1. Introduction

In this paper we shall discuss Relative Clause Formation (RCF) in Fula to verify certain hypotheses advanced by Keenan and others. A succinct account of this hypothesis is in the following statement:

...The applicability of a syntactic process across languages is proportional to its perceptual transparency. That is, the harder it is, perceptually speaking, to retrieve the immediately underlying structure from the surface form, the more constrained will be the application across languages of the transformations that generate that surface form. [Keenan and Bimson 1975]

Keenan [1972] tested this hypothesis on Relative Clause Formation in various languages. He reports that:

i. "RCF strategies which present pronouns in the position relativized represent their underlying structure more explicitly than RCF strategies with no resumptive pronouns. For example, if this view is correct then (1) represents the underlying structure more explicitly than (2) since (1) retains a pronoun in the place of the relativized NP.

(1) ha -isha she -yon natan la et ha -sefer (Hebrew)
   the woman that John gave to her the book
   'The woman that John gave the book to.'

(2) The woman that John gave the book to (English)

ii. "Furthermore, pronoun-retaining languages presented a systematically larger set of RCF possibilities than pronoun-deleting ones."

This general statement can be confirmed from Table 1, which summarizes the acceptability vs. unacceptability of relativizing on various NPs, which are generally considered difficult to relativize due to their syntactic environment (see Keenan & Bimson [1975]).

As can be seen from a perusal of Table 1, the most "generous" of the pronoun-deleting languages, English, relativizes fewer NPs than
### Table 1: Relativizability in Type A vs Type B Languages

**A. Non-Pronoun-Retaining Languages**

<table>
<thead>
<tr>
<th>Language</th>
<th>Co-NP</th>
<th>VP-S</th>
<th>NP-S</th>
<th>IND-Q</th>
<th>RC</th>
<th>Co-S</th>
<th>Obl</th>
<th>Gen/Poss</th>
</tr>
</thead>
<tbody>
<tr>
<td>English</td>
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<td>✓</td>
<td>no</td>
<td>✓</td>
<td>no</td>
<td>✓</td>
<td>✓</td>
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</tr>
<tr>
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<td>✓</td>
</tr>
<tr>
<td>Finnish</td>
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<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Malagasy</td>
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<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
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</tr>
<tr>
<td>Tagalog</td>
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<td>no</td>
<td>no</td>
<td>no</td>
<td>✓</td>
<td>no</td>
</tr>
<tr>
<td>Sinhalese</td>
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<td>no</td>
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<td>no</td>
<td>no</td>
<td>✓</td>
<td>✓</td>
<td>no</td>
</tr>
</tbody>
</table>

**B. Pronoun-Retaining Languages**

<table>
<thead>
<tr>
<th>Language</th>
<th>Co-NP</th>
<th>VP-S</th>
<th>NP-S</th>
<th>IND-Q</th>
<th>RC</th>
<th>Co-S</th>
<th>Obl</th>
<th>Gen/Poss</th>
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<tbody>
<tr>
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<tr>
<td>Zurich</td>
<td>no</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

### Table 2: Comparison of Types A and B

<table>
<thead>
<tr>
<th>Language</th>
<th>Co-NP</th>
<th>VP-S</th>
<th>NP-S</th>
<th>IND-Q</th>
<th>RC</th>
<th>Conj.</th>
<th>Obl</th>
<th>Poss-NP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type A = English</td>
<td>no</td>
<td>✓</td>
<td>no</td>
<td>✓</td>
<td>no</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Type B = Fula</td>
<td>no</td>
<td>✓</td>
<td><strong>1</strong></td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

*1** symbolizes that the example, and the underlying structure, do not occur.

**RESULT**

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
<th>Maybe</th>
<th>Not Possible</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>English</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td>-</td>
<td>8</td>
</tr>
<tr>
<td>Fula</td>
<td>3</td>
<td>4</td>
<td>-</td>
<td>1</td>
<td>8</td>
</tr>
</tbody>
</table>
the least generous of the pronoun-retaining languages, Welsh.\footnote{This table is extracted from a more complete listing in Keenan and Bimson [1975].} It is then reasonable to offer the following prediction:

...if a particular syntactic process, e.g. Relative Clause Formation...does not disturb the underlying syntactic structure much, then that process will be applicable in a great variety of syntactic context. The reason is that such processes present in surface structure more of what we need to know to understand the meaning of the derived structure than do processes which destroy the underlying structure...[Keenan and Bimson 1975:254]

In our investigation of RCF in Fula we shall see that this prediction is not borne out.

2. Relative Clause Formation in Fula

2.1 The importance of grammatical relations. The use of a specific strategy in Fula depends on the grammatical relation of the NP to the verb at the point in the derivation that the relative clause is formed.

(3) a. gorko o fiy-ii suka o
   man the hit-tense boy the
   'the man hit the boy'

   b. suka (mo) gorko o fi
      boy (REL) man the hit
      'the boy who the man hit'

(4) a. gorko o fiy-ii suka o (=3a))
   man the hit-tense boy the
   'the man hit the boy'

   b. suka o fiy-aama
      boy the hit-PASSIVE
      'the boy is hit'

   c. suka fiy-aa -do o
      boy hit-PASS-Pro. the
      'the boy who is hit'

(3a) is a sentence in the active voice. (3b) shows the result of applying RCF to the object of (3a), suka 'boy'. (4a) is in the active voice and (4b) is the result of applying PASSIVE to (4a). In (4c) we show the result of relativizing the semantic object which is now the grammatical subject. If we compare (3b) and (4c) we notice that the NP relativized, suka 'boy' is the semantic direct object of the verb fiy$^2$ 'hit'. However, the actual
processes used to relativize this NP are different in (3b) and (4c). In (3b), 'boy' precedes the subject 'man', and is itself immediately followed by a relative pronoun. The verb does not acquire any marking. In (4c), however, the same strategy is not used, as can be seen from (5):

(5) *suka mo fiy-aa o
   boy REL hit-PASS the
   'the boy who is hit'

One can reasonably argue that (5) is bad because 'boy' is no longer the object of the verb and is thus not amenable to the same strategy that was used in (3b). Thus Fula can indeed be shown to rely on the subject/object distinction at least in the applicability of the RCF rules.

2.2 The Strategies

2.2.1 Subjects. The strategy used for subjects of affirmative sentences essentially attaches a nominal suffix to the verb. This suffix agrees with the head noun for the noun class (Fula has an extensive noun class system). We illustrate this by the following pair:

(6) a. suka o yeh-i -no do del
   boy the go -past-preterit Dodel
   'the boy had gone to Dodel'

   b. suka jah-noo -do do del
      boyi go -pret.-RELi Dodel
      'the boy who had gone to Dodel'

2.2.2 Non-subjects. The strategy used for non-subject NPs essentially results in the appearance of the head noun at the beginning of the clause (whether this is a result of a deletion or a movement is not important here) followed immediately by an optional relative pronoun agreeing in noun class with the relativized, or head noun. The rest of the grammatical constituents preserve their order.

(7) a. gorko o war -ii sonndu
    man the kill-tense bird
    'the man killed the bird'

   b. sonndu (ndu) gorko o war -i
      bird (REL) man the kill-tense
      'the bird which the man killed'

As can be seen from the English glosses for the Fula sentences, RCF is quite similar to the strategy used in English in that a pronoun is not retained in the place of the NP relativized (cf. (2)). While this is

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2This caveat is necessary, since Fula uses the object strategy for relativizing the subjects of negative sentences.
indeed true for the example in (7), as a general statement regarding non-subject relativization in Fula, this would be misleading: in (8) we show that certain NPs can be relativized only if a pronoun is retained (similar to the Hebrew example in (1)).

(8) a. Pennda faw-at mburu e dow taabal
   Pennda put-tense bread on top table
   'Pennda is putting the bread on top of the table.'

b. *taabal (ngal) Pennda faw-ata mburu e dow

c. taabal (ngal) Pennda faw-ata mburu e dow mum
   table (REL) Pennda put-tense bread on top it
   'the table which Pennda put the bread on top of'

As the contrast between the grammatical (8c) and the ungrammatical (8b) shows, Fula does retain a pronoun form when it relativizes certain NPs. In this case it was a locative NP which was the object of a preposition. However, we must note that the retention of the pronoun does not affect the basic RCP strategy for non-subjects, i.e. if we compare (8c) to (7b) we see that, except for the pronoun retained in place of the relativized NP sonndu 'bird', (8c) is presumably the result of the same strategy which yielded (7b).

Keeping this similarity in mind, we shall call the non-pronoun-retaining strategy the OBJECT 1 strategy and the pronoun-retaining strategy the OBJECT 2 strategy.

2.3 The Accessibility Hierarchy and Relativization in Fula. Before going on to specific examples we should point out that Relativization in Fula supports the following generalization stated as an "Accessibility Hierarchy" [Keenan and Comrie 1972]:


b. if X ≥ Y and Y dominates Z then X ≥ Z

i.e. if in a language L an NP in the Hierarchy can be relativized, then every NP to the left of that NP in the Hierarchy can be relativized. This is indeed true for Fula, as can be seen in the following examples where (a) sentences show the result of applying OBJECT 1 and (b) sentences of OBJECT 2.

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3We have excluded the possibility of relativizing the Object of Comparison, since Fula does not have an equivalent to the English -er. Therefore, the status of this NP in the Hierarchy is moot.
(10) **Direct Object**

a. suka (mo) gorko o fi
   child (REL) man the hit
   'the child who the man hit'

b. *suka\_i (mo) gorko o fi o\_i
   child\_i
   Pro\_i

(11) **Indirect Object**

a. hobbe (be) gorko o rokk-ata maaro
   guests (REL) man the give-tense rice
   'the guests to whom the man gave rice'

b. *hobbe\_i (be) gorko o rokk-ata be\_i maaro
   guests\_i
   Pro\_i

(12) **Benefactive**

a. sukaabe (be) Pennda wupp-an -ta comci
   children (REL) Pennda wash-BEN-tense clothes
   'the children for whom Pennda washes the clothes'

b. *sukaabe\_i (be) Pennda wupp-an-ta be\_i comci
   children\_i
   Pro\_i

(13) **Instrumental**

a. paaka (ka) gorko o tay-ir -ta hudo ka
   knife (REL) man the cut-INST-tense grass the
   'the knife with which the man cuts grass'

b. *paaka\_i (ka) gorko o tay-ir-ta ka\_i hudo
   knife\_i
   Pro\_i

(14) **Time**

a. aset (mo) gorko o umm -i-noo do
   Saturday (REL) man the leave-tense here
   'Saturday (on) which the man left here'

b. *aset\_i (mo) gorko o umm-i-noo do o\_i

(15) **Location**

a. taabal (ngal) gorko o faw-ata mburu
   table (REL) man the put-tense bread
   'table (on) which the man put bread'

b. *taabal\_i (ngal) gorko o faw-ata mburu mum\_i
(16) Location (object of a Preposition)
  a. *taabaJ (ngaJ) gorko o faw-ata mburu e dow  
      table (REL) man the put-tense bread on top
  b. taabaJ (ngaJ) gorko o faw-ata mburu e dow mum,
      table (REL) man the put-tense bread on top PRO
      'table on top (of) which the man put bread'

(17) Possessive/Genitive
  a. *debbo (mo) gorko o wujj -u-no deftere  
     woman (REL) man the steal-tense book
  b. debbo (mo) gorko o wujj -u-no deftere muudum, 
     woman (REL) man the steal-tense book PRO-Poss.
     'woman whose book the man stole'

(18) Purpose
  a. *sukaabe (be) gorko o nan liggo no -feewi ha mbaawa  
     children (REL) man the cop. work very-much so modal
     naatde ekol
     enter school
  b. *sukaabe (be) gorko o nan liggo no -feewi ha be  
     children (REL) man the cop. work very-much so PRO
     'children who the man works hard so (that) they can
     mbaawa naatde ekol
     modal enter school
     enter school'

(19) Goal (see Purpose)

(20) VP-S
  a. *gorko (mo) Demba sikk -i ko mari fi  
     man (REL) Demba think-tense that Mary hit
  b. gorko (mo) Demba sikk -i ko mari fi dum,
     man (REL) Demba think-tense that Mary hit PRO
     'the man, who Demba thinks that Mary hit him'

(21) NP-S
  a. *suka (mo) gorko o jab -i kabaaru ko debbo o fi  
     child (REL) man the believes-tns news that woman the hit
     'child who the man believes the news that the woman hit'
  b. *suka (mo) gorko o jab-i kabaaru ko debbo o fi mum,
(22) **Ind.-Q.**
   a. *suka (mo) gorko o annd-i hol debbo o fi child (REL) man the know-tns. which woman the hit 'child who man knows which woman hit'
   b. *suka (mo) gorko o annd-i hol debbo o fi mum

(23) **Relative Clause**
   a. *debbo (mo) njii-noo-mi gorko pi-i-do woman (REL) see-tns-lps man i hit-REL i 'woman who I saw the man who hit'
   b. *debbo (mo) njii-noo-mi gorko i pi-i-do dum j

(24) **Conjunction**
   a. *gorko o naat-i hurdu, gorko (mo) gujjo fi 'the man entered the house (and) the man who the thief attacked'
   b. *gorko i o naat-i hurdu, gorko (mo) gujjo fi dum i

(25) **Co-NP**
   a. *debbo i kod-do i e gorko o ko Chicago
   b. *debbo i kod-do i e gorko o ko Chicago dum j
      'woman live-PRO and man the in Chicago PRO
      'woman who and the man live in Chicago'

These examples also show that **OBJECT 1** and **OBJECT 2** have the following domain:

**OBJECT 1**: D.O./I.O./Oblique (not the object of a preposition)
**OBJECT 2**: Oblique (object of a preposition)/VP-S

Furthermore, they show that, even though Fula has a pronoun-retaining strategy, the accessibility of difficult NPs to relativization is not superior to the accessibility to relativization of English (a non-pronoun-retaining language) NPs. See Table 2 for a Fula/English comparison.

2.4 **The Transparency Principle.** Keenan and Bimson claim that pronoun-retaining languages represent their underlying structures more explicitly than non-pronoun-retaining ones. In this section we want to show that, at least in Fula, Transparency (in the sense used by Keenan and Bimson) can be assured by *word-order* and *verb extensions*.

2.4.1 **Word-Order.** Fula word-order unambiguously marks the grammatical roles of NPs.
(26) a. debbo o rokk-ii gorko o suka
   woman the give-tense man the child
   'the woman gave a child to the man'

   b. debbo o rokk-ii suka o gorko
   woman the give-tense child the man
   'the woman gave a man to the child'

The surface order of these sentences tells us that gorko 'man' is an Indirect Object in (a) and a Direct Object in (b). Thus from the surface string, the underlying order can be determined. When Relative Clause Formation applies the NP will be fronted to the beginning of the clause and leave a gap in the surface string as in (27).

(27) a. debbo rokk-i i gorko o suka
   woman give-tense man the child
   'the woman gave a child to the man'

   b. gorko (mo) debbo o rokk-i i suka
   man (REL) woman the give-tense child
   'the man to whom the woman gave a child'

2.4.2 Verb extensions. Fula uses verb extensions to mark the semantic/syntactic roles of some NPs. The extension system serves to allow unambiguous interpretation of the semantic/syntactic role of the NP from the surface string. The following examples with BENEFICIAL and INSTRUMENTAL NPs illustrate this fact:

(28) a. sUkaabe (be) Pennda wupp-an -ta comci
   children (REL) Pennda wash-BEN-tense clothes
   'the children for whom Pennda washes the clothes'

   b. paaka (ka) gorko o tay-ir -ta hUd'o
   knife (REL) man the cut-INST-tense grass
   'the knife with which the man cuts grass'

The extensions in (28) assure that the surface structure unambiguously marks the role of the relativized NPs, i.e. sUkaabe 'children' (BENEFICIAL NP) and paaka 'knife' (INSTRUMENTAL NP).

Therefore, we suggest that word-order and verbal extensions serve the same purpose that Keenan and Bimson claim for pronouns--i.e. they assure the transparency of the surface string.

3. Conclusion

In our work we have shown that Keenan and Bimson are wrong in asserting that "...pronoun-retaining languages present a systematically larger set of RCF possibilities than the pronoun-deleting ones."

We have shown that, although Fula has a pronoun-retaining strategy (OBJ 2), it relativizes fewer of the "difficult" NP positions than a
pronoun-deleting language like English. Furthermore, we propose that Keenan and Bimson's specific formulation, requiring that the presence of a pronoun in the position relativized represent underlying structures more explicitly than the non-presence of a pronoun, be reviewed, at least for some languages (e.g. in Fula, and more generally, in Bantu languages, the marking of the relativized NP in some overt fashion (word-order and verb extensions) also allows a transparent representation of underlying structure.

REFERENCES

