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Lynell Marchese
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THE VERBAL SYSTEM IN GODIE:
A DAUGHTER DEPENDENCY APPROACH

Lynell Marchese

0. Introduction
1. Features needed to describe the verbal system
2. Generating structures
   2.1 Ditransitives
   2.2 Auxiliaries
   2.3 Tense-marked verbs
   2.4 Imperatives
3. Redundancy rules in the lexicon
4. Conclusion

0. The goal of this paper is to describe the verbal system of Godie, a Kru language spoken in southwest Ivory Coast, within the framework of daughter dependency grammar. This model has been recently developed by the British linguist, R. A. Hudson. The model could be called "generative" since structures are built up through the application of various sets of rules. This type of grammar varies considerably, however, from other generative grammars in that it generates only one structure for each construction (rather than the traditional deep and surface structures, with several intermediate structures in between). Rather than concerning itself with sentence relatedness, DDG concentrates on showing dependencies within a single construction. An important innovation in Hudson's model is the use of features on higher nodes. The paper contains three sections besides the introduction and conclusion. In the first section, there will be a justification of the features used to describe Godie verbs. In section two, rules needed to generate basic and more complex structures will be discussed. Finally, section three contains a discussion of how certain generalizations can be captured by redundancy rules in the lexicon.

1. A basic part of a daughter dependency grammar is classification of all items by features. Binary features are assigned by a set of classification rules. These rules can be diagrammed in a network, resembling system networks developed by Halliday. Below is a diagram of features needed to describe the syntactic behavior of verbs in Godie:
In the chart above, all items are classified as either + or - predicate. This feature is needed to distinguish predicates from non-predicates such as noun, adverbs, conjunctions, and other non-verbal particles. In this analysis [+ predicate] refers not only to verbs, but also to copulas, auxiliaries and adjectival verbs such as "be big", "be many", etc. The justification for grouping all these into one class is the fact that they all can optionally take tense markers (either the recent particle a or the remote particle mA) and they can all function as the main verb of the sentence. This analysis depends, of course, on the interpretation of auxiliaries as main verbs, but this seems to be justified by the fact that they not only take tense markers, but also serve as the host of object clitics, like any main verb. Below are examples of verbal categories which can be grouped together under the feature [+predicate]:

(2) verb a ≠ go o - m a suku'3
he go-completive recent school
He went to school.

(3) copula -go-wa-be a -go- a dotA
he is recent doctor
He was a doctor.
(4) adjectival verb  'g+i+i' big  
  they big  recent  
  They were big.

(5) auxiliary yi potential  o yio  a  6otc-
  he potential-him recent hit  
  He was going to hit him.

One of the further subdivisions of the class [+predicate] is made by the entry ± finite. [+finite] refers specifically to those verbs functioning as the main verb in a declarative or interrogative sentence. (Declarative and interrogative sentences, whether negative or positive, will be designated as [+declarative] as opposed to imperatives which are [-declarative]). When any item is both [+predicate] and [+finite], it can be optionally marked as [+tense-comp]. [-tense-comp] will designate a present tense verb, which has no overt marking. [+tense-comp] means a verb is followed by a recent or remote tense marker. Verbs which are [+finite] and which are also specified as [-transitive] and [-aspectual] are classified as [auxiliary]. These features are needed to distinguish auxiliaries which are obligatorily followed by a verb complement (explained in the sister dependency section) from all other verbs which can never be followed by such a complement. [-finite] will refer to those predicates which are not the main verb in a sentence (and thus cannot be specified for tense). These include any verb co-occurring with an auxiliary, such as 6otc hit in (5) above, or any verb occurring in compounds or complex verbal complements. [-finite] will also refer to imperatives since they too do not take tense. More importantly, imperatives and other non-finite verbs all carry the same base tone, as shown below.

(6) m~  Go!  
   o yi m~  (he AUX go)  he will go  -finite  
   o -m~ (he go-completive)  he went  +finite

Independent of the features ± finite, items that are [+predicate] are also classified as [+aspectual]. [+aspectual] indicates those verbs which show a completive-incompletive distinction on the verb stem. [+completive] is marked by low tone on the last syllable of the verb stem. [-completive] is marked by mid tone and a slightly lengthened vowel.

(7) o m~ (he go-incompletive)  he's going  
   o -m~ (he go-completive)  he went
The great majority of verbs do have the completive-incompletive distinction. Those that don't (-aspeclual) include auxiliaries, adjectival verbs, the copula -gLtu-, and the verbs -kɐ have and -kɔ to be at.

These are outlined in chart (8) below:

<table>
<thead>
<tr>
<th>Stem</th>
<th>Meaning</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>yi</td>
<td>potential</td>
<td></td>
</tr>
<tr>
<td>'kɐ</td>
<td>volitive</td>
<td></td>
</tr>
<tr>
<td>yɐ</td>
<td>perfective</td>
<td></td>
</tr>
<tr>
<td>'g+I+'</td>
<td>big</td>
<td></td>
</tr>
<tr>
<td>zu</td>
<td>many</td>
<td></td>
</tr>
<tr>
<td>6e</td>
<td>too much</td>
<td></td>
</tr>
<tr>
<td>gi</td>
<td>a lot</td>
<td></td>
</tr>
<tr>
<td>'yo-</td>
<td>supple</td>
<td></td>
</tr>
<tr>
<td>tɐ</td>
<td>hard</td>
<td></td>
</tr>
<tr>
<td>su</td>
<td>hot</td>
<td></td>
</tr>
<tr>
<td>60tə</td>
<td>cold</td>
<td></td>
</tr>
<tr>
<td>yɐ</td>
<td>to be in good health</td>
<td></td>
</tr>
<tr>
<td>tɐo</td>
<td>far, long</td>
<td></td>
</tr>
<tr>
<td>'fle-</td>
<td>intelligent</td>
<td></td>
</tr>
<tr>
<td>-zɐ</td>
<td>red</td>
<td></td>
</tr>
<tr>
<td>kpi</td>
<td>black</td>
<td></td>
</tr>
<tr>
<td>'nɐ</td>
<td>good</td>
<td></td>
</tr>
<tr>
<td>-ᵜu</td>
<td>bad, ugly</td>
<td></td>
</tr>
<tr>
<td>-gLtu-</td>
<td>to be</td>
<td>-gLtu- ₙₕₙkπₗₙₚ</td>
</tr>
<tr>
<td>-kɐ</td>
<td>to have</td>
<td>he is ₙₕₙₚaₙₚmₙₚ</td>
</tr>
<tr>
<td>-kɔ</td>
<td>to be at</td>
<td>-kɔₙₙₚₙₚₙₕkπₗₙₚ</td>
</tr>
<tr>
<td></td>
<td></td>
<td>he is-at school</td>
</tr>
</tbody>
</table>
[+predicate] items are also independently specified as \pm transitive. [+transitive] refers to those verbs which take at least two arguments. This includes copulas which link two NPs, motion verbs which take subject and locative NPs, and other verbs which are normally classified as [+transitive] (hit, kill, greet, etc.):

(9) omo' pwl# 'papo
    she is Papo
    She's Papo.

he -6a suku'
he left school
He left school.

he bA no
he greets him
He's greeting him.

Transitive verbs are further specified as [+ditransitive]. [+ditransitive] verbs like ne give and fa send allow the presence of a third argument while [-ditransitive] may only have one argument following the verb:

(10) o -fa kifi pmtw [+ditransitive]
    he send-completive chief package

Transitive verbs are also independently specified for the feature \pm locative. The set of verbs that are [+locative] take regular full noun phrases as any transitive verb. However, when the object of locative verbs are pronominalized, they take special locative pronouns, rather than the normal set of object pronouns. Compare:

(11) o m# suku'
    he goes school
(12) o 6oto 'ylo
    he hit child-the

he m# 'mlo
he goes there
he hit him

All other verbs are specified as [-locative].

Some transitive verbs allow complex nominalized complements. Therefore transitive verbs are also classified as \pm sentence-comp. [-sent-comp] verbs allow no complex complement, while [+sent-comp] verbs do. Since the complements are of several types, they are subclassified. Two types of complementizers (or nominalizers) occur with only locative verbs. Therefore verbs which are [+sent-comp] and [+locative] are further specified as [+kA]. [+kA] refers to those verbs which take kA complements. This class is quite small and includes, as far as I know, only three members: yi come, m# go, and 6a come back from. [-kA] refers to those verbs which are locative, but take a dA complement. These include -ko to be at and gwale to stay at:
Verbs which are [+sent-comp] but [-locative] are also of two types. These are subclassified for the feature [+ma]. [+ma] refers to those cognitive verbs which take "that" complements. These include verbs like "say", "think", "want", "love", "ask", etc. Verbs that are [-ma] take a complex complement marked by \( \_\_\_ \). Examples:

13. \( \text{he go walk} \text{ He goes walking.} \) He's going for a walk.  

14. \( \text{he is clear} \text{ He is clearing?} \)  

The difference between these complex complements is not relevant here. Suffice it to say, however, that Hudson's system of feature complexes can adequately describe the differences in internal structure and distribution (Marchese, MS). Below is a sample set of verbs. Note that features \( \pm \) ditransitive and \( \pm \) sent-comp cross-classify.
[-transitive] verbs are further classified as [+plural] to distinguish those verbs which obligatorily take a plural subject. Most [+plural] verbs are reduplicated, since this is the normal way of forming reciprocals, while some of the [+plural] verbs consist of single stems. These verbs seem to be inherently symmetric. A set of [-transitive] predicates is sketched below:

<table>
<thead>
<tr>
<th>-sent (+loc included)</th>
<th>+sentence-comp</th>
<th>+loc</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>+ma</td>
<td>-ma</td>
</tr>
<tr>
<td>ŋaka</td>
<td>measure</td>
<td>6ọọ think</td>
</tr>
<tr>
<td>ọwu</td>
<td>grill</td>
<td>wa love</td>
</tr>
<tr>
<td>ọọse</td>
<td>insult</td>
<td>-yi know</td>
</tr>
<tr>
<td>ọọto</td>
<td>hit</td>
<td>ọọto</td>
</tr>
<tr>
<td>ońti</td>
<td>chase</td>
<td>ońti</td>
</tr>
<tr>
<td>wa ọọ n</td>
<td>melt</td>
<td>ọọ n</td>
</tr>
<tr>
<td>ọọ n</td>
<td>wash</td>
<td>ọọ n</td>
</tr>
<tr>
<td>nu</td>
<td>hear</td>
<td>nu</td>
</tr>
<tr>
<td>pl</td>
<td>coook</td>
<td>pl</td>
</tr>
<tr>
<td>ọọma</td>
<td>drink</td>
<td>ọọma</td>
</tr>
<tr>
<td>gbọl</td>
<td>climb</td>
<td>gbọl</td>
</tr>
<tr>
<td>pọla</td>
<td>enter</td>
<td>pọla</td>
</tr>
<tr>
<td>ọọwe</td>
<td>make cry</td>
<td>ọọwe</td>
</tr>
<tr>
<td>bọọi</td>
<td>make fly</td>
<td>bọọi</td>
</tr>
<tr>
<td>ọọma</td>
<td>teach</td>
<td>ọọma</td>
</tr>
<tr>
<td>polo</td>
<td>pay back</td>
<td>polo</td>
</tr>
<tr>
<td>ọọ</td>
<td>do</td>
<td>ọọ</td>
</tr>
<tr>
<td>tra</td>
<td>show</td>
<td>tra</td>
</tr>
<tr>
<td>ọọ</td>
<td>give</td>
<td>ọọ</td>
</tr>
<tr>
<td>mọọ</td>
<td>make/give</td>
<td>mọọ</td>
</tr>
<tr>
<td>a drink</td>
<td>a drink</td>
<td>a drink</td>
</tr>
</tbody>
</table>

[9] -transitive verbs are further classified as + plural to distinguish those verbs which obligatorily take a plural subject. Most [+plural] verbs are reduplicated, since this is the normal way of forming reciprocals, while some of the [+plural] verbs consist of single stems. These verbs seem to be inherently symmetric. A set of [-transitive] predicates is sketched below:
(18)

<table>
<thead>
<tr>
<th>plural</th>
<th>-transitive</th>
<th>+plural</th>
</tr>
</thead>
<tbody>
<tr>
<td>susu</td>
<td>speak to each other</td>
<td>wa susu</td>
</tr>
<tr>
<td>wawa</td>
<td>love each other</td>
<td></td>
</tr>
<tr>
<td>jujuju</td>
<td>write to each other</td>
<td></td>
</tr>
<tr>
<td>ν</td>
<td>fight</td>
<td></td>
</tr>
<tr>
<td>teto</td>
<td>fight back and forth</td>
<td>wa teto</td>
</tr>
<tr>
<td>ηwi</td>
<td>cry</td>
<td>c ηwi</td>
</tr>
<tr>
<td>6isio</td>
<td>roll</td>
<td></td>
</tr>
<tr>
<td>kuli</td>
<td>get down</td>
<td></td>
</tr>
<tr>
<td>ηwo</td>
<td>sleep</td>
<td>c ηwo</td>
</tr>
<tr>
<td>g+m+me</td>
<td>to get big</td>
<td></td>
</tr>
<tr>
<td>kpima</td>
<td>to turn black</td>
<td></td>
</tr>
<tr>
<td>zume</td>
<td>to multiply</td>
<td></td>
</tr>
<tr>
<td>p+lam+</td>
<td>to get sharp</td>
<td></td>
</tr>
<tr>
<td>6isio</td>
<td>to be insulted</td>
<td></td>
</tr>
<tr>
<td>6+io</td>
<td>to be given</td>
<td></td>
</tr>
</tbody>
</table>

Finally + directional distinguishes those verbs which must have a directional particle. For example, the verb gulu to get up can never occur without the 'ko particle, though 'ko is a separate morpheme.16 Other verbs like pio hurry up can be either + directional.

(19) pio ko Hurry up!

golu pio canoe-the goes-fast

Besides 'ko, directional particles include 'mu inside, -zo down 5a down:

(20) c 6i+- -zo He fell down.
he fell down

wolo -zo Get out!
leave bottom

c ga 'mu He screamed.
he explode inside

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He's reading.

I pray.

An argument could be made for analyzing some of the above particles as nouns. 'mŋ and -zo for example can be possessed and occur in subject position:

(21) ñidaa' 'mŋ (pot-the-assoc-inside) The inside of the pot
     -zo pŋ-it (its bottom is that) Its meaning is that...

If this analysis is accepted, verbs taking such particles could be classified as [+transitive]. The particle 'ko however does not act in this way. I suspect that Godié is in the middle of a historical change— that is, nouns are becoming postpositions. For the purposes of this paper, all particles are treated as if they are postpositions (rather than objects).

It may seem odd that negation has not been mentioned as part of the verbal system. The reason for this is that there is evidence that negation should be assigned to the clause rather than to the verb phrase. Negation can be marked, in fact, on the subject (rather than on the predicate) of a clause:

(22) o yuaa' 'lo -ko his children-NEG there are His children are not there.

2. Now that the features which classify verbs have been discussed, we will now attempt to generate some verbal structures. In daughter dependency grammar, structures are generated through application of various kinds of rules. Some of the classification rules of Godié would include:

(23)

clauses

C-1 +sentence: +imperative, +negative
C-2 -imperative: +interrogative

predicates

C-3 +predicate: +finite, +aspectual, +transitive, ±directional
C-4 +finite: ±tense-comp
C-5 +finite, -aspectual, -transitive: ±auxiliary
C-6 +aspectual: ±completive
C-7 +transitive: ±ditransitive, ±locative, ±sent-comp
C-8 -transitive: ±plural
C-9 +locative, +sentence-comp: ±kA
C-10 -locative, +sent-comp: ±ma
C-11 +directional: ±ko, ±zo

Classification rules are used in conjunction with daughter dependency and sister dependency rules. In daughter dependency rules, dependency is indicated by an arrow drawn on the line from the mother to the daughter structure. One rule will be needed to generate a predicate as the daughter of a sentence node.

D-1 [+sentence, -nominal, ~imper]~+[predicate, -~finite]

D-1 captures the generalization that every sentence contains a full verb. The rule further specifies that if a sentence is [-imperative], the predicate will be [+finite], while a [+imperative] sentence will have a [-finite] predicate. These possibilities are outlined below:

(24)(a) [+sentence, -imper] [+predicate, +finite]
       [+aspectual] [+transitive]

(b) [+sentence, +imper] [+predicate, -finite]

Once a predicate is introduced as a daughter, the pertinent classification rules can apply. For example if (a) is generated, classification rules C-3, C-4 apply. The predicate node can be further specified as [+finite], [+aspectual], [+transitive], and [-directional]. Because of the features chosen, the application of rules 5 and 8 is excluded. However, we can apply C-4, 6, and 7 yielding [-tense-comp], [+completive], [-ditransitive], [-sent-comp], [-locative]. Because of these feature specifications, rules 9-11 will have no effect. This leaves the predicate node as follows:

(25)

[-sent, +finite, +asp, +trans, +completive, -tense-comp, -ditransitive, -sent-comp, -locative]
Once these features have been added, sister dependency rules which are sensitive to the features on the predicate will generate dependent sisters (usually various complements). It is easy to see that in Hudson's model the predicate is viewed as central, since it determines what types of complements co-occur with it. In sister dependency rules, dependency is indicated by a raised arrow. Some of the predicate-oriented sister dependency rules include:

SD 1 \([+\text{pred}, +\text{finite}] \rightarrow [+\text{nominal}]\)
SD 2 \([+\text{trans}] \rightarrow [+\text{nominal}]\)
SD 3 \([+\text{ditrans}] \rightarrow [+\text{nominal}]\)
SD 4 \([+\text{aux}] \rightarrow [+\text{pred}, -\text{finite}]\)
SD 5 \([+\text{tense-comp}] \rightarrow [+\text{tense}]\)

Given the features on the predicate, structure (a) will undergo SD 1 and 2, but the other sister dependency rules will not apply.

(26) 

\[
\begin{array}{c}
\text{SD1} \\
[+\text{nom}] \\
[+\text{pred}] \\
+\text{finite} \\
+\text{asp} \\
+\text{comp} \\
+\text{trans} \\
-\text{ditr} \\
-\text{direct} \\
-\text{tense-comp} \\
-\text{sent-comp} \\
\end{array}
\]

\[
\begin{array}{c}
\text{SD2} \\
[+\text{nom}] \\
\end{array}
\]

He hit the child.

Nominals will of course be specified for features such as ±pronomininal, +definite, etc. Classification and dependency rules dealing with nominals are not included in this paper.

Generated structures such as (26) are unordered. Hudson proposes that the ordering of elements will be handled by sequence rules. For structure (26), two sequence rules are needed. In sequence rules a large-headed arrow denotes linear order:

\[
\text{S-1} \quad [+\text{nom} \leftarrow +\text{pred}, +\text{finite}] \rightarrow [+\text{pred}]\]

S-1 indicates that the nominal generated as a sister of [+pred, +finite] precedes the predicate.
S-2 Except for the order specified in S-1, all other sisters follow their heads.\textsuperscript{12}

In the next section, structures of some basic verb constructions will be generated.

2.1 Ditransitives differ from structures like (26) by the presence of an additional argument. The crucial rule here is SD 3 which generates a nominal sister off of a [+ditransitive] predicate. Consider:

\begin{equation}
(27)
\end{equation}

\begin{itemize}
\item SD 1 triggered by [+pred, +finite]
\item SD 2 triggered by [+trans]
\item SD 3 triggered by [+ditrans]
\end{itemize}

As for ordering restrictions, the sequence rule proposed for (26) also works for (27). In Godi\textsuperscript{e}, direct and indirect objects may occur in any order following the verb if they are full nouns. However, if one is a pronoun, it will stay closest to the verb:

\begin{equation}
(28) \quad she \quad \text{gave} \quad \text{it} \quad \text{Papo}
\end{equation}

This necessitates another sequence rule:\textsuperscript{13}

\begin{equation}
S-3 \quad \text{[[nom, pro]} \quad \{[ditrans]\} \quad \{[trans]\} \quad \text{[[nom, pro]} \\
\text{[[nom, pro]} \quad \\text{[[nom, pro]} \\
\end{equation}

However, if both are pronouns, the ditransitive pronoun precedes the transitive one:

\begin{equation}
S-4 \quad \text{[[nom, pro]} \quad \{[ditrans]\} \quad \{[trans]\}
\end{equation}
2.2 As stated in earlier sections, auxiliaries are considered finite since they take tense morphemes and object clitics. The feature [+auxiliary] will trigger a verbal complement by SD 4. The following is a sample structure:

\[(29)\]

\[
\begin{array}{c}
[+sent] \\
-\text{imper} \\
-\text{interr} \\
-\text{neg} \\
\end{array}
\]

\[
\begin{array}{c}
[+nom] \\
+\text{finite} \\
-\text{aspectual} \\
+\text{auxiliary} \\
-\text{tense-comp} \\
-\text{trans} \\
-\text{dir} \\
\end{array}
\]

\[
\begin{array}{c}
\text{he} \\
\text{potential} \\
\text{yi} \\
\text{go} \\
\end{array}
\]

He will go.

Normally word order in Godié is SVO (note (26)), but when an AUX is present, the order is S AUX O V. Even though AUX is functioning as a finite predicate, it is the features on the second (non-finite) predicate which trigger complement nominals:

\[(30)\]

\[
\begin{array}{c}
[+sent] \\
\end{array}
\]

\[
\begin{array}{c}
[+nom] \\
+\text{finite} \\
-\text{aspectual} \\
+\text{auxiliary} \\
-\text{tense-comp} \\
-\text{trans} \\
-\text{dir} \\
\end{array}
\]

\[
\begin{array}{c}
\text{he} \\
\text{yi} \\
\text{potential} \\
\text{yi} \\
\text{go} \\
\end{array}
\]

He will hit the child.

To account for word order in this case, another exception will have to be made to sequence rule 2 (dependent sisters follow their heads), stating that dependent sisters of [-finite, -imperative] predicates precede rather than follow their heads. These exceptions are to be expected since Godié is not a strict SVO language.

2.3 Tense will be a sister of the verb, generated by rule SD 5 which is sensitive to the feature [+tense-comp]. For example,
S 6ọọ - a ọ lọ (he hit-completive recent child-DEF) he hit the child, would have the following structure:

(31)

```
he
```

A sequence rule would be needed to state that tense directly follows the predicate. However if ọ lọ is pronominalized, the object pronoun must occur closest to the verb. This means adding another sequence rule: 15

```
S-5 [+tense] → [[+nom, -pro] → [+pred, +trans]]
S-6 [[+nom, +pro] → [+pred, +trans]] → [+tense]
```

2.4 Imperatives in Godiè are distinct from other verb constructions in several ways. First they take a special negative marker ọ a, which distinguishes them from all other sentences, including declarative and interrogative sentences. For this reason, [+sentence] is further specified as ± imperative. Another main difference is that imperative verbs take the base tone of the verb. They cannot be inflected for aspect and do not normally take tense markers (see footnote 5). For this reason they are defined as [-finite]. This feature enables us to capture the generalization that all [-finite] verbs have the same base tone. This includes verbs following auxiliaries and those appearing in sentence-complements and compounds. As is the case with other [-finite] verbs, other predicate features such as transitive are pertinent. A simple imperative construction is shown below:

(32)

```
bring (some) water.
```
Actually some of the facts concerning imperatives are not so straightforward. For example, the same tone marking is used to indicate a subjunctive:

(33)  o yi
      he come  he should come.

Further research needs to be done in this area and in the area of sentence-complements before the description of the verb system is complete.

3. As the system stands, quite different structures will be generated for structures which are semantically very much alike. Consider the structures below:

(34)  [+sent]  [+sent]
    [+nom]  [+nom]
    [+pred]  [+pred]
    [+finite]  [+finite]
    [+asp]  [+asp]
    [+trans]  [-tense-comp]
    [-tense-comp]  [+comp]

he ate the meat  he  ate  the meat  is-eaten

In a daughter dependency grammar, these two constructions do not appear to be formally related (by a transformation, for example). However, Hudson does suggest that certain regularities can be described in the lexicon. A set of redundancy rules like those proposed by Jackendoff (1976) for the transformation model could be modified and incorporated into the grammar and would nicely account for the relatedness between the verb forms I+ and I+ (Schachter, class notes). Thus all active and passive forms would appear in the lexicon. Below are two sets of related verbs. Set I could be classified as [+transitive], [-sent-comp], while set II would differ by being specified [-transitive]:

Set I          Set II

\(\begin{array}{lll}
\text{hikka} & \text{measure} & \text{hikka} & \text{to be measured} \\
\text{nywu} & \text{grill} & \text{nywu} & \text{to be grilled} \\
\text{6ise} & \text{insult} & \text{6ise} & \text{to be insulted} \\
\text{k\text{a}} & \text{open} & \text{k\text{a}} & \text{to be opened} \\
\text{wawono} & \text{melt} & \text{wawono} & \text{to be melted} \\
\text{w\text{o}} & \text{wash} & \text{w\text{o}} & \text{to be washed}
\end{array}\)

Note that ditransitive verbs can also have corresponding intransitive forms.
Examples of these verbs:

\[(35) \text{ŋe} \text{ŋaka} \text{6utuu} \]
I measure house-Def

\[\text{6utuu} \text{ŋakaoo} \]
house-Def is/has been measured

These two sentences will not be related through any transformational rule. Rather, a rule in the lexicon would tell us that the two verbal forms are related. This would diminish the cost of having two separate forms in the lexicon. The rule proposed would have the following shape:

\[
\text{R-1 (passive)}
\]

\[
\begin{array}{c}
\left[ \begin{array}{c}
+\text{pred} \\
+\text{trans}
\end{array} \right] \\
X(Y,Z)
\end{array}
\] \quad\leftrightarrow\quad
\begin{array}{c}
\left[ \begin{array}{c}
+\text{pred} \\
-\text{trans}
\end{array} \right] \\
X(Z)
\end{array}
\]

The rule states that a verb with a certain phonological shape such as /1+/ with features [+pred, +trans] is related to another verb with the same shape, plus a suffixed 2, which is [-trans]. X represents the verb in question; Y + Z, and, in some later cases, W, represent the arguments of the verb X. The rule further tells us that the first verb has two arguments but the second has only one. It also shows that the argument introduced by SD2 (Z) will be introduced by SD1 in the second form. This captures, in effect, the generalization that the object of the active verb has become the subject of the passive verb.

Similar rules could be introduced to account for numerous cases of verb "relatedness". The lexicalist approach would seem to be the proper way to handle these phenomena in any model. While the relationships are predictable, they are not always productive. The additional rules link stative-process pairs, reciprocals and non-reciprocals, and causative and non-causative pairs.

In Godié there is a whole set of stative verbs with adjectival meanings. These verbs take only one complement. Some of them include:

- \text{zw} to be many
- \text{zʌ} to be red
- \text{'g+1+} to be big
- \text{'nʌ} to be good

Almost all these verbs can become process verbs by the addition of a \text{mʌ} suffix. Example:
Although the addition of the \textit{mA} suffix causes no more arguments to be added to the verb, it does change the verb from [-aspectual] (showing no inflection for the completive-incompletive distinction) to [+aspectual]. Both process and stative verbs will be listed in the lexicon and redundancy rule 3 will capture the regularity between them:

\begin{align*}
R-3 \quad & /X/ \quad /X+mA/ \\
& \begin{bmatrix}
+\text{pred} \\
-\text{asp} \\
-\text{trans} \\
X(Y) \\
\end{bmatrix} \rightarrow \begin{bmatrix}
+\text{pred} \\
+\text{asp} \\
-\text{trans} \\
\text{go}[X(Y)] \\
\end{bmatrix}
\end{align*}

The semantic primitive \textit{go} is used by Jackendoff (1976) for process verbs such as "turn red" or "melt". The list of stative verbs is quite long, and almost all of them can occur with the \textit{mA} suffix but some do not. This again confirms the use of the lexicalist approach, since it relates already existing forms rather than "producing" them. Thus, no forms must be listed as exceptions (i.e. as not undergoing a given transformation). The process verbs which are [-transitive] can occur as causatives (i.e. as transitives). In this case, if the undergoer of the action is a pronoun, an \textit{n} occurs between the verb and the pronoun. As yet, this has not been formally accounted for. An example of \textit{n} is given below:

\begin{align*}
(37) \quad \text{The bananas are getting black.} \\
\text{The bananas are getting black.} \\
\text{The bananas are getting black.} \\
\text{The bananas are getting black.}
\end{align*}

This correspondence will be shown by redundancy rule 4:

\begin{align*}
R-4 \quad & /X-mA/ \quad /X-mA-n/ \\
& \begin{bmatrix}
+\text{pred} \\
+\text{asp} \\
-\text{trans} \\
\text{GO}[X(Y)] \\
\end{bmatrix} \rightarrow \begin{bmatrix}
+\text{pred} \\
+\text{asp} \\
+\text{trans} \\
\text{Z cause}[\text{go}[(X,Y)]] \\
\end{bmatrix}
\end{align*}

Interestingly enough, this rule also relates a non-stative intransitive to a transitive causative:
Reciprocal verbs can be related to their non-reciprocal counterparts by a redundancy rule.

Talk/talk to each other.
Love/love each other.

R-5 formalizes this relationship:

\[
\begin{align*}
R-5 & : /X/ \\
& \begin{array}{c}
+\text{pred} \\
+\text{trans} \\
\pm\text{ditrans}
\end{array} \\
& \begin{array}{c}
+\text{pred} \\
-\text{trans}^{18} \\
+\text{pl}
\end{array}
\end{align*}
\]

\[
\begin{align*}
& X(Y,Z) \\
& X(Y,Z)'X(Z,Y)
\end{align*}
\]

Examples:

(39) He writes man-DEF.
They write to each other.

There are several causative-non-causative verb pairs in Godié. Two lexical redundancy rules are used to relate verbs of the advanced vowel harmony set.\(^{19}\)

Intransitive verbs ending in \(i\) or \(io\) are related to a causative form ending in \(ie\). Some of these verbs are listed below:

\[
\begin{array}{llll}
\text{Set I} & \text{Set II} \\
\text{-trans} & \text{+trans} \\
\etawi & \text{cry} & \etawie & \text{cause to cry} \\
kuli & \text{get down} & kule & \text{get down} \\
giisio & \text{roll} & giisie & \text{roll} \\
si & \text{burn} & sie & \text{burn} \\
bie & \text{walk around} & bie & \text{encircle} \\
waoio & \text{open} & wale & \text{to open} \\
ziisio & \text{hide oneself} & ziisie & \text{bury}
\end{array}
\]

An example of the two sets:

(41) He cries.
He makes Dali cry.
Set I and II can be related by R-6:

\[
\begin{array}{c}
\begin{array}{c}
R-6 \quad /X_i(o)/ \quad /X_i/e/
\end{array}
\end{array}
\]

\[
\begin{array}{c}
\begin{array}{c}
\text{[+-trans]} \\
\text{+[pred]}
\end{array} & \begin{array}{c}
\text{[+trans]} \\
\text{+[pred]}
\end{array}
\end{array}
\]

\[
\begin{array}{c}
\begin{array}{c}
X(Y) \\
1
\end{array} & \begin{array}{c}
Z \text{cause}[X(Y)] \\
2
\end{array}
\end{array}
\]

Set I is [-trans], while set II is [+trans]. Furthermore the subject (introduced by SD-1) of Set I occurs as the object (introduced by SD-2) of Set II. Here the semantic primitive cause is used to link semantically related forms. In R-6, Z is seen as the causative agent and the information between the brackets as the event being caused.

The following rule relates other verbs made up of advanced vowels. In this case both vowels of the verb stem are affected:

\[
\begin{array}{c}
\begin{array}{c}
R-7 \quad /C_i.V_{j}.V/ \\
\text{[+-trans]} \\
\text{+[pred]}
\end{array} & \begin{array}{c}
\text{[+trans]} \\
\text{+[pred]}
\end{array}
\end{array}
\]

\[
\begin{array}{c}
\begin{array}{c}
X(Y) \\
1
\end{array} & \begin{array}{c}
Z \text{cause}[X(Y)] \\
2
\end{array}
\end{array}
\]

Examples:

- budo bathe
- bulu fly
- \( \text{b} \text{e} \text{b} \text{e} \text{a} \text{b} \text{a} \text{h} \text{e} \text{t} \text{e} \)

(The fact that \( d \) and \( l \) occur in intervocalic position is probably significant.)

(42) n\( \text{m} \text{m} \text{e} \text{n} \text{e} \) bulu bird flies

\( \text{c} \text{b} \text{e} \text{e} \) \( \text{a} \text{v} \text{i} \text{n} \text{h} \text{o} \) he makes-to-fly plane-def.

Verbs containing vowels of the retracted set are related to causative verbs ending in \( a \) or another central vowel. Each set is presented below separately. A set of transitive verbs is related to a ditransitive (i.e. causative) set. In this case we find:

(43)

<table>
<thead>
<tr>
<th>Set I</th>
<th>Set II</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \text{m} \text{a} \text{l} \text{a} ) drink</td>
<td>( \text{m} \text{a} \text{l} \text{a} ) make/give to drink</td>
</tr>
<tr>
<td>( \text{g} \text{b} \text{a} \text{l} \text{a} ) climb</td>
<td>( \text{g} \text{b} \text{a} \text{l} \text{a} ) make to climb</td>
</tr>
</tbody>
</table>
Examples:

(44) 6a6+1+ mala 'nú
sheep drink water

0 mala wi+ 'nú
he makes-drink goats water

R-8 will capture the relatedness between Sets I and II:

R-8

\[
\begin{array}{c}
\text{R-8} \\
\text{/X+a/} \\
\text{/X+n/}
\end{array}
\]

\[
\begin{bmatrix}
+\text{pred} \\
+\text{trans} \\
-\text{ditrans} \\
-\text{sent-comp}
\end{bmatrix}
\rightarrow
\begin{bmatrix}
+\text{pred} \\
+\text{trans} \\
+\text{ditrans} \\
+\text{sent-comp}
\end{bmatrix}
\]

\[
\begin{bmatrix}
X(Y,Z) \\
1 \\
2
\end{bmatrix}
\rightarrow
\begin{bmatrix}
W \text{ cause } [X[(Y,Z)]] \\
1 \\
2
\end{bmatrix}
\]

In set II a new argument (W) is introduced which can be viewed as the agent of the semantic primitive cause.

R-9

\[
\begin{array}{c}
\text{R-9} \\
\text{/Xe/} \\
\text{/X\La/}
\end{array}
\]

\[
\begin{bmatrix}
+\text{pred} \\
-\text{trans}
\end{bmatrix}
\rightarrow
\begin{bmatrix}
+\text{pred} \\
+\text{trans}
\end{bmatrix}
\]

\[
\begin{bmatrix}
X(Y) \\
1
\end{bmatrix}
\rightarrow
\begin{bmatrix}
Z \text{ cause } [X(Y)] \\
1 \\
2
\end{bmatrix}
\]

R-9 relates the following verb types:

\[
\begin{array}{c}
\text{nee} \quad \text{nurse} \\
\text{gbate} \quad \text{boil} \\
\text{ye} \quad \text{to be dry}
\end{array}
\]

\[
\begin{array}{c}
\text{\La} \quad \text{cause to nurse} \\
\text{gbateLa} \quad \text{boil (tr)} \\
\text{yLa} \quad \text{to dry}
\end{array}
\]

Example:

\[
\text{gb\La} \quad \text{nee} \quad \text{Gb\La} \text{ is nursing.}
\]

\[
\text{anom\La} \quad \text{\La} \quad \text{gb\La} \quad \text{Anom\La is nursing Gb\La.}
\]

R-10

\[
\begin{array}{c}
\text{R-10} \\
\text{/X\{c\}} \\
\text{/X\Lambda/}
\end{array}
\]

\[
\begin{bmatrix}
+\text{pred} \\
-\text{trans}
\end{bmatrix}
\rightarrow
\begin{bmatrix}
+\text{pred} \\
+\text{trans}
\end{bmatrix}
\]

\[
\begin{bmatrix}
X(Y) \\
1
\end{bmatrix}
\rightarrow
\begin{bmatrix}
Z \text{ cause } [X(Y)] \\
1 \\
2
\end{bmatrix}
\]

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R-10 relates non-causative verbs ending in o or o to their causative counterpart ending in ~.

Examples of verbs linked by R-10.

1. **wolo** get out
   **wolo**

2. **kpolo** clean
   **kpolo**

3. **to** jump/bring across
   **to**

Example:

(45) *sakpa to* Frog jumps.
   *sakpa to* He takes my rice across.
   *he* my *rice*

R-11

\[
\begin{array}{c}
+\text{pred} \\
-\text{trans} \\
X(Y)
\end{array} 
\quad \rightarrow 
\begin{array}{c}
+\text{pred} \\
+\text{trans} \\
Z \text{ cause}[X(Y)]
\end{array}
\]

R-11 links verbs such as:

- *v1* vue fight/cause to fight
- *b1* buo forget/cause to forget
- *poo* pue prosperous/cause to prosper

Examples:

(46) *s poo* He is-in-good-health.
   *s poo* He saved his child.

R-12

\[
\begin{array}{c}
+\text{pred} \\
-\text{trans} \\
X(Y)
\end{array} 
\quad \rightarrow 
\begin{array}{c}
+\text{pred} \\
-\text{trans} \\
Z \text{ cause}[X(Y)]
\end{array}
\]

R-12 links *df* *d* stop

Examples:

(47) *tobii df* car stand-still/stopped
   *tobii df* He stopped the car.
4. It has been shown that the daughter dependency model developed by R.A. Hudson can adequately describe the verbal system in Godié. In this model the verb is seen as central since features on the verb control what dependents it can have. These features, appearing on higher nodes, allow the analyst to pinpoint the exact differences between verbal subclasses and to formulate important generalizations. Lexical redundancy rules have been used to relate verb "pairs" including passive-non-passive, causative-non-causative, and reciprocal non-reciprocal forms. This appears to be the best way of handling the data since the processes involved are not totally productive.

FOOTNOTES

1The dialect described here is jukowal. The data come from Zadi Sassi Michel from Dakpadou.

2I would like to thank Paul Schachter for teaching me about daughter dependency grammar and for making comments on this paper. Any mistakes or misapplications of the model are my own.

3Tones are marked as follows: ' indicates high tone, - low tone, while mid tones are unmarked.

4Verbs which are marked as recent or remote act syntactically in exactly the same way. Therefore, the distinction, recent vs. remote, is semantic and not made part of the classification network.

5Actually I once found an embedded imperative that appeared to be carrying a tense. I never saw this again, and the a could have been an emphasis particle. This needs further research.

6This generalization can be handled by a feature addition rule stating that pronouns which are sisters of transitive, locative verbs are [+locative]. This can be formalized in the following way [+pro ← +trans, +loc]: +loc.

7This means literally "he is at (the) clearing place". This is the typical way for many African languages to express progressives (Welmers, 73).

8Some verbs obligatorily take an n between the verb and the object pronoun. This phenomenon has not been described in this grammar.

9These verbs could be marked ±reciprocal since most of these verbs are reciprocal. The feature ± plural is used, however, to facilitate writing agreement rules.

10Evidence for this lies in the fact that 'ko is frontshifted when an auxiliary is present. gwur 'ko get up vs. ci yi 'ko gwur (he POT up get) He will get up.
Further analysis may reveal that the high tone negation is a remnant of an auxiliary, in which case the alternative solution (assigning NEG on the verb) would be favored.

In a later section, we will discuss some other exceptions to this generalization.

The rule as written involves a disjunction. It states that a pronominal sister, whether a direct or indirect object must precede any full post-verbal nominal. I know of no other way to state this generalization, but it does pose a problem since Hudson wants to disallow disjunction in rules.

There are several similarities between verbal complements following auxiliaries and constructions seen in (13)+(14), called sentence-comps. I hope to capture this generalization in a revised version of this paper.

I am not aware of any way to collapse these two rules.

Because of vowel harmony, the passive marker ɔ may be realized as ɔ: ŋwuɔ = ŋwuo grilled. Some verb stems undergo phonological change when the ɔ passive marker is added on: 6lsɛ = 6lsɛ insulted. These changes are entirely predictable.

mA is realized as mA or ma depending on the vowel harmony set of the verb stem.

More research need to be done to determine if all reciprocals are -transitive.

Advanced vowels include i, ł, u, e, ø, o, while retracted vowels include i, ø, æ, ø, ç, ɔ. œ occurs with both vowel harmony sets.

It is possible that an underlying e marker is causing centralization of the back vowels u + o: bulu +e bə̃ɬə̃, in which case rules 6 and 7 could be collapsed.

Eventually I hope to collapse many of the rules into /X/ → /X+a/.

Note there is some irregularity in this set. Some transitive verbs end in œA, while others end in ɬ. This needs further research.

This is a very strange correspondance since the intransitive verbs belong to one vowel harmony set (i, œ) and the transitive verbs to another (u, ø). The tendency for high retracted verbs to act sometimes as having an advanced underlying form has been noted in other contexts.

One important aspect of Hudson's model has not been touched upon in this paper. He does allow for assignment of functions such as subject and topic (read focus).
BIBLIOGRAPHY


Schachter, P. Class notes
Verbs which are [+sent-comp] but [-locative] are also of two types. These are subclassified for the feature [+ma]. [+ma] refers to those cognitive verbs which take "that" complements. These include verbs like "say", "think", "want", "love", "ask", etc. Verbs that are [-ma] take a complex complement marked by \( l_l \). Examples:

(15) \( c \) 6666 [-ma] 6111
    he thinks \( that \) rain \( pot \) fall  \( He \) thinks \( it \) \( will \) rain.

(16) \( c \) wa nyaniya' 6111
    he likes women-definite-associative sing-\( l_l \)

\( He \) likes \( the \) women's singing.

The difference between these complex complements is not relevant here. Suffice it to say, however, that Hudson's system of feature complexes can adequately describe the differences in internal structure and distribution (Marchese, MS). Below is a sample set of verbs. Note that features \( \pm \) ditransitive and \( \pm \) sent-comp cross-classify.
[-transitive] verbs are further classified as + plural\(^9\) to distinguish those verbs which obligatorily take a plural subject. Most [+plural] verbs are reduplicated, since this is the normal way of forming reciprocals, while some of the [+plural] verbs consist of single stems. These verbs seem to be inherently symmetric. A set of [-transitive] predicates is sketched below:

<table>
<thead>
<tr>
<th>-sent (±loc included)</th>
<th>+sentence-comp</th>
<th>-loc</th>
<th>+loc</th>
<th>+kə</th>
<th>-kə</th>
</tr>
</thead>
<tbody>
<tr>
<td>‡naka measure</td>
<td>6060 think</td>
<td>wa love</td>
<td>6iə finish</td>
<td>wa love</td>
<td>ma go</td>
</tr>
<tr>
<td>əmu grill</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6ise insult</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6otə hit</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ə+t chase</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>fiti pierce</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>wawo n melt(^8)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ə w n wash</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>nu hear</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>pi cook</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>mana drink</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>gbələ climb</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>pələ enter</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>əwie make cry</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>bələ make fly</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>kəə teach</td>
<td>yərəə ask</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>pələ pay back</td>
<td>swə tell</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>no do</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>tra show</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ŋe give</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>məa make/give a drink</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
140

<table>
<thead>
<tr>
<th><strong>-plural</strong></th>
<th><strong>-transitive</strong></th>
<th><strong>They talk to each other.</strong></th>
<th><strong>They fight.</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>son</td>
<td>speak to each other</td>
<td>wa son</td>
<td>wa tuto</td>
</tr>
<tr>
<td>wawa</td>
<td>love each other</td>
<td></td>
<td></td>
</tr>
<tr>
<td>nj瑾nj瑾</td>
<td>write to each other</td>
<td></td>
<td></td>
</tr>
<tr>
<td>nija</td>
<td>fight</td>
<td></td>
<td></td>
</tr>
<tr>
<td>tuto</td>
<td>fight back and forth</td>
<td>wa tuto</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>-plural</strong></th>
<th><strong>-transitive</strong></th>
<th><strong>He's crying.</strong></th>
<th><strong>He's sleeping.</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>نىوو</td>
<td>cry</td>
<td>ىوو</td>
<td>ىوو</td>
</tr>
<tr>
<td>3wisio</td>
<td>roll</td>
<td></td>
<td></td>
</tr>
<tr>
<td>kuli</td>
<td>get down</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ىوو</td>
<td>sleep</td>
<td>ىوو</td>
<td>ىوو</td>
</tr>
<tr>
<td>3ii333</td>
<td>to get big</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3i33</td>
<td>to turn black</td>
<td></td>
<td></td>
</tr>
<tr>
<td>zuma</td>
<td>to multiply</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3333</td>
<td>to get sharp</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3wisio</td>
<td>to be insulted</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ىوو</td>
<td>to be given</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Finally ± directional distinguishes those verbs which must have a directional particle. For example, the verb 3333 to get up can never occur without the ىوو particle, though ىوو is a separate morpheme. Other verbs like 3333 hurry up can be either ± directional.

(19) pio ىوو Hurry up!

goloo pio canoe-the goes-fast

Besides ىوو, directional particles include '3 inside, -3 down ىوو down:

(20) ى 31+ -3 He fell down.
he fell down

wolo -3 Get out!
leave bottom

ى 30a '3 He screamed.
he explode inside
An argument could be made for analyzing some of the above particles as nouns. 'mọ and -zo for example can be possessed and occur in subject position:

\[(21) \, \text{mọa' 'mọ (pot-the-assoc-inside) The inside of the pot} \]
\[\text{'}l -zo p~ltt-- -ma (its bottom is that) Its meaning is that...}\]

If this analysis is accepted, verbs taking such particles could be classified as [+transitive]. The particle 'ko however does not act in this way. I suspect that Godié is in the middle of a historical change—that is, nouns are becoming postpositions. For the purposes of this paper, all particles are treated as if they are postpositions (rather than objects).

It may seem odd that negation has not been mentioned as part of the verbal system. The reason for this is that there is evidence that negation should be assigned to the clause rather than to the verb phrase. Negation can be marked, in fact, on the subject (rather than on the predicate) of a clause:

\[(22) \, \text{yuaa' 'lo -ko (his children-NEG there are) His children are not there.}\]

2. Now that the features which classify verbs have been discussed, we will now attempt to generate some verbal structures. In daughter dependency grammar, structures are generated through application of various kinds of rules. Some of the classification rules of Godié would include:

\[(23) \]

**clauses**

C-1 +sentence: +imperative, +negative
C-2 -imperative: +interrogative

**predicates**

C-3 +predicate: +finite, +aspectual, +transitive, ±directional
C-4 +finite: ±tense-comp
C-5 +finite, -aspectual, -transitive: ±auxiliary
C-6 +aspectual: +completive
C-7 +transitive: ±ditransitive, ±locative, ±sent-comp
Classification rules are used in conjunction with daughter dependency and sister dependency rules. In daughter dependency rules, dependency is indicated by an arrow drawn on the line from the mother to the daughter structure. One rule will be needed to generate a predicate as the daughter of a sentence node.

\[ D-1 \quad [+\text{sentence}, -\text{nominal}, \prec \text{imper}] \rightarrow [+\text{predicate}, -\prec \text{finite}] \]

D-1 captures the generalization that every sentence contains a full verb. The rule further specifies that if a sentence is [-imperative], the predicate will be [+finite], while a [+imperative] sentence will have a [-finite] predicate. These possibilities are outlined below:

\[
\begin{align*}
(24)(a) & \quad [+\text{sentence} ]
\begin{array}{c}
[+\text{imperative}] \quad [+\text{predicate} ]
\end{array}
\begin{array}{c}
[-\text{finite}] 
\end{array} \\
(24)(b) & \quad [+\text{sentence} ]
\begin{array}{c}
[+\text{imperative}]
\end{array}
\begin{array}{c}
[+\text{predicate} ]
\end{array}
\begin{array}{c}
[-\text{finite}] 
\end{array}
\end{align*}
\]

Once a predicate is introduced as a daughter, the pertinent classification rules can apply. For example if (a) is generated, classification rules C-3, C-4 apply. The predicate node can be further specified as [+finite], [+aspectual], [+transitive], and [-directional]. Because of the features chosen, the application of rules 5 and 8 is excluded. However, we can apply C-4, 6, and 7 yielding [-tense-comp], [+completive], [-ditransitive], [-sent-comp], [-locative]. Because of these feature specifications, rules 9-11 will have no effect. This leaves the predicate node as follows:

\[
\begin{align*}
(25) & \quad [+\text{sent} ]
\begin{array}{c}
[-\text{imper}] 
\end{array}
\begin{array}{c}
[-\text{neg}] 
\end{array}
\begin{array}{c}
[+\text{pred}]
\end{array}
\begin{array}{c}
[+\text{finite}] 
\end{array}
\begin{array}{c}
[+\text{asp}] 
\end{array}
\begin{array}{c}
[+\text{trans}] 
\end{array}
\begin{array}{c}
[+\text{completive}] 
\end{array}
\begin{array}{c}
[-\text{tense-comp}] 
\end{array}
\begin{array}{c}
[-\text{ditransitive}] 
\end{array}
\begin{array}{c}
[-\text{sent-comp}] 
\end{array}
\begin{array}{c}
[-\text{locative}] 
\end{array}
\end{align*}
\]
Once these features have been added, sister dependency rules which are sensitive to the features on the predicate will generate dependent sisters (usually various complements). It is easy to see that in Hudson's model the predicate is viewed as central, since it determines what types of complements co-occur with it. In sister dependency rules, dependency is indicated by a raised arrow. Some of the predicate-oriented sister dependency rules include:

\[
\begin{align*}
SD 1 & \quad [+\text{pred}, +\text{finite}] \rightarrow [+\text{nominal}] \\
SD 2 & \quad [+\text{trans}] \rightarrow [+\text{nominal}] \\
SD 3 & \quad [+\text{ditrans}] \rightarrow [+\text{nominal}] \\
SD 4 & \quad [+\text{aux}] \rightarrow [+\text{pred}, -\text{finite}] \\
SD 5 & \quad [+\text{tense-comp}] \rightarrow [+\text{tense}] \\
\end{align*}
\]

Given the features on the predicate, structure (26) will undergo SD 1 and 2, but the other sister dependency rules will not apply.

\[
\begin{align*}
(26) & \quad [+\text{sent}] -\text{imper} -\text{neg} \\
& \quad \text{SD1} \\
& \quad [+\text{nom}] \rightarrow [+\text{pred}] \\
& \quad \text{SD2} \\
& \quad [+\text{nom}] \\
& \quad \text{he} \quad \text{hit-comp} \quad \text{child-def}
\end{align*}
\]

*He hit the child.*

Nominals will of course be specified for features such as ±pronominal, +definite, etc. Classification and dependency rules dealing with nominals are not included in this paper.

Generated structures such as (26) are unordered. Hudson proposes that the ordering of elements will be handled by sequence rules. For structure (26), two sequence rules are needed. In sequence rules a large-headed arrow denotes linear order:

\[
\begin{align*}
S-1 & \quad [+\text{nom}] \rightarrow [+\text{pred}, +\text{finite}] \rightarrow [+\text{pred}] \\
\end{align*}
\]

S-1 indicates that the nominal generated as a sister of [+pred, +finite] precedes the predicate.
S-2 Except for the order specified in S-1, all other sisters follow their heads.\textsuperscript{12}

In the next section, structures of some basic verb constructions will be generated.

2.1 Ditransitives differ from structures like (26) by the presence of an additional argument. The crucial rule here is SD 3 which generates a nominal sister off of a [+ditransitive] predicate. Consider:

\begin{align*}
\text{(27)} & \\
\text{SD1} & \quad [+sent, -imper, -neg, -interr] \\
\text{SD2} & \quad [+pred, +finite, +asp, +comp, +trans, +ditrans, -sent-comp, -dir] \\
\text{SD3} & \quad [+nom] \\
\end{align*}

\text{She gave the money to Papo.}

- SD 1 triggered by [+pred, +finite]
- SD 2 triggered by [+trans]
- SD 3 triggered by [+ditrans]

As for ordering restrictions, the sequence rule proposed for (26) also works for (27). In Godié, direct and indirect objects may occur in any order following the verb if they are full nouns. However, if one is a pronoun, it will stay closest to the verb:

\begin{align*}
\text{(28)} & \quad \text{She gave it to Papo.} \\
\end{align*}

This necessitates another sequence rule:\textsuperscript{13}

\begin{align*}
\text{S-3} & \quad [\text{[+nom, +pro]} \leftarrow \{+ditrans\}] \quad [\text{[+nom, -pro]} \leftarrow \{+ditrans\}] \\
\text{S-4} & \quad [\text{[+nom, +pro]} \leftarrow \{+ditrans\}] \quad [\text{[+nom, +pro]} \leftarrow \{+trans\}] \\
\end{align*}

However, if both are pronouns, the ditransitive pronoun precedes the transitive one:

\begin{align*}
\text{S-3} & \quad [\text{[+nom, +pro]} \leftarrow \{+ditrans\}] \quad [\text{[+nom, -pro]} \leftarrow \{+ditrans\}] \\
\end{align*}
2.2 As stated in earlier sections, auxiliaries are considered finite since they take tense morphemes and object clitics. The feature [+auxiliary] will trigger a verbal complement by SD 4. The following is a sample structure:

\[
\begin{array}{c}
\text{[+nom]} \\
\text{he} \\
\end{array}
\xrightarrow{SD1}
\begin{array}{c}
\text{[+pred]}
\text{[+finite]}
\text{[+auxiliary]}
\text{[+tense-comp]}
\text{[+trans]}
\text{[+dir]}
\end{array}
\xrightarrow{SD4}
\begin{array}{c}
\text{[+pred]}
\text{[+finite]}
\text{[+tense-comp]}
\text{[+trans]}
\text{[+dir]}
\end{array}
\]

\[\text{He will go.}\]

Normally word order in Godié is SVO (note (26)), but when an AUX is present, the order is S AUX O V. Even though AUX is functioning as a finite predicate, it is the features on the second (non-finite) predicate which trigger complement nominals:

\[
\begin{array}{c}
\text{[+nom]} \\
\text{he} \\
\end{array}
\xrightarrow{SD1}
\begin{array}{c}
\text{[+pred]}
\text{[+aux]}
\end{array}
\xrightarrow{SD4}
\begin{array}{c}
\text{[+nom]} \\
\text{yi} \\
\end{array}
\xrightarrow{SD2}
\begin{array}{c}
\text{[+pred]}
\text{[+finite]}
\text{[+trans]}
\text{[+sent-comp]}
\end{array}
\]

\[\text{He will hit the child.}\]

To account for word order in this case, another exception will have to be made to sequence rule 2 (dependent sisters follow their heads), stating that dependent sisters of [-finite, -imperative] predicates precede rather than follow their heads. These exceptions are to be expected since Godié is not a strict SVO language.

2.3 Tense will be a sister of the verb, generated by rule SD 5 which is sensitive to the feature [+tense-comp]. For example,
He hit the child.

A sequence rule would be needed to state that tense directly follows the predicate. However if ylo is pronominalized, the object pronoun must occur closest to the verb. This means adding another sequence rule:

\[ S-5 \text{ [+tense]} \rightarrow [[[\text{+nom}, -\text{pro}]] \leftarrow [\text{+pred}, +\text{trans}]] \]
\[ S-6 \text{ [[+nom, +pro]} \leftarrow [\text{+pred}, +\text{trans}]] \rightarrow [\text{+tense}] \]

2.4 Imperatives in Godié are distinct from other verb constructions in several ways. First they take a special negative marker aa, which distinguishes them from all other sentences, including declarative and interrogative sentences. For this reason, [+sentence] is further specified as [+imperative]. Another main difference is that imperative verbs take the base tone of the verb. They cannot be inflected for aspect and do not normally take tense markers (see footnote 5). For this reason they are defined as [-finite]. This feature enables us to capture the generalization that all [-finite] verbs have the same base tone. This includes verbs following auxiliaries and those appearing in sentence-complements and compounds. As is the case with other [-finite] verbs, other predicate features such as transitive are pertinent. A simple imperative construction is shown below:

\[ (32) \text{ [+sentence} \text{ [+imperative]} \]
\[ [\text{+predicate]} \text{ [-finite]} \text{ -aspectual} \text{ +trans} \]
\[ [\text{+sent-comp}] \]
\[ \text{ Bring } \text{ (some) water.} \]
Actually some of the facts concerning imperatives are not so straightforward. For example, the same tone marking is used to indicate a subjunctive:

(33) ọ yi
      he come          He should come.

Further research needs to be done in this area and in the area of sentence-complements before the description of the verb system is complete.

3. As the system stands, quite different structures will be generated for structures which are semantically very much alike. Consider the structures below:

(34)  

In a daughter dependency grammar, these two constructions do not appear to be formally related (by a transformation, for example). However, Hudson does suggest that certain regularities can be described in the lexicon. A set of redundancy rules like those proposed by Jackendoff (1976) for the transformation model could be modified and incorporated into the grammar and would nicely account for the relatedness between the verb forms ọ and ọ (Schachter, class notes). Thus all active and passive forms would appear in the lexicon. Below are two sets of related verbs. Set I could be classified as [+transitive], [-sent-comp], while set II would differ by being specified [-transitive]:

<table>
<thead>
<tr>
<th>Set I</th>
<th>Set II</th>
</tr>
</thead>
<tbody>
<tr>
<td>ṭọka measure</td>
<td>ṭọko to be measured</td>
</tr>
<tr>
<td>ṣọwu grill</td>
<td>ṣọmo to be grilled</td>
</tr>
<tr>
<td>ṭọse insult</td>
<td>ṭọse to be insulted</td>
</tr>
<tr>
<td>Kan open</td>
<td>Kan to be opened</td>
</tr>
<tr>
<td>ọwọn melt</td>
<td>ọwọn to be melted</td>
</tr>
<tr>
<td>ṣọ n wash</td>
<td>ṣọ n to be washed</td>
</tr>
</tbody>
</table>

Note that ditransitive verbs can also have corresponding intransitive forms.
Examples of these verbs:

(35) ṃ ṃλampton ḇuutuu
I measure house-Def

6uutuu ṃলапο
house-Def is/has been measured

These two sentences will not be related through any transformational rule. Rather, a rule in the lexicon would tell us that the two verbal forms are related. This would diminish the cost of having two separate forms in the lexicon. The rule proposed would have the following shape:

\[ R_1 \text{ (passive)} \]

\[
\begin{array}{c}
\begin{bmatrix}
+\text{pred} \\
+\text{trans} \\
X(Y,Z) \\
1 \ 2
\end{bmatrix}
\end{array}
\rightleftharpoons
\begin{array}{c}
\begin{bmatrix}
+\text{pred} \\
-\text{trans} \\
X(Z) \\
1
\end{bmatrix}
\end{array}
\]

The rule states that a verb with a certain phonological shape such as /l+1/ with features [+pred, +trans] is related to another verb with the same shape, plus a suffixed ə, which is [-trans]. X represents the verb in question; Y + Z, and, in some later cases, W, represent the arguments of the verb X. The rule further tells us that the first verb has two arguments but the second has only one. It also shows that the argument introduced by SD2 (Z) will be introduced by SD1 in the second form. This captures, in effect, the generalization that the object of the active verb has become the subject of the passive verb.

Similar rules could be introduced to account for numerous cases of verb "relatedness". The lexicalist approach would seem to be the proper way to handle these phenomena in any model. While the relationships are predictable, they are not always productive. The additional rules link stative-process pairs, reciprocals and non-reciprocals, and causative and non-causative pairs.

In Godié there is a whole set of stative verbs with adjectival meanings. These verbs take only one complement. Some of them include:

- Ꝑ to be many
- Ꝑ to be red
- Ꝑ to be big
- Ꝑ to be good

Almost all these verbs can become process verbs by the addition of a Ꝑ suffix. Example:
Although the addition of the \( \text{mA} \) suffix causes no more arguments to be added to the verb, it does change the verb from [-aspectual] (showing no inflection for the completive-incompletive distinction) to [+aspectual]. Both process and stative verbs will be listed in the lexicon and redundancy rule 3 will capture the regularity between them:

\[
\begin{align*}
\text{R-3} & \quad /X/ & /X+\text{mA}/ \\
& & \\
& & \\
& & \\
& +\text{pred} & +\text{pred} \\
& -\text{asp} & +\text{asp} \\
& -\text{trans} & -\text{trans} \\
& X(Y) & \text{go}[X(Y)] \\
\end{align*}
\]

The semantic primitive \( \text{go} \) is used by Jackendoff (1976) for process verbs such as "turn red" or "melt". The list of stative verbs is quite long, and almost all of them can occur with the \( \text{mA} \) suffix but some do not. This again confirms the use of the lexicalist approach, since it relates already existing forms rather than "producing" them. Thus, no forms must be listed as exceptions (i.e. as not undergoing a given transformation). The process verbs which are [-transitive] can occur as causatives (i.e. as transitives). In this case, if the undergoer of the action is a pronoun, an \( n \) occurs between the verb and the pronoun. As yet, this has not been formally accounted for. An example of \( n \) is given below:

\[
(37) \quad \text{neneya kpLmA} \quad \text{The bananas are getting black.} \\
\quad \text{black} \\
\quad \text{he} \quad \text{them} \\
\quad \text{He is making them black.}
\]

This correspondance will be shown by redundancy rule 4:

\[
\begin{align*}
\text{R-4} & \quad /X-\text{mA}/ & /X-\text{mA-n}/ \\
& & \\
& & \\
& & \\
& +\text{pred} & +\text{pred} \\
& +\text{asp} & +\text{asp} \\
& -\text{trans} & +\text{trans} \\
& \text{GO} [X (Y)] & Z \text{cause} [\text{go}[(X,Y)]] \\
& 1 & 2
\end{align*}
\]

Interestingly enough, this rule also relates a non-stative intransitive to a transitive causative:
Reciprocal verbs can be related to their non-reciprocal counterparts by a redundancy rule.

Talk/talk to each other.

Love/love each other.

R-5 formalizes this relationship:

R-5

\[
\begin{array}{c|c}
\text{+pred} & \text{+pred} \\
\text{+trans} & \text{-trans} \\
\text{+ditrans} & +\text{pl} \\
X(Y,Z) & X(Y,Z)\cdot X(Z,Y) \\
1 \ 2 & 1 \ 2 \ 2 \ 1 \\
\end{array}
\]

Examples:

He writes man-DEF.

They write to each other.

Intransitive verbs ending in i or io are related to a causative form ending in ie. Some of these verbs are listed below:

\[
\begin{array}{lcl}
\text{Set I} & \text{Set II} \\
\text{-trans} & \text{+trans} \\
\eta\omega i & \text{cry} & \eta\omega i e & \text{cause to cry} \\
kul & \text{get down} & kulie & \text{get down} \\
6isio & \text{roll} & 6isie & \text{roll} \\
si & \text{burn} & sie & \text{burn} \\
bi & \text{walk around} & bie & \text{encircle} \\
welio & \text{open} & welie & \text{to open} \\
zizio & \text{hide oneself} & zizie & \text{bury} \\
\end{array}
\]

An example of the two sets:

He cries.

He makes Dali cry.
Set I and II can be related by R-6:

\[
\begin{array}{c}
\begin{array}{c}
\text{R-6} \\
/Xi(o)/ \\
[-\text{trans}] \\
+\text{pred} \\
X(Y) \\
1 \\
\end{array}
& \quad & \begin{array}{c}
+\text{trans} \\
+\text{pred} \\
Z \text{cause}[X(Y)] \\
2 \\
\end{array}
\end{array}
\Rightarrow
\begin{array}{c}
\begin{array}{c}
\text{R-6} \\
/Xie/ \\
+\text{trans} \\
+\text{pred} \\
Z \text{cause}[X(Y)] \\
2 \\
\end{array}
& \quad & \begin{array}{c}
[-\text{trans}] \\
+\text{pred} \\
X(Y) \\
1 \\
\end{array}
\end{array}
\]

Set I is \([-\text{trans}]]\), while set II is \([+\text{trans}]]\). Furthermore the subject (introduced by SD-1) of Set I occurs as the object (introduced by SD-2) of Set II. Here the semantic primitive \text{cause} is used to link semantically related forms. In R-6, \(Z\) is seen as the causal agent and the information between the brackets as the event being caused.

The following rule relates other verbs made up of advanced vowels. In this case both vowels of the verb stem are affected.

\[
\begin{array}{c}
\begin{array}{c}
\text{R-7} \\
/C_iVC_jV/ \\
[+\text{pred}] \\
[-\text{trans}] \\
X(Y) \\
1 \\
\end{array}
& \quad & \begin{array}{c}
[+\text{pred}] \\
+\text{trans} \\
Z \text{cause}[X(Y)] \\
2 \\
\end{array}
\end{array}
\Rightarrow
\begin{array}{c}
\begin{array}{c}
\text{R-7} \\
/C_iVC_jV/ \\
[+\text{pred}] \\
+\text{trans} \\
Z \text{cause}[X(Y)] \\
2 \\
\end{array}
& \quad & \begin{array}{c}
[-\text{trans}] \\
+\text{pred} \\
X(Y) \\
1 \\
\end{array}
\end{array}
\]

Examples:

budo \(\rightarrow\) bathe
bada \(\rightarrow\) bathe
bulu \(\rightarrow\) fly
bala \(\rightarrow\) aause to fly

(The fact that \(d\) and \(l\) occur in intervocalic position is probably significant.)

\begin{align*}
(42) & \text{nìmìnì \underline{bulu}} & \text{bird flies} \\
& \underline{c} \ bələ \ avìñoo & \text{he makes-to-fly plane-def.}
\end{align*}

Verbs containing vowels of the retracted set are related to causative verbs ending in \(a\) or another central vowel. Each set is presented below separately. A set of transitive verbs is related to a ditransitive (i.e. causative) set. In this case we find:

\begin{align*}
(43) & \quad \text{Set I} & \quad \text{Set II} \\
\text{mA} & \text{drink} & \text{m\{a\}} & \text{make/give to drink} \\
\text{gb\{a\}} & \text{climb} & \text{gb\{a\}} & \text{make to climb}
\end{align*}
Examples:

(44) 6a6+1+ mālā 'nū
sheep drink water

o mālā wi+ 'nū
he makes-drink goats water

R-8 will capture the relatedness between Sets I and II:

\[
R-8 \quad \begin{bmatrix}
+\text{pred} \\
+\text{trans} \\
-\text{ditrans} \\
-\text{sent-comp}
\end{bmatrix}
\quad \leftrightarrow
\quad \begin{bmatrix}
+\text{pred} \\
+\text{trans} \\
+\text{ditrans} \\
+\text{sent-comp}
\end{bmatrix}
\]

\[
\begin{bmatrix}
X(Y,Z) \\
1 \\
2
\end{bmatrix}
\quad \leftrightarrow
\quad \begin{bmatrix}
W \text{ cause } [X[Y,Z]] \\
1 \\
2
\end{bmatrix}
\]

In set II a new argument (W) is introduced which can be viewed as the agent of the semantic primitive cause.

R-9 relates the following verb types:

\[
\begin{bmatrix}
+\text{pred} \\
-\text{trans}
\end{bmatrix}
\quad \leftrightarrow
\quad \begin{bmatrix}
+\text{pred} \\
+\text{trans}
\end{bmatrix}
\]

\[
\begin{bmatrix}
X(Y) \\
1
\end{bmatrix}
\quad \leftrightarrow
\quad \begin{bmatrix}
Z \text{ cause } [X(Y)] \\
1 \\
2
\end{bmatrix}
\]

R-9 relates the following verb types:

\[
\begin{bmatrix}
\text{nurse} \\
\text{boil} \\
\text{to be dry} \\
\text{to dry}
\end{bmatrix}
\quad \leftrightarrow
\quad \begin{bmatrix}
\text{cause to nurse} \\
\text{boil (tr)} \\
\text{to dry}
\end{bmatrix}
\]

Example:

\[
\text{gbụgli} \quad \text{ńẹ} \quad \text{Gbügli is nursing.}
\]

\[
\text{anọmọ} \quad \text{ńị} \quad \text{gbụgli} \quad \text{Anọmọ is nursing Gbügli.}
\]

R-10

\[
\begin{bmatrix}
+\text{pred} \\
-\text{trans}
\end{bmatrix}
\quad \leftrightarrow
\quad \begin{bmatrix}
+\text{pred} \\
+\text{trans}
\end{bmatrix}
\]

\[
\begin{bmatrix}
X(Y) \\
1
\end{bmatrix}
\quad \leftrightarrow
\quad \begin{bmatrix}
Z \text{ cause } [X(Y)] \\
1 \\
2
\end{bmatrix}
\]
R-10 relates non-causative verbs ending in o or ɔ to their causative counterpart ending in ʌ.

Examples of verbs linked by R-10:

<table>
<thead>
<tr>
<th>English</th>
<th>Wolof</th>
</tr>
</thead>
<tbody>
<tr>
<td>get out</td>
<td>ɗuol</td>
</tr>
<tr>
<td>clean</td>
<td>ɗuol</td>
</tr>
<tr>
<td>jump/bring across</td>
<td>ɗeol</td>
</tr>
</tbody>
</table>

Example:

(45) saƙpA to F\(x\{0\}\)

F\(x\{0\}\) saƙpA to ɗeol 'na s\(x\{4\}\) ɗeol ɗuol he my rice across.

R-11 links verbs such as:

<table>
<thead>
<tr>
<th>English</th>
<th>Wolof</th>
</tr>
</thead>
<tbody>
<tr>
<td>fight/cause to fight</td>
<td>b(x{1}) b(x{2}) b(x{3})</td>
</tr>
<tr>
<td>forget/cause to forget</td>
<td>b(x{1}) b(x{2}) b(x{3})</td>
</tr>
<tr>
<td>prosper/cause to prosper</td>
<td>b(x{1}) b(x{2}) b(x{3})</td>
</tr>
</tbody>
</table>

Examples:

(46) o ɗuol He is-in-good-health.

o ɗuol o y\(x\{2\}\) He saved his child.

R-12 links ɗ\(x\{n\}\) ɗ\(x\{n\}\) stop

\(x\{2\}\) d\(x\{2\}\) out

Examples:

(47) toɓi ɗ\(x\{n\}\) car stand-still/stopped

o ɗ\(x\{n\}\) toɓi He stopped the car.
4. It has been shown that the daughter dependency model\textsuperscript{2-4} developed by R.A. Hudson can adequately describe the verbal system in Godié. In this model the verb is seen as central since features on the verb control what dependents it can have. These features, appearing on higher nodes, allow the analyst to pinpoint the exact differences between verbal subclasses and to formulate important generalizations. Lexical redundancy rules have been used to relate verb "pairs" including passive-non-passive, causative-non-causative, and reciprocal non-reciprocal forms. This appears to be the best way of handling the data since the processes involved are not totally productive.

FOOTNOTES

\textsuperscript{1}The dialect described here is \textit{jrekwal}. The data come from Zadi Sassi Michel from Dakpadou.

\textsuperscript{2}I would like to thank Paul Schachter for teaching me about daughter dependency grammar and for making comments on this paper. Any mistakes or misapplications of the model are my own.

\textsuperscript{3}Tones are marked as follows: ' indicates high tone, - low tone, while mid tones are unmarked.

\textsuperscript{4}Verbs which are marked as recent or remote act syntactically in exactly the same way. Therefore, the distinction, recent vs. remote, is semantic and not made part of the classification network.

\textsuperscript{5}Actually I once found an embedded imperative that appeared to be carrying a tense. I never saw this again, and the a could have been an emphasis particle. This needs further research.

\textsuperscript{6}This generalization can be handled by a feature addition rule stating that pronouns which are sisters of transitive, locative verbs are [+locative]. This can be formalized in the following way [+pro$\leftarrow$+trans, +loc]: +loc.

\textsuperscript{7}This means literally "he is at (the) clearing place". This is the typical way for many African languages to express progressives (Welmers, 73).

\textsuperscript{8}Some verbs obligatorily take an n between the verb and the object pronoun. This phenomenon has not been described in this grammar.

\textsuperscript{9}These verbs could be marked +reciprocal since most of these verbs are reciprocal. The feature $\pm$ plural is used, however, to facilitate writing agreement rules.

\textsuperscript{10}Evidence for this lies in the fact that 'ko is frontshifted when an auxiliary is present. \textit{gul\textsubscript{u}} 'ko get up vs. \textit{c yì} 'ko g\textsubscript{u}l\textsubscript{u} (he POT up get) \textit{He will get up}. 
Further analysis may reveal that the high tone negation is a remnant of an auxiliary, in which case the alternative solution (assigning NEG on the verb) would be favored.

In a later section, we will discuss some other exceptions to this generalization.

The rule as written involves a disjunction. It states that a pronominal sister, whether a direct or indirect object must precede any full post-verbal nominal. I know of no other way to state this generalization, but it does pose a problem since Hudson wants to disallow disjunction in rules.

There are several similarities between verbal complements following auxiliaries and constructions seen in (13)+(14), called sentence-comps. I hope to capture this generalization in a revised version of this paper.

I am not aware of any way to collapse these two rules.

Because of vowel harmony, the passive marker o may be realized as o: gwo o = gwo grilled. Some verb stems undergo phonological change when the o passive marker is added on: 6i se = 6i se insulted. These changes are entirely predictable.

mA is realized as mA or mə depending on the vowel harmony set of the verb stem.

More research need to be done to determine if all reciprocals are -transitive.

Advanced vowels include i, i, u, e, e, o, while retracted vowels include i, e, o, e, æ, o. a occurs with both vowel harmony sets.

It is possible that an underlying e marker is causing centralization of the back vowels u + o: bu lu + e be ala, in which case rules 6 and 7 could be collapsed.

Eventually I hope to collapse many of the rules into /X/ → /X+a/.

Note there is some irregularity in this set. Some transitive verbs end in oA, while others end in ŋ. This needs further research.

This is a very strange correspondance since the intransitive verbs belong to one vowel harmony set (i, o) and the transitive verbs to another (u, e). The tendency for high retracted verbs to act sometimes as having an advanced underlying form has been noted in other contexts.

One important aspect of Hudson's model has not been touched upon in this paper. He does allow for assignment of functions such as subject and topic (read focus).
BIBLIOGRAPHY


Schachter, P. Class notes