Introduction

This paper consists of a series of connected notes and comments on a very perplexing type of surface structure found in many of the languages of West Africa. In the first part of the paper I will present a number of examples of the phenomenon mentioned in the title. The second part will examine the notions causative and inchoative and their function in the two languages being discussed. The third part will be devoted to a few speculations as to what the preceding sections may mean. All of the data for this paper are taken from two somewhat remotely related members of the Kwa subgroup of Niger-Kordofanian: Yoruba, spoken in southwestern Nigeria, and Yatyê, spoken in Ogoja Province in southeastern Nigeria.\(^1\)

I. A Survey of Serial Verb Constructions

A common phenomenon in many West African languages is the use of a series of verbs, all having the same structure subject. In some cases the resultant meaning would be expressed in English by a

\(^1\) A few special symbols will be used, for typographical reasons. \(\text{ê}\) and \(\text{ô}\) are respectively front and back lax mid vowels. \(\text{ê}\) is a palato-alveolar sibilant. \(\text{ü}, \text{û}, \text{and} \text{û}\) are respectively high, low, and mid tones. Normally mid tone will be marked by the absence of any tone mark. A tone mark not appearing over a segment will belong to the preceding segment and does not entail any lengthening of that preceding segment.
single verb, as with the Yoruba example:

(1) mo mú `iwé vá ilé
   I took book came house
   I brought a book home.

In other cases the meaning would be equivalent to a benefactive or some kind of adverbial notion in English, as in

(2) mo ńì àdá gbé ńgi ná
   I took machete cut tree the
   I cut the tree with a machete.

(3) mo bá q mú `iwé wá
   I for you took book came
   I brought a book on your behalf.

The range of syntactic and semantic phenomena which these languages account for with serialization is even broader than this. In the two languages which I have singled out for study in this paper, Yoruba and Yatyé, we will find serialization used to express what in English are considered instrumental and manner adverbials, datives, benefactives, locatives, causatives, inchoatives, comparatives, and auxiliaries.

Apparent instances of instrumental adverbs are (2) and (4)

(4) Amì swá ìkìtì adyú ìtsí (Yatyé)
   I took machete cut tree
   I cut the tree with a machete.

A Yoruba manner adverbial looks and behaves much like an instrumental, as in (5).
(5) Mo fi ọgbọn ọ́lọ́ọ́ ọ́lọ́ọ́
I took cleverness cut tree
I cut the tree cleverly.

There does seem to be an order constraint, however, requiring that when both an instrumental and a manner adverbial occur in one sentence, the manner adverb comes first.

(6) Mo fi ọgbọn fin di dà ọ́lọ́ọ́ ọ́lọ́ọ́
I took cleverness took machete cut tree
I cleverly cut the tree with a machete.

The expression of directional and some non-directional locative adverbs require verbs with appropriate locative semantic content.

(7) Èkó ni mo gbé ọ́lọ́ọ́ ọ́lọ́ọ́
Lagos TOPIC I live-in do work
I work in Lagos.

(8) Mo mì ẹgbọgbọ àwọn ọmọdè lọ Èkó
I took all PLURAL children went Lagos
I took all the children to Lagos.

(9) Àyì maalùtyù iku ni ọtyi eyọ ìkò
PLURAL inhabitants of Utyu gathered in meeting ground did work
The people of Utyu worked in the meeting ground.

(10) ìwọ̀yì awá ìnyahùwù awa ọtyi
child took book went home
The child took the book home.
Yoruba exhibits a very clear contrast between datives and benefactives, using distinct verbs.

(11) mo bá àbúrò mi mú ìwé wá

I on-behalf-of younger brother my took book come

I brought a book for my younger brother.

This benefactive contrasts with a dative.

(12) mo mú ìwé wá fún q

I took book came gave you

I brought you a book.

Both can occur in one sentence.

(13) mo bá àbúrò mi mú ìwé wá fún q

I brought you a book for my younger brother.

In Yatyè the situation is more like in English, where the two have, at least in surface structure, merged, so that (14) is ambiguous.

(14) àmi awá ínyahwé íbí akà àwò

I took book came for you

I brought you a book.

(or I brought a book on your behalf.)

The comparative construction in Yoruba involves two verbs: jù 'surpass', and 1q 'go'. That there is nothing morphologically comparable to the English superlative in Yoruba will be seen to be related to the use of these verbs. The surface structure of the comparative is

(15) NP V NP [jù NP 1q]s
Examples of this structure are

(16) Ayq ní qgbọn jù mí lọ
    Ayq has cleverness surpass me go
    Ayq is cleverer than I am.

(17) Ayq lè sá éré jù gbgbo àwọn ará-òkùnrin-rọ lọ
    Ayq is-able run race surpass all PLURAL classmates his go
    Ayq can run faster than any of his classmates.

jù, a low tone verb, behaves like all low tone verbs in changing to mid by a very early phonological rule if its object is a noun, rather than a pronoun, as the examples show. The NP following jù can be a sentence, as in (18) and (19).

(18) Ayq ní qgbọn jù kpé kí ó dára fún un lọ
    Ayq has cleverness surpass that₁ that₂ it is-good for him go
    Ayq is cleverer than is good for him.

(19) Ayq ní qgbọn jù bí mo ti rò lọ
    Ayq has cleverness surpass how I PERFECT think go
    Ayq is cleverer than I had thought.

In both sentences the constituent between jù and lọ is a sentence and is dominated by an NP, as the tonal behavior of jù indicates. The difference between a comparative and a superlative depends on the presence of a NP object after jù. (17), for example, could be paraphrased by (20).
(20) Ayọ lè sá érè jù lọ ní inú gbogbo àwọn ará Ọkùnrin-rẹ

Ayọ can run race surpass go among all PLURAL classmates his

Ayọ can run the fastest of all his classmates.

The first part of (20), as far as jù lọ, would mean 'Ayọ can run very fast' or 'Ayọ can run fastest', depending on contextual factors.

Auxiliaries too are treated as verbs in series in some languages. This is clearest in Yatọ, although there is some evidence for it in Yoruba too. In Yatọ there is a class of verbs which can be used either as auxiliaries or as main verbs. Although there seems to be a semantic relation between their meanings as auxiliaries and as main verbs, within the current theory it may be difficult, if not impossible, to characterize this relation adequately.

(21) (i) [-Aux] Verbs [+Aux] [-Aux]

<table>
<thead>
<tr>
<th>Verbs</th>
<th>future</th>
<th>continuous</th>
<th>habitual</th>
<th>repetitive</th>
<th>return</th>
</tr>
</thead>
<tbody>
<tr>
<td>abá</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ahẹ̀</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ọgha</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ụbọ</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(ii) ọdide ọghẹ̀ ụbọ ịtụwụ ọdide ọghẹ̀ ọgbọ́ọ

man CONT come home man squat there

The man is coming home. The man squatted there.

(iii) ọdide ọgha ụbọ ịtụwụ ọdide ọgha ọgbọ́ọ

man HABIT come home man wander there

The man usually comes home. The man wandered there.

(iv) ọdide ụbọ ụbọ ịtụwụ ọdide ụbọ ọgbọ́ọ

man REPET come home man return there

The man came home again. The man returned there.
The man is going to come home.

The causative and inchoative constructions are also clearest in Yatyê, where the following facts are in evidence.

(22) (i) itywêndo aba adâ

pot broken

The pot is broken. (Stative)

(ii) itywêndo abâ ada²

pot ACTIVE broken

The pot broke. (Inchoative)

(iii) yetâ abâ itywêndo adâ

stone ACTIVE pot broken

The stone broke the pot. (Causative)

(v) iyvi abâ yetâ adâ itywêndo

child ACTIVE stone broken pot

The child broke the pot with a stone. (Causative Instrumental)

(23) (i) ôtsi aplê

tree tear out

The tree was uprooted. (Stative)

²In previous papers I used the term CAUSATIVE for what I am calling ACTIVE in this paper. The term ACTIVE seems to subsume both CAUSATIVE and INCHOWATIVE, at least in the sense in which Lakoff (1965) used them.
(i) ọtsi ọba ọpalọ

tree ACTIVE tear out

The tree got uprooted/toppled.  
(Inchoative)

(iii) medide ọba ọtsi ọpalọ

men ACTIVE tree tear out

The men uprooted the tree.  
(Causative)

(iv) ahuhwọ ọba ọtsi ọpalọ

wind ACTIVE tree tear out

The wind uprooted the tree.  
(Causative)

(v) medide ọba yahwa ọpalọ ọtsi

men ACTIVE axes tear out tree

The men tore out the tree with axes.  
(Causative, Instrumental)

(24) (i) utsi ikù

doors close

The door is shut.  
(Stative)

(ii) ọtsi ọba ikù

doors ACTIve close

The door shut.  
(Inchoative)

(iii) iywi ọba utsi ikù

child ACTIVE door close

The child shut the door.  
(Causative)

(iv) ọtsi ọba utsi ikù

stick ACTIVE door close

The stick shut the door.  
(Causative)
(v) ́wyi aba ọtsi ikù utsì

child ACTIVE stick close door

The child shut the door with a stick. (Causative Instrumental)

There are a large number of verbs which have paradigms like (22)-(24), a few of which are given in the Appendix. There has been some doubt expressed as to whether aba is actually a verb. The evidence seems to indicate that it is. It is inflected for mood and tense, as in (25), where (24.iii) is given in the Perfect, Imperfect, and Imperative.

(25) (i) ́wyi aba utsì ikù

The child shut the door.

(ii) ́wyi aba utsì ikù

The child shuts the door.

(iii) ba utsì kù

Shut the door.

Perfect tense is marked by a mid tone on the prefix of the verb, Imperfect by a low-high sequence, and the Imperative mood by the absence of a prefix. Also aba can undergo Agent-Nominalization, as in (26).

(26) (i) obà utsì kù

one who closes doors, a door-closer

(ii) obà ́tywèndè dà

one who breaks pots

(iii) obà ọtsì plè

one who fells trees
II. Causative and Inchoative

The way Yatye handles statives, inchoatives, and causatives suggests that the latter two are the same phenomenon and that Lakoff's distinction between them (1965) is redundant. The important contrast seems to be between stative and active, with the inchoative/causative contrast being a matter of the number of NP's involved and the relation between them. For example, (27.i) is stative, but (ii-iv) are all non-stative and all have inchoatives in them. The causatives (iii and iv) are distinguished by the presence of a subject and an object. (27.v) suggests that instrumentals may be a further extension of causatives. 3

(27) (i) The sky was red.
    (ii) The sky reddened.
    (iii) The sunset reddened the sky.
    (iv) The artist reddened the sky.
    (v) The artist reddened the sky with a sunset.

This suggestion is borne out by an examination of sentences like those in (22)-(24).

The sentence (24.iii) can be paraphrased by (28).

3 Much non-transformational work, particularly the tagmemic school, talks about 'degrees of transitivity', using the terms 'intransitive', 'transitive', 'ditransitive', etc. A ditransitive, in a tagmemic framework, is a structure including both an indirect and a direct object. The present treatment suggests that if there is a useful notion of this sort it is to be defined in terms of embedded actives, rather than such things as datives and benefactives.
Furthermore, (24.i) is ambiguous in a way in which (24.iii-v) are not. (24.i) can be interpreted as stative or active, its active interpretation being identical to the unambiguous (24.ii). Although (28) is an acceptable paraphrase of (24.iii), (24.iii) is not ambiguous. (24.iv) and (24.v) have paraphrases similar to (28), i.e., respectively:

(29) òtsì abà utsì abà ikù
The stick shut the door.

(30) ìwì abà òtsì abà ikù utsì
The child shut the door with a stick.

The potential further paraphrase of (30), that is (31), does not seem to be fully acceptable, but informants recognize the structure and usually call it baby-talk. It is immediately noticeable that (31) continues the pattern of (29), adding an abà so that there is one ACTIVE per actant in a non-stative sentence:

(31) ìwì abà òtsì abà utsì abà ikù
The child shut the door with a stick.

For these reasons we may suggest (32) and (33) as underlying structures for (24.iv-v), this counting for the facts of (28)-(30).
(32) SO
   NP
   V
   VP
   NP
   \vline S_1
   NP
   V
   VP
   S_2
   NP
   V
   VP
   S_3
   NP
   V
   VP

iwyi  abà  utsi  ikù  abà
child  ACTIVE  door  shut  ACTIVE

(33) SO
   NP
   V
   VP
   NP
   \vline S_1
   NP
   V
   VP
   S_2
   NP
   V
   VP
   S_3
   NP
   V
   VP

iwyi  abà  utsi  abà  utsi  ikù  abà
child  ACTIVE  stick  ACTIVE  door  shut  ACTIVE
A transformation similar to McCawley's predicate raising will raise \( \text{iku} \) into \( S_2 \) of (33) and \( S_1 \) of (32). Precisely where it will be attached is not clear, but because of the subsequent incorporation of \( \text{abà} \), it seems better to consider \( \text{abà ikù} \) a verb and to Chomsky-adjoin \( \text{iku} \) to \( \text{abà} \), so that the lowest \( S \)'s of (32) and (33) become

(34)

\[
\text{NP} \quad \text{VP} \\
\text{utsì} \quad \text{iku} \quad \text{abà} \\
\]

Abà then copies the feature [+ACTIVE] onto \( \text{iku} \) and is deleted, resulting in the ambiguity which was observed in (24.i). (24.iii-v) are not similarly ambiguous because a stative embedded as an object complement to \( \text{abà} \) is apparently not a well-formed deep structure.

The underlying trees we have arrived at are strikingly like those of Lakoff (1965) with the difference that Lakoff's [+CAUSATIVE] and [+INCHOATIVE] pro-verbs are found to be the same verb, ACTIVE. Compare Lakoff's tree (35) to (32).
In all of Lakoff's causative examples the lowest S contains a stative verb. This is embedded as the subject complement of an inchoative pro-verb, the inchoative sentence in turn being embedded in a causative as an object complement. If we begin with a large class of stative verbs, such as those given in Appendix I for Yatyë, we can then derive an inchoative by embedding the stative in a non-stative or ACTIVE as its subject complement. We can further derive a causative by embedding this structure in another ACTIVE as its object complement. The notions causative and inchoative can be treated as derived notions and do not have to be included in the base. This, of course, is precisely the case for Yatyë, and as (33) shows an instrumental, and perhaps some manner adverbs (see (5) and (6)) can be regarded as embedded causatives. Abâ looks very much like a pro-verb which has an overt surface representation as an embedding verb.
The sort of paraphrase we get with abà is odd in that the sentence does not contain a number of verbs, each of which has a distinct meaning and can be used as the only verb in the surface structure representation of a sentence. That is, the English paraphrase of (35) can be, among others, those found in (36).

(36) John shut the door.

(37) (i) John caused the door to shut.

(ii) John made the door close.

(iii) John pushed the door shut.

(38) iwyì awà utsì ikù

child took door shut
The child shut the door.

This, in turn, can be paraphrased on the pattern of (29)-(32).

(39) (i) iwyì awà utsì abà ikù

(ii) iwyì abà utsì awà ikù

(iii) iwyì abà utsì abà ikù

(iv) iwyì abà utsì awà abà ikù

(v) iwyì abà utsì abà awà ikù

(vi) iwyì abà utsì abà awà abà ikù

However the relation between awà 'take' and ikù 'shut' is to be represented, its behavior with abà is familiar, and the predicate raising and incorporation used above with ikù can be used here also.

Awà 'take' and abà 'ACTIVE' have rather different properties, but what is important here is the fact that awà utsì in (39.i) is a
constituent, while abà utsì is not. Thus the former can be nominalized and clefted, whereas the latter cannot. (40), therefore, is grammatical, but (41) is not.

(40) *utsì òbóbà ni ìwyì abà utsì ikù mè

doctor taking TOPIC child took door shut

The child took the door and shut it.

(41) ìwyì ìmì ìwyì abà utsì ikù mè

doctor ACTIVE TOPIC child ACTIVE door shut

In Yoruba, the verb fi 'take' appears to behave very much like the Yatyë avá 'take'. Both are used to express instrumentals.

(42) (i) Ọmọ fi igi ti ilekùn

child took stick shut door

The child shut the door with a stick.

(ii) ìwyì avá ọtsì ikù utsì

child took stick shut door

The child shut the door with a stick.

With both verbs, the verb and its following noun form a constituent which can be nominalized and topicalized.

(43) (i) rírí igi ni Ọmọ fi igi ti ilekùn

taking stick TOPIC child took stick shut door

(ii) ọtsì òbóbà ni ìwyì ìmì ọtsì ikù utsì

stick taking TOPIC child took stick shut door

Fí is not normally used with inchoatives, but in some types of embeddings it is found as an inchoative. The sentences (44.i) and (45.i) are ambiguous between stative and active. As (44.ii) and (45.ii)
show, this ambiguity cannot be eliminated by using fi as abà is used in Yatyë. The sentences with fi inserted are ungrammatical. This is not surprising, since fi is not an embedding verb, as is clear from (43.i). That fi does at least have an ACTIVE feature, in Lakoff's terms an inchoative, is clear from (46), where it makes the difference between a stative and an active. In (47) fi is obligatory in structures which semantically entail the notion of coming into a state.

(44) (i) omi' kùn 'igò
   water fill bottle
   The bottle is full of water.
   (or The water filled the bottle.)

(ii) *omi' fi kùn 'igò
   water fill bottle
   The water filled the bottle.

(45) (i) 'ìgò' fò
   bottle broke
   The bottle broke.
   (or The bottle is broken.)

(ii) *ìgò' fi fò
   bottle broke
   The bottle broke.

(46) (i) nì 'igbà tí ó jë qàqlà
   when he was a bigshot

(ii) nì 'igbà tí ó fi jë qàqlà
   when he was acting-like a bigshot
(47) (i) ó ṣe igbá tí tí ó ọ̀ kparí-rẹ́
he do work until he finish it

(ii) won inú tó bẹ̀ ẹ̀ tí ó ọ̀ kú
they [beat him] equal thus that he died

They beat him to death.

Thus it is possible that ọ̀, like awá in (39), is embedded under an ACTIVE; but that, unlike awá, with ọ̀ raising and incorporation are obligatory.

III. Properties of Serial Verbs

It is fairly evident that abá in Yatýgba is a complementizing verb, but sources for other types of serial construction are not so clear. We will not go into the problem of the underlying representations for auxiliaries, but sentences like (48)-(50) present a different sort of problem. Verbs such as gbá 'receive', ọ̀ 'take', bá 'benefit', and mú 'pick up, take' are not the type which one normally treats as taking sentential complements. There are at least two other ways of deriving such structures as we have in (48)-(50): they may result from underlying conjoined structures, or they may be underlying or derived case markers. We will first consider conjunction as a source.

The sentences of (48)-(50) must be distinguished both syntactically and semantically from coordinate structures.

(48) ajá gbá eegun ha ẹnu (Yoruba)
dog received bone wedged mouth

The dog took the bone in his mouth.
Semantically it would be possible to continue a coordinate structure like (51) with (52):

(51) mo mú ìwé, mo si wá ilé
    I took book, I and came home
    I picked up a book and came home.

(52) ̀gùgbó n mo ̀gbagbé làti mú wá pèlú
    but I forgot to take come with
    but I forgot to bring it along.

However, to continue (50) with (52) in the same way would render it nonsensical. Syntactically it would be impossible to derive (48)-(50) from coordinate sentence structure for a number of reasons. First, they cannot result from conjunction reduction, simply because if conjunction reduction occurs at all in Yoruba, it is restricted to deleting identical VP's, as in (53).

(53) Adé jë oñjé, èmi sì jë oñjé  Adé àti èmi jë oñjé
    Ade ate food, I and ate food  ⇒ Ade and I ate food
    Ade ate and I ate.

There is, for example, a general constraint in Yoruba and typologically similar languages against the deletion of identical verbs in
coordinate structures. Thus, because Yoruba does not have a gapping rule, (54) is ungrammatical:

(54) *Adé' mǔ ẹmu, Oyè' omi, Dokún' sì ọtì

Ade drank wine, Oye water, Dokun and gin.

We saw above that the meaning of (50) is quite distinct from that of (51). That their underlying structures are also distinct is shown by the fact that conjunction reduction on (51), deleting mo, produces not (52), but an ungrammatical (55).

(55) *mo mǔ ìwé sì wá ilé

I took book and came house

Finally, if (48) derives from coordinate structure, it should be impossible to move either eegun 'bone' or ẹnu 'mouth' out of its original conjunct. However, both sentences in (56) are grammatical.

(56) (i) eegun'wo ni ajá gbà ha ẹnu
Which bone did the dog take in his mouth?

(ii) ẹ́ẹ̀ ẹ́nu ni ajá gbà eegun ha
Was it his mouth that the dog took the bone in?

Moving either ìwé 'book' or ilé 'house' out of its conjunct in (51), on the other hand, results in ungrammatical sentences.

(57) (i) *ìwé ni mo mǔ, mo sì wá ilé
*It was a book I took and I came home.

(ii) *ilé ni mo mǔ ìwé, mo sì wá
*It was home that I took a book and I came.

The same facts apply to (49) also. This argument, of course, depends on at least two of so far unmentioned factors which together may be
sufficient to vitiate it. The first of these is the question of whether the VP's in series are still in conjoined structure at the point where the NP movement applies. At present I have no way of making certain of this. The second factor has to do with NP movement in general. Neither Yatye nor Yoruba show any evidence of Psych-movement, WH-movement, Passive, Tough-movement, or other such transformations which have the effect of moving one NP over another. We will return to this point briefly below.

A second distinguishing feature of serialization is the tense agreement noted on page 67. All verbs in a series must agree as to tense and, as (25.iii) illustrates, as to mood also. This is clearest in Yatye, where the perfect is indicated by a mid tone on the prefixes of all verbs within one series, and the imperfect by a low-high tone sequence, the high being absent on auxiliaries.

(58) (i) ́iyi ábá awá ínyahwë ībi
child FUTURE take book come

The child was going to bring a book.

(ii) ́iyi àbá āwá ínyahwë ībi
child FUTURE take book come

The child is going to bring a book.

Lack of tense agreement results in an ungrammatical sentence. That this may be true in Yoruba also is indicated by a suppletion involving the verb wá 'come'. Wá does not occur with the continuous particle N, but must be replaced by bō 'come'. The following paradigm results.
(59) (i) mo wá láti `Ekó
I came from Lagos.
(ii) *mò N wá láti `Ekó
I am coming from Lagos.
(iii) *mo b' láti `Ekó
I came from Lagos.
(iv) mò N b' láti `Ekó
I am coming from Lagos.

The second verb of (60) has to be marked for tense agreement, as comparison with (59) indicates.

(60) (i) mò ñ nú ìwé b'.
I am bringing a book.
(ii) *mò ñ nú ìwé wá.
I am bringing a book.

A third condition on verbs in series is that they must all agree as to auxiliaries, negation, interrogative, and mood. Mood agreement is shown in (25), at least for Yatyë. This is not quite so obvious in Yoruba. The auxiliaries in Yoruba and Yatyë both occur before all other verbs in surface structure. For Yatyë this is illustrated by the examples in (21). For an auxiliary to occur elsewhere produces an ungrammatical sentence. There is an apparent case of a different auxiliary element occurring after the initial verb in surface structure in Yoruba in sentences like (61).
(61) mo lọ̀ màa mú ́iwé vá.
I went-to FUTURE take book come
I went to fetch a book.

This, however, is a case of a sentence embedded as a purpose adverb in which Equi-NP-Deletion has removed the embedded subject. This is shown by the vowel length on the main verb lọ́ 'go' and the optionality of látì 'in order to' before màa 'FUTURE', which is in complementary distribution with the vowel length.

(62) mo lọ́ látì màa mú ́iwé vá.
I went to fetch a book.

These facts are true of Yoruba complement structures in general, for example,

(63) (i) mo fẹ́ (màa) mú ́iwé vá.
I want-to (FUTURE) take book come.

(ii) mo fẹ́ látì (màa) mú ́iwé vá.
I want to (FUTURE) take book come.

Yatyé does not have Equi-NP-Deletion in complement structures, so this sort of apparent exception does not occur.

If negation were permitted to occur on more than one verb in series, and if it were not the case that all verbs in series agree as to negation, then one would expect this to show up when a verb phrase is topicalized, as in (43.ii). The negation of (44.ii), the untopicalized equivalent of (45.ii), is
(64) iwyi awá òtsi ikù utsì ya
child took stick shut door NEG
The child did not shut the door with a stick.

Both sentences of (65), however, are ungrammatical. Ya 'NEG' must be on the whole series.

(65) (i) *òwövá òtsi ya ni iwyi awá òtsi ikù utsì.
(ii) *ikúkù utsì ya ni iwyi awá òtsi ikù utsì.

This, of course, is related to the fact that ya 'NEG' is the last element in the surface structure of a sentence. Because of this, the sentences of (66), in which a NEG occurs after the first verb phrase, are also ungrammatical.

(66) (i) *iwyi awá òtsi ya ikù utsì.
(ii) *iwyi awá òtsi ya ikù utsì ya.

All of these points suggest that the serial constructions of the type discussed in this section are not derived from underlying conjoined structures. This leaves our other alternative: that at least some verbs in series, especially those denoting the so-called 'oblique' cases, are in fact overt case markers.

Treating verbs in series as case markers results in several problems. First of all we get the paraphrases in (67).

(67) (i) Oyè' mú 'iwé wá fùn mì.
Oye took book came for me

(ii) Oyè' mú 'iwé wá bùn mì.
Oye took book came presented me
In all three sentences, the last underlined word is a verb meaning something like 'give'. The particular verb used depends on the circumstances surrounding the giving, but in all three the 'case marking' is done not on the noun, but in the semantic content of the verb. There is no way of predicting exactly which one of a class of verbs marked as Instrumental or Dative or some other case is going to mark that case in a given sentence, and so we do not really have a unique determination of case marking.

A second problem is that the verbs involved must also be marked for tense. To show this I will give an example from Yoruba similar to one which we discussed earlier. The evidence in Yatýŋ is much more straight-forward, and the reader can refer back to (25) above, where he will notice the prefixes of all verbs agree for tense. The relevant Yoruba examples are (68) and (69).

(68) (i) mo vá láti Ẹkó ní àná.
I came from Lagos yesterday.

(ii) mò N bọ láti Ẹkó ní isinsin èyí.
I am coming from Lagos right now.

(iii) *mò N vá láti Ẹkó ní isinsin èyí.
I am coming from Lagos right now.

(69) (i) mo mú àbúrò mì vá láti Ẹkó ní àná.
I brought my younger brother from Lagos yesterday.
(ii) mò ń m̀ ìbúró m̀ bò látì Òkó ní ăsǐsǐn ẹ́yí.

I am bringing my younger brother from Lagos right now.

(iii) *mò ń m̀ ìbúró m̀ wá látì Òkó ní ăsǐsǐn ẹ́yí.

I am bringing my younger brother from Lagos right now.

The verb used in (68) and (69) to mark the locative is wá 'come'. This is only one of a number of verbs which could have been used, the choice again being determined by the context, but wá has one idiosyncracy which is crucial here. If wá is used in a continuous tense, even if the continuous particle is several verbs earlier in the sentence, wá must be replaced by its suppletive bò 'come', and failure to apply this rule results in ungrammatical sentences like (68.iii) and (69.iii). We have, then, a choice of 'case marker' conditioned by the tense of the sentence, an improbably situation. A third problem is that, as we saw above, certain so-called case markers are ambiguous as to which case they represent, and the choice depends on the semantic content of the following noun. Examples of this are the Yoruba sentences with fì 'take' in (70) and the Yatè sentences with abà 'ACTIVE' in (71):

(70) (i) mo fì àdá gè igi.

I took matchete cut wood.
I cut wood with a machete.

(ii) mo fì ăgbara gè igi.

I took strength cut wood.
I cut wood energetically.
The fi of (70.i) is instrumental and the fi of (70.ii) is a manner adverb, not a case at all. Similarly:

(71) (i) àmì àbà àkìtì àdyú àtsì.
I ACTIVE machete cut wood.
I cut wood with a machete.

(ii) àmì àbà àtsì awa yirú.
I ACTIVE firewood went market.
I took firewood to market.

In (71.1) àkìtì is instrumental and in a case grammar àbà would have to mark it as such. In (71.ii), on the other hand, àtsì is the direct object of the sentence. Therefore the specification of which case a 'case marker' marks is a function of the meaning of the noun to which the 'case marker' assigns case. This is obviously circular.

One of the basic motives behind case grammar is the need to specify relations between nouns and the verb of the sentence. This presupposes that a problem exists here, that is, that there must be the possibility of a single verb relating three or more actants. Two actants can, of course, be differentiated by formal Subject-of and Object-of relations, but more than two require some additional marking. The case base generates a string consisting of a modality, a verb, and a series of nouns, each marked for case. An early transformation is responsible for forming the subject and object, a process requiring the movement of NP. Such a movement transformation causes no problems in English, where NP-movement transformations seem to grow on trees, but, as we observed earlier, these languages with
serial constructions do not seem to have NP-movement transformations, with the possible exceptions of topicalization and Y-movement, neither of which seems to be subject to the sort of crossover and NP movement constraints that Ross (1967) and Postal (1968) have shown to control how other types of NP-movement can operate. In a language which otherwise lacks NP-movement before shallow structure, it seems very odd to begin the transformational derivation of sentences with mass migrations of NP.

One final observation on the problems involved in treating verbs in series as case markers is the fact that this would demand that abâ 'ACTIVE' and its immediately following noun be a constituent. They are, in fact, not a constituent. Abâ embeds a sentential complement, and the noun immediately after abâ is not its object, but is rather the subject of the complement sentence. Evidence of this is alluded to in example (26), where abâ and its complement are nominalized. If it could take a noun as object then it should be possible to nominalize abâ and the following noun. This is not possible.

There is one other possibility that would be worth examining in our search for a source for serial verbs, and that is the complex lexical item. The sorts of phenomena which we have been calling serialization act in some ways like complex lexical items and yet are clearly composed of independent lexical items. A NP within a serial string can take a relative clause, for example, and it is possible to pronominalize into and out of serial strings. Neither of these is possible with complex lexical items, as Postal (1969) and Morgan (1968)
have shown. Furthermore, it is possible, as we saw on page seven, to nominalize a section of a serial string which looks very much like a verb phrase. Also, a noun can be moved out of a serial string by topicalization or Y-movement. Thus we do have evidence for at least the following bracketings.

\[
\begin{align*}
(72) & \quad \text{\textit{iwyi}}_{\text{NP}} \text{\textit{awá ōtsi}}_{\text{VP}} \text{\textit{ikù utsì}}_{\text{VP} S} \\
& \quad \text{child took stick shut door} \\
& \quad \text{The child shut the door with a stick.}
\end{align*}
\]

\[
\begin{align*}
(73) & \quad \text{\textit{ówówá ōtsi}}_{\text{NP} \text{VP}} \text{\textit{nì \textit{iwyi}}}_{\text{NP}} \text{\textit{awá ōtsi}}_{\text{VP}} \text{\textit{ikù utsì}}_{\text{VP} S} \\
& \quad \text{taking stick TOPIC child took stick shut door} \\
& \quad \text{It was by taking a stick that the child shut the door.}
\end{align*}
\]

The fact that the two VPs together can be nominalized, as in (26), suggests also the following bracketing.

\[
\begin{align*}
(74) & \quad \text{\textit{iwyi}}_{\text{NP VP}} \text{\textit{[awá ōtsi ikù utsì]}_{\text{VP} S}} \\
& \quad \text{The resulting surface structure phrase marker, however, is not obviously derived from underlying conjunction, since the results of the discussion on this earlier apply equally to Yatyé. It must then be derived from some other source, unless we are to believe that the base generates structures like (75):}
\end{align*}
\]

\[
\begin{align*}
(75)
\end{align*}
\]
Another restriction on serial strings is that verb phrase complementation cannot be string-internal, that is, it must occur after the entire serial string. Although it is not impossible that this results from an obligatory extrapolation transformation, this possibility seems unlikely because of the absence of other NP-movement transformations. In any case, the fact remains that sentential complements are not found within serial strings. Therefore (76) below is a grammatical sentence in Yoruba, but (77) is not:

(76) mo so fún q kpé Adisà kò níí lọ lú.
I said gave you that Adisa would not go to town.
I told you that Adisa would not go to town.

(77) *mo so kpé Adisà kò níí lọ lú fún q.
I said that Adisa would not go to town give you.
I said that Adisa would not go to town to you.

Notice that (77) does have a correct reading if fún q is considered internal to the complement, meaning 'I said that Adisa would not go to town for you.' Semantically, and on the basis of what is known about complements in English, this is not surprising, but we are still left with the verb fún to account for. I have at this point no defensible explanation for these structures. And the problem does not stop here. Why the surface structure of (72) and (74), as given in (75), should seem to contradict our intuition that utsi is the direct object of the sentence and that òtsai is part of an instrumental adverb is very puzzling; as is the fact that we do apparently have the
correct relations in the surface structure of (76) and of (77) in its correct reading, as (78) and (79), respectively, show:

(78)

Although it is possible as we suggested above that (78) results from extraposition, the independent evidence for this transformation in Yoruba is very slim. But even if it does, that would mean that the complement is not actually the direct object of the sentence, but the surface structure only makes it look that way. In either case, serialization presents us with a structure that behaves in some ways like a complex lexical item and in other ways like a structure containing a number of independent lexical items. But it evidently is not what one would normally consider a complex lexical item.

Needless to say, this paper has left a score of unanswered questions, the most important of which concerns the source of verbs
in series. Ross (1967:170) mentions a set of sentences which appear to be immune to the coordinate structure constraint. These are

(80) (4.107) a. She's gone and ruined her dress now.
   b. I've got to try and find that screw.
   c. Aunt Hattie wants you to be nice and kiss your granny.

(80.b) and (80.c) puzzle me at least as much as they puzzled Ross. (80.a), on the other hand, seems to bear some relation to the phenomena discussed in Part Two, and in a more general way to the whole problem of serialization. Additional examples like (80.a) are the inchoative sentences of (81),

(81) (i) The bottle took and broke.
   (ii) The bottle upped and broke.
   (iii) The bottle went and broke.

and their causative counterparts

(82) (i) John took and broke the bottle.
   (ii) John upped and broke the bottle.
   (iii) John went and broke the bottle.

These sentences are paraphrases of the more standard form using only the verb broke, in much the same way that the sentences of (28)-(30) are paraphrases of those in (24). The sentences of (81) and (82) have properties which seem quite similar to those cited in Yatyq also. For example, the verbs took, upped, and broke can occur only in non-

stative, or, in the terminology of Part Two, ACTIVE sentences. The sentences of (83), then, are not surprisingly ungrammatical.
(83) (i) *The bottle is taken and broken.
(ii) *The bottle is upped and broken.
(iii) *The bottle is gone and broken.

A further parallel is the fact that they must take the same auxiliary and must both be either negative or affirmative, as in (84).

(84) (i) *The bottle took and didn’t break.
   *The bottle upped and might break.
   *The bottle went and will break.
   *The bottle went and has broken.

(ii) The bottle didn’t take and break.
   The bottle might up and break.
   The bottle will go and break.

(iii) *The bottle has taken and broken.
   The bottle has gone and broken.
   The bottle has upped and broken.

but

(iv) The bottle has took and broken!

Except for the puzzling asymmetry of (84, iii), these facts show themselves to be strikingly similar to what we found in Yatyę. It may be that these represent the failure of a plugging-in rule, in R. Lakoff’s (1969) terms, to apply, leaving a pro-verb to be spelled out in surface structure. The verbs take, up, and go serve no semantic function other than to redundantly mark the sentence as active. The ultimate solution to both this and the serialization problem may turn out to be very closely related, if not identical.
IV. Some Broader Implications of Serialization

In the earlier years of research into transformational grammar a great deal was written on the formal notion of simplicity as an evaluatory measure. More recently this topic has with some justification received less attention and the thrust of research has been turned more to the related topic of constraints on transformations and on derivations. The feeling has been rather that before we can talk meaningfully about simplicity metrics we need to know much more about just what sort of devices we will need to account for the phenomena of natural languages. It is therefore with considerable trepidation that I venture into the question of what is meant by simplicity in linguistic descriptions.

I will begin with the statement that the goal of our science is to be able to present for any given sentence of any given language a fully 'factored-out' representation of the meaning of that sentence and to be able to justify, in some meaningful sense, all formal devices and primitive notions used in such a description. It stands to reason that in some languages we may require certain devices which will not be required in other languages. A case in point is the NP-movement transformation. As was noted in earlier parts of this paper Yoruba and Yatyq appear to have little, if any, NP-movement. There are, to be sure, movement transformations of other types, including Topicalization and Y-movement, and, more importantly for these languages, clitic placement. However, these movement transformations are distinct from NP-movement rules in one crucial way: they are not
subject to the same complex constraints, such as the Crossover Constraint, the Complex NP Constraint, the Coordinate Structure Constraint, and so on.

The function of these 'global derivational constraints', as Lakoff calls them (1969), is to prevent the underlying structure of a sentence from being destroyed beyond the point of recoverability. That is, NP-movement transformations are an extremely powerful type of rule, and any grammar which allows them must also block those movements which would be particularly destructive to the underlying structure. The statement of such constraints may involve reference to rules and to various not necessarily adjacent stages in the derivation, and it therefore is a costly affair, but the added complexity they bring to the grammar is not due to the fact that there are global constraints operating, but to the fact that the grammar of that particular language permits NP-movement transformations in the first place. It should not, therefore, come as a surprise that there are languages without NP-movement rules, and therefore languages that do not need some of these global constraints. In terms of a universal base, Yoruba, Yatyg and typologically similar languages do not seem to have such transformations and therefore in some sense the grammars of these languages can be considered 'less marked' than the grammars of languages having NP-movement rules and therefore needing global derivational constraints on these rules.

In as complex a device as a grammar of a natural language, it is unlikely that simplification in an area such as NP-movement
would be without its parallels in other areas of the grammar. Such a parallel simplification might involve the serialization phenomena we have been discussing. If, in fact, the goal of the underlying representation of a sentence is to give a factored-out representation of the meaning of that sentence, then one would also expect that lexical incorporation rules would be needed in languages such as English. These could be similar to what McCawley (1968) suggested for the derivation of kill, or they could be similar to such processes as Gruber (1967) developed. Whatever they are like, it should not be surprising to find languages in which such highly constrained processes are needed to a more limited degree than they are, say, in English. This may be why we find both serialization and the absence of NP-movement transformations in the same languages. There is apparently an overall tendency toward economy in a grammar and some languages may well have more nearly 'optimal' grammars than others. It may also be possible that processes as costly and complex as NP-movement in English may be found in languages other than English, and not in English at all.

Whatever the validity of the preceding speculations, we apparently have some important questions before us. Why, for example, do we find a strongly limited verb inventory in the lexicon, a type of syntactic structure in which groups of verbs get in concert to form more complex meanings, such as 'go-take-come' for 'fetch' or 'take-give' for the three argument verb 'give', and the absence of NP-movement all in the same languages? Here is a ripe field for the
sometime vacuous discipline of linguistic typology. Linguistic typology should be able to tell us what the implications of specific linguistic phenomena are for the structure of particular languages and should enable us to predict much more accurately the sorts of phenomena we can expect to find in particular languages.
The following is a sample listing of verbs which are inherently stative in Yatye. Each can become non-stative when embedded as subject complement of abà 'ACTIVE', and that complex can then be embedded as object complement of a higher abà to produce a causative. Each verb is given with its stative, inchoative, and causative meanings.

<table>
<thead>
<tr>
<th>Item</th>
<th>Stative</th>
<th>Inchoative</th>
<th>Causative</th>
</tr>
</thead>
<tbody>
<tr>
<td>aplë</td>
<td>uprooted</td>
<td>get uprooted</td>
<td>uproot</td>
</tr>
<tr>
<td>ihù</td>
<td>fallen</td>
<td>fall</td>
<td>fell</td>
</tr>
<tr>
<td>akìë</td>
<td>torn</td>
<td>tear</td>
<td>tear</td>
</tr>
<tr>
<td>avù</td>
<td>dry</td>
<td>dry</td>
<td>dry</td>
</tr>
<tr>
<td>adyù</td>
<td>severed</td>
<td>get severed</td>
<td>cut/sever</td>
</tr>
<tr>
<td>asá</td>
<td>split</td>
<td>split</td>
<td>split</td>
</tr>
<tr>
<td>apù</td>
<td>rotten</td>
<td>rot</td>
<td></td>
</tr>
<tr>
<td>atà</td>
<td>crushed</td>
<td>get crushed</td>
<td>crush</td>
</tr>
<tr>
<td>awà</td>
<td>broken</td>
<td>break</td>
<td>break</td>
</tr>
<tr>
<td>ikú</td>
<td>open</td>
<td>open</td>
<td>open</td>
</tr>
<tr>
<td>ikù</td>
<td>shut</td>
<td>shut</td>
<td>shut</td>
</tr>
<tr>
<td>adà</td>
<td>shattered</td>
<td>shatter</td>
<td>shatter</td>
</tr>
<tr>
<td>irò</td>
<td>spoiled</td>
<td>spoil</td>
<td>spoil</td>
</tr>
<tr>
<td>ayrë</td>
<td>molten</td>
<td>melt</td>
<td>melt</td>
</tr>
<tr>
<td>ablë</td>
<td>glued to</td>
<td>get stuck to</td>
<td>glue to</td>
</tr>
</tbody>
</table>
REFERENCES

Because serialization is not a generally known phenomenon, I have included a number of important articles on the topic in this bibliography, even though they are not cited in the text.


Gruber, Jeffrey (1967) Functions of the Lexicon in Formal Descriptive Grammars. TM-3770/000/00. System Development Corporation, Santa Monica, California.


Morgan, Jerry (1968) "On the Notion 'Possible Lexical Item'", Unpublished ditto. University of Chicago.


