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Evidence for a VP-internal analysis of postverbal arguments in an SOVX language

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Mande languages are known for their typologically unusual SOVX word order, in which the subject and direct object precede the verb, while adjuncts and other complements must follow it. Koopman (1992) argues for Bambara that this unique word order arises when the direct object obligatorily raises to a preverbal position for Case, while any other postverbal elements surface in their base-generated position within the VP. However, Nikitina (2019) proposes for Wan that postverbal elements are located in a high, clause-adjoined position. This paper presents syntactic evidence from Mandinka in support of the former analysis of postverbal indirect objects. In particular, I provide word order, pronominalization, and binding facts that show that postverbal indirect objects must be located in a low, VP-internal position, which is incompatible with a clausal-adjunction analysis.

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1 Introduction

Mande languages exhibit a typologically unusual S-Aux-O-V-X word order. As shown below for Mandinka (Creissels & Sambou 2013; Creissels in press), the subject appears clause-initially.¹ With the exception of the completive, tense/aspect information is consistently realized as an auxiliary following the subject (sometimes in combination with a postposition following the verb), which is followed by the direct object (if the verb is transitive). The progressive aspect, for example, is expressed with a locational copula auxiliary, in combination with the postposition *kaŋ* following the verb, as shown in (1). The completive is realized as a suffix on an intransitive verb (see 2), but if the verb is transitive, an auxiliary form of the completive surfaces instead, as shown in (3).² Everything else must follow the verb. This includes adjuncts, such as *n na buŋo kono* (‘in my house’) in (2), as well as CP complements (which require a dummy 3SG pronoun in preverbal object position) (4), locative PP complements (5), and indirect object complements (6). Note that it is impossible for both objects to precede the verb (6b), or for both objects to follow the verb (6c).

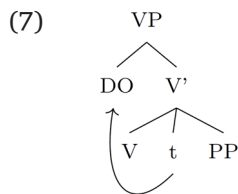
- (1) m bé ból-oo-lú kúu kaŋ
 1SG LOCCOP dish-D-PL wash POSTP
 ‘I am washing (the) dishes.’
- (2) m bojí-tá n na búŋ-o kono
 1SG fall-CPL 1SG GEN house-D in
 ‘I fell in my house.’
- (3) ŋ ŋá ból-oo-lu kuu
 1SG CPL dish-D-PL wash
 ‘I washed (the) dishes.’
- (4) ŋ ŋá a fo ko Músá bojí-ta
 1SG CPL 3SG say that Musa fall-CPL
 ‘I said that Musa fell.’
- (5) Músá je kitáab-oo ke táabúl-oo kaŋ
 Musa CPL book-D put table-D on
 ‘Musa put a/the book on a/the table.’

¹ All of the Mandinka examples in this paper were collected between Fall, 2020 and Fall, 2024 from my language consultants Rakey Cole, a Mandinka speaker from the Gambia, and Ousmane Cisse, a Mandinka speaker from Senegal. Tones have been marked according to elicitations from Ousmane Cisse, who assisted with the tone-marking. The absence of a tonal diacritic indicates a low tone, and the tone of long vowels is represented on the first vowel.

² For an overview of SOVX word order in West African languages, see Creissels (2005), and for an analysis of the historical development of SOVX word order from Proto-Mande, see Nikitina (2011).

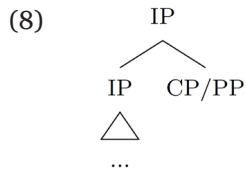
- (6) a. Músá je kitáab-oo dii dín-dín-o-lu la
 Musa CPL book-D give child-D-PL OBL
- b. *Músá je kitáab-oo dín-dín-o-lu (la) dii
 Musa CPL book-D child-D-PL OBL give
- c. *Músá dii-ta kitáab-oo la dín-dín-o-lu la
 Musa give-CPL book-D OBL child-D-PL OBL
 ‘Musa gave a/the book to (the) children.’

Given that ascribing an SOV word order to a language has often been synonymous with describing it as “verb-final,” rigidly SOVX languages present a puzzle for the generative literature on word order, since NP direct objects precede the verb, but the verb does not appear clause-finally in the presence of other arguments. Furthermore, SOVX word order raises the question of whether the postverbal material should be analyzed as structurally low or high in these languages. The answer to this question is controversial. Koopman (1992) argues for Bambara that the direct object, along with any postverbal material, is generated within a head-initial VP (Kayne 1994; for similar proposals for SOVX word order in other West African languages, see also Koopman 1984 on Mahou and Travis 1989 on Kpelle). The direct object then raises to a preverbal position in order to receive Case, while everything else remains in its base-generated position within the VP, as shown in (7) (adapted from Koopman 1992: (2)).³

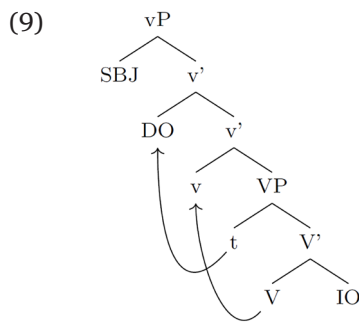


Nikitina (2009; 2019), however, argues from a range of phenomena in Wan and other Mande languages that postverbal material is not VP-internal. She instead proposes that postverbal elements, including arguments, are located in a high, clause-adjoined position, as shown in (8). In Nikitina’s view, the only possible analysis for this position within a generative-transformational framework is to assume that the postverbal elements undergo obligatory rightward extraposition. She argues that obligatory rightward movement is conceptually undesirable, and that the facts therefore cannot receive a satisfactory explanation in a generative-transformational approach. Instead, she adopts the Lexical-Functional Grammar (LFG) framework, where she accounts for the high, clause-adjoined position of the postverbal arguments by proposing that they are part of the verb’s argument structure at one level of the grammar (the functional level, or “f-structure”), and adjoined to the clause at another level of the grammar (the surface structural level, or “c-structure”) (Nikitina 2019).

³ For a somewhat similar analysis of Dutch, see Zwart (1993) (the Dutch pattern is, however, only somewhat similar to the Mande pattern).



However, as I will show, neither an obligatory rightward extraposition account nor abandoning a generative-transformational approach is necessary to account for this word order phenomenon. In fact, I provide robust syntactic evidence from Mandinka which favors a VP-internal analysis of postverbal indirect objects (like those in 6a) within a generative-transformational framework, like the one proposed by Koopman (1992), and I will argue that Nikitina's (2009; 2019) findings from Wan can be accommodated within this analysis. The specific structure I adopt is an updated version of (7), where I assume binary branching (Kayne 1984), and accordingly represent the base position of the direct object as a specifier, as shown in (9). I continue to follow Koopman in assuming a head-initial structure given the head-initial position of T and C elements, namely auxiliaries (see examples 1, 3–6) and complementizers (see example 4).



In section 2, I show that postverbal indirect objects must immediately follow the verb, while adjuncts are more freely ordered. In section 3, I show that postverbal indirect objects must also be included in the material replaced by the verbal pro-form *a ke* ('do it'), while postverbal adjuncts are not necessarily included. In section 4, I provide binding data that show that postverbal NPs must be lower than preverbal NPs: preverbal objects can serve as antecedents for reciprocals in postverbal argument position, and quantified expressions in preverbal objects can bind postverbal pronouns. Together, these facts strongly suggest that postverbal indirect objects are located in a fixed, low position in the VP.⁴ In section 5, I thus argue that a VP-internal analysis is the best

⁴ Note that while wh-movement is often used as a diagnostic for the relative height of arguments, it is not an applicable diagnostic in Mandinka since it is a rigid wh-in situ language. As shown in (i), the wh-phrase occupies the same position as the corresponding non-wh-phrase in an indicative clause. There is also no evidence that relative clauses or focus constructions involve A'-movement.

- (i) kamban-oo je dʒuma (le) dʒe
 boy-D CPL who FOC see
 'Who did a/the boy see?'

fit for these findings, in contrast with a clausal-adjunction analysis like the one proposed by Nikitina (2009; 2019). Section 6 concludes the paper.

2 Ordering of postverbal arguments and adjuncts

Postverbal indirect objects are rigidly ordered preceding various adjuncts, including adverbs (10–11), as well as benefactive (12), locative (13), and instrumental (14) PPs, all of which must follow the postverbal indirect object; none of these adjuncts may precede it.

- (10) Aisátú je kitáab-oo dii (*koteŋke) dín-dín-o-lu la (koteŋke)
 Isatou CPL book-D give again child-D-PL OBL again
 ‘Isatou gave a/the book to (the) children again.’
- (11) Aisátú je kitáab-oo dii (*tarijaake) dín-dín-o-lu la (tarijaake)
 Isatou CPL book-D give quickly child-D-PL OBL quickly
 ‘Isatou gave a/the book to (the) children quickly.’
- (12) ŋ ŋá kitáab-oo dii (*Músá je) karandirláa la (Músá je)
 1SG CPL book-D give Musa BEN teacher OBL Musa BEN
 ‘I gave a/the book to a/the teacher for Musa.’
- (13) ŋ ŋá kitáab-oo dii (*domori.dulaa to) Faatú la (domori.dulaa to)
 1SG CPL book-D give eating.place-D LOC Fatou OBL eating.place-D LOC
 ‘I gave a/the book to Fatou at a/the restaurant.’
- (14) ŋ ŋá máan-oo dii (*kojáar-oo la) Faatú la (kojáar-oo la)
 1SG CPL rice-D give spoon-D with Fatou OBL spoon-D with
 ‘I gave (the) rice to Fatou with a/the spoon.’

The fact that the indirect object and adjuncts must appear in this order is expected under the traditional assumption that arguments are generated closer to the verb than adjuncts, and is therefore compatible with an analysis in which the indirect object is located internal to the VP.

Within a clausal adjunction analysis, however, there is no straightforward account for this word order restriction. Under Nikitina’s LFG analysis, in fact, the mapping between f-structure and c-structure does not determine the order of the postverbal elements, so it is predicted that postverbal arguments and adjuncts may appear in any order. While Nikitina claims that this is the case in Wan, deriving the order found in Mandinka would require an ordering stipulation.⁵ A generative-transformational alternative, in which postverbal elements are obligatorily extraposed

⁵ Note that Nikitina (2019) only discusses one clear pair of examples where the indirect object may appear before or after another postverbal element in Wan (Nikitina 2019: (80), (83)). These examples are given in example (51) in section 5, where I show that they are not a problem for a VP-internal account given that the language is head-initial.

would require not just unmotivated obligatory movement, but also a stipulation about the order in which these elements attach in their postverbal positions. These kinds of stipulations are particularly unexplanatory given that other postverbal elements, including CP and locative PP arguments, do not adhere to this order. CP complements must *follow* adverbs and PP adjuncts, as shown in (15) and (16).

(15) kambaan-o je a fo (**koteŋke**) ko Marí funti-ta (***koteŋke**)
 boy-D CPL 3SG say again that Mary leave-CPL again
 ‘A/the boy said again that Mary left.’

(16) ŋ ŋá a fo Músá je (**Faatú je**) ko a funti-ta (***Faatú je**)
 1SG CPL 3SG say Musa BEN Fatou BEN that 3SG leave-CPL Fatou BEN
 ‘I told Musa for Fatou that she left.’

Note that this is consistent with English, where CP arguments typically undergo heavy shift to the right: while the adverb *loudly* follows the NP argument in (17), it must precede a CP argument (18–19).

(17) I said my name loudly

(18) I said loudly that Mary’s friend bought a car.

(19) ?*I said that Mary’s friend bought a car loudly.

In addition, locative PP complements may *optionally* follow some PP adjuncts (20–21) and adverbs (23) (though not all; see examples (22) and (24), where the locative PP complement must precede the adjunct). Also note that adjuncts themselves, such as the adverbs *saama* (‘tomorrow’) and *koteŋke* (‘again’) can be flexible in their word order with respect to one another, as shown in (24), where *saama* can appear either before or after *koteŋke* (but crucially not before the PP complement).

(20) Músá je kitáab-oo ke (**Faatú je**) táabúl-oo kaŋ (**Faatú je**)
 Musa CPL book-D put Fatou BEN table-D on Fatou BEN
 ‘Musa put a/the book on a/the table for Fatou.’

(21) ŋ ŋá máan-oo ke (**kojáar-oo la,**) ból-oo kono (**kojáar-oo la**)
 1SG CPL rice-D put spoon-D with bowl-D in spoon-D with
 ‘I put (the) rice in a/the bowl with a/the spoon.’

(22) ŋ ŋá naaf-oo ke (***baa daala,**) n dín-dín-o kaŋ (**baa daala**)
 1SG CPL hat-D put sea.D by 1SG child-D on sea.D by
 ‘I put a/the hat on my child at a/the beach.’

- (23) m bé kitáab-oo-lú ke la (koteŋke) táabúl-oo kaŋ (koteŋke) saama
 1SG LOCCOP book-D-PL put POSTP again table-D on again tomorrow
 ‘I will put a/the book on a/the table again tomorrow.’
- (24) m bé kitáab-oo-lú ke la (*saama) táabúl-oo kaŋ (saama) koteŋke
 1SG LOCCOP book-D-PL put POSTP tomorrow table-D on tomorrow again
 (saama)
 tomorrow
 ‘I will put a/the book on a/the table again tomorrow.’

If all postverbal material is clause-adjoined, as Nikitina (2019) claims, why should only indirect objects have a fixed position that precedes adjuncts, while other arguments and adjuncts can or must appear in a different order? This problem is easily avoided if postverbal indirect objects originate and remain in VP-internal position, while other postverbal elements are located higher in the structure, and can potentially be locally reordered.

While this paper is primarily focused on postverbal indirect objects, I would like to briefly elaborate on the reason why I suggest that other postverbal elements undergo local reordering, and are crucially not located in a high, clause-adjoined position, focusing in particular on the locative PP complement of ‘put.’ As shown in examples (22) and (24), these PP arguments do not have the option to follow all adjuncts. This lack of systematicity, supported by the very fact that the reordering is optional even when it is possible, may be more easily explained if the relevant reordering operation is a relatively superficial one (see section 4.3 for additional discussion).

In addition, note that the element in (20) that optionally precedes the PP argument is a benefactive. As shown in (25), the benefactive also appears closest to the verb in the presence of multiple postverbal adjuncts.

- (25) a. ŋ ŋá máan-oo tabi Faatú je, káléer-o kono domori.dulaa to
 1SG CPL rice-D cook Fatou BEN pot-D in eating.place.D LOC
 b.??ŋ ŋá máan-oo tabi káléer-o kono domori.dulaa to Faatú je
 1SG CPL rice-D cook pot-D in eating.place.D LOC Fatou BEN
 ‘I cooked rice in a pot at the restaurant for Fatou.’

It therefore appears that benefactives have a preference for appearing close to the verb and reordering may occur in order to preserve this order. Crucially, however, recall that the benefactive may not precede a postverbal indirect object, as shown in (12). The fact that this adjunct seems to be located in a position relatively close to the verb and still must be preceded

by the postverbal indirect object therefore provides further support for an analysis where the postverbal indirect object is located in a low VP-internal position.⁶

3. *a ke* replacement

‘Do-so’ replacement is a well-known constituency test in English: verbal constituents may be substituted by the verbal pro-form ‘do-so’ (Hankamer & Sag 1976; Hauser 2010), as shown in (26). Mandinka has a similar construction in which verbal constituents may be replaced with a pro-form composed of the dummy verb *ke* (‘do’) preceded by the 3SG pronoun *a* (27).

(26) I ate an apple and Sam ~~ate an apple~~ did so, too.

(27) η ηά ból-oo-lu kuu, Músá fanaη je ból-oo-lu kuu a ke
 1SG CPL dish-D-PL wash Musa also CPL dish-D-PL wash 3SG do
 ‘I washed (the) dishes, Musa did so, too.’

I argue that the *a ke* pro-form replaces vP-level constituents (Stroik 2001; Haddican 2007), and can therefore be used to diagnose what postverbal material is part of the vP in Mandinka. Both the postverbal argument and postverbal adjuncts can be replaced by *a ke*, as shown in (28).

- (28) a. η ηά kitáab-oo dii Faatú la tarijaake kúnuη, Músá je a ke bii
 I CPL book-D give Fatou OBL quickly yesterday, Musa CPL 3SG do today
 ‘I gave a/the book to Fatou quickly yesterday, Musa did so today.’
- b. η ηά kitáab-oo dii karandirlaa la, Faatú je kúnuη, Músá je a ke
 I CPL book-D give teacher.D OBL Fatou BEN yesterday, Musa CPL 3SG do
 bii
 today
 ‘I gave a/the book to a/the teacher for Fatou yesterday, Musa did so today.’
- c. η ηά kitáab-oo dii Faatú la, domori.dulaa to kúnuη, Músá je a
 I CPL book-D give Fatou OBL eating.place.D LOC yesterday, Musa CPL 3SG
 ke bii
 do today
 ‘I gave a/the book to Fatou at a/the restaurant yesterday, Musa did so today.’

⁶ Note that I am treating all PPs that are not thematically selected by the verb as adjuncts for ease of exposition, and because they pattern with adjuncts such as adverbs, rather than with indirect objects (e.g., in the pro-form replacement test in section 3). However, note also that some of these PPs, such as the benefactives and instrumentals, which appear before the complement of ‘put’ in (20) and (21), are common optional or applied arguments, which might have something to do with their preference for appearing close to the verb. I leave further investigation of these PPs to future research, but what is crucial for our purposes is that they appear to be located relatively low, yet still higher than the postverbal indirect object (see also section 3).

The fact that both the argument and adjunct are low enough to be included in the *a ke* pro-form lends additional support to the conclusion from section 2 that the postverbal argument must be located within the vP. If both postverbal arguments and adjuncts are adjoined at the clausal level, neither would be expected to be replaced by the vP pro-form.

Interestingly, while both adjuncts and arguments *can* be included in the *a ke* pro-form, an asymmetry arises between adjuncts and arguments with respect to which ones *must* be included. Adjuncts, including adverbs (29), benefactive PPs (30), and locative PPs (31), may follow *a ke*.

- (29) η ηά kitáab-oo dii Faatú la kúnun, Músá je a ke bii
 1SG CPL book-D give Fatou OBL yesterday Musa CPL 3SG do today
 ‘I gave a/the book to Fatou yesterday, Musa did so today.’
- (30) η ηά kitáab-oo dii karandirlaa la Faatú je, Músá je a ke Aisátú je
 1SG CPL book-D give teacher.D OBL Fatou BEN Musa CPL 3SG do Isatou BEN
 ‘I gave a/the book to a/the teacher for Fatou, Musa did so for Isatou.’
- (31) η ηά kitáab-oo dii Faatú la domori.dulaa to, Músá je a ke baa daala
 1SG CPL book-D give Fatou OBL eating.place.D LOC Musa CPL 3SG do sea.D by
 ‘I gave a/the book to Fatou at a/the restaurant, Musa did so at the beach.’

Arguments, on the other hand, cannot be excluded from the material replaced by *a ke*. This is true for the preverbal direct object, regardless of where the preverbal direct object is placed relative to *a* and *ke*, and whether the oblique case marker is present (32). It is also true for the postverbal indirect object (33). Instead, both objects must be included in the material substituted by *a ke*.

- (32) a. *η ηά kitáab-oo dii Faatú la, Músá je a ke kalaa (la)
 1SG CPL book-D give Fatou OBL Musa CPL 3SG do pen.D OBL
 b. *η ηά kitáab-oo dii Faatú la, Músá je a kalaa (la) ke
 1SG CPL book-D give Fatou OBL Musa CPL 3SG pen.D OBL do
 c. *η ηά kitáab-oo dii Faatú la, Músá je kalaa (la) a ke
 1SG CPL book-D give Fatou OBL Musa CPL pen.D OBL 3SG do
 Intended: ‘I gave a/the book to Fatou, Musa did so a/the pen.’
- (33) a. *η ηά kitáab-oo dii Faatú la, Músá je a ke Aisátú la
 1SG CPL book-D give Fatou OBL Musa CPL 3SG do Isatou OBL
 b. *η ηά kitáab-oo dii Faatú la, Músá je a Aisátú la ke
 1SG CPL book-D give Fatou OBL Musa CPL 3SG Isatou OBL do
 c. *η ηά kitáab-oo dii Faatú la, Músá je Aisátú la a ke
 1SG CPL book-D give Fatou OBL Musa CPL Isatou OBL 3SG do
 Intended: ‘I gave a/the book to Fatou, Musa did so to Isatou.’

This asymmetry suggests that while both postverbal arguments and adjuncts are low enough to be included within the *a ke* pro-form, postverbal adjuncts are high enough that they need not be included, while postverbal indirect objects are more deeply embedded and *must* be included. These results are expected if postverbal indirect objects are VP-internal while adjuncts are adjoined at a higher vP-level: *a ke* minimally replaces the smallest vP-constituent containing the verb and its arguments, but may optionally target a higher vP-segment containing adjuncts. However, these results are unexpected in a clausal-adjunction analysis where there is no structural difference between postverbal arguments and adjuncts, and both would be expected to be able to appear outside of the *a ke* pro-form.

4 Binding

Nikitina (2019) provides binding data from Wan which demonstrate that a postverbal reflexive pronoun may be bound by a preverbal object, as shown in (34).

(34) *Wan* (Nikitina 2019)

Dèlòtós [e: séjgè-e]_i bilà ságlā e_i tōā-e gó
 Deloto REFL:ALN knife-DEF pull start:PAST REFL sheath-DEF in
 ‘Deloto started pulling his knife_i from its_i sheath.’

Nikitina argues that the binding data show that postverbal material cannot be base-generated in a clause-adjoined position within a transformational grammar framework, since it would not be c-commanded by the preverbal object. However, she also argues that the alternative, namely obligatory rightward extraposition, is conceptually undesirable (see Nikitina 2019 for details), so she uses these data to motivate an LFG approach.

In this section, I show that binding facts from Mandinka also suggest that postverbal arguments cannot be base-generated in a clause-adjoined position, and I similarly argue against a rightward extraposition account. However, I depart from Nikitina in arguing that the postverbal material is not in a clause-adjoined position at all: instead, I argue that these binding facts are expected within an analysis in which the postverbal material is located within VP and c-commanded by the preverbal object, as the word order and *a ke* facts indicate.

4.1 Condition A

According to Condition A of Binding Theory, anaphors must be bound by a c-commanding antecedent. The Mandinka reciprocal *ɲoo* obeys Condition A, in contrast with SELF-reflexives: a SELF-reflexive in Mandinka can be interpreted as bound by an antecedent that is inside a relative clause (and therefore does not c-command it) (35), while *ɲoo* cannot (36).

- (35) [fót-óo mɛŋ be dɪndɪŋ-o-lu_i la búŋ-o kono] dijaa-ta i_i (fáŋó-lu) je
photo-D what LOCCOP child-D-PL GEN house-D in please-CPL 3PL (SELF-PL) OBL
'A/the photo which is in the children_i's house pleases themselves_i.'
- (36) *[fót-óo mɛŋ be dɪndɪŋ-o-lu_i la búŋ-o kono] dijaa-ta ɲóo_i je
photo-D what LOCCOP child-D-PL GEN house-D in please-CPL RECIP OBL
Intended: 'A/the photo which is in the children_i's house pleases each other_i.'

Note that (36) also shows that linear order is not the relevant factor in licensing a reciprocal in Mandinka: the intended antecedent *dindɪŋolu* precedes *ɲoo* in linear order, but the sentence is ungrammatical because the antecedent cannot c-command out of the relative clause.

Now observe that the Mandinka reciprocal *ɲoo* may be bound by the subject when *ɲoo* is in a postverbal argument position (37). In addition, *ɲoo* may also be bound by a preverbal object antecedent when it appears in a postverbal argument (38), but not vice versa (39).

- (37) dɪndɪŋ-o-lu_i je kitáab-oo-lú dii ɲóo_i la
child-D-PL CPL book-D-PL give RECIP OBL
'The children_i gave books to each other_i.'
- (38) Aisátú je dɪndɪŋ-o-lu_i jitandí ɲóo_i la
Isatou CPL child-D-PL show RECIP OBL
'Isatou showed (the) children_i to each other_i.'
- (39) *Aisátú je ɲóo_i jitandi dɪndɪŋ-o-lu_i la
Isatou CPL RECIP show child-D-PL OBL
Intended: 'Isatou showed each other_i to (the) children_i.'

Also note that a possessor can c-command out of its containing NP in Mandinka to bind anaphors, as shown in (40) (see Despić 2011 for an analysis of this phenomenon in Serbo-Croatian, where he links it to the reduced structure of nominals in languages without freestanding articles). (41) shows that if the positions of the antecedent and the anaphor are reversed, the result is unacceptable.

- (40) Aisátú je dɪndɪŋ-o-lu_i la kitáab-oo(-lú) dii ɲóo_i la
Isatou CPL child-D-PL GEN book-D-(PL) give RECIP OBL
'Isatou gave the children_i's books to each other_i.'
- (41) *Aisátú je ɲóo_i la kitáab-oo(-lú) dii dɪndɪŋ-o-lu_i la
Isatou CPL RECIP GEN book-D-(PL) give child-D-PL OBL
Intended: 'Isatou gave each other_i's books to the children_i.'

The fact that *noo* in a postverbal object may be bound by a subject or preverbal object suggests that the postverbal object must be able to be c-commanded by the preverbal subject and object. The postverbal object therefore cannot be base-generated in a clause-adjoined position, since it would be too high to be c-commanded by the preverbal subject or object. These facts can be accounted for by an analysis where the postverbal anaphor is located within the VP.

As mentioned by Nikitina (2019), another possibility is that the postverbal anaphor undergoes rightward A'-movement, and that the bound interpretation is a result of binding a lower copy of *noo* via obligatory reconstruction. However, note that when the reciprocal is the postverbal indirect object and postverbal adjuncts are also present, the postverbal adjunct obligatorily follows the postverbal indirect object (42). If the postverbal indirect object undergoes rightward A'-movement, this restriction on the landing site would require additional explanation, as discussed in section 2. No explanation for this rigid order is necessary if the postverbal indirect object is always VP-internal.

- (42) a. Aisátú je dín-dín-o-lu_i la kitáab-oo(-lu) dii **noo**_i la tarijaake kúnun
 Isatou CPL child-D-PL GEN book-D(-PL) give RECIP OBL quickly yesterday
- b. *Aisátú je dín-dín-o-lu_i la kitáab-oo(-lu) dii tarijaake kúnun **noo**_i la
 Isatou CPL child-D-PL GEN book-D(-PL) give quickly yesterday RECIP OBL
 'Isatou gave the children_i's books to each other_i quickly yesterday.'

Furthermore, rightward movement preceding the adjunct would constitute a string-vacuous scrambling operation, which is quite generally assumed to be disallowed (see especially Hoji 1985). In the absence of positive evidence for rightward extraposition and reconstruction, I therefore conclude that the postverbal argument must be in a low position in order to satisfy Condition A, which is consistent with a VP-internal approach.

4.2 Quantified Expressions

Quantified expressions are known to have scope over pronouns that they c-command, yielding bound variable readings (e.g., Reinhart 1983; Safir 2004). Observe that quantified expressions in preverbal objects may bind into postverbal objects (43), but not vice versa (44).

- (43) η ηά **kitáabu-wó-kitáabu**_i dii a_i la saféerilaa la
 1SG CPL every.book give 3SG GEN writer.D OBL
 'I gave each book_i to its_i writer.'
- (44) *η ηά a_i la kitáab-oo dii **taalibe-wó-taalibe**_i la
 1SG CPL 3SG GEN book-D give every.student OBL
 Intended: 'I gave his_i/her_i book to every student_i.'

Given these possibilities, the pronoun in the postverbal object should be in a position low enough that it can be c-commanded by the quantified expression in the preverbal object. These results thus further support the hypothesis that postverbal NP arguments are located within the VP, rather than in a high, clause-adjoined position.

4.3 Binding in postverbal locative PP arguments

Before moving on, it is worth noting that the binding facts can provide additional support for the proposal in section 2 that postverbal PP arguments of ‘put’ are also located in a relatively low position, and their flexible word order with respect to postverbal adjuncts may be the result of local reordering. Note that *noo* within a postverbal locative PP can be bound by an antecedent in the preverbal argument (45), and quantified expressions in preverbal arguments can bind pronouns in postverbal PP arguments (46), even when the postverbal locative PP follows an adjunct. This is true whether the adjunct is another PP (as in the (a) examples) or an adverb (as in the (b) examples).

- (45) a. Aisátú je dǐndǐŋ-o-lu_i ke Faatú je, **noo**_i la laarǎŋ-o-lu kaŋ
 Isatou CPL child-D-PL put Fatou BEN RECIP GEN bed-D-PL in
 ‘Isatou put (the) children_i in each other_i’s beds for Fatou.’
- b. Aisátú je dǐndǐŋ-o-lu_i ke koteŋke, **noo**_i la laarǎŋ-o-lu kaŋ
 Isatou CPL child-D-PL put again RECIP GEN bed-D-PL in
 ‘Isatou put (the) children_i in each other_i’s beds again.’
- (46) a. Aisátú je dǐndǐŋ-wó-dǐndǐŋ_i ke Faatú je, **a**_i la laarǎŋ-o kaŋ
 Isatou CPL every.child put Fatou BEN 3SG GEN bed-D in
 ‘Isatou put every child_i in his_i/her_i bed for Fatou.’
- b. Aisátú je dǐndǐŋ-wó-dǐndǐŋ_i ke koteŋke, **a**_i la laarǎŋ-o kaŋ
 Isatou CPL every.child put again 3SG GEN bed-D in
 ‘Isatou put every child_i in his_i/her_i bed again.’

These data suggest that, just like postverbal indirect objects, postverbal locative PP arguments also need to be in a position that is lower than the preverbal argument, in order to be c-commanded by their antecedent. Interestingly, a similar argument has been made with respect to the nominal domain: Ticio (2005) shows that the order of nominal arguments in Spanish may vary, but the binding possibilities are not affected by reordering. For example, the agent may precede or follow the theme (47). However, regardless of the order, it is possible for the agent to bind an anaphor when it is the theme, as shown in (47a)–(47b), but it is not possible for the theme to bind an anaphor when it is the agent (47c)–(47d).

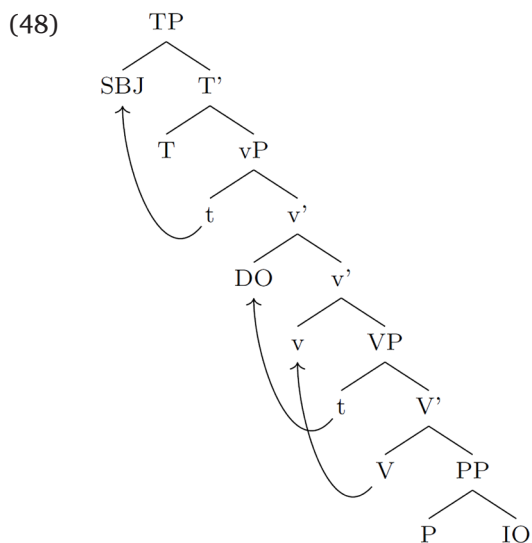
(47) *Spanish* (Ticio 2005)

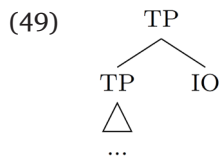
- a. la llamada telefónica [de Juan_i]_{agent} [a sí mismo_i]_{theme}
 the call phone of Juan to himself
 ‘Juan_i’s phone call to himself_i.’
- b. la llamada telefónica [a sí mismo_i]_{theme} [de Juan_i]_{agent}
 the call phone to himself of Juan
 ‘Juan_i’s phone call to himself_i.’
- c. *la llamada telefónica [de sí mismo_i]_{agent} [a Juan_i]_{theme}
 the call phone of himself to Juan
 Intended: ‘himself_i’s phone call to Juan_i.’
- d. *la llamada telefónica [a Juan_i]_{theme} [de sí mismo_i]_{agent}
 the call phone to Juan of himself
 Intended: ‘himself_i’s phone call to Juan_i.’

Ticio (2005) thus argues that the linear order of these arguments does not reflect their syntactic c-command relations, and that the optional reordering takes place postsyntactically at PF. Given that postverbal locative PP arguments in Mandinka are also flexible in their ordering, while their binding relationships are preserved, a similar analysis may be applicable to these locative PP arguments in Mandinka, which must be c-commanded by indirect objects but may be reordered at PF.

5 Postverbal arguments are VP-internal

I argue that the evidence from the ordering of postverbal arguments and adjuncts, *ake* replacement, and binding lead to the conclusion that the structure in (48), where the postverbal object remains within VP, is to be preferred over that in (49), where it is adjoined at the clausal level (regardless of whether clausal-adjunction is the result of base-generation or rightward extraposition).





Recall that I adopt a head-initial analysis of the OV word order given the head-initial position of C elements and T elements. In (48), since the subject precedes the auxiliary, I assume that it raises to Spec,TP in order to receive Case. Following Koopman (1992), I assume that the direct object also raises in order to receive Case, specifically to Spec,vP. I also adopt the standard assumption that the verb raises from V to v.⁷ Note that while we cannot detect the raising of the verb and direct object from word order alone, evidence for verb movement comes from the placement of the causative suffix *-ndi*, as shown in (50).

- (50) kambaan-oo je balañ-o bori-ndi
 boy-D CPL ball-D run-CAUS
 ‘A/the boy rolled a/the ball.’

Assuming that causative morphology is located on v (e.g., Folli & Harley 2007; Pytkänen 2008), the suffixal nature of this causative morpheme can be taken to suggest that the verb undergoes head movement to v. Furthermore, the fact that the word order is still OV, with the direct object preceding the verb, suggests that the direct object must raise as well. Additional support for raising of the direct object comes from Kandybowicz & Baker (2003), who similarly argue that in the Kwa language Nupe, which has both OV and VO word orders, the OV order is derived from a head-initial structure via movement of the object from Spec,VP to a vP-internal Case-licensing position. Note, however, that nothing rests on these assumptions: as long as the direct object is base-generated higher than the indirect object, an analysis in which the verb and direct object do not raise and the Case of the direct object is valued in situ is equally compatible with the facts, and with the central claim that the indirect object is VP-internal. Finally, the indirect object receives Case from the preposition, and therefore does not need to raise to Spec,vP, instead remaining within the prepositional phrase.⁸ The

⁷ I assume that once the verb raises to v it does not raise higher to T, given that both the auxiliary in T and the DO precede the verb, and that the verb is replaced by *a ke*, which I have argued is a vP-level pro-form, and would therefore be unable to replace an element located in T. Recall, however, that in intransitive clauses, the completive appears as a suffix on the verb, rather than as an independent auxiliary preceding it (2). While the behavior of the completive morpheme is outside the scope of this paper, Koopman (1992) discusses a similar alternation in Bambara. Koopman proposes that the verb raises to T in intransitive clauses, resulting in a suffix on the verb, but cannot move to T in transitive clauses, resulting in SAuxOV order (see Koopman’s work for relevant discussion). See also Sande, Baier & Jenks (2019) for an overview of SAuxOV word order in West African languages.

⁸ Note that there are two possible ways to analyze *la*: one possibility is that it is an adposition that follows the IO after it raises to its Spec, another is that it is an oblique case marker assigned by a null preposition. Either possibility is compatible with the current analysis, so I do not commit to one here, but I have glossed *la* as an oblique case marker in order to distinguish it from other uses of adpositions.

resulting order is S-Aux-O-V-X, with the subject preceding the aspectual auxiliary located in T, the direct object preceding the verb, and the indirect object appearing after the verb.

This structure in (48) captures the fact that the postverbal indirect object is closer to the verb than postverbal adjuncts, since it is located directly adjacent to the verb as its complement. It also captures the fact that the verb, preverbal direct object, and postverbal indirect object are replaced by the vP pro-form *a ke*, since together they form a vP-constituent. Adjuncts (not depicted) are adjoined at a higher vP-level, which allows them to be optionally replaced by *a ke*. Finally, this structure also captures the fact that an indirect object anaphor may be bound by a preverbal antecedent, and a pronoun in a postverbal indirect object may be bound by a preverbal quantified expression, since the postverbal indirect object is located low enough to be c-commanded by the preverbal arguments.

Recall that Nikitina (2009; 2019) argues against a VP-internal analysis of SOVX word order in Wan. For example, Nikitina (2019) shows that the IO does not necessarily need to appear immediately after the verb in Wan, in contrast with the Mandinka examples in (10–14), where the IO *must* immediately follow the verb. As shown in (51), the IO may appear either before or after another PP. For Nikitina, the fact that other postverbal material may intervene between the verb and IO suggests that the IO is not part of the VP. Instead, she argues that it is located in a high, clause-adjoined position.

(51) *Wan* (Nikitina 2019)

- a. Dèlòt́ á wìté-ŋ gbé lá lé [gbānē-mú yā] [lā gbè lèn]
 Deloto PROG hunt-NMLZ way show PROG dog-PL with 2SG son to
- b. Dèlòt́ á wìté-ŋ gbé lá lé [lā gbè lèn] [gbānē-mú yā]
 Deloto PROG hunt-NMLZ way show PROG 2SG son to dog-PL with
 ‘Deloto is showing to your son the way of hunting with dogs.’

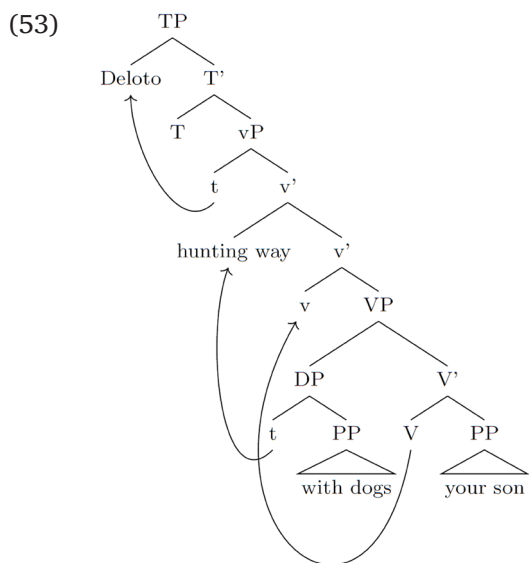
I will show that the head-initial approach to Mande VP and vP that I adopt easily derives the separation of a PP complement or modifier such as ‘with dogs’ from its associated preverbal nominal. That the PP does not appear within that nominal is in fact consistent with Nikitina’s (2009) generalization that PPs are ruled out inside Wan nominals (see also Goertzel 2022, who identifies the same restriction against PP modifiers in Mandinka nominals). Nikitina shows that nominals in Wan may only be modified by bare NPs, and never by PPs:

(52) *Wan* (Nikitina 2009)

- a. yré t̄ābālí
 wood table
- b. *yré yā t̄ābālí
 wood of/with table

- c. *tābālī yré yā
 table wood of/with
 ‘table of wood’

While Nikitina takes this restriction on PPs to mean that they are clause-adjoined, the restriction can be met simply by stranding the PP in the base position of the nominal complement when it raises to preverbal position (assuming that internal arguments which precede the verb raise to that position, as in (48)), as shown in (53).⁹



Note that this same approach can be extended to account for another set of examples with non-finite complements discussed by Nikitina (2009). She shows that in Wan, some verbs may select a non-finite VP as their complement, and that when that VP complement is transitive, its preverbal object appears adjacent to it, as shown in (54), where the direct object ‘work’ appears directly before the complement verb ‘do.’ However, when the non-finite complement verb has a postverbal PP complement, the postverbal complement does not appear adjacent to the complement verb, as shown in (55), where the PP ‘in the tree’ appears clause-finally, rather than immediately following the complement verb ‘climb’ that selects it.

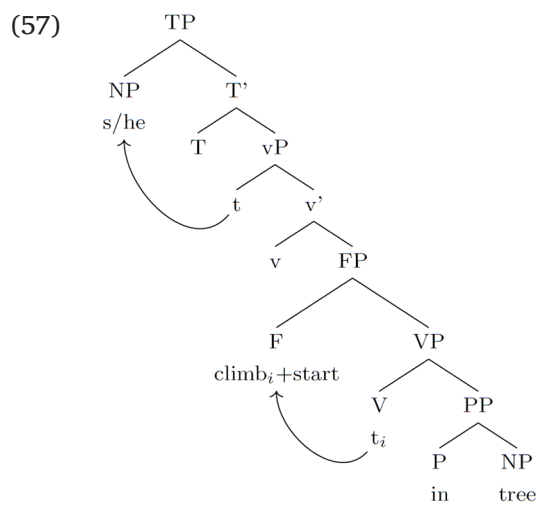
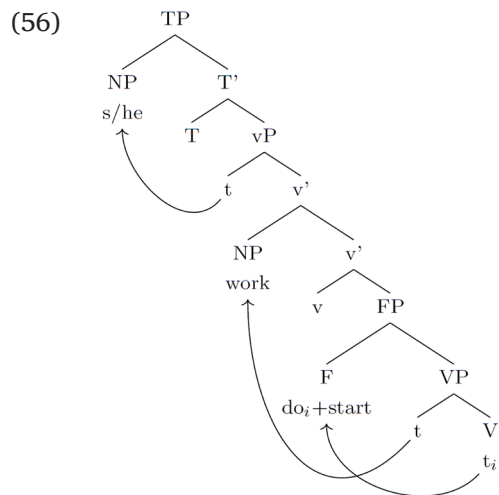
⁹ The order in (51b) now becomes the more unexpected one, but, as suggested by an anonymous reviewer, local reordering (see section 2) is a promising explanation: given the facts in (10–14), which show that the IO typically does immediately follow the verb, it would not be surprising for speakers to sometimes prefer the IO to appear close to the verb, and locally reorder the PP and IO accordingly.

- (54) *Wan* (Nikitina 2009)
 è yrē ló ságlā
 s/he work do started
 ‘He began to work.’
- (55) *Wan* (Nikitina 2009)
 a. è kúnā ságlā yrē é gó
 s/he climb started tree DEF in
 b. *è kúnā yrē é gó ságlā
 s/he climb tree DEF in started
 ‘She began to climb onto a tree.’

According to Nikitina, this result is unexpected if the postverbal PP complement is part of the VP constituent, since one would expect the postverbal complement to immediately follow the verb that selects it, so she argues that these findings suggest that the postverbal complement is located in a high, clause-adjoined position. Crucially, however, this result is only unexpected under a head-final analysis in which the non-finite complement VP is base-generated to the left of the verb that selects it. On the other hand, the position of the postverbal complement can easily be explained within a head-initial analysis like the one proposed here. One way to account for the postverbal location of the PP within a head-initial analysis is to assume that, like in the analysis suggested above for (51a), the non-finite VPs in (54)–(55) are also nominal, which requires raising to Spec,vP for Case, thus stranding the PP in (55) like in (51a).

In addition, note that (54) and (55) involve the aspectual verb ‘begin,’ which is among what Wurmbrand (1998; 2001) calls “core” restructuring verbs, meaning that they are generally consistent across different languages in displaying transparency effects. I therefore suggest that another possible explanation for (54) and (55) is to analyze them as involving restructuring. According to Wurmbrand (see also Cinque 2006), transparency effects arise with restructuring verbs because the sentences are monoclausal: restructuring verbs head a functional projection and take a nonfinite VP as their complement. Assuming a head-initial structure for this functional projection yields the structures in (56) and (57) for the sentences in (54) and (55), respectively. Given the linear order of the restructuring verb relative to the verb in its complement, I assume that the verbs form a verb cluster in the sense of Keine & Bhatt (2016), who propose that the complement verb undergoes head-movement to incorporate with the restructuring verb (for an overview of verb cluster phenomena, see Wurmbrand 2006). Crucially, since the restructuring verb and the verb in its complement are not in different clauses, and since the structure is head-initial, the complements appear in their usual positions relative to the entire verbal complex:

just as before, the direct object raises from Spec,VP to Spec,vP, as shown in (56), while the PP complement remains in situ, as shown in (57).



Admittedly, the above discussion provides an outline for an analysis, while a full exploration into constructions like (51) and (54–55) lies beyond the scope of this paper, and would require in-depth research into these aspects of Wan. But the adherence to the generalization that PPs do not appear in nominals, as well as the resemblance to the cross-linguistic phenomena of restructuring and verb clustering are striking, and the hypotheses sketched here yield principled accounts of otherwise puzzling word order phenomena. Lacking speakers of Wan to consult, I must leave it to future research to confirm the approach or provide an alternative consistent with the Chomskyan assumption that movement derivations underlie word order

puzzles like this one. Crucially, given Nikitina's (2009) report that Wan disallows PPs within nominals, and lacking evidence that that verbs like 'begin' do not behave as restructuring verbs in Mande languages, examples like (51) and (54–55) do not provide conclusive evidence that postverbal elements must surface in a high clause-adjoined position, particularly in light of the robust syntactic evidence presented above, which supports a VP-internal analysis of postverbal indirect objects.¹⁰

6 Conclusion

In this paper I have argued that the internal argument that appears postverbally in Mandinka is base-generated within the VP, where it remains throughout the course of the derivation. This VP-internal position has been proposed by previous authors (e.g., Koopman 1984; 1992; Travis 1989), but empirical support for this position is lacking in the literature on SOVX word order. The Mandinka data I present thus contribute to advancing our understanding of this typologically unusual word order. I have shown that postverbal indirect objects consistently precede postverbal adjuncts, while other postverbal arguments like CPs and locative PPs can or must follow them, an order that is consistent with a VP-internal analysis. I have also shown that postverbal objects must be replaced by the pro-form *a ke*, indicating that postverbal objects are low within the verbal domain, unlike postverbal adjuncts, which can but need not be replaced by *a ke*. Additionally, I have provided evidence that postverbal objects must be in a position low enough to be c-commanded by preverbal arguments by showing that reciprocal *noo* inside a postverbal object can be bound by a preverbal antecedent, and pronouns inside a postverbal object can be bound by a quantified expression in a preverbal object, but not vice versa.

I have also shown that this evidence presents serious challenges for an analysis like Nikitina's (2009; 2019), where all postverbal elements, including indirect objects, are located in a clause-adjoined position. For example, the ordering of postverbal arguments and adjuncts suggests that CP and locative PP arguments may optionally or obligatorily undergo local rightward movement, but this appears to be unavailable to indirect objects. While this order is expected in a VP-internal approach, a clausal adjunction approach would require additional stipulations about the order in

¹⁰ Nikitina (2019) also suggests on the basis of tonal considerations that postverbal elements in Wan are not in the same intonational phrase as the verb. While I leave an investigation of the intonational phrasing of Mandinka to future research, it is important to note that intonational boundaries do not always correspond precisely with syntactic domains (e.g., Selkirk 2005; Cheng and Downing 2016, among many others). In fact, Kandybowicz (2020) demonstrates this independence between syntactic constituency and intonational phrasing for a number of West African languages (e.g., Krachi, Bono, and Nupe), where S-V-COMP constitutes a clear intonational phrase, despite not forming a syntactic constituent. Intonational phrases alone would therefore not provide sufficient evidence to posit a clause-adjoined position for postverbal elements.

which postverbal material can adjoin to the right of the clause. Furthermore, the *a ke* replacement facts reveal an asymmetry between postverbal objects and adjuncts. This suggests that they are not located in the same position, and that the postverbal object in particular is located low within the verbal domain. Finally, the binding data suggest that the postverbal object must be in a position low enough to be c-commanded by the preverbal object, which is consistent with a VP-internal approach.

In conclusion, the syntactic evidence that I have provided from Mandinka favors an analysis of SOVX word order in which postverbal objects remain in-situ within the VP domain, rather than one in which they are adjoined to a higher position to the right of the clause.

Abbreviations

ALN = alienable possessor, BEN = benefactive, CAUS = causative, CPL = completive, D = default determiner, DEF = definite marker, FOC = focus, GEN = genitive, LOC = locative, LOCCOP = locative copular, OBL = oblique, PL = plural, POSTP = postposition, RECIP = reciprocal, REFL = reflexive, SG = singular

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Competing interests

The author has no competing interests to declare.

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