

Chapter 34

The syntactic diversity of SAuxOV in West Africa

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Surface SAuxOV orders abound in West Africa. We demonstrate that apparent examples of this word order have important structural differences across languages. We show that SAuxOV orders in some languages are due to mixed clausal headedness, consisting of a head initial TP and head-final VP, though this order can be concealed by verb movement. Other languages are more consistently head-initial, and what appear to be SAuxOV orders arise in limited syntactic contexts due to specific syntactic constructions such as object shift or nominalized complements. Finally, we show that languages which have genuine SAuxOV, corresponding to a head-final VP, tend to exhibit head-final properties more generally. This observation supports the idea that syntactic typology is most productively framed in terms of structural analyses of languages rather than the existence of surface word orders.

1 Introduction

The order subject-auxiliary-object-verb (SAuxOV) is quite common across West Africa. At the same time, it is well-known that syntactic differences exist among the languages with this surface order (Creissels 2005). Our goal in this paper is to identify structural differences across languages for which SAuxOV order occurs,



and to show that these structural differences correlate with other word order properties of the language.

Our central observation is that there is a single clause structure which results in SAuxOV word order as a language-wide property. The relevant structure is MIXED CLAUSAL HEADEDNESS; here, the property of having a head-initial TP and a head-final VP, resulting in SAuxOV word order whenever an overt auxiliary is present. Such a structure is typical of the Kru and Mande language families. One example each from Guébie (Kru) and Dafing (Mande) is provided below.

- (1) a. Marka Dafing (Mande: Burkina Faso; Notes)

wúru-¹ú ¹ní fwó-¹ó ñì mì
dog-DEF PST meat-DEF eat

‘The dog ate the meat.’

- b. Guébie (Kru: Côte d’Ivoire; Notes)

e⁴ ji³ ja³¹ li³
1SG.NOM FUT coconuts eat

‘I will eat coconuts.’

This structure occurs in an area of West Africa we call the Mandesphere, the historical sphere of influence for the Mande empires which were politically dominant in West Africa for much of its recent history, as discussed further in §4.

There is one major difference in the clausal syntax of Kru and Mande languages, however. In Kru, but not in Mande, verb movement occurs in sentences without an overt auxiliary, resulting in SVO order. While this is an important syntactic difference between the languages, it seems to be inconsequential for the purposes of word order typology: both Mande and Kru languages are overwhelmingly head-final below the clause level, another property which is characteristic of the Mandesphere.

Outside of the Mandesphere, languages are generally head-initial (Heine 1976). Where apparent SAuxOV orders occur, we demonstrate that these do not involve mixed clausal headedness (Manfredi 1997; Kandybowicz & Baker 2003; Aboh 2009). We examine two such cases. First, we present a novel analysis of Gwari (Nupoid), in which we demonstrate that some auxiliaries such as the completive trigger movement of the object across the verb, while most others do not (2a).¹ The second case of apparent SAuxOV we examine involve nominalized complements, as in the Fongbe (Kwa) example in (2b):

¹See Kandybowicz & Baker (2003) for a similar analysis of closely-related Nupe.

- (2) a. Gwari (Benue-Congo: Nigeria; Hyman & Magaji 1970: 51)
 wó lá shnamá si
 3SG COMPL:SG yam buy
 ‘S/he has bought a yam.’
- b. Fongbe (Kwa: Benin; Lefebvre & Brousseau 2002:215)
 Ûn è nú d̀̀ j́
 1SG fall thing eat.NOM on
 ‘I began to eat.’

The structures beneath these word orders are quite different from those we saw for Guébie and Dafing in (1). Tellingly, we show that languages with more restricted instances of OV order in (2) are systematically head-initial at the clause level.

Summing up, we will show that a head-final VP, which is a definitional property of SAuxOV languages, is a good predictor of head finality in West Africa. On the other hand the construction-specific presence of SAuxOV orders is not. The larger conclusion we draw from this observation is that typological correlations about headedness should be based on abstract structural analyses of languages, after factoring out independent syntactic operations such as verb movement, rather than on the presence or absence of surface orders in a given language. Moreover, it is the basic analytic toolkit supplied by generative syntax that allows such abstract generalizations to be stated.

The outline of this paper is as follows: §2 lays out the structural characteristics of SAuxOV arising from mixed clausal headedness in Dafing (Mande) and Guébie (Kru). §3 demonstrates that Gwari and Fongbe are head-initial in their clauses, including within the VP; OV orders are shown to occur as an artifact of particular syntactic constructions and contexts. §4 reports the results of a small typological survey showing that languages with mixed clausal headedness are concentrated in the Mandesphere, and compares our structural typology to those relying on surface order, such as the word order properties listed in WALS. §5 concludes.

2 Mixed clausal headedness

In this section we present evidence for analyzing some instances of SAuxOV word order as a result of clausal mixed headedness, where T, the position of inflection, is head-initial, but the verb phrase, VP, is head final. We show how these two structural properties are diagnosed in two languages, Guébie (Kru) and Dafing (Mande).

While there are many grammatical morphemes which can be called auxiliaries, we will use the term ‘auxiliary’ to refer to the element that surfaces in a position where TAM marking obligatorily occurs in declarative clauses, a position distinct from the position of the lexical verb. We analyze this position as T (for Tense) regardless of the semantic distinctions it encodes.² Many West African languages have such a position. To qualify as showing SAuxOV due to mixed headedness, the T position must be adjacent to the subject, and, in languages which index subjects, the T position must be the locus of subject agreement. If a language allows multiple auxiliaries to occur, the T position will be the position of the highest (usually leftmost) auxiliary.

Once the T position is identified in a language, the crucial test for whether it shows mixed headedness is whether, in the presence of an overt auxiliary in T, objects obligatorily precede the verb. We focus on clauses where the relevant object is the single object of a transitive verb.

2.1 SAuxOV in Kru

In this section we show that Guébie, a Kru language spoken in southwest Côte d’Ivoire, has mixed clausal headedness. Word order properties in Guébie are similar to word order across Eastern Kru languages (cf. Marchese 1979/1983), so we are using Guébie data here to diagnose SAuxOV across Eastern Kru more generally. It should be noted that in certain Western Kru languages like Grebo (Innes 1966) some of the tense/aspect marking is done through verbal suffixes, rather than auxiliaries. However, across the family, whenever an auxiliary is present, the verb surfaces after a direct object: SAuxOV (Marchese 1979/1983).

Most clauses in Guébie show SAuxOV order, where nothing can intervene between subject and auxiliary, and the verb is clause final. This is true of both main clauses, (3a), and embedded clauses, (3b).³

- (3) a. SAuxOV word order in Guébie (Kru: Côte d’Ivoire; Notes)
- | | | | |
|------------------------|-----------------|------------------|-----------------|
| e ⁴ | ji ³ | ja ³¹ | li ³ |
| 1SG.NOM | FUT | coconuts | eat |
| ‘I will eat coconuts.’ | | | |

²This position is equivalent to Infl or I⁰ in the GB framework.

³The Guébie data presented here come from original work on the language. The data were collected between 2013 and 2017, in Berkeley, California and Gnagbodougnoua, Côte d’Ivoire, with six primary consultants (cf. Sande 2017). Guébie is a tonal language with four distinct tone heights. Tone is marked here with numbers 1–4, where 4 is high.

- b. e⁴ wa² gba¹ e⁴ ka³ tɛɛ^{3.3} kɔklɛ^{3.2.2}
 1SG.NOM want.IPFV that 1SG.NOM IRR snake touch
 ‘I want to touch the snake’

As is well known, a number of other word order properties correlate with OV across languages (Greenberg 1963; Dryer 2007). These include postpositions, genitive-noun order, and manner adverbs before main verbs.⁴ Guébie displays all of these typological characteristics, as shown in (4).

(4) Guébie (Kru: Côte d’Ivoire; Notes)

a. Postpositions

- ɔ³ ji³ su³ mɛ³ gara^{1.1}
 3SG.NOM FUT tree in perch
 ‘He will perch in a tree.’

b. Gen-N

- touri^{1.1.3} la² dɔre^{3.3}
 Touri GEN money
 ‘Touri’s money’

c. AdvV

- e⁴ ji³ fafa^{4.4} ja³¹ li³
 1SG.NOM FUT quickly coconuts eat
 ‘I will eat coconuts quickly’

With regards to (4c), some Western Kru languages like Krahn and Wobé place manner adverbs after verbs within the VP (Marchese 1979/1983: 80-81), much like the Mande word order discussed in §2.2. It is possible that this variation is due to contact of some Western Kru languages with Mande. However, because most Eastern and some Western Kru languages show the same word order as Guébie with respect to (4), it would seem that Adv-V order was present in Proto-Kru (Lynell Zogbo, p.c.).

In addition to word order properties that correlate with OV order across languages, we see other head-final properties in Guébie, such as nominalized verbal objects, which surface before the main verb, (5).

⁴We do not consider properties such as noun-adjective, which Dryer does not find to correlate with OV versus VO order across languages.

- (5) SAux[OV]_{NOM} V in Guébie (Kru: Côte d'Ivoire; Notes)
 e⁴ ji³ [ja³¹ la² li-li-je^{3.2.2}] koci^{23.1}
 1SG.NOM FUT coconuts of eat-RED-NMLZ start
 'I will start eating coconuts.'

We see that word order in Guébie is overwhelmingly head final. However, when there is no auxiliary present, the verb fails to surface clause-finally, and instead appears immediately after the subject, resulting in SVO order, (6). SVO order only appears in two clause types: simple perfective, (6a), and simple imperfective, (6b).

- (6) Verb movement: S-V_i-O-*t_i* in Guébie (Kru: Côte d'Ivoire; Notes)
- a. e⁴ li³ ja³¹
 1SG.NOM eat.PFV coconuts
 'I ate coconuts.'
- b. e⁴ li² ja³¹
 1SG.NOM eat.IPFV coconuts
 'I eat coconuts.'

The difference between perfective and imperfective verbs in Guébie is tonal. Verbs are only differentiated for aspect when they surface in the immediately-post-subject position. That is, verbs only show inflection when there is no auxiliary. This is a point of variation in Kru languages, where some languages show inflection on verbs even when they are not in the inflectional position (Marchese 1979/1983; Koopman 1984).

Reviewing the word-order properties of Guébie, we see that it follows the proposed diagnostics for a mixed-headed SAuxOV structure. First, it has a syntactic auxiliary position immediately following the subject, where TAM is marked. Usually TAM is marked by auxiliaries, but when verbs surface in this position (see below), they are marked with inflection. Guébie also shows obligatory OV word order within the verb phrase. The following diagram shows our proposed structure for Guébie SAuxOV clauses.

We see in Figure 1 that the auxiliary is in T, the inflectional position. We also see that objects precede verbs within the verb phrase. When there is no auxiliary present, we propose that the clause-final verb undergoes movement to T, the inflectional position. This is shown in Figure 2.

We will see that it is not only Kru languages which show mixed-headed SAuxOV structure, but other languages in West Africa as well.

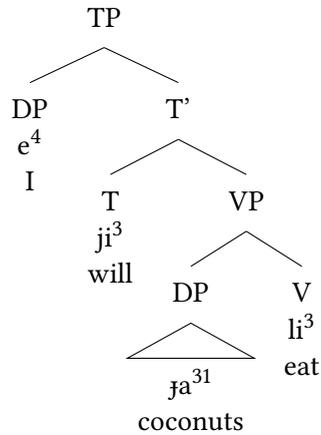


Figure 1: Guébie clause structure (cf. Sande 2017)

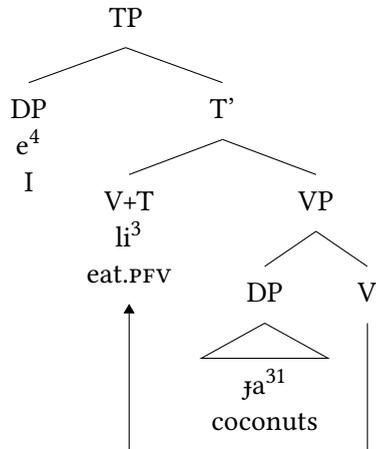


Figure 2: Verb movement in Guébie (cf. Koopman 1984; Sande 2017)

2.2 SAuxOV in Mande

Our second example with mixed clausal headedness is Dafing, also known as Marka, a Western Mande language spoken by 180,000 people in Burkina Faso (Prost 1977; Diallo 1988).⁵ Dafing is closely related to Bambara and Jula (Dioula), which are both major Mande languages in the area with millions of speakers. Word order in Dafing is representative of Mande languages more generally (e.g. Creissels 2005; Nikitina 2011), and we take it as a representative language. The genetic affiliation of Mande is uncertain; it has been claimed to be of Niger-Congo stock (Greenberg 1966), although this classification is not well established (Dimmendaal 2008).

As in Guébie, Dafing shows SAuxOV word order. There is an auxiliary position which must occur immediately after the subject, and the verb surfaces after the object when auxiliaries are present. This is true for both main and embedded clauses.

(7) SAuxOV word order in Dafing (Mande:Burkina Faso; Notes)

- a. wú-rú-¹ú ná fwó-¹ó jì mì
dog-DEF FUT meat-DEF eat
'The dog will eat the meat.'
- b. ê: ná fð ká wú-rú-¹ú ¹ná fwó-¹ó jì mì
3SG PFV say COMP dog-DEF FUT meat-DEF eat
'She said that the dog will eat the meat.'

This auxiliary position is typically called the “predicative marker” in the Mandeist literature (e.g. Idiatov 2000; Creissels 2019); the number and types of distinction that are marked in this position are large, as it is a composite marker of tense, aspect, modality, negation, as well as transitivity, for example, in Soninke Creissels (2017).

Like in Guébie, Dafing has obligatory OV order in the verb phrase. Thus, we take Dafing to be a language with mixed clausal headedness, a head initial TP and a head final VP.

⁵The Dafing data in this paper was collected via elicitation in Berkeley, CA with a single consultant who is also a native speaker of Jula (Mande), and a fluent speaker of Mooré (Gur).

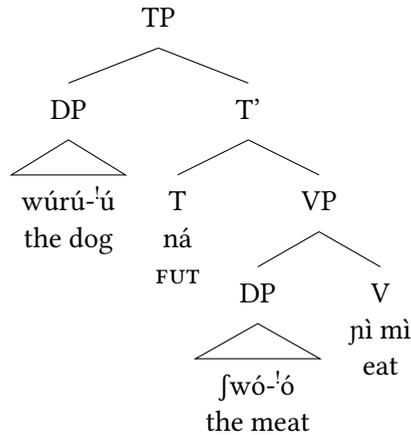


Figure 3: SAuxOV in Dafing

A similar structure is proposed by Nikitina (2009).⁶

Outside of the mixed-headedness in the clause, Mande languages like Dafing have many of the head-final properties that were also found in Kru languages like Guébie. For example, Dafing has postpositions (9a) and genitive-noun word order in the noun phrase (9b).

Another head final property that Dafing shares with Kru languages like Guébie (5) is that nominalized complement clauses precede embedding verbs.

- (8) SAux[OV]_{NOM} V (Notes)
 wú-rú-ú 'ní [f-wó-ó ñì mí-í] dàm-nà
 dog-DEF PFV meat-DEF eat-DEF begin
 'The dog began eating the meat.'

This is a point of variation in Mande, as Eastern Mande languages such as Wan do not allow the full nominalized VP to precede the higher verb (Nikitina 2009).

⁶A different analysis is suggested by Koopman (1984; 1992), who maintains that objects move from a postverbal position to a preverbal one in Mande. If this analysis is adopted, as it must be if one assumes that syntactic structures across languages are uniformly right-branching (Kayne 1994), then the criterion of mixed clausal headedness we refer to throughout would be reanalyzed as obligatory movement of the object to a position before the verb. In general, then, the main takeaway here and below would be the systematic difference between languages where objects obligatorily move to a position before verbs (Guébie and Dafing), resulting in general surface OV, and languages where objects only move to a position before verbs in specific syntactic contexts.

There are two significant differences which distinguish Mande and Kru. First, in Mande languages, all VP constituents besides the primary object follow the verb, including adverbs, clausal complements, and oblique arguments (Nikitina 2009). This is illustrated in (9c), which shows verb-adverb order in Dafing.

(9) Head finality in Dafing (Notes)

a. Postpositions

wú-rú-¹ú tá-bà-rí-¹í zú-kò
dog-DEF table-DEF under

‘The dog is under the table.’

b. Gen-N

ʃi ká-á wú-rú-¹ú
Sidiki GEN dog-DEF

‘Sidiki’s dog’

c. VAdv (*VAdv)

wú-rú-¹ú ¹ní ʃwó-¹ó ɲi mi zò-nà-zò-nà
dog-DEF PST meat-DEF eat quickly

‘The dog ate the meat quickly.’

As verb-manner adverb order is generally a property of VO languages (Dryer 2007), Mande languages can be seen as somewhat less consistently head-final than Kru languages.⁷

The second difference between Kru and Mande is that Mande languages like Dafing never allow verb movement in transitive clauses, even in the absence of an overt auxiliary.

(10) No verb movement in Dafing (Notes)

wú-rú-¹ú ʃwó-¹ó ɲi mi
dog-DEF meat-DEF eat

‘The dog eats the meat.’

In the preceding sentence, which is interpreted habitually, no overt auxiliary element occupies the T position. Yet SOV order still occurs. We assume that in

⁷Valentin Vydrin (p.c.) reports that some Mande languages also have Adv-V word order, so this may indeed be a point of variation across Mande, though we could not identify any convincing cases in the literature. One interesting case is Soninke, which allows adverbial content to occur in the preverbal object position with intransitive verbs, but only if that content is in the form of a DP (Creissels 2017); in such a case the existence of Adv-V word order is a question of analysis.

such cases there is a null auxiliary in T, such that the structure is identical to Figure 3, unlike in Kru, where verbs move to T when T lacks segmental content.

2.3 Summary

We have seen that Guébie (Kru) and Dafing (Mande) both have a mixed clausal headedness, a head initial TP and a head final VP. Independent differences conceal their structural similarity, such as differences in verb movement and adverb position. We also saw that Dafing and Guébie have head final structures elsewhere: both have Gen-N word order and postpositions. We revisit this connection in §4, where we will see that when we look at a broader sample of languages in West Africa, mixed clausal headedness is indeed a good predictor of head-finality below the clause level. Verb movement, on the other hand, has no clear correlations with head finality or SAuxOV, as would be expected if it is an independent syntactic operation.

3 Apparent mixed clausal headedness

3.1 Introduction

In this section we present data from two languages, Gwari (Nupoid) and Fongbe (Gbe) that exhibit apparent mixed clausal headedness as a result of SAuxOV order in a restricted set of constructions. In these languages, SAuxOV is not a general organizing principle of clause structure, as in Kru and Mande. Instead, Gwari and Fongbe have uniformly head-initial clause structures. Their SAuxOV orders instead arise in the context of specific syntactic constructions. In Gwari, (11a), SAuxOV order surfaces with a restricted set of aspectual particles. In Fongbe, (11b), putative OV order only occurs in the context of nominalized VP complements. Hence, putative SAuxOV in Fongbe is in fact SVGenN.

(11) Apparent cases of SAuxOV in Gwari and Fongbe

a. Gwari (Benue-Congo: Nigeria)

wó kú àshnamá si
3SG COMPL:PL yams buy

‘S/he has bought yams.’

(Hyman & Magaji 1970: 56)

b. Fongbe (Kwa: Benin)

Ûn è nú d̀ù jí
1SG fall thing eat.NOM on

‘I began to eat.’

(Lefebvre & Brousseau 2002: 215)

any overt auxiliary forces a change from VO to OV order. In Gwari, the presence versus absence of the past tense marker does not result in such an alternation. Because the presence of an overt auxiliary must block the movement of verbs to T, the persistence of VO word order in the presence of an auxiliary suggests that the Gwari has a head-initial (VO) VP, unlike Guébie.

The fact that Gwari has a head-initial VP correlates with other head-initial properties of Gwari, including prepositions (14a) and verb-adverb order (14c), although the presence of genitive-noun order is a head-final property (14b).

- (14) a. Prepositions/Postpositions
 wo tú shnamá lō ó tēbùl-`
 3SG put yam STAT LOC table-LOC
 ‘S/he is putting the yam on the table.’
- b. Genitive-Noun
 ēbí yàbà
 child banana
 ‘the child’s banana’ (Hyman & Magaji 1970: 25)
- c. V-Adverb
 yi gô àkyàuta cīcī
 1PL buy gifts always
 ‘We always buy gifts.’ (Hyman & Magaji 1970: 51)

In fact, genitive-noun word order is the most common exception to head-initiality in West African languages, which otherwise show word orders that correspond typologically with head-initial VPs, as also noted in Heine (1976). Genitive-noun order plays a critical role in the discussion of Fongbe below.

While it is generally head-initial, some auxiliaries in Gwari trigger OV order, most notably the completive aspect marker.⁸ Completive aspect is marked with an auxiliary that occurs between the subject and VP. Unlike the past tense however, where we see the surface order SAuxVO, completive-marked sentences have the surface order SAuxOV:

- (15) a. *lá*: singular objects
 wó lá shnamá si
 3SG COMPL:SG yam buy
 ‘S/he has bought a yam.’ (Hyman & Magaji 1970: 64)

⁸This pattern is also found in closely related Nupe in the completive, analyzed in Kandybowicz & Baker (2003), whose analysis shares several elements with ours, as discussed further below.

- b. *kú*: plural objects
 wó kú àshnamá si
 3SG COMPL:PL yams buy
 ‘S/he has bought yams.’ (Hyman & Magaji 1970: 56)

In addition to the difference in word order that these two auxiliaries enforce, they behave differently with respect to agreement. As shown in (15), the completive auxiliary agrees with the number of the object. This is not the case for the past tense auxiliary, which does not agree with either the subject or the object; this agreement relationship is indicative of a closer syntactic relationship between the completive and the object than the past tense marker.

Now the past tense auxiliary and completive auxiliary may be combined, as shown in (16). In such sentences the past tense precedes the completive aspect, indicating that past tense is structurally higher than the completive, following the general head-initiality of Gwari clause structure. When both past and completive markers are present, the surface word order is SAuxAuxOV, in the today and before yesterday past, or SAuxOV, with the completive and tense markers fusing, in the yesterday past.

- (16) a. Today past completive
 w-a kú àshnamá si
 3SG-T.PST COMPL:PL yams buy
 ‘S/he bought yams.’ [today] (Hyman & Magaji 1970: 57)
- b. Yesterday past completive
 wò kùì àshnamá si
 3SG Y.PST.COMPL:PL yams buy
 ‘S/he has bought yams.’ [yesterday] (Hyman & Magaji 1970: 57)
- c. Beyond yesterday past completive
 wò bei kú àshnamá si
 3SG BY.PST COMPL:PL yams buy
 ‘S/he has bought yams.’ [before yesterday] (Hyman & Magaji 1970: 57)

The fact that the past tense and completive aspect can be combined in this way demonstrates that they are not competing for the same structural position. While the high tense auxiliary is like its auxiliary counterparts in Guébie and Dafing, for example in hosting the subject in its specifier position, the lower completive auxiliary has no clear counterpart in those languages. Furthermore, it is the presence of the completive which is responsible for OV order. We now demonstrate how the completive can have this effect syntactically.

The tree in Figure 4 illustrates an analysis of a Gwari sentence with a past tense auxiliary in T. The verb originates in a VP projection where the object is base-generated and receives its theta role. The verb obligatorily moves to a distinct *v* head which introduces the external argument (not shown), resulting in SVO order.

Following Kandybowicz & Baker (2003), we assume that completive auxiliaries originate in a completive V head (AgrO in Kandybowicz & Baker (2003)), which intervenes between V and *v*, blocking movement of the main verb to V, and moving to *v* in its place. In addition, the completive head triggers movement of the object to its specifier, where it agrees with the object in number (15). The result is the SAuxOV word order in the completive aspect, shown in Figure 5.

Support for the idea that the completive is still a kind of lexical verb, rather than an auxiliary, comes from its transparent identity to the lexical verbs *lá* ‘take’, and *kú* ‘collect,’ which occur with singular versus plural objects, respectively (Hyman & Magaji 1970: 63):

- (17) a. Gwari ‘take’ as a main verb
 wo lá shnamá lō
 3SG take yam STAT
 ‘S/he is taking a yam’ (Hyman & Magaji 1970: 92)
- b. Gwari ‘gather’ as a main verb
 wo kú àshnamá lō
 3SG take yam STAT
 ‘S/he is taking some yams’ (Hyman & Magaji 1970: 93)

Compare Aboh (2009) for a similar analysis of serial verbs involving ‘take’ in Gbe languages.

Evidence for the idea that object movement is responsible for OV orders in Gwari comes from double object constructions. When there is no completive auxiliary, as in (18a), the verb precedes both objects. In completive clauses, however, the verb occurs between the two objects. Either order of arguments is possible, as seen in (18b-c).

- (18) a. SVO₁O₂
 wo bma mi būsì ya lo
 3SG break 1SG stick PART STAT
 ‘S/he is breaking my stick’ (Hyman & Magaji 1970: 92)

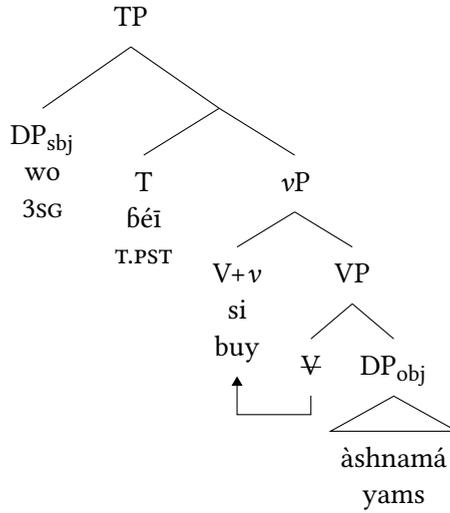


Figure 4: Structure for SAuxVO in Gwari

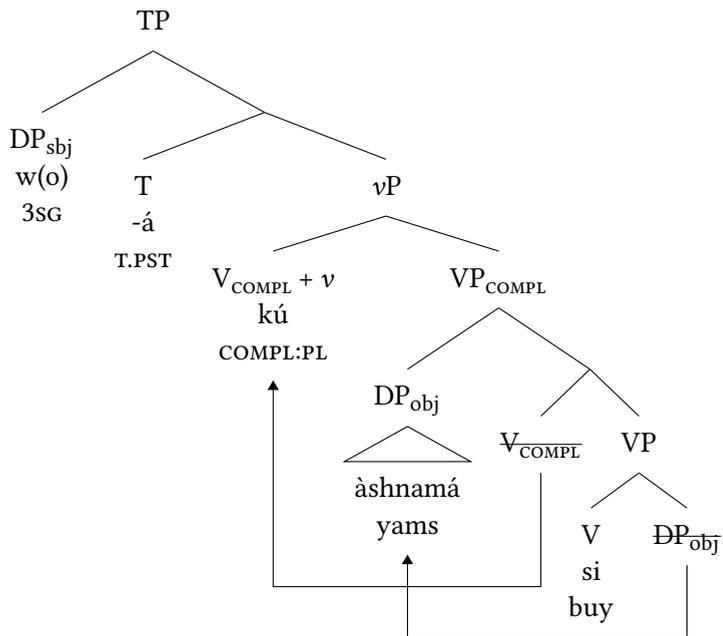


Figure 5: Structure of SAuxOV in Gwari

- b. SAuxVO
 Lili nò òù gbàdè
 Lili HAB eat corn
 ‘Lili (habitually) eats corn.’ (Lefebvre & Brousseau 2002: 94)

Other auxiliaries occurring in the same position as the habitual above include the future, irrealis, and anterior markers. So SAuxVO is the general word order in clauses with auxiliaries in Fongbe.

Like Gwari, Fongbe displays mixed headedness properties, an issue which is examined in detail in Aboh (2004) for Kwa languages in general. Like in many Kwa languages, Fongbe nominal complements precede the noun that selects them, a head-final characteristic (20a). On the other hand, possessors follow the noun they modify, a head-initial characteristic, (20b).

- (20) a. Comp-N
 càkpàlò sín gò ó
 beer OBJ bottle DEF
 ‘the bottle of beer’ (Lefebvre & Brousseau 2002: 45)
- b. N-Gen
 àwà ví ó tòn
 arm child DEF gen
 ‘the child’s arm’ (Lefebvre & Brousseau 2002: 45)

Other word order properties also give similar mixed results. Fongbe has both prepositions and postpositions, as shown in (21a). Verbs precede adverbial modifiers, as shown in (22).

- (21) a. Pre- and postpositions
 Kòkú xò àsón nú Àsibá
 Koku buy crab for Asiba
 ‘Koku bought crab for Asiba’ (Lefebvre & Brousseau 2002: 302)
- b. Kòkú òò àxì mè
 Koku be.at market in
 ‘Koku is in the market’ (Lefebvre & Brousseau 2002: 325)

- (22) V-Adv
 Kòkú wà àzò gànjí
 Koku do work well
 ‘Koku worked well’ (Lefebvre & Brousseau 2002: 381)

While it has some head-final properties, Fongbe is largely head-initial at the level of the clause. We demonstrate below that apparent OV order is not due to mixed clausal headedness in Fongbe but rather due to a nominalized complement of a lexical verb.

Our main interest here is what Lefebvre & Brousseau (2002) call an “aspectual verb construction”. Superficially, this construction has SAuxOV word order, in that the lexical verb in the clause is preceded by its object, as shown in (23).

(23) SV[OV]_{NOM}

- a. Àsibá d̀ò [[ví ́ kpón]] wè]
 Asiba be.at child DEF look.at.NOM POST
 ‘Asiba is looking at the child’ (Lefebvre & Brousseau 2002: 215)
- b. Ûn è [[nú d̀ù]] jí]
 1SG fall thing eat.NOM on
 ‘I began to eat.’ (Lefebvre & Brousseau 2002: 215)

However, as can clearly be seen from the data in (23), the aspectual verbs *d̀ò* ‘be at’ and *è* ‘begin’ (lit. ‘fall’) actually take a PP complement, the head of which selects a nominalized verb phrase.

This fact makes the Fongbe aspectual verb construction quite different from the constructions we have examined so far. In the other languages surveyed, SAuxOV word order involves a single extended projection of a lexical verb, and the placement of that verb in relation to its object changes based on the properties of heads higher in the clausal spine. In Fongbe, apparent OV order involves a nominalized verb. The inflected verb here is a lexical verb that selects a PP complement; it is not an auxiliary. Aspectual verbs in Fongbe retain their lexical uses. For example, the verb *è* in (23b) can be used to simply mean ‘fall’. Thus, these word orders are better labeled SVGenN or SVO than SAuxOV.

The data above demonstrate Fongbe is head initial for both TP and VP. In SVO clauses, no movement is needed to derive the word order, as shown in Figure 6.

In contrast apparent SAuxOV order in Fongbe occurs when a main verb selects a PP complement.⁹ The head of the PP, in turn, selects a nominalized VP complement. The structure is shown in Figure 7.

⁹See Aboh (2010) for discussion of the structure of Kwa noun phrases as well as an account of the combined pre- and postpositions typical of Kwa. Unlike our analysis below, Aboh adopts uniform head-initial structures with righthward complements moving to specifier positions to the left of the noun.

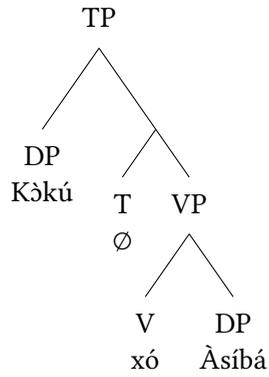


Figure 6: SVO Structure in Fongbe

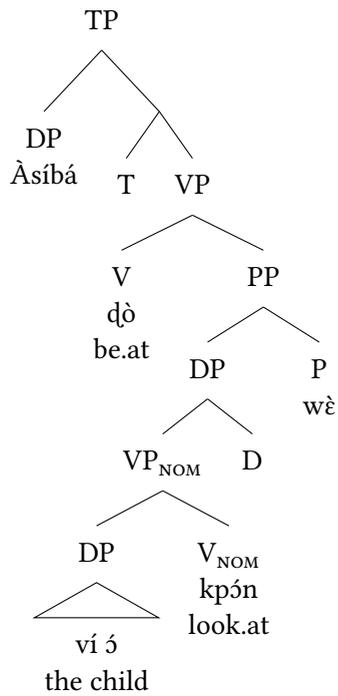


Figure 7: SVOV Structure in Fongbe; cf. Aboh (2004: ch. 6)

Because nominal complements always precede the noun that selects them in Fongbe (20a), apparent OV order inside the nominal VP arises simply because Gen-N is the normal order for noun phrases, including nominal complements. Because Fongbe is head-initial in verb phrases, the aspectual verb precedes its complement, and this gives rise to apparent SAuxOV order. In fact, however, this is simply SVGenN word order, where N is a nominalized verb.

3.4 Summary

We have seen that neither Gwari (Nupoid) nor Fongbe (Kwa) has a head-final VP, and therefore OV order is not a general organizing characteristic of their clausal architecture. This makes them different from Guébie and Dafing in several ways. First, surface OV order has a restricted distribution in both languages. In Gwari, it occurs only when there is a completive verb which triggers object shift and blocks movement of the lexical verb. In Fongbe, OV order only occurs in nominalized verb phrases. Second, outside these narrow contexts, auxiliaries occur with VO word order. Under our analysis of Gwari and Fongbe, this is because these auxiliaries occupy the T^0 head of TP, and TP is head-initial.

The derivation of apparent SAuxOV word order in Gwari differs from that in Fongbe. In Gwari, a combination of object shift and lack of verb raising conspires to yield apparent SAuxOV orders, orders that we noted were in fact $S(\text{Aux})V_1OV_2$. In Fongbe, OV order emerges in nominalized complements to certain aspectual verbs, so the Fongbe order is in fact $S(\text{Aux})V\text{GenN}$. One path forward for formal typological research is to identify how much variation there is within languages with apparent SAuxOV structures. It seems certain that both phenomena (object shift, nominalized complements) are relatively common in West Africa, the latter in particular given the frequency of GenN word order.

There are additional cases of apparent SAuxOV in West Africa that are conditioned by other factors. For example, object shift is obligatory with pronouns in Ogoni languages such as Kana (Ikoro 1996), and it is conditioned by negation in Leggbó (Good 2007). Yet all of these cases, occurring in languages spoken well to the east of the Mandesphere, should not be conflated with the mixed clausal headedness which is at the root of SAuxOV in Kru and Mande languages.

4 Survey results: Distribution of SAuxOV

In this section we examine the distribution of SAuxOV order with mixed-headedness within the Macro-Sudan Belt, and specifically within West Africa. In order

to carry out this structure-based typological study, we followed three steps: 1) establishing a relevant structure, 2) identifying structural diagnostics based on descriptive facts, and 3) conducting a survey on the basis of those structural diagnostics. These three steps result in a typological survey based on both hierarchical structure and descriptions of linear word order properties.

Step one, above, is discussed in §2, where we define the relevant structure for SAuxOV with clausal mixed-headedness. This structure involves a dedicated inflectional position immediately following the subject, and general OV word order within the verb phrase. To address steps two and three, we identified 26 syntactic variables meant to identify SAuxOV structures, and we carried out a survey of 54 languages from the Macro-Sudan belt, recording the value for each syntactic variable whenever relevant information was available. Metadata about each language, the sources used to determine the survey responses for those languages, and where each language is spoken were collected. The survey was informed by both typology and hierarchical structure, examining word order properties that have been found to be most closely associated with head finality (Dryer 1992; 2007), those that determine headedness within the VP, and those that distinguish SAuxOV due to clausal mixed-headedness from verb-second languages and head-initial languages with object shift. A full list of the 26 variables examined, along with the values of those variables reported for each language, is given in the appendix.

The languages surveyed comprise a diversity sample based on genetic affiliation and geography, loosely based on the sample used by Clements & Rialland (2008). The number of languages in each family in our survey is given in Table 1. The remainder of this section reports on the results of our survey.

The map in Figure 8 shows the distribution of languages with mixed-headedness in the clause leading to structural SAuxOV based on our survey. Each language is marked on the map with a colored letter, where the letter represents language family. The letter key is given in Table 1. Colors represent different word order relationships between auxiliaries, objects, and verbs, where red represents SAuxOV order with mixed-headedness in the clause. Language families and latitude and longitude for each language are determined from Glottolog (Hammarström & Nordhoff 2011).

We see that there is a strong cluster of SAuxOV with clausal mixed-headedness in West Africa. There is a strong centralization of SAuxOV orders in the area around Mande and Kru languages, which we call the *Mandesphere* given the historical influence of the Mande-speaking Mali Empire in this area.

Table 1: Languages included in survey

Language family	<i>n</i>	Languages	Map key
Adamawa	3	Mundang, Mambay, Banda-Linda	A
Atlantic	2	Sereer, Fula	Z
Bantoid/Bantu	2	Noni, Bisa	B
Bongo-Bagirmi	3	Kabba, Kenga, Mbay	P
Chadic	6	Hausa, Pero, Mupun, Mina, Miya, Lele	C
Central Sudanic	1	Ma'di	S
Cross River	1	Khana	R
Dogon	2	Jamsay, Tommo So	D
Edoid	2	Esan, Degema	E
Ethio-Semitic	1	Amharic	V
Gbaya	1	Ngbaka	Y
Gbe	2	Maxi, Fongbe	F
Gur/Senufo	7	Dagbani, Bwamu, Bariba, Koromfe, Supyire, Dagaare, Lobi	G
Ijoid	1	Kalabari	I
Kordofanian	1	Otoro	O
Kru	5	Guébie, Godié, Grebo, Wobe, Krahn	K
Kwa	2	Tafi, Akan	W
Mande	6	Mano, Dafing, Bamana, Boko, Bobo, Gouro	M
Mel	1	Mani	U
Nilotic	1	Lango	L
Nupoid	1	Gwari	N
Saharan	1	Beria	X
Songhay	2	Koyraboro Senni, Tondi Songway Kiini	H

In order to discover whether other head-final properties are distributed in the same way as SAuxOV structures with mixed headedness, we look first at the distribution of postpositions, which closely mirror the postposition map of Africa from the World Atlas of Language Structure (Dryer 2013a) (Figure 9).

Like postpositions, Genitive-Noun word order correlates with OV across languages (Dryer 2007), and it is well known that adposition and genitive order track each other across languages based on their relationship in grammaticalization. The distribution of Genitive-Noun order given our survey is shown in Figure 10. The WALS map of Genitive-Noun order in Africa shows a very similar distribution.

Dryer (2007) also observes that OV languages surface with manner adverbs before verbs. However, we found that Manner Adverb-Verb order has a much narrower distribution within West Africa than are other head-final properties like postpositions, Genitive-Noun order, and even mixed-headed SAuxOV.

Unlike the distribution of postpositions and Genitive-Noun order, which resemble the distribution of SAuxOV, the order of manner adverbs and verbs does not seem to correlate with other head-final properties in West Africa (Figure 11). This is likely due to the combination of VAdv and OV word order in Mande and some Kru languages.

Verb movement also shows a different distribution from SAuxOV with mixed headedness. We saw in Guébie, a language that shows clausal mixed headedness, that when there is no auxiliary present, the verb surfaces immediately after the subject in the inflectional position. We analyze this SVO order as verb movement. In Figure 12, the combination of two word order properties determines whether verb movement is present in a language: 1) word order when an auxiliary is present (say, SAuxOV), and 2) word order in clauses without an auxiliary (say, SVO). While the Mandesphere is almost entirely characterized by clausal mixed headedness, only a subset of these languages shows verb movement. Verb movement is detectable in a number of head-initial languages, with SAuxVO order, based on the requirement that the verb need not be adjacent to the object, i.e., adverbs can intervene these two elements when an auxiliary is absent. We conclude that verb movement is independent from headedness.

The results of our survey are summarized in Table 2. We conclude that head-final properties like postpositions and Genitive-Noun order correlate strongly with clausal mixed headedness (SAuxOV order) in the Macro-Sudan belt, and specifically in West Africa. As head final properties are centered around the Mandesphere, along with clausal mixed headedness, we concur with Heine (1976) that Proto-Mande was likely head final, and is likely the source of this areal pattern,

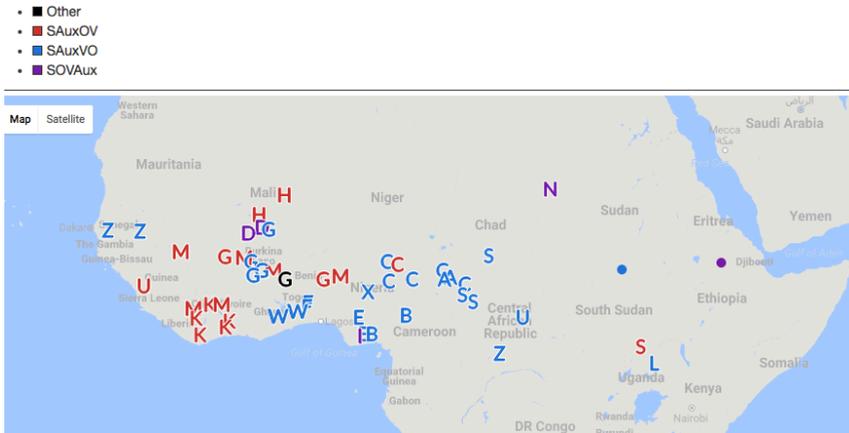


Figure 8: Distribution of SAuxOV (red). The language in black is Dagbani, a Gur language in which we were not able to identify auxiliaries.

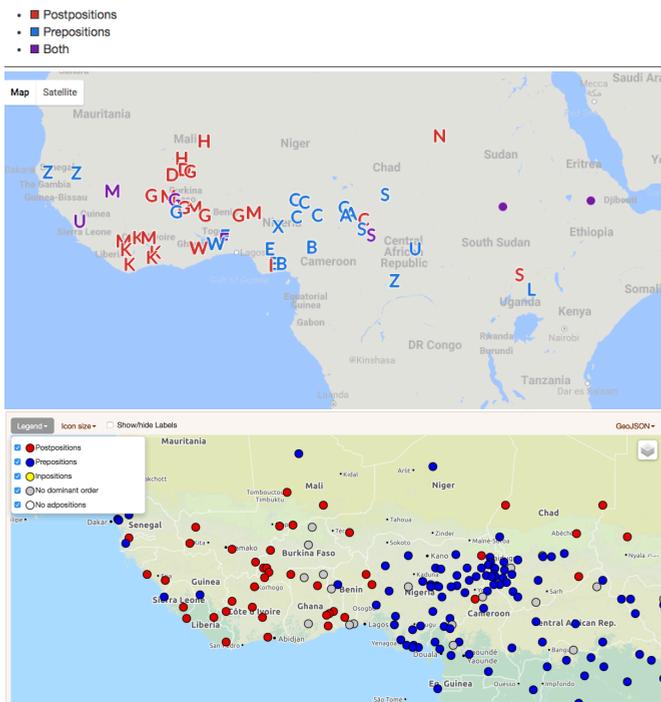


Figure 9: Distribution of postpositions in our survey (top) and WALS (Dryer 2013a) (bottom)

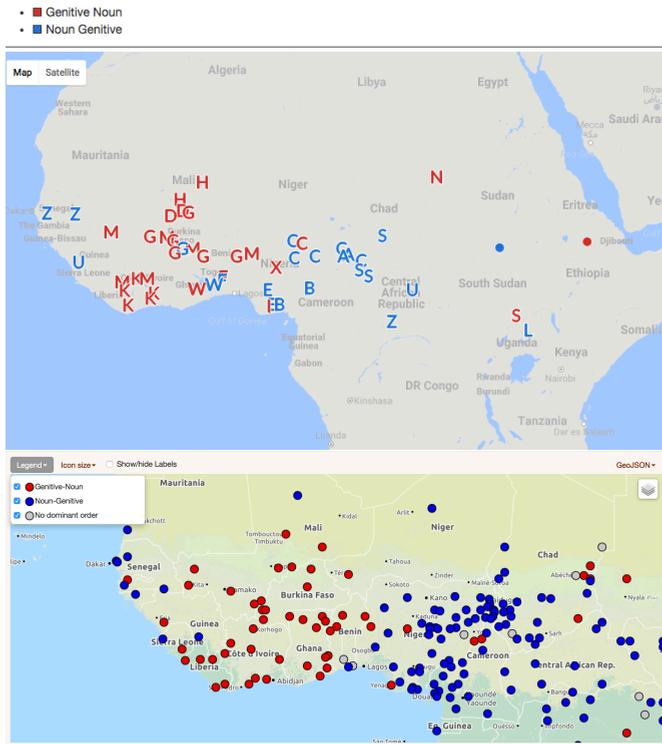


Figure 10: Distribution of GenN in our survey (top) and WALS (bottom) (Dryer 2013b)

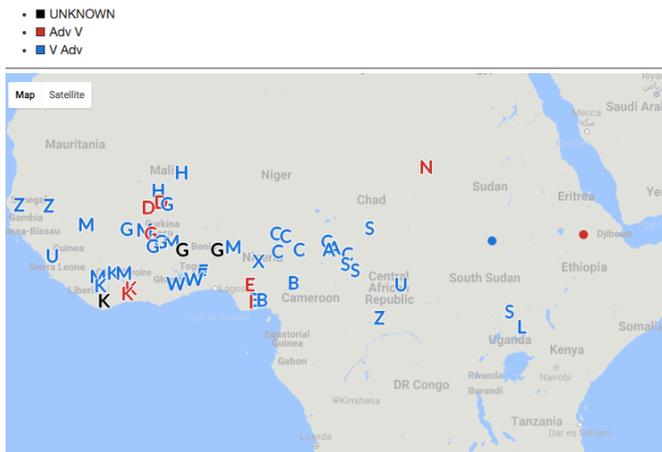


Figure 11: Distribution of Adv-V (red)

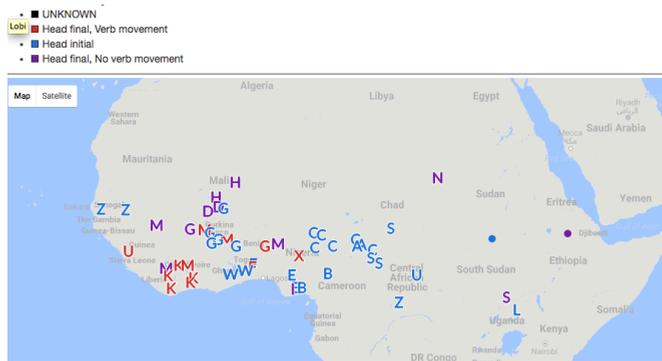


Figure 12: Distribution of verb movement (red)

particularly in light of the outsized economic and cultural influence of Mande speakers in the West African history. The results of our survey show that only languages in the Mandesphere show clausal mixed-headedness. The appearance of conditioned SAuxOV, discussed in §3, does not correlate as neatly with head-final properties as mixed headedness does in the Mandesphere.

Table 2: Head-final properties whose distribution correlates with mixed-headed SAuxOV

	Correlates with SAuxOV	Independent of SAuxOV
Postpositions	X	
Genitive-Noun	X	
Verb-Adverb order		X
Verb movement		X

The fact that clausal mixed headedness is a better predictor of head-final properties than the presence of apparent SAuxOV such as those in Gwari and Fongbe highlights a more general point about syntactic typology we would like to emphasize: while many typological discussions of word order are based on surface order, the results in this section clearly demonstrate that syntactic typologies should be based on structural analyses of languages instead. The success of this approach in the survey above indicates that cross-linguistic tendencies about word order might be more profitably framed in terms of the underlying structures that give rise to these word orders rather the existence of various surface patterns.

5 Conclusion

It has been understood since at least Heine (1976) that SAuxOV word order is a typologically significant property of West African languages. More recently, Güldemann (2008; 2011) has suggested that S(Aux)OVX (with emphasis on X) is a property of a linguistic area he labels the Macro-Sudan Belt, similar to the Sudanic zone of Clements & Riailand (2008), which stretches west to Senegal and Guinea and east to the Central African Republic.

A potential problem for this claim is that, as we have now seen, S(Aux)OVX is almost certainly not a single syntactic phenomenon. In particular, we must be careful to distinguish between the superficial appearance of such a word order with a structure that is actually distinct, as in Gwari and Fongbe, from the existence of genuine mixed clausal headedness in Mande and Kru.

At the same time, the more fine-grained picture we have sketched clarifies a number of interesting historical and areal questions. For example, what is the distribution in West Africa of OV due to object shift (as in Gwari) versus OV due to nominalization (as in Fongbe)? Are these constructions generally found, and hence reconstructable, in their narrower language families? Are these structures more common among languages directly adjacent to the Mandesphere, suggesting a contact-based origin? While these questions can only be asked in the context of a structural analysis, such an approach should provide new insights into the history of linguistic change and contact in West Africa.

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Abbreviations

1	first person	NOM	nominative
2	second person	OBJ	object
3	third person	PART	particle
BY	before yesterday	PFV	perfective
COMPL	completive	PL	plural
DEF	definite	POST	postposition
FUT	future	PST	past
GEN	genitive	RED	reduplication
HAB	habitual	SG	singular
IPFV	imperfective	STAT	stative
IRR	irrealis	T.PST	today past
LOC	location	Y	yesterday
NMLZ	nominalizer		

Appendix

A list of variables extracted for our survey from grammars and from linguists with expertise in the languages examined is given in Table 3. The survey was conducted primarily in multiple choice format via Google Forms, with the option of choosing multiple possible word orders per question. Space was provided after each question to leave additional comments or examples. The particular variables chosen are meant to determine the headedness properties of each language, along with which languages display mixed-headedness within the clause, which languages have a dedicated tense/aspect position immediately after the subject, and whether verb movement to the auxiliary position is possible.

The values of the six variables most relevant for the results presented in this paper are given in Table 4 and Table 5 for each language in our survey. A * after the result means that the specified word order only occurs in the case of (nominalized) V complements of aspectual verbs. For further results and survey details, please contact the authors.

Table 3: Variables examined in the SAuxOV survey

Variable
1. Relative order of O and V in clauses containing auxiliaries
2. Relative order of adpositions and their object nouns
3. Relative order of Gen and N in a genitive construction
4. Relative order of S, Aux, O, and V in clauses containing auxiliaries
5. Relative order of manner adverb and V in clauses containing auxiliaries
6. Relative order of PP adjunct and non-locative V in clauses containing auxiliaries
7. Relative order of CP adjunct and V in clauses containing auxiliaries
8. Relative order of object pronoun and V in clauses containing auxiliaries
9. Relative order of NP/PP locative object and V in clauses containing auxiliaries
10. Relative order of CP objects and V in clauses containing auxiliaries
11. Relative order of V and multiple NP objects in clauses containing auxiliaries
12. Relative order of theme and goal in clauses containing auxiliaries
13. Relative order of pronoun and full NP objects in clauses containing auxiliaries
14. Whether it is possible for a sentence to lack an auxiliary
15. Relative order of S, V, and O when no auxiliary is present
16. Which inflectional categories auxiliaries can mark
17. Whether multiple auxiliaries are possible in the same clause
18. Whether there is an overt polar question marker
19. Relative order of polar question marker with S, Aux, O, and V
20. Position of Wh-words within Wh-questions
21. Whether negation is marked with an auxiliary or other overt marker
22. Position of non-auxiliary negative markers within the clause
23. Whether negation affects clausal word order when an auxiliary is present
24. Position of complementizers within embedded clauses
25. Whether objects can appear before auxiliaries (OAuxSV order)
26. Whether adverbs can occur before an auxiliary (AdvAuxSV order)

Table 4: Survey results

Language	1	2	3	4	5	15
Otoro	VO	Pre, Post	NG	SAuxVO	VAdv	SVOX
Guébie	OV	Post	GN	SAuxOV	AdvV	SVOX, SVXO
Mano	OV	Post	GN	SAuxOV	VAdv	SOVX
Bamana	OV	Pre, Post	GN	SAuxOV	AdvV, VAdv	SOVX
Mani	OV	Pre, Post	NG	SAuxOV	VAdv	SVOX
Godié	OV	Post	GN	SAuxOV	AdvV	SVOX, SVXO
Boko/Busa	OV	Post	GN	SAuxOV	VAdv	SOVX
Grebo	OV	Post	GN	SAuxOV		SVOX
Wobe	OV	Post	GN	SAuxOV	VAdv	SVOX
Krahn	OV	Post	GN	SAuxOV	VAdv	SVOX
Bobo	OV	Post	GN	SAuxOV	VAdv	SVOX
Bisa	OV	Post	GN	SAuxOV	VAdv	SVOX, SOVX
Dagbani	VO	Post	GN	SVO (no Aux)		SVOX
Jamsay	OV	Post	GN	SOVAux	AdvV	SOXV
Tafi	VO	Pre	NG	SAuxVO	VAdv	SVOX
Bwamu	VO	Pre, Post	GN	SAuxVO	AdvV	SVOX
Bariba	OV	Post	GN	SAuxOV		SVOX, SVXO
Mundang	VO	Pre	NG	SAuxVO	VAdv	SVOX
Koromfe	VO	Post	GN	SAuxVO	VAdv	SVOX
Gwari	OV, VO	Pre	GN	SAuxVO	VAdv	SVOX
Mambay	VO	Pre	NG	SAuxVO	VAdv	SVOX
Sereer	VO	Pre	NG	SAuxVO	VAdv	SVOX
Supyire	OV	Post	GN	SAuxOV	VAdv	SOVX
Esan	VO	Pre	NG	SAuxVO	AdvV	SVOX
Noni	VO	Pre	NG	SAuxVO	VAdv	SVOX
Hausa	VO	Pre	NG	SAuxVO	VAdv	SVOX

Table 5: Survey results (cont.)

Language	1	2	3	4	5	15
Koyraboro Senni	OV	Post	GN	SAuxOV	VAdv	SOVX
Tondi Songway	VO	Post	GN	SAuxOV	VAdv	SOVX
Kiini						
Dogon	OV	Post	GN	SOVAux	AdvV	SXOV
Mupun	VO	Pre	NG	SAuxVO	VAdv	SVOX
Pero	VO	Pre	NG	SAuxVO	VAdv	SVOX
Amharic	OV	Pre, Post	GN	SOVAux	AdvV	SOXV, SXOV
Maxi	VO	Pre	GN	SAuxVO	VAdv	SVOX
Degema	VO	Pre	NG	SAuxVO	VAdv	SVOX
Pulaar	VO	Pre	NG	SAuxVO	VAdv	SVOX
Mina	VO	Pre	NG	SAuxVO	VAdv	SVOX
Ma'di	OV	Post	GN	SAuxOV	AdvV, VAdv	SOVX
Dagaare	VO	Post	NG	SAuxVO	VAdv	SVOX
Khana	VO	Pre	NG	SAuxVO	VAdv	SVOX
Lango	VO	Pre	NG	SAuxVO	VAdv	SVOX
Kabba	VO	Pre, Post	NG	SAuxVO	VAdv	SVOX
Miya	VO	Pre	GN	SAuxOV, AuxOVS	VAdv	SVOX, VOXS
Banda-linda	VO	Pre	NG	SAuxVO	VAdv	SVOX
Fongbe	VO (OV in gerunds)	Pre, Post	NG	SAspOV*	VAdv	SVOX
Kalabari	OV	Post	GN	SOVAux	AdvV	SXOV
Akan	VO (OV in gerunds)	Post	GN	SAspOV*	VAdv	SVOX
Beria	OV	Post	GN	SOVAux	AdvV	SOXV, SXOV
Kenga	VO	Pre	NG	SAuxVO	VAdv	SVOX
Ngbaka	VO	Pre	NG	SAuxVO	VAdv	SVOX
Mbay	VO	Pre	NG	SAuxVO	VAdv	SVOX
Lele	VO	Post	NG	SAuxVO	VAdv	SVOX
Gouro	OV	Post	GN	SAuxOV, SAuxVO	VAdv	SVOX, SOVX
Lobiri	VO	Pre	GN	SAuxVO	VAdv	SVOX

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