simply needs a nominal in its specifier, as formulated in (36).

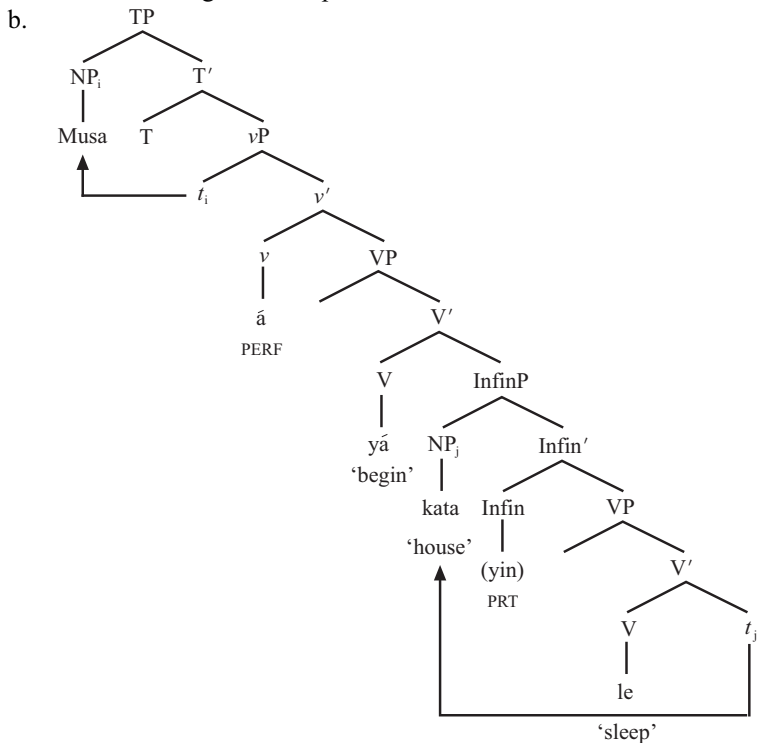
(36) *Infin*<sup>0</sup> has an uninterpretable [+N] feature that must be checked.

Because *Infin*<sup>0</sup> has a [+N] feature rather than a Case feature, it attracts even inherently Case-marked NPs like locative complements.

The attraction properties of *Infin*<sup>0</sup> may seem exotic, but they can be seen as a slight rearrangement of notions already at work in other languages. *Infin*<sup>0</sup>'s requiring movement to its specifier makes it similar to I/T heads in

English, including nonfinite *to*, which require movement to its specifier even when there is no issue of Case. That  $\text{Infin}^0$  in Nupe triggers movement of an internal argument rather than an external argument follows from the fact that  $\text{Infin}^0$  selects VP, rather than  $\text{vP}$ . Hence, there is no subject present in the complement, and the EPP feature can only be checked by a VP-internal NP. Because  $\text{Infin}^0$  has a  $[\text{+N}]$  feature value, it triggers only movement of NPs, never PPs, adverbs, VPs, or CPs. Finally, we assume that (36) applies not only to *yin* but also to the null version of  $\text{Infin}^0$  selected by *má* ‘know how to’. As a result, the word orders found under *má* are the same as those found under *yá* and *bé*, even though the head that triggers movement is less obvious with *má*. An example derivation involving a locative-selecting verb embedded under a modal auxiliary is provided in (37).

- (37) a. Musa á yá kata (yin) le.  
 Musa PERF begin house PRT sleep  
 ‘Musa has begun to sleep in the house.’



The featural difference between  $\text{Agr}_O^0$  and  $\text{Infin}^0$  also accounts for a further contrast. Like many West African languages, Nupe has few simple unergative verbs. Many unergative predicates in English are rendered in Nupe as a transitive verb plus a cognate object (cf. Hale & Keyser 1993): ‘run’ in Nupe



is literally ‘run race’, ‘work’ is ‘do work’, ‘sleep’ is ‘sleep a sleep’, and so on. These cognate objects sometimes behave differently in perfect constructions than in modal auxiliary constructions. In perfect constructions, cognate objects sometimes remain after the verb (unlike the referential objects of ordinary transitive verbs). In contrast, cognate objects always come before the embedded verb in modal auxiliary constructions, as shown in (38).

- (38) a. Musa á le ele.  
 Musa PERF sleep-V sleep-N  
 ‘Musa has slept (a sleep).’  
 b. Musa bé ele (yin) le zì.  
 Musa come sleep-N PRT sleep-V PURP  
 ‘Musa came to sleep (a sleep).’

Example (38a) shows that the cognate object does not move to [Spec,Agr<sub>O</sub>P]. This suggests that it does not bear a structural accusative Case feature that needs to be checked by Agr<sub>O</sub><sup>0</sup>. Either it receives a kind of inherent Case from the verb that selects it, or perhaps its nonreferential nature means that it does not need to be marked for Case at all. But even though it has a special status for Case theory, it is still intrinsically nominal. Therefore, it is necessarily attracted to [Spec,InfinP] in (38b) to check the [+N] feature of *yin*. This is another instance of the generalization that only Case-marked NPs come before the verb in perfect constructions, whereas all NPs precede the verb in modal auxiliary constructions.

Two provisos must be made with respect to (36) before we can go on. The first is that (36) cannot be satisfied when the lower verb is a pure intransitive like *fù* ‘fly’ or *tsu* ‘die’. In such structures, there is no NP in the c-command domain of Infin<sup>0</sup> that it could attract. Nevertheless, such sentences are not ruled out, as shown by (29a) and (32a). Conceivably, some sort of null expletive NP is inserted in [Spec,InfinP] in these structures as a language-particular “last resort” to rescue an otherwise impossible structure. However, we have no direct evidence for such an element. The other option is to say that (36) simply holds “whenever possible.” Infin<sup>0</sup> may or may not have a EPP-like [+N] feature, but the structure in which it has this feature blocks the structure in which it does not unless it leads to a crashed derivation. We tentatively adopt this second view, leaving open exactly how it is to be formalized.<sup>14</sup>

The second proviso is that when the verbal complement of Infin<sup>0</sup> takes no NP arguments, Infin<sup>0</sup> cannot reach down into the domain of another  $\theta$ -marking lexical head to attract an NP found there. Thus, we find minimal contrasts like (39).

<sup>14</sup> The formalization could be done either in terms of economy conditions or optimality theoretic rankings, both of which say that a possible structure is ruled out when a preferred one is available. Implementation of these proposals, however, would take us into complexities far from our main topic.

- (39) a. Musa má dzukó lo.  
 Musa know market go  
 ‘Musa knows how to go to the market.’  
 (cf. \*Musa ma lo dzukó.)
- b. Elúgi yá \*(yin) fù lo dzukó.  
 bird begin PRT fly go market  
 ‘The bird began to fly to the market.’  
 (cf. \*Elúgi yá dzukó [yin] fù lo.)

In (39a) the locative expression *dzukó* ‘market’ is a direct dependent of the verb *lo* ‘go’, which is the complement of  $\text{Infin}^0$  (null in this case). *Dzukó* is obligatorily attracted to [Spec,InfinP] in accordance with (36). In contrast, the locative expression *dzukó* ‘market’ in (39b) is a direct dependent of *lo* ‘go’, not of *fù* ‘fly’, which is the head of the VP complement of *yin*. This locative NP cannot be attracted to [Spec,InfinP], even though it is c-commanded by *yin*, and there is no other [+N] element that is closer to *yin*. The invisibility of NPs contained in a smaller VP to attraction by *yin* could be due to the Phase Impenetrability Condition (Chomsky 2001). Among other things, this condition explains why the  $T^0$  of a matrix clause in English cannot attract the subject NP of a complete lower clause to form a sentence like *Chris seems that t will win*. We tentatively assume that the resultative VP in an SVC, embedded CPs, and perhaps PPs count as phases distinct from the larger verb phrase they appear in. Again, we do not pursue the full formulation of this, or its implications for a theory of phases. Given that ‘go market’ is a phase distinct from ‘fly’ in (39), *yin* must be generated without its [+N] feature or the structure will crash, just as when the complement of *yin* is the intransitive verb ‘fly’ alone.

### 3.3 Double-Object Constructions under Modal Auxiliaries

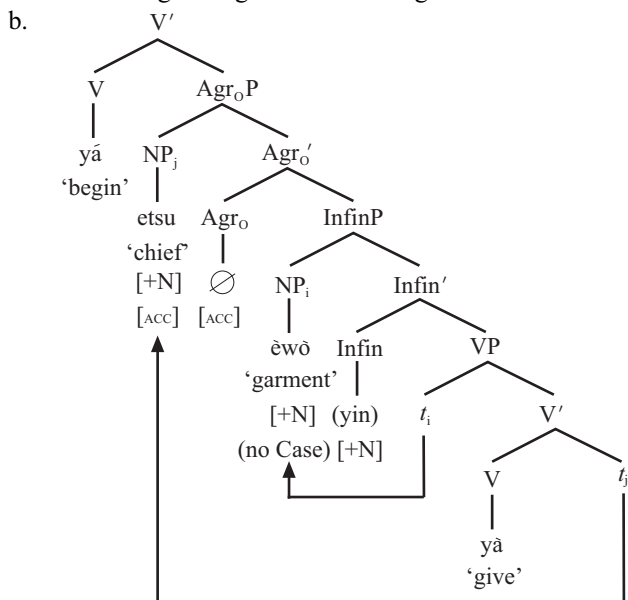
We need to extend our account to DOCs, which are the most complex structures we have to deal with. The crucial facts are that (i) both objects of the DOC precede the main verb and *yin*, and (ii) the objects show up in the dative-shifted order  $\text{NP}_{\text{goal}}$  before  $\text{NP}_{\text{theme}}$ . This pattern is illustrated for *yà* ‘give’ in (23), and for a second ditransitive verb in (40).

- (40) Musa bé kata woda booku (yin) tan zì.  
 Musa come house paint white PRT paint PURP  
 ‘Musa came to paint the house with white paint.’

This is just what we would expect if we add the assumption that  $\text{Agr}_{\text{OP}}$  is generated above  $\text{InfinP}$ , rather than below it. There must of course be an  $\text{Agr}_{\text{OP}}$  somewhere in the structure between  $\text{vP}$  and the transitive VP, given (20).  $\text{Infin}^0$  does not bear a Case feature, so  $\text{Agr}_{\text{OP}}$  is needed for Case-licensing in these constructions just as in simpler clauses. The generalization

in (20) leaves open where Agr<sub>O</sub>P should fall with respect to InfinP. Suppose it is generated above InfinP. The derivation proceeds cyclically, from the bottom of the structure up. The lowest head with features to check is Infin<sup>0</sup>. Its [+N] feature attracts the closest NP to its specifier. This will be the theme NP in [Spec,VP], given our assumptions about ditransitive structures. The fact that this NP bears inherent Case rather than structural Case is irrelevant, because Infin<sup>0</sup> is insensitive to Case. The next head with features to check is Agr<sub>O</sub><sup>0</sup>. This head bears a structural Case feature, not a pure [+N] feature. It also attracts the closest relevant phrase, but only NPs that have a structural Case feature (with whatever value) count as relevant. Agr<sub>O</sub><sup>0</sup> thus reaches beyond the theme NP in [Spec,InfinP], down to the complement of V, attracting the goal NP to its specifier. Agr<sub>O</sub><sup>0</sup> is thus the vehicle that accomplishes dative shift in modal auxiliary constructions, just as in simple clauses. Finally, head movement of the embedded verb is blocked due to the presence of *yin* in Infin<sup>0</sup>. The analysis is summarized in (41b).<sup>15</sup>

- (41) a. Musa yá etsu èwò (yin) yà.  
 Musa begin chief garment PRT give  
 ‘Musa began to give the chief a garment.’



<sup>15</sup> Note that the presence of Agr<sub>O</sub>P in this structure does not disturb the selection relation between the modal auxiliary verb and the InfinP. The type of Infin head selected by the modal auxiliary (*yin* or  $\emptyset$ ) is the same if the main verb is transitive or intransitive. Presumably, Agr<sub>O</sub><sup>0</sup> is transparent to selection because it is semantically inert and generated for purely formal reasons concerning feature checking. This type of nonlocal selection arises often in exploded functional category frameworks (see Cinque 1999).

This accounts for the word-order properties of DOCs in modal auxiliary constructions with minimal additional assumptions.

What would be the result if Agr<sub>O</sub>P were generated below InfinP, rather than above it? Agr<sub>O</sub>P would attract the goal NP to its specifier for Case-checking, as always. Then InfinP would attract the closest NP, which would be the goal NP in [Spec, Agr<sub>O</sub>P]. The theme NP would stay in the specifier of VP throughout the derivation, which would give the word order ‘begin’–‘chief’–*yin*–‘garment’–‘give’. Although this is not radically different from the correct word order, it puts *yin* in the wrong position with respect to the theme object, as shown in (42).

- (42) \*Musa yá etsu yin èwò yà.  
 Musa begin chief PRT garment give  
 ‘Musa began to give the chief a garment.’

There is no obvious theoretical problem with this derivation, but it gives an impossible result. Thus, we need the following Nupe-specific stipulation:

- (43) Agr<sub>O</sub>P cannot come between InfinP and VP in Nupe.

Although (43) is nothing to be proud of, agreement projections are already known to vary in their position with respect to other, more substantive heads in idiosyncratic ways (see Cinque 1999:136–137). Thus, (43) is in line with what we know from other languages.

The stipulation in (43) has positive consequences in another respect; it supports an account of the rather quirky-looking surface distribution of *yin*. Recall that when the modal auxiliary verb is *yá* ‘begin’ or *bé* ‘come’, *yin* is obligatory if the main verb is intransitive or an ordinary transitive, but it is optional if the main verb is a ditransitive, or a verb that selects a locative complement. We propose that the true generalization regarding the surface distribution of *yin* is as follows:

- (44) Infin<sup>0</sup> can be realized by  $\emptyset$  at PF only if its specifier is not.

We have no deep explanation for why (44) holds, but we consider it akin to doubly-filled Comp phenomena in English. English has structures in which a *wh*-phrase appears in [Spec, CP] or a complementizer appears in C<sup>0</sup>, but the two do not appear together:

- (45) a. I found the key \*(which) C fell out of your pocket.  
 b. I found the key (*Op*) \*(that) fell out of your pocket.  
 c. \*I found the key which that fell out of your pocket.

See Koopman 1996, 2000 and Sportiche 1997 for generalizations of this effect to functional heads other than C<sup>0</sup>. For the most part, (44) applies in a straight-

forward manner. When the main verb is intransitive, there is no NP to move to [Spec,InfinP], so that position remains empty, and *Infin*<sup>0</sup> must be spelled out as *yin*. When the main verb selects a locative complement or is ditransitive, the inherently Case-marked NP is attracted to [Spec,InfinP] and remains there. When this happens, spelling out *Infin*<sup>0</sup> as *yin* is optional. If, however, the NP with inherent Case undergoes *wh*-movement, leaving a copy that undergoes deletion, spelling out *Infin*<sup>0</sup> as *yin* is required again (see (30)). The crucial example to consider is when the main verb is an ordinary transitive verb. Such verbs have objects with structural accusative Case. This accusative Case must be checked by *Agr*<sub>O</sub><sup>0</sup>, unlike the inherent cased NPs. This *Agr*<sub>O</sub><sup>0</sup> is generated above *Infin*P, by (43). Therefore, the object NP that was attracted to *Infin*P necessarily moves on to [Spec,*Agr*<sub>O</sub>P] for Case licensing. The copy in [Spec,InfinP] deletes, and as a result *Infin*<sup>0</sup> must be spelled out as *yin*. The sentences in (46) present a minimal contrast between a locative-object verb and an accusative-object verb with respect to these *yin* placement facts.

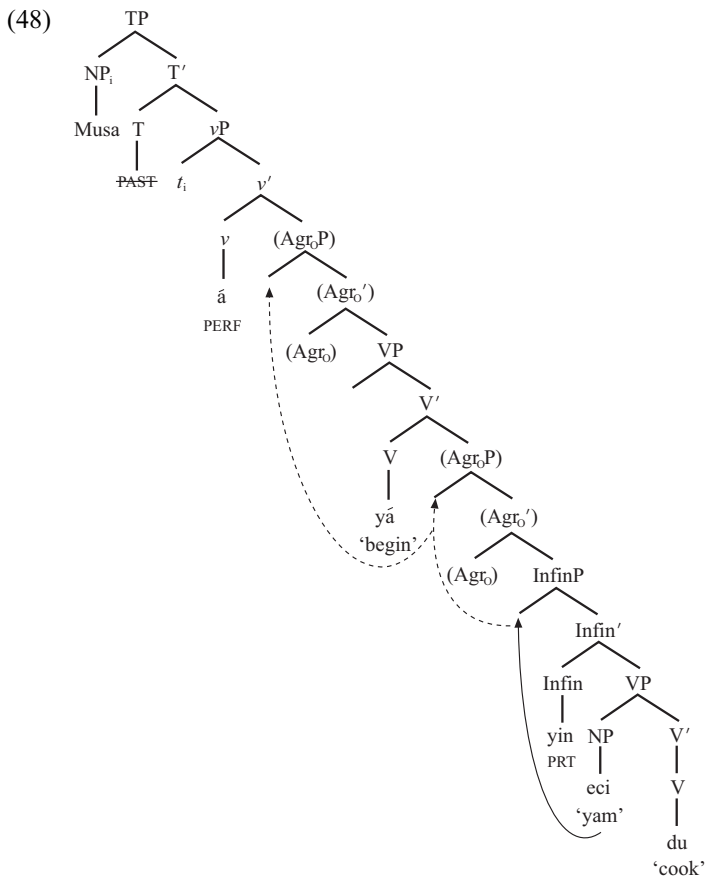
- (46) a. Musa yá [*Infin*P kata<sub>i</sub> (yin) [*VP* ci t<sub>i</sub>]. (locative object; *yin* is optional)  
 Musa begin house PRT lie  
 ‘Musa began to lie down in the house.’
- b. Musa yá [*Agr*<sub>OP</sub> nakà<sub>i</sub> *Agr*<sub>O</sub> [*Infin*P t<sub>i</sub> \*(yin) [*VP* t<sub>i</sub> ba]]]  
 Musa begin meat PRT cut  
 ‘Musa began to cut the meat.’ (direct object; *yin* required)

This analysis of the surface distribution of *yin* vindicates both our decision, made at the end of section 2, to include *Agr*<sub>O</sub>P in all transitive clauses, and our generalization that *Agr*<sub>O</sub>P always appears above *Infin*P. If *Agr*<sub>O</sub>P were below *Infin*P, then it could not remove the specifier from *Infin*P, and *yin* should be optional in (46b), not obligatory.

So far, we have assumed that *Agr*<sub>O</sub>P in a modal auxiliary construction is generated below the V projection of the modal auxiliary and above the *Infin*P. Could it instead be generated above the base position of the modal auxiliary as in perfect constructions? The examples we have looked at so far do not distinguish between these possibilities. The modal auxiliary verb comes before the surface position of the object, but that could be because it starts higher than the landing site of the object NP (as we have assumed so far), or because it moves higher, as a result of normal V-to-*v* movement applying to the modal auxiliary verb. These two possibilities can be distinguished by putting the modal auxiliary construction in the perfect. In this case, the perfect marker *á* occupies the *v* position, forcing the modal auxiliary to remain low. If the *Agr*<sub>O</sub><sup>0</sup> that hosts the object is below the higher VP, the object will come after the modal auxiliary verb even in the perfect; if the *Agr*<sub>O</sub><sup>0</sup> that hosts the object is above the higher VP, then the object of the lower verb will come before the modal auxiliary in the perfect. In fact, both orders are possible, although the order that corresponds to the first option (shown in (47b)) seems to be preferred.

- (47) a. Musa á eci yá \*(yin) du.  
 Musa PERF yam begin PRT cook  
 ‘Musa has begun to cook the yams.’  
 b. Musa á yá eci \*(yin) du.  
 Musa PERF begin yam PRT cook  
 ‘Musa has begun to cook the yams.’

This freedom of word order is consistent with our view that  $\text{Agr}_O^0$  is a purely formal element, the position of which is not fixed by matters of semantic selection. Our version of Burzio’s Generalization in (20) already says all that is necessary:  $\text{Agr}_O\text{P}$  has to be somewhere between the  $v$  that licenses the subject and the V that licenses the object, and this is satisfied in both structures. The modal auxiliary itself is not a transitive V (it selects only a quasiclausal complement) so where the  $\text{Agr}_O\text{P}$  comes with respect to it is not grammatically determined. The full syntactic structure is shown in (48), with both possible positions for the  $\text{Agr}_O\text{P}$  indicated.



To the extent that (47b) is preferred over (47a), we can attribute the preference to economy considerations. All things being equal, it is better for *eci* 'yam' to be Case-licensed in an Agr<sub>O</sub>P below the modal auxiliary *yà* 'begin' because then the NP movement chain is shorter.

We now have a complete analysis of modal auxiliary constructions that explains their special word orders in terms of other particulars of the construction. There is little temptation to see NP-V orders as evidence for a head final V' in this construction, because the particle *yin* intrudes between the NP and the V. If we are right that *yin* is a nonfinite I-like head that projects its own phrase, then clearly the verb+object constituent has been split by movement. So, the view that VP is head-final can take no encouragement from these structures. Rather, the NP-V orders found in modal auxiliary constructions can be attributed to the presence of an EPP-like feature on the Infin head. That auxiliary verbs select nonfinite projections is no surprise, nor is it surprising that Infin<sup>0</sup> should have an EPP feature. The only unusual fact about such constructions is that Infin<sup>0</sup> selects VP, rather than vP, so it attracts underlying objects rather than subjects.<sup>16</sup>

#### 4. What Is the Word Order of VP in Nupe?

We now have complete analyses of two distinct constructions in which Nupe has NP-V word order. What do these analyses teach us about word order parameters in general? Clearly, all of the higher verbal projections in the clause have the canonical specifier-head-complement order favored by Kaynian approaches. This order is characteristic not only of I<sup>0</sup>/T<sup>0</sup>, as in Koopman's original 1984 analysis, but also of v<sup>0</sup> (marked by the position of *á* in perfect clauses and the verb in nonperfect clauses), of Agr<sub>O</sub><sup>0</sup> (marked by the position of the verb in perfect clauses), and of Infin<sup>0</sup> (realized as *yin* in many cases). So this favored order is indeed widespread.

The one phrase whose order we have not learned much about so far is VP itself. Nupe clauses have so much movement of NPs and verbs that it is not

<sup>16</sup> Nupe has two other structures in which all NPs come before the verb, but other phrases do not. One is the gerundlike nominalization construction shown in (i). The other is a typologically unusual verb-doubling construction that expresses emphasis on the verb or a *yes/no* question; an example is given in (ii).

- (i) Etsu èwò ya ge.  
 chief garment give be.good  
 'Giving the chief garments is good.'  
 (\*Etsu ya èwò .../\*yiya etsu èwò ...)
- (ii) Musa yà etsu èwò yà.  
 Musa give chief garment give  
 'Did Musa give the chief a garment?' or 'Musa *did* give the chief a garment.'

We believe that our analysis of modal auxiliary constructions extends to these constructions as well, but we do not pursue the matter here for reasons of space. See Kandybowicz 2002 for an analysis of these constructions in terms of an account similar to the one proposed in this paper. See also Smith 1969 for a discussion of the gerundlike nominalization construction.

common to see both a verb and its complement in the  $V'$  projection at Spell-Out. But now that we have a handle on what moves where and why, we can consciously engineer contexts in which we have reason to think that neither the verb nor its complement has moved. In this section, we identify three such contexts. In all three cases, the verb comes before its complement, showing that Nupe is uniformly head-initial (at least in its verb phrase structures). This is significant, because it means that there is no need to single out VP as having a special word order different from that of the functional projections that dominate it, as has been proposed in the literature for West Germanic languages as well as for Vata and Gbadi.<sup>17</sup>

#### 4.1 *The Perfect of Intransitive Locative Verbs*

The simplest relevant case comes from perfect clauses. We know that the perfect marker *á* prevents the verb from raising out of VP to  $v$ , as it otherwise would. When the verb in a perfect clause is transitive, it raises to  $\text{Agr}_O^0$ , we claim. But suppose the verb is intransitive and selects a locative complement with inherent Case. Then  $\text{Agr}_OP$  is not (or at least may not be) present. This is confirmed by the distribution of *yin* in modal auxiliary constructions, which differs in intransitive clauses and transitive clauses (see (46)). So the verb need not raise to  $\text{Agr}_O^0$  in this kind of construction, and the locative complement does not raise for Case checking. Both are in their base positions, and the verb comes before the locative noun phrase, as shown in (49).

- (49) Musa [<sub>VP</sub> á [<sub>VP</sub> ci kata o]]  
 Musa PERF lie house LOC  
 'Musa has lain down in the house.'

#### 4.2 *Word Order in the Second VP of Serial Verb Constructions*

A second opportunity to see the base order of the  $V'$  projection is in resultative SVCs. In section 2.3, we briefly reviewed Stewart's (2001) argument that the second verb in such constructions can include a verb and its complement but no subject position, no adjuncts, and no functional structure. We also showed that Nupe is nondistinct from Edo in these respects. There are thus no independently motivated landing sites for movement internal to the resultative  $V'$  projection. Moreover, the word-order alternations of perfect clauses show that the first verb of an SVC raises to  $\text{Agr}_O^0$  or  $v^0$ , but the second verb does not change its position with respect to either its own complement or the direct object of the clause as a whole. Thus, there is no verb movement out of the resultative  $V'$  projection, either. The second verb

<sup>17</sup> See Koopman 2000 for a reanalysis of Vata and Gbadi in terms of uniformly head-initial projections and remnant movement.



and its complement both remain in the VP—and the order is consistently verb-complement, as shown in (50).<sup>18</sup>

- (50) a. Musa [<sub>VP</sub> tun<sub>i</sub> [<sub>Agrop</sub> egi<sub>j</sub> t<sub>i</sub> [<sub>VP</sub> t<sub>j</sub> t<sub>i</sub> [<sub>VP</sub> lo dzuko]]]]  
 Musa send child go market  
 ‘Musa sent the child to the market.’  
 b. Musa [<sub>VP</sub> ce<sub>i</sub> [<sub>Agrop</sub> èbi<sub>j</sub> t<sub>i</sub> [<sub>VP</sub> t<sub>j</sub> t<sub>i</sub> [<sub>VP</sub> ta èsákó o]]]]  
 Musa throw knife be.on table LOC  
 ‘Musa threw the knife onto the table.’  
 c. Musa [<sub>VP</sub> á [<sub>Agrop</sub> èbi<sub>j</sub> ce<sub>i</sub> [<sub>VP</sub> t<sub>j</sub> t<sub>i</sub> [<sub>VP</sub> ta èsákó o]]]]  
 Musa PERF knife throw be.on table LOC  
 ‘Musa has thrown the knife onto the table.’

### 4.3 Resultative SVCs in Modal Auxiliary Constructions

Modal auxiliary constructions provide a third opportunity to observe the word order in VP. If our structures are on the right track, then the *Infin* head lexically filled by *yin* prevents the verb from undergoing movement to  $v^0$  or  $\text{Agr}_O^0$ , by the Head Movement Constraint. So here again we have an unmoved verb. Can verbs in this construction ever take an unmoved complement? The answer is yes. The locative complements of posture and motion verbs are not a relevant case; they clearly move to [*Spec,InfinP*] to check the [+N] feature of *Infin*<sup>0</sup>. But the resultative VP in an SVC is a relevant case. Many serial verbologists agree that this VP is generated as the complement of the first verb (Larson 1991, Collins 1997, Carstens 2002), at least when the interpretation is resultative (Stewart 2001). Empirical support for this comes from Edo, where a main verb can be followed by a resultative PP or a resultative VP, but not both.<sup>19</sup>

- (51) a. Òzó fí àkhé ye òtíkù. (Edo)  
 Ozo throw pot in trash  
 ‘Ozo threw the pot in the trash.’  
 b. Òzó fí àkhé guòghó. (Edo)  
 Ozo throw pot break  
 ‘Ozo threw the pot so that it broke.’  
 c. \*Òzó fí àkhé ye òtíkù guòghó. (Edo)  
 Ozo throw pot in trash break  
 ‘Ozo threw the pot into the trash so that it broke.’

<sup>18</sup> See note 5 for some critique of Carstens’s (2002) claim that there is a *v* node and hence a landing site for verb movement internal to the second verb phrase of an SVC.

Interestingly, we have not found examples exactly like this in the literature on apparently head-final Ijo (Williamson 1965; Carstens 2002). If such SVCs exist, have the same basic structure as in Edo and Nupe (these are big ifs), and the order is ‘Musa child send market go’, this could be evidence that that language truly is head-final in the base, contra Carstens (2002). We are not in a position to pursue this further one way or another, however.

<sup>19</sup> This complementarity cannot be shown so nicely in Nupe, because Nupe has no verbs comparable to *throw* or *put* that take both an NP object and a PP goal. Such notions are always rendered with an SVC. We do not know if there is a deeper reason behind this lexical gap.

If the PP in a sentence like (51a) is a complement of the verb, as commonly assumed since Larson 1988, then it is reasonable to say that the VP in (51b) is also a complement of the verb. Now, the resultative VP clearly cannot move leftward to [Spec,InfinP] in Nupe (see (56)). There is also no evidence that the resultative VP extraposes to the right edge of the clause (descriptively speaking) the way full clauses do. Unlike clauses, the resultative VP comes before adverbs and unselected PPs. It also must come inside of superficially head-final projections like the purposive head *zì*, mentioned in section 3.2:

- (52) a. Gana bé èwò \*(yin) fo li zì.  
 Gana come garment PRT wash be.clean PURP  
 ‘Gana came to wash the garment clean.’  
 b. \*Gana bé èwò \*(yin) fo zì li.  
 Gana come garment PRT wash PURP be.clean  
 ‘Gana came to wash the garment clean.’

Putting together the pieces, we know that in (51a) *li* ‘be clean’ is the complement of *fo* ‘wash’, the order of *li* with respect to *zì* shows that *li* does not extrapose rightward, and the presence of *yin* before *fo* shows that *fo* does not undergo head movement to the left. Yet *fo* comes before *li*. This shows once again that the order inside the Nupe VP is head-complement. Here our results agree with those of Carstens (2002), who claims that the partially similar word order in SVCs in Ijo shows that that language is also head-initial in the base (a result she claims to be universal).

We now have three independent arguments that converge on this same conclusion. We take it that this resolves the question of word order in VP beyond reasonable doubt.

## 5. NP Movement versus Remnant VP Movement

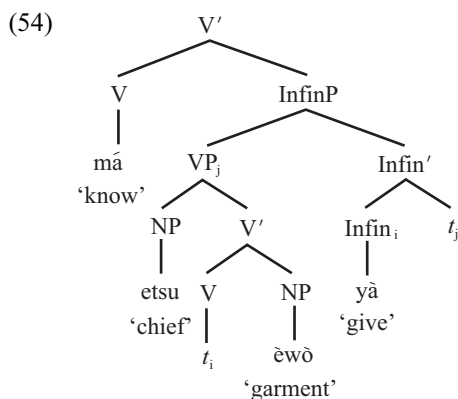
We have given an analysis of the verb-final orders in Nupe that has pretensions of completeness. There are two different types of verb-final orders, with different properties, but both are properly analyzed as involving the leftward movement of individual NPs, coupled with failure of the verb to undergo head movement to a higher position. We have also given several arguments that the verb comes before its complement if neither moves.

Throughout our discussion, we have contrasted two possible explanations of X-V word order: base-generation of a head final V' (the traditional headedness parameter) versus leftward movement of postverbal X to a specifier position. There is a third way to account for X-V word orders that is sanctioned by Kayne's theory and has attracted much attention in recent work. This is the possibility of remnant movement. Remnant movement takes place when the verb moves out of VP into some higher head Y, and then the VP that now contains the trace of the verb moves leftward to some specifier position above Y. It is natural to ask, then, whether remnant movement might provide as good an account of the Nupe facts as our analysis does.

The most promising type of sentence for justifying a remnant VP analysis in Nupe is the DOC in a modal auxiliary construction, an example of which is repeated in (53).

- (53) Musa má etsu èwò yà.  
 Musa know chief garment give  
 ‘Musa knows how to give the chief a garment.’

What makes a remnant movement analysis tempting is the fact that the order of the two objects is necessarily the same as it is in simple constructions. In our analysis, this requires two separate NP movements: the theme NP moves to [Spec,InfinP] to check the EPP feature of  $\text{Infin}^0$ , and the goal NP moves to [Spec,Agr<sub>O</sub>P] to check the Case feature of  $\text{Agr}_O^0$ . Suppose instead that the goal in a DOC were generated in [Spec,VP] and theme in complement position (contrary to our argument in section 2.3). On such an analysis, the verb could head-move out of VP into  $\text{Infin}^0$  (which happens to empty in this example), leaving the remnant VP to move into [Spec,InfinP]. This generates the observed word order, as shown in (54).



This analysis captures immediately the fact that the order of the objects in (53) is the same as in simple clauses. It also fits nicely with the fact that no overt functional head is seen between the two objects in this construction. The remnant movement hypothesis actually predicts this, because the two objects (plus the trace of the verb) form a constituent that occupies [Spec,InfinP]. In contrast, our analysis needs a functional head ( $\text{Agr}_O^0$ ) between the two objects that does not show up overtly.

In spite of this initial success, remnant movement derives incorrect word orders when applied to other examples. Consider again the case of a resultative SVC embedded under a modal auxiliary, as shown in (55).

- (55) Musa má èwò fo li.  
 Musa know garment wash be.clean  
 ‘Musa knows how to wash the garment clean.’

Under the remnant movement analysis, the first verb of the embedded SVC *fo* ‘wash’ raises to *Infin*<sup>0</sup>, leaving behind the remnant VP [*èwò t li*], which has the theme object in [Spec,VP] and the VP ‘be.clean’ as the complement of V. Moving this remnant VP to [Spec,InfinP] would derive the following unattested word order:

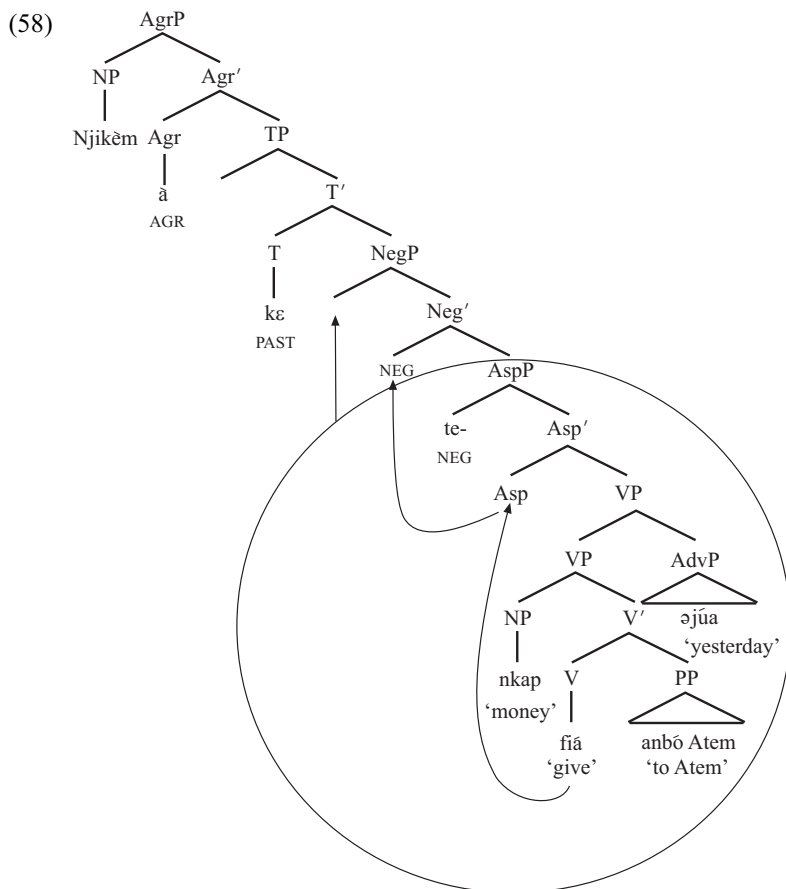
- (56) \*Musa má èwò li fo.  
 Musa know garment be.clean wash  
 ‘Musa knows how to wash the garment clean.’

We conclude that, although a remnant movement analysis derives the correct surface order in certain cases, it is not a possible alternative to the analysis offered in the text when a full range of Nupe structures is considered.

This is not to say that remnant movement analyses are never called for. We believe that they are valid for some other African languages that alternate between X-V and V-X orders. For example, Nkemnji (1995) builds a good case for remnant movement in Nweh, a Grassfield Bantu language spoken in Cameroon. Nweh shows normal-looking verb-initial orders in affirmative clauses. Negative clauses can have the same word order with a clause-final negation particle *bɔ* added, or they can have a verb-final word order in which *bɔ* is absent and the lexical verb appears in its place. These patterns are shown in (57).

- (57) a. Njikèm à kə fiá nkap anbó Atem əjúá.  
 Njikema AGR PAST give money to Atem yesterday  
 ‘Njikema give money to Atem yesterday.’ (Nkemnji 1995:117)
- b. Njikèm à kɛ te- fiá nkap anbó Atem əjúá bɔ.  
 Njikema AGR PAST NEG give money to Atem yesterday not  
 ‘Njikema did not give money to Atem yesterday.’  
 (Nkemnji 1995:112)
- c. Njikèm à kɛ te- nkap anbó Atem əjúá fiá.  
 Njikema AGR PAST NEG money to Atem yesterday give  
 ‘Njikema did not give money to Atem yesterday.’  
 (Nkemnji 1995:112)

A crucial difference between Nweh and Nupe is that even nonnominal VP-internal material comes before the final verb in Nweh, including PPs, adverbs (see (57b,c)), and complement clauses (Nkemnji 1995:117). Nkemnji claims that base word order is always specifier-head-complement in Nweh. The verb in (57c) optionally moves to *Neg*<sup>0</sup>, and then the remnant VP moves obligatorily to [Spec,NegP]. The result is a structure in which the verb comes last (Nkemnji 1995:126):



A very similar analysis seems to be justified for Lokaa, a Cross River language of Nigeria. Lokaa too has verb-initial order in affirmative clauses. In negative clauses, the verb combines with a negative prefix and appears late in the clause. More specifically, the verb appears after the completive particle *ke*, after both objects of a double object construction ((see 59b)), after the PP arguments of *put*-type verbs ((see 59c)), and (optionally) after adverbs ((see 59b)).

- (59) a. Yá-kə: kə ɔ̀m̀ni-á eblá ewé iyà:sí. (Iwara 1982:272)  
 3PL-give PRT Omini dog his today  
 'They have given Omini his dog today.'
- b. Kə ɔ̀m̀ni-á eblá ewé iyà:sí y'á:-kəi. (Iwara 1982:272)  
 PRT Omini dog his today 3PL-give  
 'They have not given Omini his dog today.'
- c. Ú:bi kɛŋkɔŋ sɔ̀mfɪ: də lɔ:sɛ ɔ:-bana. (Iwara, p.c.)  
 Ubi knife that on floor NEG-3SG-put  
 'Ubi did not put that knife on the floor.'

Here too it is plausible to say that the verb moves out of VP into Neg<sup>0</sup>, after which a verb phrase projection moves to [Spec,NegP].<sup>20</sup>

What makes a remnant VP analysis suitable for Nweh and Lokaa but not for Nupe? There are three reasons that converge nicely. First, in Nweh and Lokaa there is clear evidence that the verb has moved to a functional head position (namely Neg<sup>0</sup>) in the verb-final order. In Nweh, the evidence is that the verb replaces the negative particle; in Lokaa, the evidence is that the verb fuses with a negative morpheme to form a single word. There is no such independent evidence of verb movement in Nupe. A new head position that is not independently motivated would have to be made up to house the final verb in Nupe, especially in examples where the overt Infin<sup>0</sup> *yin* is present. Second, in Nweh and Lokaa there is clear evidence that nonnominal projections front along with the nominal ones. Third, the relative orders of these phrases are the same as in verb-initial sentences, which suggests that the verb phrase is intact except for the verb. It is the correlation of these three properties that makes remnant movement so attractive for these languages. Nupe is quite different, in that nominals often come before the verb but nonnominal expressions never do. This makes sense if movement is triggered to check Case or EPP features in Nupe, because only nominal expressions can in general check these features.

We conclude there is a coherent cluster of properties that distinguish remnant movement languages like Nweh and Lokaa from NP movement languages like Nupe. Both kinds of derivations seem well motivated, but for different constructions in different languages.

## 6. Conclusion

What then, are the implications of this for linguistic theory? Apart from the detailed analyses we have given of some unusual-looking constructions in Nupe, what has been learned about the forces at work in producing word orders? Does Kayne's (1994) suggestion that complement-verb structures are always derived by movement from verb-complement structures look more likely or less likely as a result of this inquiry?

In many respects, Kayne's conjecture looks more likely. We have found no evidence of a head-final projection in the verb phrase structure of Nupe and much evidence in favor of head-initial projections. We have also confirmed that there is evidence in favor of a rather rich typology of leftward

<sup>20</sup> There seem to be some minor differences in word order between Nweh and Lokaa. In Lokaa, adverbs can appear before or after the negative verb, and CP complements always appear after it (Eno, personal communication). In Nweh, the negative verb always comes after these elements, to judge by Nkemnji's examples. The difference can be described by saying that in Lokaa the "core VP" moves to [Spec,NegP], possibly leaving behind phrases that are adjoined to VP in the base (adverbs) or as a result of extraposition (CPs). In Nweh, the maximal VP (or even a larger AspP) moves, including everything that is adjoined to it. Why the two languages should differ in this way is unclear.

movements, including movement of NPs to check Case features (perfect clauses in Nupe), movement of NPs to check EPP features (nonfinite clauses in Nupe), and remnant VP movement (negative clauses in Nweh and Lokaa). Thus, the linguist who wants to derive OV orders by way of movement has plenty of well-motivated tools to work with.

There is one significant respect in which our results go against the practice of Kayne (1994) and much of the work he has inspired, however. Kayne does not adopt the orthodox minimalist assumption that movement should always be attributable to the features of identifiable functional heads. On the contrary, his program has depended to a large degree on the idea that null head positions can be created quite freely to host movements. This is not what we have found in our study of the West African languages. There is a rich variety of movements, but each is keyed to particular functional heads. The characteristic NP movements in nonfinite clauses in Nupe are clearly related to the presence of *Inf* heads like *yin*. The remnant movement in negative clauses in Nweh and Lokaa is clearly tied to the presence of a Neg head that hosts verb movement and triggers VP movement to its specifier position. The most abstract head in our analysis is  $\text{Agr}_O^0$  in perfect constructions in Nupe, which never has its own lexical content in the language. But it does have a clear role in the structure (Case checking), similar elements have been posited in many other languages, and it is spelled out overtly in languages such as Kinande (see Baker & Collins 2002). We suggest that Kaynian analyses of pure head-final languages like Japanese and Turkish should be held to the same standard: we should only be satisfied with them if plausible stories about the identities of the functional head positions posited to trigger movement are forthcoming. Whether this standard can be met, and if so how, requires an expertise in truly head-final languages that we do not possess, but we hope this study will help pave the way for those who do.

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