1. Introduction

This paper considers the behavior of certain Yoruba deletion and pronominalization phenomena with respect to island constraints. In order to approach several of the problems, it will be necessary first to reanalyze some related areas of Yoruba syntax, including subject-verb agreement and relative clause formation. I will argue that the dependent subject pronouns are, in fact, prefixes, and that they arise by a subject-verb agreement rule. I will then show that relativization in Yoruba involves certain types of reduction under coreference which are controlled in part by island phenomena. I will then illustrate the behavior of island constraints, and I will argue that a distinction must be made between those constraints which require the mention of some S node in their statement and those that do not and that constraints of the former type are stronger in an easily specifiable way.

2. Yoruba Pronoun Forms

Yoruba has several sets of subject pronoun forms whose distribution is conditioned morphologically. The pronouns are as follows:

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1I would like to thank Jerry Morgan and Talmy Givón for their very helpful comments, and Oláyínwọlá Awọyalé and Oláṣọọ́lá Ajólọre for their invaluable assistance with the data. All mistakes and weaknesses in the paper are, of course, my own responsibility. With the exception of the following special symbols, all symbols have their IPA values: ẹ is a voiceless alveopalatal fricative, ọ and ọ are respectively front and back open mid vowels, and the diacritics ẹ, ọ, Ọ and Ọ refer to high, mid, low tones and downstep, respectively.

2There is some debate as to just how the dependent pronouns are related to the independent forms. The strongest position, adopted by Stahlke [1969] is that they are synchronically derived from the independent forms by regular morphophonemic processes. This position is modified somewhat in Fresco [1971], where he shows that the second person singular ọ cannot be derived by vowel harmony, as I had suggested, since Standard Yoruba vowel harmony operates only on the tense vowels ọ and ẹ, laxing them to ọ and ẹ. Thus the normal harmonic process could not account for the shift from ọ to ọ, a shift from lax to tense. At least in this case the strong position I had originally adopted must be modified.
(1) Yoruba subject pronoun paradigms

(a) Independent pronouns

<table>
<thead>
<tr>
<th>Subject</th>
<th>Pronoun</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st person</td>
<td>ãmi</td>
<td>'I'</td>
</tr>
<tr>
<td>2nd person</td>
<td>ùwọ́</td>
<td>'you (sg.)'</td>
</tr>
<tr>
<td>3rd person</td>
<td>òún</td>
<td>'he, she, it'</td>
</tr>
</tbody>
</table>

(b) Dependent pronouns

<table>
<thead>
<tr>
<th>Tense</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preterit</td>
<td>ìmọ̀ a</td>
</tr>
<tr>
<td>Negative</td>
<td>ìmọ̀ o</td>
</tr>
<tr>
<td>Future</td>
<td>ìmọ̀ òwọ́n</td>
</tr>
</tbody>
</table>

The subject forms of the first and second plural appear to be derived from the initial vowel of the independent forms. The other plural pronouns differ, if at all, only in tone from the independent root. I will offer below an explanation for the high tone found on some of the third plural subjective pronouns. Although the singular dependent forms deviate considerably from their corresponding independent pronouns, I will discuss only the third person morphemes and, to a very limited degree, the first person. For an analysis of the second person singular subject pronoun, see Fresco [1971] and Stahlke [1969].

In developing an analysis of the third person singular subject pronoun, the following facts must be accounted for.

(2)  

i. All singular preterit and progressive pronouns end in the vowel o.

ii. All third person singular and plural forms except in the negative and future (yọ́') paradigm bear a high tone.

iii. The third singular is segmentally zero in the negative and future (yọ́').
Since two sets of singular subject pronouns end in o, and no plurals or pronouns from other paradigms do, the morphological status of this vowel as a part of the pronominal system must be considered. Several facts suggest that it is not actually a part of the pronominal system. For example, the phonology of Standard Yoruba places the condition on CV sequences that nasals be followed by one of the three nasalized vowels Ĭ, ū, and ņ, not by an oral vowel. Thus the form mo is a morpheme structure violation and might be considered polymorphemic. The distribution of the vowel o in other tenses lends support to the hypothesis that this vowel does not belong to the pronominal system and that mo consists of mi + o. As the affirmative and negative preterit and future (yọ') forms below illustrate, the vowel o occurs consistently before the verb, and its distribution is easier to state in terms of the verbal elements of the verbal string than in terms of the pronominal and tense/aspect markers. Thus it is not to be considered a part of the subject pronoun. The o under discussion is underlined in the following examples.

(3) i. Preterit affirmative
   mo lọ ilé  'I went home.'
   o  lọ ilé  'You went home.'
   ŋ  lọ ilé  'He went home.'

   ii. Preterit negative
       mi (k)ŋ lọ ilé  'I didn't go home.'
       o  ŋ  lọ ilé  'You didn't go home.'
       ŋ  kŋ lọ ilé  'He didn't go home.'

---

3 The situation is not quite this simple. Bamgbọse [1966] and Awobuluyi [1967a] give a long list of modals and other aspectual and adverbial elements which can occur between the vowel o and the main verb. However, none of these will cause o to come before the negative or future morphemes, and so my distributional claim stands, subject to the modification that the element immediately to the right of o requires further specification.

4 See note 2 for a discussion of the o found in the second person singular.
iii. Future affirmative

mi (γ)' lq ilé
o  δ' lq ilé
∅  γό' lq ilé

'I will go home.'
'You will go home.'
'He will go home.'

iv. Future negative

mi ki γό' lq ilé
o ki γό' lq ilé
∅ ki γό' lq ilé

'I won't go home.'
'You won't go home.'
'He won't go home.'

Fresco [1971] agrees that the o found in the preterit subject pronoun series is not morphologically a part of the pronoun. However, he argues that lexically the third singular pronoun consists of the high tone which remains after the vowel has been removed. His analysis fails to account for an important fact about this high tone, namely, the distribution of the high tone which he identifies as the pronoun. The following examples will illustrate this.

(4)  i.  δ lq
kō lq
γό' lq

'He went.'
'He didn't go.'
'He will go.'

ii.  wōn lq
wōn kō lq
wōn γό' lq

'They went.'
'They didn't go.'
'They will go.'

iii.  qmō lq
qmō kō lq
qmō γό' lq

'The child went.'
'The child didn't go.'
'The child will go.'

Since the third singular subject pronoun is, as generally recognized, zero before the negative of future (4i), the high tone of δ will also
be absent in just those places. This pattern is paralleled in the third person plural subject pronoun (4ii). This pronoun has a high tone in the preterit affirmative, but a mid tone in the negative and future. The mid tone form is probably basic, since all other forms of this pronoun, with the exception of object pronouns occurring after low or mid tone verbs, have mid tone. Thus the high tone in the third plural form has the same distribution as in the third singular. The examples in (4iii) represent a large class of sentences in which the subject is an NP containing at least a noun and possibly more. The final vowel of the subject NP has a high tone, regardless of what its basic tone may be, just if the following morpheme is not the negative or the future marker. As the examples in (4) show, the high tone which appears in the third person preterit forms is independently predictable and thus is not to be interpreted as the third person singular morpheme. Thus the third person singular form of the subject pronoun must be considered morphologically zero, not only in the negative and future, where this conclusion is obvious, but also in those paradigms in which the vowel o and a high tone are found.

5The morphology of the Yoruba tense/aspect system is at least as complex as that of the pronoun system, and any attempt at synchronic regularization is probably doomed from the outset. But even given this hedge, it may be possible to analyze the future marker yô' in the following. Since short falling tones, or high-low sequences on single vowels, are very rare in Yoruba, yô' may lend itself to an analysis as / + ô/. The vowel / may be identical to the / of the habitual and future negator kîf, and the negative future form kî yô' may be analyzable as /kîf ô Verb/, becoming /kî yô' Verb/, with only the downstep remaining from the low tone. Whether the high tone of the / of kîf and yô' is identifiable as the same high tone elsewhere used as a subject marker is doubtful.

6Talmy Givón (personal communication) has suggested the possibility that the o and the high tone are alternants of an agreement morpheme. I agree that this is probably the diachronic source of both formatives, but there are several problems involved in trying to make this a synchronic analysis as well. One of these is the fact that the o occurs throughout the singular subject series but not at all in the plural. As mentioned in the body of the paper, o cannot simply mark the singular, since it is found also in the place of plural subjects which have been put in focus. The high tone also occurs in places where
The claim that the subject concord (SC) prefix, the negative marker, and certain tense/aspect markers are morphologically prefixes on the verb is further supported by vowel harmony alternations in some dialects [Bamgboye 1967, Awobuluyi 1967b, Adetugbo 1967, and Fresco 1971].

3. Some Agreement and Coreference Problems

The analysis of the third person pronoun just presented plays an important role in the interpretation of certain syntactic phenomena in Yoruba, including focus and the identification of coreferential NP's in complex sentences. Several linguists [Courtenay 1969, Fresco 1971, Schachter 1971, and Stahlke 1969] have claimed that Yoruba, like many other Niger-Congo languages, has a subject-verb agreement or concord rule. This rule attaches a subject concord marker (SC) as the left most constituent of the verb. Thus a surface structure like mo lq 'I went' is derived from a deeper structure àmi lq in which the subject NP is an independent pronoun. This rule is illustrated below.

7 Agreement seems like a less likely analysis. For example, in sentences which undergo Equi-NP-Deletion there will always be a high tone before the verb of the embedded sentence, as discussed in section 3. That this high tone is not an agreement morpheme is clear from the fact that it does not occur in some of the kl' complements where one would expect it to. Thus sentences (a) and (b) have desiderative counterparts without the high tone.

(a) Dàda ò màa lq
Dàda will go

(b) Wòn lq ilé
They went home.

Finally, if either o or ò, or both, are grammatical agreement markers, their very occurrence, not merely their distribution, would have to be conditioned morphologically, as the data in the first section of the paper show. This is a most unnatural condition on a syntactic process.

7 I am assuming that the derived structure resulting from concord is a Chomsky-adjunction. There is really very little evidence for this claim, but its validity has no effect on the arguments in this paper.
(5)  

i.

\[
\begin{array}{c}
S \\
\downarrow \\
NP \\
\downarrow \\
N \\
\downarrow \\
emi \\
\downarrow \\
I \text{ went} \\
\end{array} \\
\begin{array}{c}
S \\
\downarrow \\
NP \\
\downarrow \\
N \\
\downarrow \\
emi \\
\downarrow \\
I \text{ went} \\
\end{array}
\]

\[\Rightarrow\]

\[
\begin{array}{c}
S \\
\downarrow \\
VP \\
\downarrow \\
N \\
\downarrow \\
\text{mo} \\
\downarrow \\
I \text{q} \\
I \text{ went} \\
\end{array}
\]

'The child went.'

ii.

\[
\begin{array}{c}
S \\
\downarrow \\
NP \\
\downarrow \\
N \\
\downarrow \\
\text{qmo} \\
\downarrow \\
\text{child} \\
\downarrow \\
\text{go} \\
\downarrow \\
\text{qmo} \downarrow \text{Iq} \\
\end{array} \\
\begin{array}{c}
S \\
\downarrow \\
VP \\
\downarrow \\
N \\
\downarrow \\
\text{qmo} \\
\downarrow \\
\text{go} \\
\downarrow \\
\text{qmo} \downarrow \text{Iq} \\
\downarrow \\
\text{V} \\
\downarrow \\
\text{V} \\
\downarrow \\
\text{Iq} \\
\end{array}
\]

The child went.'

If the subject NP is a personal pronoun, as in (5i), the appropriate SC is attached to the verb and the subject is deleted. If, as in (5ii), the subject NP is a noun, the SC is simply the high tone whose distribution was illustrated in (4). In this case, the subject NP is not deleted.

Focus sentences in Yoruba involve placement of the focused NP at the
front, subject generally to island constraints.\(^8\) The focused NP is followed by the thematic particle ni, as below.

\begin{align*}
\text{(6)} & \quad \text{Ajá kpa adìq} \quad \Rightarrow \quad \text{Adìq ni ajá kpa} \\
& \quad \text{dog kill chichen} \quad \text{chicken Topic dog kill} \\
& \quad \text{The dog killed the chicken.} \quad \text{It's the chicken the dog killed.}
\end{align*}

If it is the subject NP which is to be focused, it too is moved to the front. In the preterit affirmative, however, the particle 6 is inserted in subject position. In the negative and future 6 is not inserted. This is illustrated in (7).

\begin{align*}
\text{(7) i.} & \quad \text{Ajá kpa adìq} \\
& \quad \text{dog kill chicken} \\
& \quad \Rightarrow \quad \text{Ajá ni 6 kpa adìq} \\
& \quad \text{dog Topic kill chicken} \\
& \quad \text{It's the dog that killed the chicken.}
\end{align*}

\begin{align*}
\text{ii.} & \quad \text{Ajá kò kpa adìq} \\
& \quad \text{dog neg kill chicken} \\
& \quad \Rightarrow \quad \text{Ajá ni kò kpa adìq} \\
& \quad \text{dog Topic neg kill chicken} \\
& \quad \text{It's the dog that didn't kill the chicken.}
\end{align*}

\begin{align*}
\text{iii.} & \quad \text{Ajá yò'kpa adìq} \\
& \quad \text{dog future kill chicken} \\
& \quad \Rightarrow \quad \text{Ajá ni yò'kpa adìq} \\
& \quad \text{dog Topic future kill chicken} \\
& \quad \text{It's the dog that will kill the chicken.}
\end{align*}

\(^8\) Ajólore [1974] presents a compelling array of arguments for deriving focus sentences in a manner similar to the derivation of pseudo-clefts in English [AkmaJian 1971]. This involves the reduction of the relative clause in the pseudo-cleft to just the constituent in focus, deleting all trappings of the relative clause. While I disagree with certain details of Ajólore's analysis, the overall structure of it is convincing.
That this replacement by ọ is not an agreement process is illustrated by the following examples.

(8) 

i. ọmi ni ọ ọ̀q
   ọmi ni ọ̀ × ọ̀q
   'It's I that went.'

ii. ọwọ ni ọ ọ̀q
    ọwọ ni ọ̀ × ọ̀q
    'It's you (ag.) that went.'

iii. ọwa ni ọ ọ̀q
     ọwa ni a ọ̀q
     'It's we that went.'

iv. ọyin ni ọ ọ̀q
    ọyin ni ọ̀ × ọ̀q
    'It's you (pl.) that went.'

v. ọwọni ọ ọ̀q
   ọwọni ọ̀ × ọ̀q
   'It's they that went.'

In each example, the first member of the pair has ọ replacing the focused pronoun, and the second has the corresponding subject pronoun as a replacive. Thus agreement in focus must be considered optional. The examples with agreement are also considered slightly more emphatic than those with ọ. The third example in (8iii) and (8iv) is given to show that ọ does not mark number agreement, since the plural examples are ungrammatical with just number agreement and no person agreement. This is further evidence, in this case of a syntactic sort, that ọ is not a third person singular subject pronoun. If it were, then it would be necessary to claim that the third singular can agree with any other person/number combination, a claim which receives no support from any other area of Yoruba syntax. The agreement phenomenon sketched in (8i) involves two rules. First, there is a rule of Subject Concord, which copies the appropriate concord morpheme onto the verb, and then there is a rule of Pronominal Subject NP Deletion, which deletes the Subject NP just in case it is a pronoun.

Yoruba also has a rule of Equi-NP Deletion which applies in certain complement structures. The sort of complement involved here has been
the subject of considerable recent discussion [Dangboye 1971 and Awobuluyi 1970]. I will illustrate it with the following paradigm, using the desiderative verb *fô* 'want'. Complements of desiderative verbs are introduced by the complementizer *kf*.

(9) i. mo fô kf ëmi lô  
   ii. mo fô kf n lô  
   iii. mo fô lô  
   'I want that I go.'

(10) i. o fô kf iŵô lô  
     ii. *o fô kf o lô  
     iii. o fô lô  
     'You (sg.) want that you (sg.) go.'

(11) i. ò fô kf ñun lô  
     ii. ò fô kf ò lô  
     iii. ò fô lô  
     'He wants that he go.'

(12) i. a fô kf àwa lô  
     ii. *a fô kf a lô  
     iii. a fô lô  
     'We want that we go.'

(13) i. é fô kf éyin lô  
     ii. *é fô kf é lô  
     iii. é fô lô  
     'You (pl.) want that you (pl.) go.'

(14) i. wôñ fô kf ãwôn lô  
     ii. wôñ fô kf wôñ lô  
     iii. wôñ fô lô  
     'They want that they go.'

In each of the examples (9-14) there are three sentences, all six sets being paradigmatically identical. In each case, sentence (i), containing an independent pronoun in the lower sentence, is more emphatic and explicit than sentence (iii), in which Equi-NP Deletion has applied. In examples (10, 12, 13), sentence (ii) is ungrammatical, but in (9), where the *o* is missing, it is grammatical. In (11ii) and (14ii), on

---

9The absence of *o* in (9ii) is a further piece of evidence that it is not an agreement marker. What (9ii) does suggest is that *o* may have something to do with modality.
the other hand, the dependent pronoun in the lower sentence indicates that the higher and lower subjects are not coreferential. In paradigms like (9-14) but with non-coreferential higher and lower subjects, analogs to the (i) and (ii) sentences are found. Sentences like (iii) are naturally not possible since Equi-NP Deletion requires coreference. In such sentences, the difference between dependent and independent pronouns in the complement is one of emphasis.

In complements of declarative verbs the behavior of embedded subjects under coreference is identical to what was found in (9-14), with the exception that declarative verbs do not permit Equi-NP Deletion. I will illustrate only the third person cases.

(15) i. ó sq kpé òán 1q
   'He said that he went.'
ii. ó sq kpé ó 1q
   'He said that he went.'
(16) i. wón sq kpé àwón 1q
   'They said that they went.'
ii. wón sq kpé wón 1q
   'They said that they went.'

In the third person the subject deletion rule, which normally applies after agreement, fails to apply, or, perhaps more accurately, is blocked from applying by the fact of coreference with the higher subject. In Yoruba, then, the absence of a subject NP may be due to at least two rules. After agreement has applied, subject NP deletion may apply just if the subject NP is a pronoun. In a desiderative complement structure Equi-NP Deletion removes the subject NP under the condition of coreference with the higher subject NP.

4. The Relative Clause

In Yoruba, as in English, the relative clause follows the head noun. The clause is introduced by the invariant marker ʧ, as in the following examples. The relative clauses are underlined.

\[\text{The coreference alternation in the third person is a common phenomena in the Kwa languages. It was first observed in Idoma by R. C. Abraham [1953] and has since been discussed by Pike [1967]. I am grateful to Olúqóíá Ajóløre for pointing out to me that it holds in the plural as well as in the singular in Yoruba.}\]
In (17i) the relativized NP is the underlying object of the embedded S and is absent in the surface structure. In (17ii) the relativized NP is the underlying subject of the embedded S and again is absent in the surface structure. In (17iii) the relativized NP is a possessive in the underlying structure, and in the surface structure it is retained as a pronoun. I will posit an underlying NP + S analysis, assigning underlying phrase structure trees like the following.

[Diagram of phrase structure trees]

[S child [S I saw child] went to house]
(19) i. tf-Insertion

ii. Coreferential NP Reduction

The relative marker is attached to the embedded S, and then the lower NP is subject to one of two types of reduction under coreference. One of the simpler cases is (18), the derivation of which is shown in (19). The deletion found in (19) is also found where the embedded coreferent is subject of the relative clause. Since, as I have shown in section One, the \( \delta \) which has usually been treated as a third person singular pronoun is in fact not a pronoun at all, and the pronoun itself is null, in the relative clause in (20) it must be the case that the subject has been deleted just as was the object in (19).
However, Yoruba relative clauses cannot all be described as simply involving deletion, like in (19) and (20). As the sentences in (21) show, the embedded coreferent may, depending on conditions to be discussed below, also be pronominalized. In certain cases there is no way to make the sentences grammatical because the relative clause is itself ill-formed.

(21)  
\textit{i.} Ade wà ní qóqó-qmq tì mo rì lọwọ-rì  
Ade is in presence of child Rel I saw book his  
Ade is with the child whose book I saw.  

\textit{ii.} qmq tì dún dìi Adé Iq sf Igboro ni ìbù̀rdò-Mosún  
child Rel he] and Ade went to town is junior-sibling of Mosun  
"The child who and Ade went to town is Mosun's junior-sibling.  

\textit{iii.} aja tì níjì tì wọn ti tūn un kò dárá ti kú  
dog Rel food Rel they take give it] Neg good Perf die  
"The dog that the food that they gave it was not good has died.  

\textit{iv.} obínrìn tì kpé-ó se níjì fun Adé wú mì ni iyáwó'mì  
woman Rel that SC cook food give Ade please me is wife my  
"The woman who that she cooked for Ade pleased me is my wife.  

The Yoruba sentences in (21i and ii) are grammatical, while those in (21ii and iv) are not. In the corresponding English sentences only (21i) is grammatical. Clearly, in the light of (21) it cannot be claimed simply that Yoruba relative clauses involve the deletion of the embedded coreferent.\footnote{In an earlier draft of this paper I did in fact refer to this as the deletion analysis of Yoruba relative clauses, implying that deletion was the process which characterized the structure. The fact that this was not correct was eventually brought home to me by persistent disagreement from Olúqólá Ajdíore, as well as by comments from Talmy Givón. I am grateful to both of them for forcing me to reconsider this point and finally see the light.} Rather, deletion occurs if the embedded
coreferent is a subject, object, or adverb (22).

(22) 1. nf ìgbà ti nọ ọ \(\ldots\)  
    at time Rel I went  
    when/at the time at which I went  

11. nf ibi ti nọ ọ \(\ldots\)  
    at place Rel I went  
    where/the place to which I went

Under certain other conditions the embedded coreferent may be pronominalized (2i1 and 11), and under still other conditions no relative clause is possible (2i11 and iv). What is apparently the case is that relativization in Yoruba involves not simply deletion, but rather reduction under conditions of coreference. Whether the NP is reduced to a pronoun or to zero, that is, is deleted, depends on conditions to be described below.

5. Constraints on Movement and Anaphora

In the first section of this paper I developed an analysis of the pronominal subject system of Yoruba. Some features of this system, such as the zero form of the third person singular subject concord and the conditions under which the agreement rules are blocked, play an important role in an understanding of deletion, pronominalization, and restrictions on these processes in Yoruba. In the second section I outlined the processes involved in the formation of relative clauses in Yoruba, showing that both deletion and pronominalization are involved. In this section I will discuss the applicability of island constraints [Ross 1967] in Yoruba and some modifications of the theory of constraints which can be motivated on the basis of Yoruba. I will begin by briefly outlining the island constraints as they were originally developed for English.

5.1. Ross' constraints on movement over variables. In his very important study Constraints on Variables in Syntax [1967], Ross motivates a set of constraints on rules which move NP over an essential variable. One of these, the Coordinate Structure Constraint, blocks the movement
of NP out of a pair of structures conjoined by and, but, and or. Consequently the sentences in (23i) are fully grammatical, but those in (23ii) are ungrammatical.

(23)  

i. What did you eat with your wild rice?
This is the roast duck which I ate with the wild rice.

ii. *What did you eat roast duck and ?
*Here is the typewriter which Will writes plays and I had repaired yesterday.

A grammatical sentence will result if, as in (24) the same NP is moved out of both conjuncts.

(24) Tom caught the fish which Sam cleaned and we all ate.

The constraint, as Ross states it [1967:161], is as follows.

(25) The Coordinate Structure Constraint
In a coordinate structure, no conjunct may be moved, nor may any element contained in a conjunct be moved out of that conjunct.

Another of these constraints is one which blocks movement of elements out of certain embedded sentences. Thus the sentences in (26i) are grammatical while those in (26ii) are not.

(26)  

i. The man whom the prosecutor charged
[NP [S that the defendant had murdered S] NP] turned up alive.
Who does the book say [NP [S the steam engine was invented by S] NP] ?

ii. *The man whom the prosecutor filed [NP [N the charge N] [S that the defendant had murdered S] NP] turned up alive.

*Who do you know [NP [NP a man NP] [S who hates S] NP] ?

---

12The behavior of coordinate structures under movement rules varies slightly, depending on which of the conjunctions is involved. I will not discuss this point here.
Ross gives the following statement of this constraint [1967:127].

(27) **The Complex NP Constraint**

No element contained in a sentence dominated by a noun phrase with a lexical head noun may be moved out of that noun phrase by a transformation.

He gives the following diagram for (27) [1967:127], where A stands for any constituent.

(28)

```
NP -------
[+N    ]
[+Lexical]
```

A third general principle governing movement rules is what he calls the 'Pied Piping Convention', stated as follows [1967:206].

(29) **The Pied Piping Convention**

Any transformation which is stated in such a way as to effect the reordering of some specified node NP, where this node is preceded and followed by variables in the structure index of the rule, may apply to this NP or to any non-coordinate NP which dominates it, as long as there are no occurrences of any coordinate node, nor of the node S, on the branch connecting the higher node and the specified node.

An example of the Pied Piping Convention is the following [Ross 1967:197-8]:

```
NP -------
[+N    ]
[+Lexical]
```

A ---

A ---

A ---
ii. The reports \[NP[7] \text{ which } NP[7]\] the government prescribes the height of the lettering on the covers of are invariably boring.

The reports \[NP[5] \text{ the covers of which } NP[5]\] the government prescribes the height of the lettering on almost always put me to sleep.

The reports \[NP[3] \text{ the lettering on the covers of which } NP[3]\] the public funds.

The reports \[NP[1] \text{ the height of the lettering on the covers of which } NP[1]\] the government prescribes should be abolished.

The Pied Piping Convention makes the movement of higher NP optional. Ross also observes that under certain conditions Pied Piping becomes obligatory. One of these conditions he states in the following way [1967:207].

(31) The Left Branch Condition
No NP which is the leftmost constituent of a larger NP can be reordered out of this NP by a transformational rule.
he gives the following examples [1967:243] to illustrate (31).

(32) i.  
\[
\begin{array}{c}
S \\
| \downarrow \text{NP} \\
\downarrow \text{V} \\
\text{elected} \\
\downarrow \text{NP} \\
\text{the} \\
\text{guardian's} \\
\text{boy's} \\
\text{president} \\
\end{array}
\]

ii. (a) The boy [NP whose guardian's employer NP] we elected

president ratted on us.

(b) *The boy [NP whose guardian's NP] we elected employer

president ratted on us.

(c) *The boy [NP whose NP] we elected guardian's employer

president ratted on us.

Another constraint is proposed to account for the ungrammaticality of sentences like (33), in which some element has been moved out of a sentence embedded in subject position.

(33) i. For Harry to buy the big car was foolish.

ii. *[NP The big car [S which [S for Harry to buy S] was


This constraint Ross states as follows [1967:243].

(34) The Sentential Subject Constraint

No element dominated by an S may be moved out of that S
if that node S is immediately dominated by an NP which
itself is immediately dominated by S.

An important feature of sentential subjects is the fact that they can usually be extraposed. Thus the sentence in (33) can be converted into the sentence in (35i). Since the clause [S for Harry to buy the big
car is no longer a sentential subject, relativization as in (35ii) renders the grammatical (35i).

(35)  i. It was foolish for Harry to buy the big car.
  ii. The big car which it was foolish for Harry to buy just rusted away.

Ross claims that the Coordinate Structure Constraint and the Complex NP Constraint are universal and that the Left Branch Condition and the Sentential Subject Constraint are very nearly universal, violations occurring in only a few languages and probably under carefully controlled conditions.

5.2. Island constraints in Yoruba. The Coordinate Structure Constraint is perhaps the easiest of the island constraints to illustrate in a particular language. Yoruba coordination is of two types, depending on the constituents being conjoined. NP's are conjoined by àti, as shown below.

(36)  Adé àti Wálé à saré
Ade and Wale are running.
Mo ra ilá àti ýòfó
I bought okra and greens.

Sentences are conjoined by what is very likely a verbal element si, meaning something like 'and then'. This word frequently has the effect of imposing a temporal or logical order on the two conjuncts.

(37)  Adé ló sì qjà, ò sì ra ýòfó
Ade went to the market, he then bought greens.

Although it is questionable whether si is in fact a conjunction, and therefore whether conjoined sentences are permitted at all in Yoruba surface structures, sentences like (37) seem to be subject to the Coordinate Structure Constraint, as the in-focus example in (38) shows.

(38)  i. ýòfó ni Adé rà
   greens TOPIC Ade bought
   It's greens Ade bought.
Because of the questionable status of sf, I will concentrate only on conjoined NP's and the conjunction əti. 13

Perhaps the most obvious movement rule in Yoruba is that involved in focus. As shown in (38), focus involves the preposing of the element to be focused and the insertion of the particle ni between it and the rest of the sentence. Focus is also involved in question formation, the question word being in focus. If the focused element is moved out of a coordinate structure, the sentence is ungrammatical, as in (39).

(39) i. *lwọ ni mo rə əti Adé
   *It's you I saw and Ade.

ii. *taani ọlọkpa əti rə ọlẹ nə inú-ilé'mi
   *Who did the policeman and see the thief in my house?

Sentences like those in (39) become marginally grammatical if the focused element is a noun, the third singular pronoun, or a question word, if it is the leftmost member of the conjoined structure, and if the pronoun ọun 'he' is left behind. Even then, the sentence is grammatical only if the antecedent of ọun is human. The following sentences meeting these conditions are marginally grammatical. 14

13 The status of conjoined VP's in Yoruba is unclear. For some discussion of this question, see Stahlke [1970] where evidence is presented to show that because movement out of some serial verb constructions is permitted such constructions are probably not underlying coordinate structures but are more likely derived from complement structures.

14 The situation is actually more complex than this. Although it seems that the condition on humanness of nouns is generally true, it is also the case that if there exists a particularly close semantic connection between a verb and an object, the first conjunct of the object can be pronominalized. An example of this is the sentence

iIə ni mo ọse ọun əti ọfọ
okra Topic I am-cooking it and greens

in which I is has been focused and the pronoun ọun is left behind. If the verb ọse 'cook' is replaced by another verb, such as rə 'buy' or rə 'see', the sentence becomes ungrammatical. I owe this example to A.J. Òbiore.
(40)  i. ?Adé ni mo rl ṣun əti ìbúró‘mi
    It's Ade that I saw him and my younger sibling.
   ii. ?qqr‘mi ni ṣun əti iyawó-rẹ ṣá lị mi
    It's my friend that his wife and he came to greet me.
   iii. ?Taani ṣun əti iyọ ọbà ṣí Ịbađàn nị ọnà?
    Who is it that he and you went to Ibadan yesterday?

Sentences like these are definitely ungrammatical if any of the conditions mentioned above are violated. Thus none of the sentences in (41) is even marginally acceptable.

(41)  i. *Adé ni mo rl ìbúró mi əti ṣun
    It's Ade that I saw my younger sibling and him.
   ii. *qqr‘mi ni iyawó-rẹ əti ṣun wá lị mi
    It's my friend that his wife and he came to greet me.
   iii. *lị ni o ra ṣun əti ọfọ nị ọnà
    What did you buy it and greens yesterday?

In a relative clause, relativization in a coordinate structure is permitted, but the pronoun ọnà must replace the relativized noun, and the pronoun must be the first element of the conjunct. Also, the antecedent of ọnà must be human.

(42)  i. ọmọ nà əl mo rl ṣun əti Adé wá sị ịbf
    The child Rel I saw him and Ade came here.
   *Ọmọ nà əl mo rl Adé əti ṣun wá sị ịbf
    The child Rel I saw Ade and him came here.
   ii. ọmọ nà əl ṣun əti Adé ọọ ilé wá nị ịbf
    The child Rel he and Ade went home is here.
   *Ọmọ nà əl Adé əti ṣun ọọ ilé wá nị ịbf
    The child Rel Ade and he went home is here.
   iii. *ọfọ əl ṣun əti ilá ṣun wọn jú
    greens Rel it and okra taste good are very costly.
If the embedded coreferent is deleted, as is normal for subjects and objects in Yoruba relative clauses, then the following ungrammatical forms corresponding to (42i and ii) will result.

(43) 1. *Ọmọ nà tf mo rí àti Òdè wà sf ibf
    The child whom I saw and Ade came here.

        ii. *Ọmọ nà tf àti Òdè ló ẹ̀lẹ̀ wà ní sf ibf
            The child who and Ade went home is here.

The grammaticality of the first member of each pair in (42) may be related to the generalization captured above in (16), where it was noted that in non-desiderative complements the pronoun ọmọ was kept and agreement was blocked if ọmọ was coreferential with some higher NP. In relative clauses, the embedded coreferent is normally deleted, but where the antecedent is human and the embedded coreferent is the first element of a conjunct pronominalization occurs instead of deletion. In just these cases, as shown in (43) deletion would result in an ungrammatical sentence, just as movement would in English. Thus the Coordinate Structure Constraint must apply both to the movement phenomena of focus and to the reduction phenomena of relativization.

The possessive in Yoruba is a right-branching construction and is superficially subject to the Pied Piping Convention. Yoruba linguists distinguish emphatic possessive, using the particle ńi to link the possessed noun with the possessor and an unemphatic construction which differs only in that the particle ńi is absent. Both constructions, as illustrated in (44) and (45) are right-branching and contain what has been called an Associative Particle (Assoc) [Welmers 1964 and Courtenay 1969], which takes the form of a mid tone which occurs immediately after the possessed noun.15

15Because of certain tonal assimilation rules in Yoruba the Associative mid tone is usually heard only before a consonant-initial noun or the consonant-initial emphatic possessive particle ńi. For an extensive and lucid treatment of this mid tone see Courtenay [1969].
(44)  

i. olůkọ ŕ̥ lẃ̩-qọ̀
   teacher saw book Assoc child
   The teacher saw the book of the child.

ii. olůkọ ŕ̥ lẃ̩-t̥́ qọ̀
   teacher saw book Assoc Emph child
   The teacher saw the child's book.

A longer possessive construction, illustrating its right branching nature, is given in (45i). The possible English glosses are given in (45ii).

(45)  

i. The teacher saw

   \{ the chief's child's book. \}
   \{ the book of the chief's child. \}
   \{ the book of the child of the chief. \}

Relativization and focus are possible only on NP₁, NP₃, or NP₅. ¹⁶

If the NP involved is on a right branch, a pronoun is left behind. The relativized and focused variants are given below.

¹⁶Question formation could also have been used here, but this process involves the focus of some question word and is therefore subject to the same restrictions as focus.
(46) Relativization in right-branching constructions.

i. \[\text{NP}_1 \text{ NP}_5 \text{ olōyè}] \text{ tf mo rf} \text{ lwé-ǫmq} \text{ [NP}_5 \text{ } \text{ -rë}] \text{ wà nf ibfl}

\(\text{chief Rel I saw book Assoc child Assoc his is here}\)

The chief whose child's book I saw is here.

ii. \[\text{NP}_3 \text{ ǫmq-olōyè}] \text{ tf mo rf} \text{ lwé} \text{ [NP}_3 \text{ } \text{ -rë}] \text{ wà nf ibfl}

\(\text{child Assoc chief Rel I saw book Assoc his is here}\)

The child of the chief whose book I saw is here.

iii. \[\text{NP}_1 \text{ lwé-ǫmq-olōyè}] \text{ tf mo rf} \text{ wà nf ibfl}

\(\text{book Assoc child Assoc chief Rel I saw is here}\)

The chief's child's book which I saw is here.

(47) Focus in right-branching constructions.\(^{17}\)

i. \[\text{NP}_5 \text{ olōyè}] \text{ ni olùkọ rf} \text{ lwé-ǫmq} \text{ [NP}_5 \text{ } \text{ -rë]}

\(\text{chief Topic teacher saw book Assoc child Assoc his}\)

It's the chief that the teacher saw his child's book.

ii. \[\text{NP}_3 \text{ ǫmq-olōyè}] \text{ ni olùkọ rf} \text{ lwé} \text{ [NP}_3 \text{ } \text{ -rë]}

\(\text{child Assoc chief Topic teacher saw book Assoc his}\)

It's the chief's child that the teacher saw his book.

iii. \[\text{NP}_1 \text{ lwé-ǫmq-olōyè}] \text{ ni olùkọ rf}

\(\text{book Assoc child Assoc chief Topic teacher saw}\)

It's the chief's child's book that the teacher saw.

In each case where the NP to be moved or deleted is on the right branch of some NP, it is pronominalized and the resulting sentence is grammatical. If the NP to be moved or deleted is a highest NP, as in (46iii) and (47iii), no pronominalization occurs. Rather the NP is deleted.

The behavior of these right-branching constructions is analogous to the Left Branch Condition Ross states for English [1967:207]. The Pied Piping Convention shows up in Yoruba as a constraint on movement or

\(^{17}\)The English translations of (47i) and (47ii) are, of course, ungrammatical, although the Yoruba examples are not.
deletion from the right branch of an NP. The following constraint will account for the syntactic behavior observed in (44-47).

(48) The Right Branch Constraint

No NP which is the rightmost NP of some larger NP may be moved out of or deleted from the larger NP.

The behavior of complex NP structures under relativization and focus presents a slightly different sort of problem. In example (49) there is no variation in grammaticality, whatever pronoun form is used. They are all equally ungrammatical.

(49) *ójọ ti ṣọ mọ qkùnrin
   food_i Rel I know man_j

   ðun ó f i
   { fun qmọ nà kọ dún
     Ø }

   Rel he_j took {it (dependent)
     gave child the not sweet
     {it (independent)
     Ø }

   *The food which I know the man who gave {it
     Ø }

to the child does not taste good.

The ungrammaticality of (49) could be attributed to the fact, mentioned above, that ðun requires a human antecedent. That this is not the only reason for (49) being bad is shown by the fact that the sentence is equally bad if the dependent pronoun form is used or if the NP is deleted, as we would expect in a relative clause. Further evidence that

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18 The Right Branch Constraint was independently proposed by Qláyíwqá Aoýalé [M.A. Qualifying Examination, December, 1972] at the time this paper was being written.

19 This discussion of the Complex NP Constraint will be confined to the most obvious cases, to show that the constraint is in fact valid for Yoruba. There are many interesting problems of NP-squishing [Ross 1972] which, for the sake of brevity and clarity, I am ignoring.
the problem lies in the structure and not in the form of the pronoun used comes from the following sentence, where the antecedent of *dun* is human.

(50) *q̀kǹrin tf mo gbọ ́Iròhin tf ́ọ sq kpô
    man  Rel I hear  news Rel say that
    ọwon ọkùkpó mú  ọwọ kpùkpó
  pl. police arrest  him (dep) steal money much
  him (indep)  φ

*The man whom I heard the news that the police arrested  him  φ

stole a lot of money.

It is also impossible to move a NP out of a complex NP in Yoruba. Given a sentence like (51i), it is impossible to ask a question (51ii) by, for example, questioning the object of *fún*, thereby fronting it and putting it in focus.

(51)  i.  mo mọ obínrin tf ́ọ ́bí qmọ fún q̀kǹrin ́ygn
     I know woman Rel SC bear child give man that
     I know the woman who bore that man a child.

ii. *taa i ni o mọ obínrin tf ́ọ ́bí qmọ fún  ọwọ kpùkpó
  Who Topic you know woman Rel SC bear child give him  φ
  *Who do you know a woman who bore a child to?

Deletion and movement out of a sentential subject in Yoruba is subject to much the same restrictions as in English. I will illustrate this with the following sentence.

(52)  [NP [g kpô obínrin na ́ösẹ ọbajẹ] NP] wù mif
that woman the is-cooking food pleases me
As the sentences in (53) show, no NP can be moved out of the embedded sentence. The grammaticality of these sentences is not improved by replacing the moved NP by the pronoun ọun.

(53)  i. *[S obìnrìn nà ni [S[S kpè {∅} ñse oǹjè S]NP] wù mf S]S]

*It's the woman that that she is cooking food pleases me.


*It's the food that that the woman is cooking pleases me.

Similarly, if (52) is embedded as a relative clause on either obìnrìn or oǹjè, the resulting sentence will be ungrammatical. Again the sentence is not improved if the embedded coreferent is replaced by a pronoun instead of being deleted.

(54)  i. *[NP obìnrìn nà [S tf [S kpè {∅} ñse oǹjè S]NP] wù mf S]NP]

woman the Rel that she is-cooking food pleases me
ni iyàwọ-ègbọ̀n'mi
is wife of senior sibling my
*The woman who that (she) is cooking food pleases me is my older brother's wife.

ii. *ákárá àtì ẹkọ ni [NP oǹjè [S tf [S kpè obìnrìn nà beancakes and porridge is food Rel that woman the
ñse {∅} S]NP] wù mf S]NP]

is-cooking pleases me
*Beancakes and porridge is the food which that the woman is cooking (it) pleases me.

Just as in English, however, if the subject clause is extraposed, the sentences (56) corresponding to (53) and (54) are grammatical. The basic extraposed form is given in (55).
(55) ṣ wù mf [ṣ kpé obínrin nà ñṣe ońje] ꙼

It pleases me that the woman is cooking food.

(56) i. obínrin nà ni [ṣ ṣ wù mf [ṣ kpé ṣ ñṣe ońje] ꙼]

woman the it is pleases me that is-cooking food

It's the woman that it pleases me that (she) is cooking food

ii. ońje ni [ṣ ṣ wù mf [ṣ kpé obínrin nà ñṣe] ꙼]

food it is pleases me that woman is-cooking

It's food that it pleases me that the woman is cooking.

iii. [NP obínrin nà [ṣ ṣ ṣ wù mf [ṣ kpé ṣ ñṣe ońje] ] ꙼]

woman the Rel pleases me that is-cooking food

ni iyàwó-ṣgbôn'mi

is wife of senior sibling my

The woman who it pleases me that (she) is cooking food is

my older brother's wife.

iv. ̀ákàrà̀ ̀áti ̀ákọ̀ ni [NP ońje [ṣ ṣ ṣ wù mf]

Beancakes and porridge is food Rel pleases me

[ṣ kpé obínrin nà ñṣe] ꙼]

that woman is-cooking

Beancakes and porridge is the food which it pleases me that

the woman is cooking.

5.3. A revision of island constraints in Yoruba. On the basis of the
evidence from pronominalization and deletion, island constraints in
Yoruba can be divided into two pairs. The first pair consists of the
Coordinate Structure Constraint and the Right Branch Constraint, and the
second consists of the Complex NP Constraint and the Sentential Subject
Constraint. Constraints of the first type permit the structure just if
the NP to be moved or deleted is pronominalized. That is, the following
output structures are permitted in Yoruba in configurations which are
subject to the Coordinate Structure Constraint (57i) or the Right Branch
Constraint (57ii). ꙼ represents any constituent.
Corresponding structures in which the pronominalized NP has been deleted are ungrammatical.

Constraints of the second type permit neither pronominalization nor deletion, and so the following output structures for configurations which are subject to the Complex NP Constraint (58i) or the Sentential Subject Constraint (58ii) are ungrammatical.
The obvious difference between (57) and (58) is the presence of the circled S node which intervenes in (58) between the antecedent and the pronominalized or deleted NP. In order for pronominalization to be blocked by a constraint, it apparently must be necessary that there be an essential S in the formulation of the constraint. Thus the Complex NP and Sentential Subject Constraints cannot be stated without referring to an embedded S node, an essential S. The Coordinate Structure and Right Branching Constraints, on the other hand, ignore the presence of an intervening S and no S need be mentioned in the formulation of these constraints. I will refer to constraints of the former type as essential S constraints and of the latter type as non-essential S constraints.

Ross [1967:426-28] divides reordering rules into chopping and copying rules. Chopping rules consist of copying and replacement of the copied element by zero or some element not identical to the copied element. In a copying rule the element which has been copied also remains behind. Ross then makes the claim that "chopping rules are subject to the constraints...; copying rules are not." Interpreted in this way, island constraints are not applicable to relative clause formation in Yoruba, since, as I showed earlier, relative clauses involve only deletion or pronominalization and not copying. Yet certain ungrammaticalities result from relative clause formation in just those cases where a reordering constraint would have been violated if reordering were the relativization process in Yoruba. The question, then, is just what processes are subject to island constraints in Yoruba. In putting in focus an element which is subject to a non-essential S constraint, copying and pronominalization are permitted, but deletion is blocked. In putting in focus an element subject to an essential S constraint, deletion, pronominalization, and copying are all blocked. Since copying must apply before pronominalization or deletion can apply, it would be sufficient to say that copying out of an essential S configuration is blocked, just as in English. This would block both pronominalization and deletion, since their structural descriptions would not be met. However, in relativization into a non-essential S configuration, pronominalization is permitted but deletion is blocked. In relativization
into an essential S configuration, pronominalization is blocked and therefore deletion will also be blocked. But now the constraints cannot be on copying. Rather they behave as if they were constraints on pronominalization.

We are then faced with the question of what island constraints actually do constrain in Yoruba. A plausible solution could be developed along the following lines. It can be shown easily that Yoruba does not permit sentences like those in (59), where whether or not the structural description for pronominalization has been created by copying, pronominalization has failed to apply.

(59)  
i. *akarà ni Dàdà jẹ akarà  
beancakes Topic Dada ate beancakes  
*It's beancakes that Dada ate beancakes.

ii. *Qlá jẹ akarà t’baba-Qlá ra akarà  
Qla ate beancakes Rel father of Qla bought beancakes  
*Qla ate the beancakes which Qla's father bought the beancakes.

The fact that pronominalization and/or deletion are obligatory in sentences of this sort means, in effect, that sentences like (59) which may show up as intermediate derived structures in the derivation of the focused and relativized sentences in (60) are blocked from occurring as grammatical surface structures.

(60)  
i. akarà ni Dàdà jẹ  
It's beancakes that Dada ate.

ii. Qlá jẹ akarà t’baba-Qlá ra  
Qla ate the beancakes which his father bought.

In those cases where deletion is blocked by a non-essential S constraint no real problem exists. Non-essential S constraints simply block a smaller set of sentences than essential S constraints. In those cases where pronominalization is blocked by an essential S constraint the ungrammaticality of a surface output containing a pronoun can be accounted for by the fact that these structures block pronominalization. If pronominalization has not occurred, as in (59), the sentence will be
ungrammatical because pronominalization has not applied where it was obligatory, even though its application would have violated an essential S constraint. Thus a sentence which has undergone copying or which for some other reason meets the structural description of pronominalization must undergo pronominalization. If the sentence contains a configuration defined by a non-essential S constraint, deletion will be blocked, but the pronominalized version will be grammatical. If it contains a configuration defined by an essential S constraint, pronominalization will be blocked, and in this case the non-pronominalized form will also be ungrammatical because of its failure to undergo an obligatory rule.

The distinction between essential S and non-essential S constraints introduces the notion that some constraints are stronger than others. That is, the set of conditions under which non-essential S constraints can be violated contains as a proper subset the set of conditions under which the essential S constraint can be violated. Thus the essential S constraints block a larger set of processes and are more powerful. This notion becomes quite natural when one considers that the effect of this ranking of constraints in Yoruba is to make NP's contained in embedded sentences less accessible to reordering, pronominalization and deletion than NP's contained in islands whose description does not include an essential S.

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