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The morphology and syntax of determiner phrases in Kiswahili

Carstens, Vicki May, Ph.D.

University of California, Los Angeles, 1991

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UNIVERSITY OF CALIFORNIA

Los Angeles

THE MORPHOLOGY AND SYNTAX OF DETERMINER PHRASES
IN KISWAHILI

A dissertation submitted in partial satisfaction
of the requirements for the degree
Doctor of Philosophy in Linguistics

by

Vicki May Carstens

1991

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ABSTRACT OF THE DISSERTATION

The Morphology and Syntax of Determiner Phrases
in Kiswahili

by

Vicki May Carstens
Doctor of Philosophy in Linguistics
University of California, Los Angeles, 1991
Professor Timothy Stowell, Chair

This dissertation is a study of the morphology and syntax of that constituent traditionally referred to as the Noun Phrase. I first analyze Bantu Noun Class as a gender system, and Noun Class prefixes as gender-specific spellings-out of number features. I then argue for the view that the Noun Phrase is embedded within two functional categories, Number Phrase and Determiner Phrase. I propose that noun-raising to the empty Determiner position yields the surface noun-initial order found within Kiswahili DPs, and that genitive pronouns occupy the Specifier position of the Number Phrase.

Against this background I undertake a cross-linguistic study of argument position and agreement within DPs. I

propose that all arguments of N originate NP-internally, and that in certain languages (including Kiswahili), NP-internal subjects may receive Case *in situ*. In other languages, including Turkish, Hungarian, and English, subjects of NP must raise to the Specifier position of number for structural Case. I relate these two strategies to the parameter +/- grammatical gender, and to constraints on the distribution of agreement morphology.

Finally, I consider the operation of morphological well-formedness conditions in Kiswahili. I argue that they apply cyclically, and that an identification requirement for zero-morphemes is among them.

1 Introduction

1.1 The Topic

This dissertation is an investigation of inflectional morphology within the constituent traditionally referred to as the Noun Phrase. I will argue for the view that the Noun Phrase proper is embedded within two functional categories, Number Phrase and Determiner Phrase (see Abney (1987), Ritter (1988), Ritter (1990), and others). The domain of study is therefore more accurately identified as the Determiner Phrase, or perhaps as the extended Noun Phrase (ENP), consisting of NP and the functional projections which surround it.

The language of study is Kiswahili,¹ a member of the Bantu family of the Niger-Kordofanian phylum.² Bantu is a very large family, estimated to have upwards of 400 members. Kiswahili shares with other languages of this group a very rich system of inflectional morphology, in both the nominal and the verbal system.

¹ *ki-* is the singular prefix of the gender containing all language names. *Kiswahili* is often referred to in English as *Swahili*, but to native speakers this seems incomplete - only the right gender specification distinguishes the name of the language from that of the people who speak it (*Waswahili*), and from the name for the area of their residence (*Uswahili*).

² See Greenberg (1963), Guthrie (1948) for information on these genetic groupings.

In the last few years, research on morphology and on phrase structure have proved quite mutually illuminating (Baker (1988), Pollock (1989), and others). A study of Bantu morphology is particularly interesting to undertake in such a theoretical context.

I have chosen to focus on the internal structure and processes of the ENP because of their relevance to topics of recent interest in sentence-level grammar. For example, agreement and its possible phrase-structure correlates have received much attention of late (Pollock (*op cit*), Chomsky (1989)), but mainly at the sentence-level. ϕ -features originate within ENP, however, and in many languages are syntactically active in a robust agreement relation within this domain. The analysis of inflectional morphology in ENP therefore contributes to our understanding of such morphology at every level of structure.

1.2 Sketch of the Data and Issues

In this section I will provide a brief overview of relevant aspects of the Kiswahili language, and of the issues to be addressed in this dissertation.

Every noun of a Bantu language belongs to one of a large set of Noun Classes. Each Class is associated with a particular nominal prefix, and with a distinctive pattern of agreement borne by modifiers and arguments of the noun, and on auxiliaries and predicates in relevant syntactic

relations to it. I list the Kiswahili Classes, with representative examples, in (1).

(1) Class Prefixes:	Class	example	gloss ³
	1	m-tu	person
	2	wa-tu	people
	3	m-ti	tree
	4	mi-ti	trees
	5	gari	car
	6	ma-gari	cars
	7	ki-atu	shoe
	8	vi-atu	shoes
	9	n-yumba	house
	10	n-yumba	houses
	11	u-bao	board
	14	u-kweli	truth
	15	ku-soma	to read
	16	mahali	specific place
	17	"	general place
	18	"	inside place

(2) shows Noun Class agreement on some dependents of N, and on the verb, triggered by its subject.

- (2) a. mtoto **huyu** wangu **mzuri** **a-me-anguka**
1child 1this 1my 1good 1agr-perf-fall
'this my good child has fallen down'
- b. watoto **hawa** wangu **wazuri** **wa-me-anguka**
2child 2this 2my 2good 2agr-perf-fall
'these my good children have fallen down'
- c. mti **huu** wangu **mzuri** **u-me-anguka**
3tree 3this 3my 3good 3agr-perf-fall
'this my good tree has fallen down'
- d. miti **hii** **yangu** **mizuri** **i-me-anguka**
4tree 4this 4my 4good 4agr-perf-fall
'these my good trees have fallen down'

³ See Chapter 2 for details on the contents of these Classes, their relationships as singular/plural pairings, and related issues.

- e. **yai hili langu zuri⁴ li-me-anguka**
 5egg 5this 5my 5good 5agr-perf-fall
 'this my good egg has fallen down'
- f. **mayai haya yangu mazuri ya-me-anguka**
 6egg 6this 6my 6good 6agr-perf-fall
 'these my good eggs have fallen down'

etc.

Kiswahili also manifests object agreement, as shown in (3), and agreement of COMP with the head of a relative clause, as in (4). In (4a), this agreement is attached to a lexical complementizer; in (4b) it is in on the verb, which I assume has raised to COMP to agree with a null operator in [Spec, CP] (cf. Carstens & Kinyalolo (1989)). These examples simultaneously illustrate subject pro-drop. pro-drop of objects is also possible in the presence of object agreement, as shown in (5).

- (3) a. **Ni-na-*(m)-penda Juma⁵**
 1S-pres-* (30A)-like
 'I like Juma'

⁴ There is no overt agreement morphology on consonant-initial nouns of this Class.

⁵ O(bject) A(greement) is generally required with animates, and otherwise correlates with specificity. See Moshi (1985) for discussion of OA in Kiswahili.

I should point out that treatment of this morphology as agreement is not uncontroversial. In a number of Bantu languages, the Object Marker, to use a more neutral term, cannot be doubled by a lexical NP. In others, there is good evidence that apparent doubling actually involves an NP in adjunct position (see Bresnan & Mchombo (1987)). I have not found evidence for this position in Kiswahili, and the fact that OA is obligatory with specific NPs seems to argue against it. I therefore assume that Bantu languages are not uniform in this regard.

- b. A-li-* (wa)-ona watoto
3S-pst-2OA-see 2child
'S/he saw the/some children'
 - c. Tu-ta- (zi)-nunua mboga
1Pl-fut-(100A)-buy 10vegetables
'We will buy (the) vegetables'
- (4) a. kitabu amba-chc ni-li-ki-soma
7book COMP-7RA 1S-pst-70A-read
'the book I read'
- b. kitabu ni-li-cho-ki-soma
7book 1S-pst-7RA-70A-read
'the book I read'
- (5) a. Tu-ta-*(zi_i)-nunua [e]_i
1Pl-fut-*(100A)-buy
'We will buy them'
- b. A-li-* (wa_i)-ona [e]_i
3S-pst-*(2OA)-see
'S/he saw them'

I begin this dissertation by arguing for an analysis of the Noun Class system as a gender system, and Noun Class prefixes as gender-specific number morphology. These proposals constitute departures from the standard views of Bantu linguistics: Class, an amalgam of number and gender, is typically considered to be a lexical property of Bantu nouns and/or their prefixes (see Welmers (1973), Myers (1987), Bresnan & Mchombo (1989) for discussion). I will argue that while gender is a lexical property of nouns, number is a functional head, which selects NP as its complement. Number and gender cannot be other than distinct, on this view.

As the examples in (2) demonstrate, Kiswahili nouns generally precede their modifiers and arguments. I will argue in Chapter 3 that this results from noun-raising to D (cf. Ritter (1988)). In many other respects, word order in Kiswahili ENP is quite free, as shown in (6).⁶

- (6) a. shati hili langu zuri
9shirt 9this 9my 9good
- b. hili shati langu zuri
5this 5shirt 5my 5good
- c. shati langu zuri hili
5shirt 5my 5good 5this
- d. shati langu hili zuri
5shirt 5my 5this 5good
- 'this my good shirt'

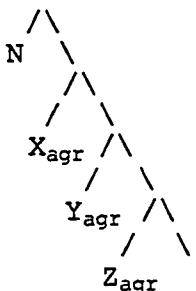
There is nonetheless good evidence, from pronominalization and binding, for the hierarchical organization of the noun's arguments, [possessor-agent-theme]. In addition, I will argue that genitive pronouns are higher than all lexical arguments of N. I will propose that genitive pronouns may only appear in [Spec, NumberP].

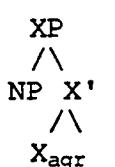
I then turn to consideration of the agreement relation. Kiswahili manifests two patterns of grammatical agreement. In most categories, heads agree with their specifiers. Subject agreement, object agreement, and relative agreement,

⁶ The demonstrative in (6b) exemplifies one of two exceptions to the generalization that ENP is noun-initial. See chapter 3 for details.

shown in (2)–(5) are all instantiations of this pattern.⁷ Within ENP, however, [Spec, head] agreement is not found. Agreement features are assigned by the head noun, under government, as the data in (6) suggest.

The two patterns are represented schematically in (7) and (8).

(7)  [government-based agreement]

(8)  [Spec-head agreement]

I will show that languages with grammatical gender typically have government-based agreement (GBA) in ENP, while languages without gender often have [Spec-head] agreement in the same domain. Curiously, although the two systems are found within different categories of a single language, they never co-occur within the extended Noun Phrase. The correlations in (9) are found to hold for a large group of languages:

⁷ cf. Chomsky (1986a) on [Spec-head] agreement; Koopman (1987), Carstens & Kinyalolo (1989) and many others on the analysis of agreement across categories in these terms.

(9)	Type I	II
gender	+	-
GBA in ENP	+	-
lexical subjects in post-nominal position	+	-
lexical subjects in prenominal Spec	-	+
morphological Case on lexical subject	-	+
[Spec, head] agreement in ENP	-	+

Languages of the Bantu and Romance families are Type I languages. Hungarian and Turkish are typical of Type II.

An account of these correlations is provided in chapter 4, drawing on Case theory and a proposed Agreement Licensing Principle.

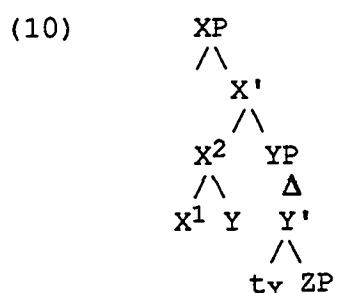
In the course of this investigation, two sub-phrasal empty categories will be considered. In addition to *pro*, the phonologically null pronominal of X^{\max} level, I will argue for the existence of *pro^w*, an X^0 -level empty category identified by agreement. I will also provide evidence that zero-morphemes in Kiswahili are identified by gender-features on word-brackets. Licensing of each of these ecs thus relates crucially to the rich feature-system of Kiswahili nouns.

Finally, I will show that morphological well-formedness conditions apply cyclically in Kiswahili. The evidence for this comes from successive applications of Kiswahili word-formation processes, and certain morphological effects that they trigger.

1.3 Some Notes on the Theory

This study is conducted within the Principles and Parameters approach to syntactic theory, of Chomsky (1981), (1982), (1986a), (1986b), (1989) and related work. I will spell out my assumptions wherever they diverge crucially from those of the literature cited. A few preliminary remarks on morphology are in order at this point, however.

Following Baker (1988), I will be assuming that any X^0 may in principle have two types of subcategorization requirements, and that three situations result from this. If X^0 selects only a Y_P complement, then X^0 is an independent word. If X^0 selects only a Y^0 complement, then X^0 is an affix, whose selectional requirement is strictly morphological. An X^0 may also select both Y_P and Y^0 , in which case X^0 is a syntactic affix, in the sense of Baker (op cit): it has both syntactic and morphological selectional requirements to fulfill. This is made possible by raising and incorporation of the head of the complement:



I assume with Chomsky (1986a) that this movement is subject to the Empty Category Principle in (11), and that this gives rise to the locality effects characterized by the Head-Movement Constraint in (12).

- (11) A nonpronominal empty category must be properly governed.
- (12) Head Movement Constraint: an X^0 may only move to the Y^0 which properly governs it. (Travis (1984))⁸
- (13) α properly governs β iff
 - a. α θ-governs β , or
 - b. α antecedent-governs β ⁹

I also assume provisionally, following Baker (op cit), that X^2 in (10) governs everything that ty governs, as stated in (14).¹⁰

- (14) *The Government Transparency Corollary* (adapted from Baker (1988))

A derived word inherits the government domains of its subparts

In chapter 4, I will propose a revision of (14).

Regardless of how some X^0 and Y^0 come to be concatenated,¹¹ their union will observe the Percolation

⁸ cf. also Koopman (1984) on the NP-type of V-movement.

⁹ On θ-government and antecedent-government, see Chomsky (1986a). Government will be important in Chapter 3, and I supply a formal definition there.

¹⁰ See chapter 4 for a weakening of this assumption, however.

¹¹ As to why this should be so, Baker (op cit) argues that there is a subtheory containing the principles of morphology, which applies whenever morphemes are concatenated (see also Sadok (1985) and Marantz (1984)). Hayes (1990) proposes that

Convention in (15). (15) says that every word inherits the features of its head, and, where no clash exists, those of its non-head as well.

(15) *Percolation* (Selkirk (1982:76))

- a. If a head has a feature specification $[\alpha F_i]$, $\alpha \neq u$, its mother node must be specified $[\alpha F_i]$, and vice versa.
- b. If a nonhead has a feature specification $[\beta F_j]$, and the head has the feature specification $[u F_j]$, then the mother node must have the feature specification $[\beta F_j]$.

This is the framework of assumptions in which my study of Kiswahili morphology is carried out.

1.4 Organization of the Dissertation

The remainder of this dissertation is divided into five chapters. Chapter 2 is concerned with the Noun Class issue described in 1.2 above. All Noun Classes of Kiswahili other than Class 15 are treated in chapter 2. Chapter 3 contains an analysis of Kiswahili Noun Phrase structure. Chapter 4 considers the patterns shown in (9), and provides a Case-theoretic account of their distribution. Chapter 5 is an analysis of Class 15, the

initial lexical insertion is of feature-bundles - lexical items themselves are not inserted until the end of all syntactic processes, and are therefore subject to the rules and processes of the lexicon until that point. I will not choose among these proposals here.

Noun Class consisting of verb forms bearing the prefix *ku-*. I argue that these include infinitives, nominals, and two kinds of gerunds, corresponding to the *poss-ing* and *acc-ing* gerunds of English. I propose a unified account, while extending to the *poss-ing* gerund the findings of chapters 3 and 4 on DP structure. Finally, in Chapter 6 I take up some problems in the formation of diminutives and augmentatives in Kiswahili. I show that these motivate cyclic application of well-formedness conditions, and an identification requirement on zero-morphemes.

2.0. Introduction

This chapter is concerned with the analysis of Bantu Noun Class. In most Bantu languages, each noun belongs to one of a number of Noun Classes. Class membership determines the type of agreement borne by a noun's modifiers and complements, and by auxiliaries and verbs in relevant syntactic relations with it. The Class of the noun typically correlates with a distinctive noun prefix, as shown in (1). Following a long tradition I list the Classes in accordance with Meinhoff's numbering system for Proto-Bantu. 12 and 13 of Proto-Bantu are absent in Kiswahili, but adherence to the traditional numbering system persists since it relates the Kiswahili Classes to their cognates in other Bantu languages.

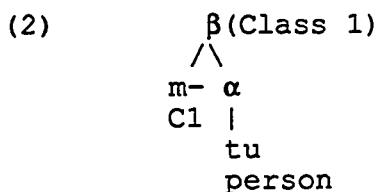
(1) Class Prefixes:	Class	Example	gloss
	1	m-tu	person
	2	wa-tu	people
	3	m-ti	tree
	4	mi-ti	trees
	5	gari	car
	6	ma-gari	cars
	7	ki-atu	shoe
	8	vi-atu	shoes
	9	n-yumba	house
	10	n-yumba	houses
	11	u-bao	board ¹
	14	u-kweli	truth
	15	ku-soma	to read
	16	mahali	specific place
	17	"	general place ²
	18	"	inside place

Intuitively it is clear that Bantu Noun prefixes for many Classes are related as singular/plural pairings, to which a particular group of stems is common. For example, every noun stem in Kiswahili which takes the Class 1 singular prefix also takes the Class 2 prefix in the plural, and so on, through Class 10. As Myers (1987) points out, it is a weakness of the Meinhoff system that this relationship among Classes is not in any way reflected. Although writers of pedagogical grammars have consistently treated singular and plural nouns as belonging

¹ Plurals of Class 11 nouns are found in Class 10.

² The locative Classes have no fixed members other than *mahali* or *pahala*, both meaning 'place'. Nouns are made locative in Kiswahili by suffixation of *-ni*. For details on locatives in Bantu languages with locative prefixes, see Bresnan & Mchombo (1989), and section 5 of this chapter. On a language employing the Kiswahili-type strategy, see Demuth (to appear). See also discussion in 2.5.

to one Class, the Meinhoff system is assumed in the linguistic literature.³ The reason for this seems to lie in a tradition of considering Class features to be properties of the prefixes themselves. This assumption is evident in the representations assigned to Bantu nouns in recent theoretical treatments. The analyses of Sproat (1985), Myers (1987) and Bresnan & Mchombo (1989) may all be represented as in (2). Despite differences in their analyses of α , these researchers share the assumption that the prefix, as the head of β , supplies the Class information. I will argue against this position.



It is implicit in both the traditional Meinhoff system, and in the more recent analyses cited, that number and gender are conflated in Bantu Classes. A significant aspect of my account is the separation of these two categories within Bantu grammar. I will argue that gender is universally a lexical property of nouns, and that Noun Class prefixes are gender-specific spellings-out of number

³ One exception is Givon (1969), where it is proposed that stems are the gender-bearers and prefixes the number morphology. My analysis is very much in the spirit of his.

features. I postpone consideration of the place of number in grammar until Chapter 3, at which point I will present arguments that number is head of a functional category.

The structure of this chapter is as follows. In Section 2.1, I will provide evidence that the Noun Class system is a gender system, and that the gender features of β in (2) are inherited from the noun stem. In 2.2 I will argue against the treatment of prefixes as heads, based on undesirable redundancies of this approach. 2.3 discusses irregular singular/plural pairings, and multi-Class stems. In 2.4-2.5 I will reanalyze the apparently derivational functions of Noun Class prefixes, in the formation of diminutives, augmentatives, abstract/deverbal nouns, and locatives. The analyses presented rely crucially on the existence of zero-affixes and null X^0 -level nominals of particular genders. 2.6 proposes licensing requirements for the latter (analogous conditions for zero-morphemes are proposed in Chapter 6). 2.7 summarizes the results of these sections. 2.8 is concerned with the Bantu synthetic compound - a construction which has been a major influence on recent analyses of Noun Class prefixes (cf. Sproat (op cit), Myers (op cit), and Bresnan & Mchombo (op cit)). I show in 2.8 that the apparent relevance of Bantu synthetic compounds (SCs) to the Noun Class prefix question is illusory. Languages vary on whether SCs have internal

phrase structure, and both situations are compatible with the analysis presented in this thesis. 2.9 concludes the chapter.

2.1 A Revised Classification

Consider first the status of noun stems, with respect to Class information. Since stems are morphologically undifferentiated by Class features, they are represented without them in the works cited, as in (2). But in order to account for the fact that fixed groups of noun stems always bear the prefixes associated with particular Classes,⁴ we must in fact assume that stems are specified for Class. There is no other obvious means of ruling out undesirable mismatches between prefixes and stems, such as those shown in (3):

- (3) a. *n-tu
C9-person
'person'
- b. *mi-atu
C4-shoe
'shoes'

Under the standard assumption that noun prefixes are heads, the ungrammaticality of (3) could be accounted for

⁴ There are systematic exceptions - most noun stems may in fact bear prefixes from any of several classes - but with accompanying semantic shifts. This phenomenon will be taken up in 2.4 and 2.5.

by grouping stems into genders, and subcategorizing each prefix for complements of the appropriate gender. The problem of the Meinhoff system is also solvable under this hypothesis, by the specification of each member of a singular/plural prefix pair for complements from a single gender. Thus stems which bear prefixes of Classes 1 and 2 constitute one gender, and so forth, yielding the classification in (4):

(4) Stem groups for Classes 1-10

Group A: = stems of Classes 1/2
Group B: = stems of Classes 3/4
Group C: = stems of Classes 5/6
Group D: = stems of Classes 7/8
Group E: = stems of Classes 9/10

Under these assumptions we could account for (3) by supposing that prefixes have lexical entries including the following information, where α = a noun stem or NP (I leave the choice open, at this point).

- (5) $ki - [_ + \alpha \text{ Group D}]$; denotes singularity
 $vi - [_ + \alpha \text{ Group D}]$; denotes plurality

Two aspects of (5) are important to note. (i) every member of a singular/plural prefix pair must bear the same subcategorization frame, as $ki-$ and $vi-$ do here. This redundancy is unavoidable under the assumption that each prefix is a head which selects the noun to which it attaches. (ii) under (5), prefixes are specified only for

number. The gender specification is supplied entirely by the noun, and these two features together make up Class.

I adopt the conclusion in (ii), but reject the characterization of the prefix-noun relationship in (i). While under (i) the choice of noun is dependent on the choice of prefix, I propose that the reverse is in fact true: the choice of each prefix pair is determined by lexical properties of the noun stem. The prefixation of *ki-* and *vi-* to *Group D* nouns is accomplished by gender-specific number feature spell-out rules of the type exemplified in (6), under my analysis.

(6) Group D Noun-formation rules

Singular Formation N --> *ki-N*

Plural Formation N --> *vi-N*

Some corroborative evidence for the choice of (6) over (5) is provided by facts of animate agreement in Kiswahili. Animate agreement shows that every exception to the supposed selectional requirements of a singular prefix is also an exception for the corresponding plural prefix: the redundancy in (5) is absolute. Assuming instead that lexical properties of nouns determine prefix choice, as in (6), a more elegant account is available.

2.2

Animacy

The agreement triggered by animate nouns in Kiswahili is always that of Class 1 for singulars, and Class 2 for plurals. However, not all animate nouns bear Class 1 and 2 prefixes. The names of animals have the morphological shape of nouns of either Classes 9 and 10 or 7 and 8:

- (7) a. huyu ng'ombe a-na-kula nyasi
1this 9cow 1agr-pres-eat 10grass
'This cow is eating grass'
- b. * hii ng'ombe i-na-kula nyasi⁵
9this 9cow 9agr-pres-eat 10grass
'This cow is eating grass'
- c. Vifaru wa-wili wa-na-pigana
8rhino 2two 2agr-pres-fight-recip
'Two rhinos are fighting'
- d. * Vifaru vi-wili vi-na-pigana
8rhino 8two 8agr-pres-fight-recip
'Two rhinos are fighting'

The prefixes of Classes 1 and 2 are found mainly on nouns referring to humans; in fact, with the addition of the generic terms for 'animal' and 'insect', these are the sole contents of Classes 1 and 2. Not all nouns referring to

⁵ Second language speakers often neutralize agreement distinctions, employing Classes 9/10 throughout. (7b) would be expected in such non-standard dialects. It is also the case that in many Bantu languages all animates are not 1/2, but trigger agreement consistent with the Noun Class prefixes. I focus on the Kiswahili facts as they provide supporting evidence for the treatment of Noun Class prefixes advocated here. Cross-linguistic differences on the status of animate nouns is irrelevant to the conclusions of this paper.

humans bear 1/2 prefixes, however. Kinship terms, the words for *friend*, *leader*, and *youth*, and names for people with deformities are among those which exhibit other than 1/2 prefixes, while triggering 1/2 concord:

- (8) a. Wale vijana wa-na-cheza mpira
2those 8youth 2agr-prog-play 3ball
'Those young guys are playing ball'
- b. Kipofu mrefu a-li-ingia ghafla
7blind 1tall 1agr-pst-enter suddenly
'Suddenly a tall blind man entered'
- c. Nyanya a-li-fariki zamani
9grandmother 1agr-perf-die 9long ago
'Grandmother died long ago'

If Class information were a property of noun prefixes, these agreement facts would be quite anomalous. However, assuming that prefixes are specified for number only, and that the stems of such nouns belong to *Group A*, no problem arises. I suggest that all animate stems were reanalyzed as *Group A* at some point in time, but retain the singular/plural formation rules appropriate to their genders in the ancestor language.

I should point out that the facts in (8) are generally accounted for under the assumption that animacy itself triggers 1/2 agreement, overriding the lexical Class of a noun (or NP). Note, however, that it is not real-world animacy that is involved: animate nouns made augmentative

or diminutive trigger the agreement consistent with the prefixes of their derived Classes:⁶

- (9) a. Kitoto hiki ki-na-lala
7child 7this 7SA-pres-sleep
'This tiny child is sleeping'
- b. Jitoto lile li-li-m-piga mbwa wangu
5child 5that 5SA-pst-1OA-hit 9dog 1my
'That big child beat my dog'

Since, e.g., small children are certainly animate, if there is a process of "animacy override" (henceforth AO), it cannot be in the domain of pragmatics. To account for the facts in (9) we would be forced to assume that AO is a grammatical process which, in the presence of the [+animate] feature of an underived noun, rewrites lexical gender as Group A. Once the putative process is given such

⁶ Note that the existence of other languages, or other dialects of Kiswahili, in which diminutives or augmentatives may trigger Class 1/2 agreement, is not counter-evidence to the claims of this section. I will argue in 2.4 that diminutives and augmentatives are formed by affixation of null nominals which belong to particular genders. This allows for various results. It might be that in some languages such nominal affixes have also been reanalyzed as Gender A (Class 1/2), and therefore trigger Class 1/2 agreement. I understand that some speakers of Kiswahili allow either agreement pattern, suggesting that the null affix may be of either gender. There could be e.g. more than one diminutive: one for animates, which attaches to Gender A nouns, and one for other nouns. My claim is that the Kiswahili facts reported here provide information on the status of animate agreement in this particular language, which is in turn relevant to the analysis of Noun Class prefixes. Other diminutive and augmentative formation strategies may be less revealing, but are not thereby contradictory.

a formal interpretation, it becomes clear that my proposal is a particular version of AO. With respect to (9), I will argue in 2.4 that augmentatives and diminutives are formed by affixation of null nominals, whose gender specifications override that of their hosts (see note 6).

A few alternative versions of AO are imaginable. First, the gender change to *Group A* might apply to prefixed nouns or NPs, rather than to stems, as I assume. To make this approach consistent with the augmentative/diminutive agreement facts, we could suppose that the feature [+animate] (in addition to the lexical gender of nouns) is rendered inaccessible by diminutive and augmentative formation. I consider gender-change to stems preferable, since gender is a property of stems. Second, gender-reanalysis might apply synchronically on a case-by-case basis, rather than being a historical development, as I assume. While one may note the existence of AO in closely related languages including Chimwi:ni and Bondei, I see no principled basis for deciding whether these languages have inherited a common gender grouping of animates, or a rule of gender change. I will adopt the hypothesis of historical reanalysis for the sake of concreteness.⁷

⁷ Any grammatically-based version of AO is compatible with a mechanical, structure-based theory of agreement. See Carstens and Kinyalolo (1989) for the application of

I have proposed that all animate nouns in Kiswahili have been reanalyzed as *Group A*, but nonetheless form their singulars and plurals by the rules of their original genders. This is accomplished via exception features in their lexical entries, as shown in (10).

(10) **Group A stems**

-tu	'person'
-toto	'child'
-vulana	'boy'
-buzi	'goat'*
-pofu	'blind person'**

*apply singular/plural formation rules of Gender E (*n-/n-*)
**apply sing./plural formation rules of Gender D (*ki-/vi-*)

Ordinary *Group A* stems will undergo the rules of singular/plural formation shown in (11). Under the Elsewhere Principle of Kiparsky (1982), this will be blocked for starred nouns.

(11) **Gender A Noun formation rules**

Singular Formation: N --> m-N

Pluralization: N --> wa-N

I will propose in Chapter 3 that number is a functional head, and that the rules in (29) apply to the output of Noun-raising to the Number⁰ node.

In summary, I have argued that what is traditionally thought of as Class consists of two things: the gender

such an agreement theory to Bantu, and Chapter 4 of this thesis.

feature of the stem, and the number specification spelled out by the prefix. Nouns are represented as in (12):

- (12) $\beta(\text{Group A, singular})$
 \backslash
 ki- α
 sing |
 faru
 rhino Group A

Now suppose instead that prefixes select for the stem-group of their complements, as under the alternative analysis shown in (5). The subcategorization frames of both "Class 7" *ki-* and "Class 8" *vi-* would require alteration to permit their attachment to, e.g., *-faru* in (12), which as it stands should violate their selectional requirements. Assuming the exception features in (11), we derive the revised subcategorization frames in (13).

- (13) *ki* - [$_+\alpha$ Group D, and α^{**}]; denotes singularity
vi - [$_+\alpha$ Group D, and α^{**}]; denotes plurality
n - [$_+\alpha$ Group E, and α^*]; denotes singularity
n - [$_+\alpha$ Group E, and α^*]; denotes plurality

The redundancy of the hypothetical subcategorization frames for singular/plural prefix pairs would thus be absolute. I take this as further evidence that only one statement of selectional restrictions on prefix/noun combinations is motivated. The specification of nouns/genders for choice of prefix pairs reflects this, while attributing selection of nouns to prefixes cannot.

2.3 Irregular Paradigms

I have argued that the Noun Class system is gender-based, Noun Class prefixes being the spell-out of singular and plural for each gender. The account extends straightforwardly to all of Classes 1-10, but perhaps a few words are in order on how it works in Class 5, where *O* and *ji-* both occur as Class prefixes, and in the morphologically identical Classes 9 and 10. I will address these questions in 2.3.1 and 2.3.2. 2.3.3 considers the status of nouns which appear to form singulars in one gender, and plurals in another. This case arises in Kiswahili for nouns with singulars in Class 11: their plurals are found in Class 10 (*Group E*, in my system). I will argue that these nouns are best treated as belonging to an additional gender, *Group F*.

2.3.1 Class 5

Most Class 5 nouns bear no prefixes, as (14) demonstrates, but monosyllabic and some vowel-initial stems bear the prefix *ji-*, as shown in (15). I assume that the feature [+singular] has no overt morphological instantiation for this gender. I will argue in Chapter 6 that *ji-* is a morphological expletive, inserted whenever a noun violates certain Kiswahili well-formedness conditions.

- (14) a. gari/ma-gari
 5car 6car
 'car/cars'
- b. tunda/ma-tunda
 5fruit 6fruit
 'fruit/fruit'
- c. jina/ma-jina
 5name 6name
 'name/names'
- (15) a. ji-no/me-no
 5-tooth 6-tooth
 'tooth/teeth'
- b. ji-cho/ma-cho
 5-eye 6-eye
 'eye/eyes'
- c. ji-we/ma-we
 5-stone 6-stone
 'stone/stones'

2.3.2 Classes 9 and 10

There is no overt difference between singular and plural nouns in Classes 9/10, prefixes of the two Classes being homophonous. It is clear, however, that a number distinction is present in the abstract, since nouns of the two Classes trigger distinct agreement forms (see (16)). I assume Class 9 and Class 10 nouns undergo singular and plural formation rules in the usual way, the outputs of which happen to be homophonous.

- (16) a. ndizi hii i-me-iva
 9banana 9this 9agr-perf-ripen
 'This banana is ripe'

- b. ndizi hizi zi-me-iva
 10banana 10this 10agr-perf-ripen
 'These bananas are ripe'

2.3.3 Singular/plural gender mismatch

Nouns of Class 11 bear the singular prefix *u-*, but trigger agreement homophonous with that of Class 3:

- (17) a. wimbo huu mrefu u-ta-faa
 11song 11this 11long 11agr-pres-suffice
 'This long song will do'
- b. mti huu mrefu u-ta-faa
 3tree 3this 3long 3agr-fut-suffice
 'This tall tree will do'

Plurals of such nouns bear Class 10 prefixes, and trigger Class 10 agreement. Class 3 nouns in contrast pluralize in Class 4:

- (18) a. nyimbo hizi ndefu zi-ta-faa
 10song 10these 10long 10agr-fut-suffice
 'These long songs will do'
- b. miti hii mirefu i-ta-faa
 4tree 4this 4tall 4agr-fut-suffice
 'These tall trees will do'

Clearly, if we were to make the stems of Class 11 nouns a sub-group of *Group B* (= Classes 3/4) which undergo a separate rule of singular formation, we would then predict plural *Group B* agreement (= Class 4 agreement), contrary to the facts. Similar problems would arise if we treated the stems as members of *Group E* (9/10), since the wrong form of singular agreement would be predicted. I conclude that there is a distinct stem-group which I will call *Group F*,

with agreement forms homophonous to those of *Group B* singulars and *Group E* plurals. Any group of nouns in a Bantu language which exhibits this pattern of singular/plural Class mismatch will constitute a distinct gender, in this system.

2.4 Null affixes and derivation

One of the motivations for the treatment of Noun Class prefixes as heads is the role some of them appear to play in derivational processes. If a Noun Class prefix can derive, e.g., a diminutive from an ordinary noun, then surely it must be a head, or so the reasoning goes. In this section I will consider the role of Noun Class prefixes in the formation of diminutives, augmentatives, and abstract nouns. I will argue that the prefixes themselves are not involved in these processes. Rather, there are zero-affixes of certain genders, which may be added to bare nouns by derivational rules, as in Kiswahili diminutives, or which may be syntactic heads, as in Shona and Chichewa diminutives. Noun Class prefixes appropriate to the genders of the affixes are added as number morphology, in the usual way.

2.4.1 Augmentatives and Diminutives

Kiswahili diminutives bear the prefixes of Classes 7/8 instead of those associated with their lexical gender (19a-d). Augmentative nouns show a great deal of prefix variation, which we will consider in Chapter 6. Always involved are prefixes of Classes 5/6 (19e,f) or 3/4 (20), or Class 5 singular with 4 plural (21). Agreement is consistent with the derived Class in all cases (22).

- | | | | |
|---------|--|----|---|
| (19) a. | mtoto
1child
'child' | b. | watoto
2child
'children' |
| c. | kitoto
7child
'tiny child' | d. | vitoto
8child
'tiny children' |
| e. | jitoto
5child
'big (ugly) child' | f. | matoto
6child
'big (ugly) children' |
| (20) a. | kitabu
7book
'book' | b. | vitabu
8book
'books' |
| c. | mtabu
3book
'big book' | d. | mitabu
4book
'big books' |
| (21) a. | kidole
7finger
'finger' | b. | vidole
8finger
'fingers' |
| c. | jidole
5finger
'big finger' | d. | midole
4finger
'big fingers' |

(22) i-na-ni-shangaza kwamba kitoto hiki kina
9agr-pres-10A-surprise that 7child 7this 7have

midole kama hii
4finger like 4this

'It surprises me that this tiny child has such big fingers'

Note that nouns inherently of Classes 7/8, 5/6, and 3/4 have no particular size characteristics. Thus the morphology associated with these Classes is not in general indicative of smallness or largeness:

- | | |
|-------------------|--------------------|
| (23) a. kikapu | b. kiingereza |
| 7basket | 7english |
| 'basket' | 'english language' |
| c. jicho | d. gari |
| 5eye | 5car |
| 'eye' | 'car' |
| e. msumari | f. msikitii |
| 3nail | 3mosque |
| 'nail' | 'mosque' |

If, for example, Class 7/8 (stem group D) or its prefixes have some inherent specification as [+diminutive], one must ask why nouns which ordinarily bear Class 7/8 prefixes do not refer exclusively to very small things.⁸ There are two possible means of explaining this. I will consider each in turn.

First, we might suppose that simple homophony is involved: the prefixes and agreement paradigms for the stem

⁸ We should also wonder why the nouns of Class 7/8 are not all ambiguous between "ordinary" and diminutive readings. I will answer this question in Chapter 6.

group corresponding to e.g. Classes 7/8 are coincidentally identical to those of some gender bearing the diminutive semantic feature. However, the chances of accidental homophony with six existing Noun Classes are negligible. I will therefore not pursue such an account.

The alternative which I will adopt is to assume that there are null nominal affixes with the meanings [diminutive] and [augmentative], which attach to noun stems:

- (24) -toto --> -toto - 0
 | DIMIN
 [Grp A] [[Grp A] Grp D]

As (24) shows, the diminutive morpheme is Group D. As the head of the derived word, it supplies the gender specification (Selkirk (1982)). Singular/plural formation rules of Group D therefore apply, attaching the *ki-/vi-* prefixes characteristic of Group D (Class 7/8) nouns. Agreement is as appropriate for members of this gender.

A plausible alternative would be to assume that diminutives and augmentatives are formed by rules which change gender:

- (25) Diminutive formation: N ==> N⁹
 +Diminutive
 +Group D

⁹ I intend this as a transformational arrow, as distinct from the arrow in (24) whose purpose is merely to indicate before and after.

I will adopt (24) rather than (25), for two reasons. First, the representation of the output form is endowed with an internal complexity parallel to that of forms involving overt affixes, under (24). Second, we will see in Chapter 6 that the zero-affixation approach paves the way for an account of some surprising asymmetries in the augmentative and diminutive formation processes.

There is much more to be explained about the formation of augmentatives and diminutives, including the variation in augmentative Class demonstrated in (19) - (21). As these matters are among the most interesting and complex in nominal Kiswahili morphology, I will devote Chapter 6 to them, and to the exploration of their theoretical implications. I will argue there that the distribution of an epenthetic morpheme *ji-* in augmentative and diminutive forms provides strong evidence for my proposal to separate these processes from attachment of the singular/plural prefixes of the derived Classes. The facts of *ji-*-epenthesis also argue that augmentatives and diminutives are subject to several well-formedness conditions, and that these apply cyclically. Among them is an identification requirement on zero-morphemes, which accounts for the non-ambiguity of the forms in (23).

The Kiswahili strategy of diminutive and augmentative formation is a deviation from the Bantu norm, in involving

members of the basic inventory of genders to which underived nouns belong. I turn now to a somewhat different strategy of diminutive/augmentative formation, one more widely used.

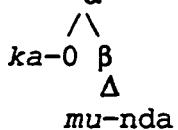
2.4.2 Double Prefixation: Classes 12 and 13 in Shona and Chichewa

In many Bantu languages, including Shona and Chichewa, diminutives and augmentatives bear special prefixes, and trigger agreement distinct from that of any other Noun Classes. The prefixes involved are attached outside of those corresponding to the stem's lexical gender.

- | | |
|---------------------------------------|--|
| (26) a. mu-nda
3-field
'field' | b. ka-mu-nda
12-3-field
'small field' |
| (27) a. mi-nda
4-field
'fields' | b. ti-mi-nda
13-4-field
'small fields' |

I take these facts to indicate that the null diminutive affix of Chichewa differs from the comparable affix of Kiswahili both in occupying a distinct gender, and in its level of attachment: while the Kiswahili affix attaches to roots, the Chichewa affix selects a larger category. The *ka-* and *ti-* prefixes spell out singular and plural for the affix's gender.

(28) α [Chichewa diminutive]



I must introduce an assumption at this point which will not be justified until chapter 3; namely, that β is phrasal. This being the case, the null diminutive and augmentative affixes of Chichewa must be syntactic affixes.¹⁰

A syntactic affixation account of diminutives and augmentatives is considered and rejected in Bresnan & Mchombo (1989), owing to the agreement facts of (29) and (30). These examples show that agreement with a diminutive noun can only be "outer concord": concord with the Class of the outer prefix.

(29) a. ka-mu-nda k-anga
 12-3-field 12-my

b. * ka-munda w-anga
 12-3-field 3-my
 'my small field'

(30) a. ti-mi-nda t-anga
 13-4-field 13-my

b. * ti-mi-nda y-anga
 13-4-field 4-my
 'my small fields'

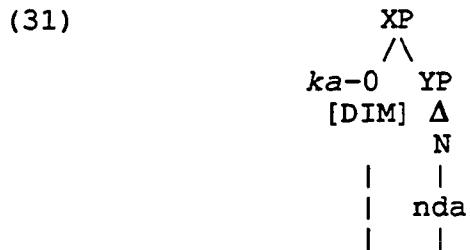
¹⁰ This is why I position the affix to the left of its complement, rather than to the right as I did in Kiswahili. Derivational morphology is right-headed in Bantu, but the syntax (including inflectional morphology) is left-headed.

Bresnan & Mchombo argue that if the category to which *ka-* and *ti-* attach were phrasal as in (28), then we would expect specifiers like possessors, adjectives, and demonstratives to be possible within β . The unavailability of "inner" concord indicates that this is not the case, they claim.

It seems to me that in some cases, the unavailability of "inner" concord should follow from the logical relationship of a specifier or modifier to the diminutive noun: for example, [*DIMIN [this/my field]*] seems semantically ill-formed, since what is possessed or indicated is a small field. Generation of demonstratives and possessors within the scope of a diminutive will therefore be impossible independently of the status of α . On the other hand, a representation like *DIMIN [red shoe]* seems a logical possibility, since color is a property of the object, and therefore seems as if it should be possible in the scope of a size modifier. If this intuition is correct, the latter case suggests that the gender and number features of *munda* are syntactically invisible, assuming that they cannot in fact control agreement on an adjective.¹¹ The analysis therefore must account for this.

¹¹ While examples with adjectives are not included in their discussion of diminutives, B&M state that concord with the Class of a noun bearing the diminutive prefix is impossible.

Suppose the null diminutive noun is a syntactic affix, as I have suggested. To satisfy the affix's morphological requirement of a noun host, *munda* in (28) must raise to it. The representation of *ka-munda* - 'small field' is thus (31):



Under *Percolation* (Selkirk (1982); see chapter 1) the suppression of the gender and number features of *munda* is expected, since they potentially clash with those of the head of the derived word, the diminutive noun. Recall Baker's (1988) assumption that a category into which incorporation takes place inherits the government domain of the incorporee; under this assumption anything governed by *nda* in its base position in (31) is governed, after successive applications of head movement, by the singular diminutive zero-affix. We will see in Chapter 4 that agreement features are assigned under government. Singular diminutive agreement on everything within the surface government domain of *kamunda* is thus expected.¹²

¹² This is a simplification – as mentioned previously, I will argue in Chapter 3 that NUMBER is a functional head,

It is worth noting that Class 12/13 diminutives are not characterized by attachment to prefixed nouns in every language which has them. In Kikuyu, the prefixes of these Classes appear to attach to bare stems most of the time, as shown in (32a)-(32d). Many Kikuyu diminutives are idiosyncratic in form, however (and of these, some are so in meaning). Idiosyncracies seem limited to monomoraic stems (see (33)).¹³ Note that in (33b), the singular prefix of the stem's lexical gender is present in both singular and plural diminutive, between the diminutive prefix and the stem. In (33d), the prefixes match in number specification.

- | | |
|--|--|
| (32) a. mwana/ciana
1child/10child
'child/ren' | b. kaana/twana
12child/13child
'small child/ren' |
| c. muiriitu/airiitu
1maiden/2maiden
'maiden/s' | d. kairiitu/tuiriiitu
12maiden/13maiden
'girl/s' |
| (33) a. mundu/andu
1person/2person
'person/s' | b. kamundu/tumundu
12-1person/13-1person
'insignificant
person/s' |

to which nouns raise in the syntax in Bantu. The landing site of *-nda* in (31) is therefore NUMBER. See Chapter 3 for details.

¹³ See Chapter 6 for discussion of well-formedness conditions prohibiting single-mora and vowel-initial nouns in Kiswahili.

c. muti/miti
3tree/4tree
'tree/s'

d. kamuti/tumiti
12-3tree/13-4tree
'stick/s'

I conclude that the null diminutive morphemes of 12/13 vary from language to language in whether or not they have syntactic subcategorization frames - in Kikuyu, they do not; their only subcategorization requirement is the morphological one, of an X^0 host. The equivalent morpheme of Chichewa shares this morphological requirement, but in addition selects a phrasal complement. Exceptional forms in Kikuyu are numerous, as is fairly typical of processes at this level of structure (lexical as opposed to syntactic processes, in the terminology of Chomsky (1970)). That the internal prefix need not reflect the number of the diminutive shows that this prefix is semantically contentless; its presence does not indicate that the noun which bears it is selected with a number specification. In this the Kikuyu cases differ from double-prefixed diminutives in Chichewa, where no plural diminutives of singular nouns occur. Where β of (34) = the highest node dominating a prefixed noun in the two languages, I conclude that an abstract element NUMBER is present in β in Chichewa, but absent in β in Kikuyu. I return to consideration of prefixed nouns within X^0 in 2.5, and to the issue of NUMBER in Chapter 3.

(34)

ka-0	$\begin{array}{c} \alpha \\ / \backslash \\ \beta \\ \Delta \end{array}$
prefix+N	

2.4.3 Class 14

Let us turn now to Class 14, the Class of abstract nouns. The prefix *u-*, which distinguishes nouns of this Class, attaches to both adjective and noun stems, although not to verbs. This is shown in (35f):

- (35) a. -kweli - 'true' u-kweli - 'truth'
 b. -refu - 'tall' u-refu - 'height'
 c. -zuri - 'good' u-zuri - 'goodness'
 d. -toto - 'child' u-toto - 'childhood'
 e. -levi - 'a drunk' u-levi - 'inebriation'
 f. -soma - 'read' *u-soma - 'study'

Class 14 nouns trigger the same agreement as those of Class 11, for the speakers I consulted:

- (36) u-toto m-baya w-ake u-li-m-haribu
 14child 14bad 14his 14agr-pst-3SOA-ruin
 'His unfortunate childhood ruined him'

Is Class 14 the same as Class 11? While in many Bantu languages the Noun Class prefixes and agreement of Classes 11 and 14 are distinct,¹⁴ in Kiswahili the two appear to have merged (cf. Welmers (1973)). In the former group of languages there is clearly a distinct gender which I will

¹⁴ Ashton (1944) states that these two Classes of Kiswahili are cognate to distinct Classes having *lu-* and *bu-* prefixes in some Bantu languages. The same Classes in Shona bear the prefixes *u-* and *ru-*.

refer to as *Group G*, corresponding to Class 14. *Group G* has only one member, a null nominal affix with the semantic feature [+abstract]. Affixation of the *Group G* morpheme is equivalent to affixation of the English suffixes *-hood* and *-ness* both: **childness* and **goodhood* in English are unacceptable because [-hood] subcategorizes for [+N, -V], [-ness] for [+N, +V]. The Kiswahili affix may attach to any [+N] stem.

Members of *Group G* have no clear status with respect to the concepts singular and plural; they are rather like mass nouns in this respect. I will arbitrarily assume that *Group G* nouns acquire the *u-* prefix by a rule of singular formation.

In the case of Kiswahili, where agreement of Classes 11 and 14 is homophonous, I conclude that the two Classes have merged, the null [+abstract] nominal now being a member of Class 11.

2.4.4 **Multi-Class Stems**

There exist certain stems in Bantu languages for which a choice of Noun Classes exists. Meanings vary with prefix choice, in predictable ways. In Kiswahili, stems naming fruit, if they bear 5/6 prefixes and trigger 5/6 agreement, refer to the fruit itself. When in Classes 3/4, they name fruit trees:

- (37) a. embe/maembe
 5mango/6mango
 'mango'
 b. mwembe/miembe
 3mango/4mango
 'mango tree'
 c. chungwa/machungwa
 5orange/6orange
 'orange'
 d. mchungwa/michungwa
 3orange/4orange
 'orange tree'

The zero-affixation solution extends naturally to such cases - I suggest that there is a null affix of Gender B (Class 3/4) meaning 'tree', which subcategorizes for nouns naming fruit, so that the 'fruit-noun' is basic, and the 'tree-noun' derived. If instead one were to derive e.g. *chungwa* - 'orange' from *mchungwa* - 'orange tree', the morphological process involved would need to subtract the 'tree' meaning. I assume such semantic subtraction to be an impossibility in natural language.

2.5 Locative Classes 16-18

2.5.1 Locative Prefixes as Syntactic Heads

Many Bantu languages, including Chichewa and Shona, have locative prefixes which attach to already-prefixed nouns. Although they share this property with augmentatives and diminutives, locatives exhibit behavior which distinguishes them from all other Noun Class prefixes. Bresnan & Mchombo ((op cit), henceforth B&M) present a range of facts as evidence that locative prefixes in Chichewa are syntactically independent words: their complements may include conjoined NPs (38), they may be

gapped (39) or pronominalized (40), and demonstratives and modifiers may bear either 'inner' or 'outer' concord ((41a)-(41c)).

- (38) Mu-ku-pít-á ku [m-sika kapena m-zinda]?
IIPL/HON SB-PROG-go-IND 17 3-market or 3-city
'Are you going to the market or the city?'

- (39) A-nyamata a-na-low-ets-a nkhosa
2-boy 2SB-REC-PST-enter-cause-IND 10sheep

m' khola la mfumu Kapanga kapena m' (khola) la
18 5corral 5ASC 9chief or 18 5corral 5ASC

mfumu Kapatuka
9chief

'The boys drove the sheep either into chief Kapanga's corral or into chief Kapatuka's (corral).

- (40) a. mu iyi
18 9this
'in this (e.g. house)'

b. pa icho
16 7that
'on that (e.g. hat)'

c. ku iwo
17 6them
'to them (e.g. pumpkins)'

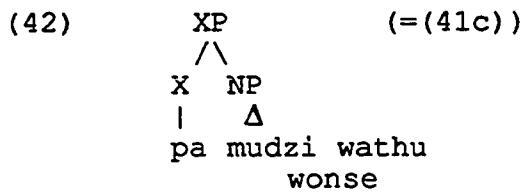
(41) a. pa-mu-dzi p-athu p-onse
16-3-village 16-our 16-all
'at all of our village'

b. pa-mu-dzi w-athu p-onse
16-3-village 3-our 16-all
'at all of our village'

c. pa-mu-dzi w-athu w-onse
16-3-village 3-our 3-all
'at all of our village'

d. *pa-mu-dzi p-athu w-onse
16-3-village 16our 3-all
'at all of our village'

I will assume with B&M and Myers (1987) that the locative Class prefix is a syntactically independent head (42), and not a realization of number features. Under such an analysis, the phenomenon of "inner" concord (41c) is completely unsurprising. I will consider "outer" concord shortly.



If the locative prefix is a syntactic head, what is its category? Arguing in favor of nominal status is the fact that locative phrases may occupy all argument positions, and trigger agreement just like NPs (cf. Bresnan & Kanerva (1989)).

- (43) a. Ndi-ma-ku-konda kuno
 1S-ASP-17OA-like 17dem
 'I like it here'
- b. mu-nyumba mu-li anthu ambiri
 16-9house 16-be 2person 2many
 'In the house are many people'

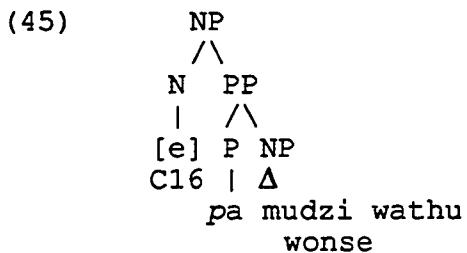
Regarding the agreement, I know of no phenomena aside from Bantu locative constructions which suggest that \emptyset -features may characterize non-nominal categories, and I hesitate to adopt such a conclusion based on just this evidence. On the other hand, complements to locative prefixes are not

introduced by -a (44b), which is obligatory with other nominal complements (44a):

- (44) a. ugwtelo *(wa) tauni [Chichewa]
14destruction *(14of) 9town
'the destruction of the town'
- b. mu- (*mwa) mudzi
18 (*18of) 3village
'in the village'

Furthermore, monomoraic nouns are not typical of Bantu at all - they are disallowed in Kiswahili (see Chapter 6), and as far as I know they do not occur in Chichewa either.

I suggest that the locative prefixes themselves are prepositions, selected by phonologically empty locative nominals, as illustrated in (45). This means that locative phrases are NPs, as their distribution requires, and as is consistent with their triggering of agreement. At the same time, we can assume that locative prefixes assign Case to their objects, and thereby account for the facts of (44).



I assume that Bantu locative NPs share with the bare NP adverbs of English the ability to meet the Case Filter without benefit of structural Case, by virtue of an inherent Case feature (Larson (1985)). Since inherent and

structural Cases are known to be compatible, this does not prevent locatives from occupying Case positions.¹⁵

Let us return to the facts of (41). Myers (*op cit*) and Bresnan & Mchombo (*(op cit)*, henceforth B&M) attribute "outer" concord ((41a) and (41b)) to the availability of base-generation of nominal modifiers within the projection of the locative head, and I will follow them in this. The interpretations of items bearing locative concord merits some attention, however. There are items for which the Myers/B&M account works quite straightforwardly: demonstratives clearly must be able to modify the locative head, when their meanings are consistent with this placement (cf. Kiswahili *hapa-* 16this - 'here'). Similarly -*o* -*ote* - 'any/no x' forms must be base-generated as locative modifiers (cf. Kiswahili *po pote* - 17any/no - 'anywhere/nowhere'). That this is the correct treatment of (44) is less obvious. Base-generating -*othe* - 'all' and -*athu* - 'our' within the maximal projection of the locative head will yield the relative scopes [*all our [[e] of the village]*], while the meaning supplied is [*at all of [our village]*]. It is not at all clear from such an example how the phenomenon of alternative concord is best interpreted,

15 I propose this as a friendly amendment to Larson's account - what he actually suggests is that the assignment of inherent Case to bare NP adverbs is optional.

but additional data lends support to the Myers/B&M approach.

There are two alternatives to the analysis Myers and B&M adopt. First, we might suppose that elements may raise out of the locative's complement, and adjoin to the locative phrase. In their derived positions, we could suppose that they receive agreement features from the locative head under government.

Asymmetries with respect to what may bear locative agreement support the base-generation approach over a movement account. In chapter 3 I will argue that demonstratives, lexical arguments of N, and APs may scramble via rightwards movement and adjunction, but that genitive pronouns may not. (48) and (49) argue that this is also the case in Chichewa:

- (48) a. chitunzi changa cha Sam [N-pron-compl]¹⁶
7picture 7my 7of
'my picture of Sam'
- b. * chitunzi cha Sam changa [N-compl-pron]
7picture 7of 7my
'my picture of Sam'
- c. chitunzi ichi cha Sam [N-dem-compl]
7picture 7this 7of
'this picture of Sam'

¹⁶ *pron* = pronoun, *compl* = complement, *dem* = demonstrative.

- d. chitunzi cha Sam ichi [N-compl-dem]
 7picture 7of 7this
 'this picture of Sam'
- (49) a. chipanda chachikulu cha mowa [N-AP-compl]
 7calabash 7big 7of 3beer
 'big calabash of beer'
- b. chipanda cha mowa chachikulu [N-compl-AP]
 7calabash 7of 3beer 7big
 'big calabash of beer'

In light of these facts, it is interesting to note that complements and APs unambiguously related to the noun within the locative phrase may not bear locative concord:

- (46) a. mu chipanda cha mowa
 18 7calabash 7of 3beer
 'in the calabash of beer'
- b. * mu chipanda mwa mowa
 18 7calabash 18of 3beer
 'in the calabash of beer'
- c. mu zipanda zitatu
 18 8calabash 8three
 'in three calabashes'
- d. * mu zipanda mutatu
 18 8calabash 18three
 'in three calabashes'

APs with locative concord are most readily interpreted as modifiers of a locative nominal distinct in meaning from the overt noun:

- (47) pa tebulu poyela pali madzi
 16 9table 16clean 16be 6water
 'the clean spot on the table is wet'
 ?'on the clean table is wet/there is water'

If movement were responsible for locative concord, we would expect the noun's object in (46b) and AP modifiers in (46d) and (47) to be free to agree. On the other hand, the

genitive pronoun in (41a) and (41b) would be expected not to agree. These facts constitute evidence against an analysis in which -ote and -athu in (41) receive locative agreement as a result of raising out of the NP headed by *mudzi*, and adjoining to the locative phrase.

A second possibility is an "Exceptional Case Marking" type analysis of locative agreement. Once again, the base-generation hypothesis of Myers and B&M fares best: the position of a genitive pronoun, sandwiched between the head noun on the left and a complement on the right, ought to be inaccessible to external governors. This expectation is reinforced by a detailed exploration of Noun Phrase syntax (see chapter 3).

I conclude that items bearing locative agreement can only be base-generated within the projections of the null locative nominal, as Myers (*op cit*) and B&M suggest. This brings us back to the question I raised about the interpretation of (41a)-(41c). Assuming the existence of null locative nominals in the case of both locative and the 'inner' concord, the representations of (41a) and (41b) will correspond to *at [all our [[e] of the village]]*, and *[[e] at all of [our village]]* respectively. Assuming that these null nominals contribute only a generic 'place' meaning, it would seem that the scope difference illustrated here is of little consequence.

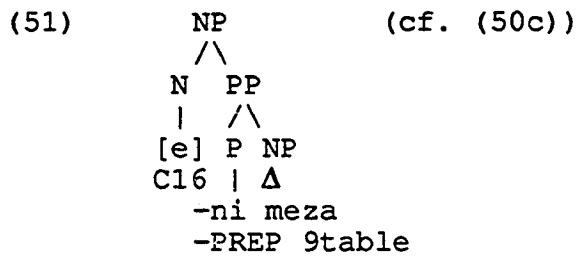
2.5.2 Locatives in Kiswahili

Kiswahili locative Classes have no prefixes associated with them. Locative nouns are recognizable by the suffix *-ni*. Nouns with this suffix must also bear the singular or plural Noun Class prefixes appropriate to their stem-groups. Agreement is never consistent with these prefixes however (50d). Instead *-ni* suffixed nouns trigger agreement from one of the three locative Classes cognate to those we saw above in Chichewa. As in Chichewa, the choice of locative agreement correlates with semantic differences: Class 16 agreement indicates a specific location (50b), Class 17 a general location (50a), and Class 18 an inside location (50c):

- (50) a. nyumba-ni kw-angu ku-na watu wengi
9house-loc 17-my 17agr-have 2person 2many
'There are many people at my house'
- b. chumba-ni mw-angu m-na watu wengi
7room-loc 18-my 18agr-have 2person 2many
'There are many people in my room'
- c. meza-ni pa-ngu pa-na sahani
9table-loc 16-my 16agr-have 10plate
'There are plates on my table'
- d. * meza-ni yangu i-na sahani
9table-loc 9-my 9agr-have 10plate
'There are plates on my table'

Assuming that the locative Class features are introduced by null nominals as proposed in 2.6.1, we need posit only a single, minimal difference between languages of the

Kiswahili and the Chichewa types. This difference is in the prepositions utilized: instead of the three specialized prepositions Chichewa employs, Kiswahili has just one, and it is affixal, attaching finally to the head of its complement. I attribute this to raising and incorporation, as shown in (51).



All modifiers of a locative noun in Kiswahili must bear agreement with the locative class: "inner" concord is impossible:

- (52) ni-mo chumba-ni mw-angu/*ch-angu
 1S-18be 7room-loc 18-my/*7my
 'I am in my room'

Kiswahili locatives thus behave exactly like Chichewa augmentatives and diminutives in this respect. I assume that once the noun complement incorporates with the preposition, which bears agreement with the locative head, its features are lost to the locative features by suppression, comparable to that which occurs in Chichewa augmentatives and diminutives.

2.6 Licensing Null Nominals

I have posited the existence of three null nominals to account for the facts of Bantu locative constructions, and relied on the same device in the analysis of Shona/Chichewa-type diminutives. Assuming I am correct in this, it seems reasonable that the availability of such empty nouns should be linked to the rich agreement of Bantu. Like argument *pro*, these ecs are typically in a local relationship with some element bearing their \emptyset -features. Whereas *pro* is generally identified by Spec-head agreement, or under clitic-movement from Spec to head (Sportiche 1989), these ecs may trigger agreement only on the heads of their complements, in the case of Chichewa locatives (45), or their gender information may be spelled-out overtly only in the Noun Class prefix, as is true of Chichewa diminutives (31) (I return to the Kiswahili (51) shortly). The ecs I have proposed also differ from the familiar *pro* in being sub-phrasal. They are apparently licensed by agreement, however. Let us assume that there are zero-level and phrasal versions of *pro*, which I will call *pro^w*, and *pro^{max}* respectively. I suggest that the licensing of both *pro^{max}* and *pro^w* falls under (53):¹⁷

¹⁷ See also Martin (1985) on a government requirement on x^0 gaps, based on English data.

- (53) **Generalized pro-licensing condition:** the \emptyset -features of *pro* (*pro^w* and *pro^{max}*) must be overtly manifested within its agreement domain.

I will demonstrate in Chapter 4 that the agreement domain of X^0 is its government domain, while that of XP is the head whose Spec that XP occupies. I propose that an X^0 *pro* has in principle three ways of being licensed: (i) through realization of its \emptyset -features on its governee(s); (ii) through [Spec, head] agreement with its maximal projection; or (iii) by bearing the gender-specific number prefix. Note that the number morphology on a(n empty) noun must surely count as within that noun's government domain, making (iii) a subpart of (i).

In Chichewa and Shona locatives, (i) is always met since the features of the null locative nominal show up as agreement on the preposition. (iii) is met automatically in Chichewa/Shona diminutives, and (ii) will be met in addition to (i) or (iii), whenever a phrase headed by a null nominal occupies a position from which agreement is triggered. Only where Kiswahili locatives are concerned does (iii) not duplicate the effects of (i) or (ii), since Kiswahili locatives lack both number prefixes and agreeing prepositions. Under this system, the null locative nominals can only be licensed in Kiswahili when the locative phrase occupies a Spec position, and therefore triggers agreement on a head.

Now, since the agreement which a locative phrase triggers from such a position provides the only evidence for the null nominal's existence, it is not problematic to conclude that when no agreement co-occurs with a Kiswahili locative phrase, no null nominal is involved. In other words, a null nominal is present in (54a) and (54b), but not (54c):

- (54) a. [NP 18pro [PP chumba-ni]] m-na watu wengi
 7room-loc 18agr-have 2person 2many
 'There are many people in the room'
- b. Ni-li-zi-weka sahani [NP 17pro [PP mezani pangu]]
 1S-pst-10OA-put 10plate 9table-loc 17my
 'I put the plates on my table'
- c. Ni-li-zi-weka sahani [PP mezani]
 1S-pst-10OA-put 10plate 9table-loc
 'I put the plates on the table'

We can surmise that no such alternation exists in Chichewa/Shona locatives, since the prepositions of these languages always bear agreement. As these prepositions are unique in each being associated exclusively with a particular gender, I suggest that they occur only when selected by the null nominal of that gender, thus forcing its appearance. The gender-neutral Kiswahili *-ni* is not similarly restricted.

The abundance of sub-X⁰-level zero-affixes in Kiswahili is surely a related, non-coincidental phenomenon. Only by assuming this can we suppose that, for example, variation in the formation of diminutives across Bantu

languages is reducible to the zero-morpheme's gender, and to whether or not it has a syntactic subcategorization requirement. In Chapter 6 I will propose a recoverability requirement on zero-morphemes, the satisfaction of which, for Bantu nouns, hinges on the visibility of the affix's gender features.

2.7 Summary

So far I have argued that all Bantu Noun Class prefixes are number morphology, aside from those of locative Classes 16, 17, and 18. Each locative Class has one member: a zero-level *pro* which I have named *pro^w*, licensed by agreement on its PP complement, or with its maximal projection.¹⁸

Omitted from this discussion is the *ku-* prefix of Class 15, which will be the topic of Chapter 5. The reader may surmise from this that the facts of Class 15 are somewhat involved, and differ from those of any other Classes. My conclusions regarding Class 15 will have no bearing on the analysis of other Noun Class prefixes, so to the extent that I have succeeded in constructing an argument that Noun Class is a gender system with prefixal

¹⁸ Under the analysis in Chapter 3, [Spec, head] agreement is not with the maximal projection of N, technically speaking, but with DP, which inherits its features.

number morphology, the work of this Chapter is almost finished.

One further construction has been treated as evidence for the standard view of Noun Classes and their prefixes, and that is Bantu synthetic compounds. I will provide an analysis of the relevant facts before closing.

2.8 Synthetic Compounds

The prefixes of certain Bantu Classes are able to attach to a V-X sequence, in a kind of synthetic compound, shown in (55). I illustrate with data from Shona (Myers (1987)), Chichewa (Bresnan & Mchombo (1989)), and Kiswahili. I will refer to this construction as the *Group A compound* (GAC), as it is always of Classes 1 and 2 in Kiswahili. Group A compounds have been discussed repeatedly in relation to the analysis of Class prefixes (cf. Sproat (1985), Mchombo (1978), Myers (*op cit*), (B&M)).

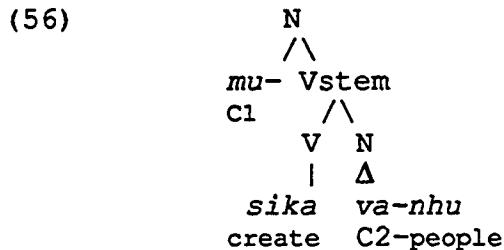
(55a) = (79) in Myers chapter 2; (55b) from B&M's (4)).

(55)a. mu-sika va-nhu
C1-create C2-people
'God (lit. 'people-creator')' [Shona]

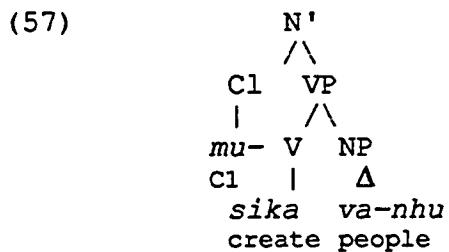
b. m-sungachuma
C1-keep wealth
'treasurer' [Chichewa]

c. m-chimba kisima
C1-dig C7-well
'well-digger' [Kiswahili]

The role of GACs in motivating recent analyses of the prefixes as Class-bearing heads is clear in the representations which have been proposed for them. Mchombo (1978) and Sproat (1985) argue for (56):



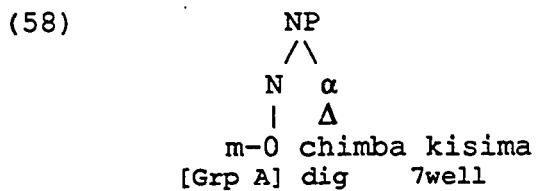
Myers suggests instead that Class prefixes attach to phrasal categories, as shown in (57):



Clearly, if prefixes contribute only number information, as I have argued, neither Myers' approach nor that of Sproat and Mchombo can account for (55). Assuming that the prefix *m-* attaches to a VP in the syntax, we expect the result to be nothing more than a VP with a [+singular] specification, whatever that might mean. Sproat and Mchombo's alternative, that the prefix converts a verb stem to a noun, is also untenable, under this

analysis. The prefix itself cannot effect the change in category and interpretation that these forms exhibit.¹⁹

I will assume instead that derivation of GACs in (55) involves a compounding process which produces new Group A nouns naming agents of certain activities, members of professions and the like. We can think of this as involving null affixes (58), as I have argued to be true in the case of other derived nouns. The resulting form undergoes singular and plural formation in the usual way.



The identity of α is discussed at some length in Myers and B&M, since the decision as to whether Class prefixes are syntactic affixes hinges on it, under their theories. α 's status is not of great concern to the analysis of singular/plural formation developed in this chapter, however. It is true that GACs contain a prefix internal to α , so that if α can be shown to be X^0 , then it will follow

¹⁹ It might be argued that there are two prefix pairs *m-/wa-*, one pair of which has the features [+N-V, +animate], and therefore derives synthetic compounds from VPs. This would seem to obscure the relationship between such compounds and regular nouns of Classes 1 and 2. I reject this analysis in favor of a uniform treatment of the prefixes.

that prefixation is not dependent on syntactic accessibility. However inflectional affixes are already known to appear occasionally within complex X^0 forms (cf. Borer (1984) on Hebrew compounds), despite the strength of the generalization that they are usually located outside derivational affixes. This state of affairs seems no more problematic for a syntactic theory of plural formation than the existence of V-N compounding for syntactic theories of complementation. In other words, that zero-level items with involvement in phrase-level syntax should be able also to combine at the sub- X^0 level in certain constructions is well-established, and this must be accounted for independently of what conclusions this investigation yields on the status of Noun Class prefixation rules.²⁰ The identity of α will not tell us the level of structure to which singular/plural formation rules should apply, under this view.

The question is of independent interest to an investigation of Bantu syntax and morphology however, and I will therefore address it briefly before ending this chapter. I will provide evidence that α includes the constituent VP in Kiswahili, although in Chichewa α

²⁰ See Borer (*op cit*) for one account.

probably lacks internal phrase structure. The situation in Bantu is thus not uniform.

2.8.1 Arguments that α contains VP

The variety and identity of the constituents which may follow the verb within Kiswahili GACs provides the major argument that α contains VP. First, adverbs may appear:²¹

- (59) a. mwenda pole
C1go gently
'One who proceeds gently'
- b. mfika mapema
Clarrive early
'One who arrives early'
- c. msema kwa sauti
C1speak 17of 9voice
'One who speaks loudly'
- d. mlala uchi
C1sleep naked
'One who sleeps naked'

It is not possible to analyze *pole*, *mapema*, *kwa sauti* and *uchi* as modifiers of nouns, because these lexical items are not acceptable nominal modifiers, as (60) demonstrates. The compounds in (59) therefore unambiguously contain adverbials.

- (60) a. * mtu pole - 'a gentle person'²²

²¹ This fact was pointed out to me by K. Kinyalolo (personal communication).

²² *mtu mpole* - 'a gentle person' is acceptable, since *pole* bears Class 1 agreement. Similarly, *wa sauti* would be an acceptable nominal modifier in (60d), with Class 1

- b. * mgeni mapema - 'an early guest'
- c. * mtoto uchi - 'a naked child'
- d. * msimulizi kwa sauti - 'a loud narrator'

Second, objects of the verbs within GACs may be modified, as in (61).

- (61) a. mjenga hoteli za kigerumani
 1build 10hotel 10of 7german
 'a builder of german hotels'
- b. mwimba nyimbo za huzuni
 1sing 10song 10of 9sadness
 'a singer of sad songs'
- c. mwandika vitabu vya mapenzi
 1write 8book 8of 6love
 'a writer of romantic books'
- d. mchimba makaburi ya wafalme
 1dig 6grave 6of 2king
 'a digger of king's graves'

Third, the object of the verb internal to a GAC may be a conjunct.

- (62) a. mchimba kisima na kaburi
 1dig 7well and 5grave
 'a well and grave digger'
- b. wachimba visima na makaburi
 2dig 8well and 6grave
 'diggers of wells and graves'
- c. mpanda farasi na punda
 1ride 1horse and 1donkey
 'a horse and donkey rider'

Fourth, question words may appear in Group A nominals:²³

agreement on -a. Note that Class 1 agreement on pole in (59a) is ill-formed: *mwenda **mpole**.

²³ The questions in (63) are not echo questions.

- (63) a. Wewe ni mpanda nini: punda au farasi?
 you COP 1ride what 1donkey or 1horse
 'What are you a rider of: horses or donkeys?'
- b. Yule ni mchimba nini: kisima au kaburi?
 s/he COP 1dig what 7well or 9grave
 'What is s/he a digger of: wells or graves?'

The clear ability of internal constituents of Group A compounds to undergo syntactic processes and to include phrasal constituents is not consistent with an analysis of them as words containing only X^0 s. I conclude that they are formed on the phrasal category VP.

For the sake of completeness I will present what evidence there is with respect to relativization out of GACs, although this is equivocal. It happens that relativization of constituents of NPs is possible in Kiswahili, just in case the semantic variable is realized as a genitive resumptive pronoun.²⁴

- (64) a. huyu ni mtoto ni-li-ye-mw-on-a ndugu yake
 1this COP 1child 1S-pst-1RA-1OA-see 1sibling 1this
 'This is the child whose sibling I saw'
- b. hiki ni chakula ninachopenda upishi wake
 7this COP 7food 1S-pres-7RA-like 14cook 14poss
 'This is the food that I like to cook'

The same strategy also permits apparent relativization of the objects within Group A compounds:

²⁴ I avoid here the question of whether movement is involved in relativization out of NP, as it is a complex question and irrelevant to the point I wish to make.

- (65) a. hiki ni kisima ni-na-ye-m-penda mchimba
 7this COP 7well 1S-pres-7RA-1OA-like 1digger
 wake
 1poss
 'This is the well whose digger I like'
 b. huyu ni farasi ambaye ni-na-m-jua mpanda
 1this COP 1horse COMP-1RA 1S-pst-1OA know 1rider
 wake
 1poss
 'This is the horse whose rider I know'

If $\alpha = X^0$, we would expect GACs to be opaque to syntactic processes, under the Lexical Integrity Hypothesis (Lapointe (1979)). Therefore (65) seems to suggest that they contain phrasal structure.

It is not clear, however, that relativization in (65) is of a constituent of the compound: it is possible that these examples are derived by relativization of complements of derived nominals *mpanda* and *mchimba*, rather than extraction out of [*mpanda farasi*] and [*mchimba kisima*]. The alternative possibility is illustrated in (66):

- (66) kisimai ninachompenda [NP [N' [N mchimba]] wake_i]²⁵

²⁵ Note that this structure cannot be assigned to GACs generally, since the NP objects within them are not introduced by the dummy case-marker -a, as complements to N must be:

- (i) mchimbaji *(wa) kisima
 1dig-nom 1of 7well
 'well-digger'

The viability of this hypothesis depends on the status of the data in (67): if *Group A* compounds of transitive verbs without objects are grammatical, the genitive resumptive pronouns in (65) might be in the noun complement position. The examples in (67) are judged acceptable, although they are considered by native speakers to be shortened forms of *ji*-suffixed nominals, rather than 'true' *Group A* nominals.

- (67) a. mpanda - 'rider' (cf. mpandaji - 'rider')
b. mchimba - 'digger' (cf. mchimbaji - 'digger')
c. msoma - 'reader' (etc.)
d. mlala - 'sleeper'
e. msimama - 'stander'
f. mfika - 'arriver'

This being the case, the representation in (66) is plausible. (65) therefore does not argue either for or against a syntactic account.

2.8.2 B & M's arguments for $\alpha = x^0$

While examples comparable to (59)-(63) are not included in their paper, B&M present other data from Chichewa which they take to argue that such compounds are in fact islands to syntactic processes. All of their findings can be reproduced for Kiswahili, as I show in (68)-(69). These examples demonstrate that the nominals within compounds may not be pronominalized ((68a); (68b)), modified in certain ways (69a), or gapped (69b):

(68) a. * m-chimba hiki
C1-dig 7this
'This-digger'

b. * m-ki-chimba
C1-7OA-dig
'It-digger'

(69) a. * m-chimba kisima kikubwa
1-dig 7well 7big
'digger of big wells'

b. * m-panda farasi na m- [e] punda
1-ride 9horse and 1- 9donkey
'a horse rider and a donkey __'

B&M attribute comparable Chichewa facts to the Lexical Integrity Hypothesis (cf. Lapointe (op cit)), and consider them evidence that $\alpha = X^0$. This approach is not available to us, in light of (59)-(63). Assuming instead that compounds are phrasal in Kiswahili, what accounts for these facts?

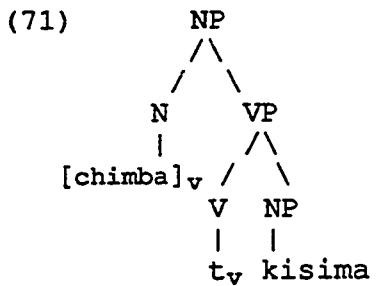
As noted above, Group A compounds all characterize individuals by their professions, habitual activities or attributes. Assuming that an interpretation along these lines is a necessary part of their well-formedness, we can rule out the unacceptable Group A compounds in (68) on semantic grounds. With respect to (69a), note the existence of a grammatical reading in (70a), and that (70b) is well-formed:

(70) a. m-chimba kisima kikubwa
1-dig 7well 7big
ok 'digger of a particular large well'

- b. m-chimba visima vikubwa
1-dig 8well 8big
'digger of big wells'

Apparently the problem with (69a) is that modification gives rise to a specific reading for *kisima*, making the generic interpretation of the compound impossible. In Kiswahili, this problem dissolves if the internal noun is plural; (70b) is an acceptable label for an individual who habitually digs big wells.

(69b) is interesting in its contrast with the grammatical locative (39). The difference between morphologically dependent prefixes expressing number on the one hand, and independent locative prepositions on the other, apparently determines whether gapping is possible (although a correlation is not universal - cf. *pre-* and *post-war*, *inter-* and *intra-departmental*, etc., vs. *I want to buy a newspaper and John wants to *(buy) a book, I didn't buy a record and John didn't *(buy) a cassette.*). I suggest that the verb of the compound must raise into the empty N° to bear the Class prefix (71). The unavailability of a host for this morphology in the absence of a lexical verb renders (69b) impossible.



B&M provide two additional arguments that Bantu compounds are X^0 's (and therefore formed in the lexicon, under their assumptions). First, they claim them to have non-compositional meanings. This is not the case in Kiswahili, as preceding examples show, but it does seem to be the case in Chichewa.²⁶

Second, B&M show that VPs within Group A compounds cannot be conjoined (72).

²⁶ (iia), glossed as *pathblocker* in B&M, has only the meaning shown, according to my Chichewa consultant. (iib) is reported by Sproat (1985) to have been coined by Sam Mchombo for an individual often encountered sitting on a rock, a story Sproat includes in support of his claim that such compounds are productive in Chichewa. My consultant rejects this form with compositional meaning: for her, this construction is not productive, and new coinings of this type are not possible. My own findings for Chichewa thus support Bresnan & Mchombo's claims, even more consistently than the data they include, in fact.

- (ii) a. mpinga-njira
 1block-path
 ok'obstructive person'

 * 'path-blocker'
- b. mkhala-pa-mwala
 1sit-on-stone
 * 'stone-sitter'

- (72) * m- [konda ma-ungu ndi pinga njira]
1 love 6pumpkin and block 9path
'pumpkin lover and pathblocker'

Precise Kiswahili equivalents are ungrammatical for the independent reason that the second of two verbs within apparent conjoined VPs must bear a Class 15 prefix (see Section 2.7).²⁷ Thus both (73a) and (73b) are unacceptable:

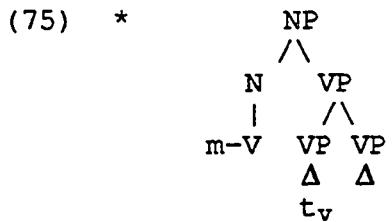
- (73) a. * m- [penda wanyama na chukia watu]
1 love 2animal and hate 2person
'one who loves animals and hates people'
- b. * a-na-penda wanyama na chukia watu
1agr-pres-love 2animal and hate 2person
's/he loves animals and hates people'
- c. a-na-penda wanyama na ku-chukia watu
1agr-pres-love 2animal and 15hate 2person
's/he loves animals and hates people'

Inclusion of *ku-* on the second verb within a Group A nominal does not result in grammaticality, however:

- (74) a. * m- [penda wanyama na kuchukia watu]
1 love 2animal and 5hate 2person
'one who loves animals and hates people'
- b. mpenda wanyama na mchukia watu
1-love 2animal and 1hate 2person
'animal-lover and people-hater'
- c. * m- [teka maji na kukata kuni]
1 draw 6water and 15cut 9wood
'one who draws water and cuts wood'
- d. mteka maji na mkata kuni
1draw 6water and 1cut 9wood
'water-drawer and wood-cutter'

²⁷ Sam Mchombo (p.c.) informs me that this is true in Chichewa also.

I suggest that (73c) involves conjoined I-bars, the second of which is headed by the underspecified morpheme *ku-* (see chapter 5). The ungrammaticality of (73b) results from a ban on VP conjunction, as a verb within conjoined VPs cannot raise to I to support tense and aspect morphology without violating the ECP. Given that the *m*-prefix is affixal and, like tense morphology, will require a host, the ungrammaticality of (73a) follows from the impossibility of representation (75). The two VP nodes in (75) prevent government by the raised verb of its trace, such that (75) violates the ECP.



(74a) and (74c) are impossible since I' does not fulfill the selectional requirements of the null nominal, nor could the leftmost verb raise to support number morphology, if this structure were to be permitted.

In summary, only the non-compositionality of Chichewa compounds argues that they cannot be formed on any VP constituent. The remaining data B&M present is easily accounted for under a phrasal analysis of *Group A* compounds. Such an analysis seems entirely appropriate for Kiswahili. Since in Chichewa *Group A* compounding is not a

productive process, I conclude that Chichewa has only lexically listed GACs. Whether these have internal phrase structure is a moot point.

2.8.3 CP Compounds

Myers (1987) also discusses cases in which a Class marker appears to take a sentential complement in Shona (Myers cites Hannan (1984) for these examples):

- (76) a. chi-ha-ndi-kwan-i
7-NEG-1S-fit-FV/NEG
'tight clothes'
(cf. handikwani "I don't fit")
- b. ku-ma-ziv-a-nd-a-dzok-a
17-2PL-know-FV-1S-PART-PST-return-FV
'a dangerous place'
(cf. madziva ndadzoka 'you who know (where
I've gone) only when I have returned)'

All of the examples Myers provides are similarly idiomatic in meaning. I will assume that these are listed idioms with nominal status, which acquire singular Class prefixes consistent with their inherent stem group specifications. Since comparable forms do not exist in Kiswahili, I will not consider them further.

2.9 Conclusion

In this chapter I have argued that Bantu Noun Class is a gender-based system. Nouns are grouped into genders, which determine the shape of number morphology. "Class"

thus has no status as a grammatical category: it is composed of gender and number.

Most of the apparently derivational uses of Bantu Noun Class prefixes are readily reanalyzable as instances of zero-affixation, by nominal affixes of particular genders. The prefixes of locative Classes 16, 17, and 18 constitute genuine exceptions, and I have analyzed these prefixes as prepositional complements to null nominals (subphrasal *pro^w*). Class 15 has properties that set it apart from all other Classes. I defer discussion of it for Chapter 5.

A controversy in the recent Bantuist literature as to whether prefixes attach to X^0 or XP (cf. B&M, Myers) has little bearing on an analysis along these lines, but it is interesting to note that the status of the synthetic compounds on which the arguments are based appears to vary cross-linguistically, such that in Kiswahili they include VP, whereas in Chichewa they are formed on V^0 . While discussion of the level at which number features are spelled out awaits Chapter 3, I have noted that Chichewa compounds have the same status vis-a-vis this question as do the Hebrew compounds discussed in Borer (*op cit*). Borer presents one account of this phenomenon consistent with a syntactic theory of inflectional morphology, Anderson (1982) another. I leave the choice on this matter open.

In the next two chapters I will propose a specific, syntactic derivation for the affixation of number morphology, and integrate this into a theory of the representation of Bantu Noun Phrases. I will also present an analysis of agreement in the Noun Phrase. Two remaining issues in the analysis of Noun Class prefixes are taken up in Chapters 5 and 6.

I will continue to gloss examples by means of the traditional Class numbering system, throughout this thesis. The Class designations of nouns should be understood as having descriptive rather than theoretical status.

3**NP Structure****3.0****Introduction**

This chapter is concerned with the analysis of NP structure in Kiswahili. I will first argue that number is a functional head which selects NP as its complement.¹ I will then show that word order facts support an analysis in which Kiswahili has noun-raising to Number⁰ (hereafter #) and thence to Determiner⁰ (see Abney (1986), and related work). This derivation accounts for the fact that Kiswahili nouns precede all arguments and modifiers. I will show that genitive pronouns occupy a distinct position from lexical genitives, and attribute this to a requirement that the pronoun occupy [Spec, #P]. Finally, I will suggest positions for APs, demonstratives, and quantifiers in the base.

The structure of the chapter is as follows. I will first take up the question of the representation of number in grammar, in Section 3.1. Based on the existence of languages in which number is an independent word, I will argue that number is a syntactic category. Since grammatical number words precede other NP constituents in

¹ cf. Carstens (1989), (1990), (in press). Ritter (1990) makes an independent proposal that number is a functional head, based on data from Hebrew and Haitian.

head-initial languages, and follow in head-final languages, I will analyze number as a functional head. To reconcile this position with the conclusions of Chapter 2, I will propose that the phonological spellings-out of # in Bantu are gender based; hence Noun Class prefixes. Since # is affixal in Kiswahili, it must attach to a noun host at S-structure. This motivates noun-raising. [$\# + N$] then raises to the empty D^0 , to support its features.

Section 3.2 is concerned with arguments of N, particularly in pronominal form. 3.3 - 3.6 present analyses of APs, demonstratives, and quantifiers. 3.7 provides concluding remarks.

3.1 Number as a Functional Head

In Chapter 2 I proposed that Noun Class prefixes are not themselves heads, but gender-specific spellings-out of number features. I argued that Noun Class consists of distinct categories of number and gender, the latter of which is universally a lexical property of nouns. The analysis provides no language-particular motivation in Kiswahili (and in Bantu generally) for either a phrasal or a sub-X-zero-level treatment of number in grammar - unlike several prior theories of Noun Class, this one does not rely on attachment of the prefixes at a particular level.

I turn therefore to cross-linguistic considerations to decide this question. The following form of variation argues strongly for a syntactic account.

While most languages are like Kiswahili and English in exhibiting number morphology, in others, grammatical number is indicated by the presence of independent words. Dryer (1989) demonstrates the existence of singular, plural, dual, and trial number words (of which plural is the most common). I illustrate with data from Yapese, an Austronesian language with the singular/plural/dual distinction ((1) = Dryer's (4) and (5), for which he cites Jensen (1977)).

- (1) a. ea rea kaarroo neey
 sing car this
 'this car'
- b. ea gal kaarroo neey
 dual car this
 'these two cars'
- c. l'agruw ea kaarroo [two ≠ dual]
 two car
 'two cars'
- d. ea pi kaarroo neey
 plural car this
 'these cars'

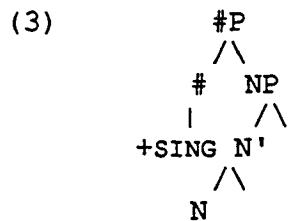
If number is analyzed as a syntactic category, a unified account can be provided for number words and number morphology. I will consider two possible instantiations of this proposal.

First, we might think of number as a specifier of NPs. Under such an approach, a pluralizer like the Yapese *pi* could be analyzed as an overt plural specifier, as shown in (2a). In languages like Kiswahili and English, the specifier itself would be phonologically null, and number morphology on N would be agreement with its features, as (2b) illustrates. I will not adopt this view for two reasons. First, Dryer notes that the order of number words and nouns covaries with that of verbs and their objects, in nearly all cases: VO languages manifest the order number word, N, while the reverse is found in OV languages. As Dryer points out, this is expected if number words are heads, but not if they are specifiers. Second, to the best of my knowledge, the two pluralization strategies under consideration are in complementary distribution. If number morphology were agreement, this would not be expected - agreement with an overt number specifier ought not only to be possible, but perhaps to be as common as NP-agreement doubling, across languages. The apparent absence of the pattern shown in (2c) is therefore surprising.²

² One might account for this by assuming number morphology to be clitic-like, but this would not explain why a true agreement relation between number specifier and head should be unavailable.

(2)	a.	NP	b.	NP	c.	NP
		/ \		/ \		/ \
	SPEC	N'	SPEC	N'	SPEC	N'
	pi	N	[plural]	N	PL WORD	N+pl.agr
	Pl					
		kaarroo		ma-gari		
		car		C6-car		
		[Yapese]		[Kiswahili]		[unattested?]

I will consider instead that number words and morphemes are functional heads which select NP complements. In Yapese, singular, plural, and dual are overt, independent lexical items. For Bantu, I propose that the numerous instantiations of singular and plural are introduced by the redundancy rules already motivated, applying at PF. Singular and plural themselves are represented syntactically as unique, abstract affixes, differentiated by a [+/-singular] feature. Nouns raise and incorporate to these syntactic affixes (3), triggering spell-out.



I propose that the [+/-singular] distinction is universal, but that further divisions within these specifications, such as [-singular, +dual], are entirely optional. Thus it is not the case that all languages have (covert) dual and trial, as their existence will only be assumed on the basis of overt evidence. That singular is

unmarked in many languages suggests that it is the default category, where number is concerned. I will not pursue this question here.³

Dryer observes that, for the most part, number words occur outside of the position of adjectives and within the scope of articles. I illustrate with examples from Tongan, Kimaghama, and Cayuvava (Dryer's (6), (25) and (26); his citations follow examples).

- (4) a. ha ongo puha'e ua⁴ [ART-#-N-MOD]
art dual box two
'two boxes' (Tongan, Churchward 1953:28)
- b. do mamu raga [N-AP-#]
tree big plur
'big trees' (Kimaghama, Boelaars 1950:33)
- c. me-ris rabiri [#-AP-N]
plur-new paddle
'new paddles' (Cayuvava, Key 1967:50)

The relative order of number words and adjectives is consistent with the hypothesis that NP is the number word's

³ For example, many Bantu languages distinguish a number of future tenses, including one for later today, one for tomorrow, and one for thereafter. The situation is similar for past tenses. This does not seem to necessitate the conclusion that all languages have these tenses, although universality of the +/-past distinction seems an unavoidable conclusion. Alternatively, we might equate dual and trial with aspects.

⁴ Note that *ongo* - 'dual' here is not agreement with *ua* - 'two', but one of a set of independent number words which need not co-occur with numerals. One might be tempted to suspect a kind of pro-drop in the case of [dual] in the absence of 'two', but for [plural], where any number greater than one is potentially involved, the content of such an empty pronominal would not be recoverable.

complement. I assume #P to be the complement of the determiner (cf. Abney (1986) and others, on DP theory), in keeping with their relative positions.⁵ Note that a theory in which determiners are constituents of NP cannot easily accommodate the treatment of grammatical number words as heads. The head-like behavior of number words therefore provides indirect support for the DP hypothesis.

Apparent counter-examples no doubt exist in various languages,⁶ and I have two general remarks to make in this regard. First, across languages the surface word order in "noun phrases" clearly differs from that of the base quite frequently - we will see evidence for this conclusion with

⁵ In six of the 44 languages in Dryer's survey, articles and number words cannot co-occur, which he takes as evidence that they are the same category, and occupy the same position. Perhaps the functional categories determiner and number are non-distinct in these languages.

⁶ Dryer himself presents a few exceptions to the word order generalizations on which my proposals are based. He cites Djapu as a language in which plural words occur inside of numerals, genitives, and adjectival modifiers, and presents Vietnamese as a case in which plural words might be argued to occur outside of articles (i):

- (i) nhu-*ng* cai con *ngu'a* den
plur ident anim horse black
'the black horses'

The status of *cai* and *con* is not clear, however. It is possible that they are not determiners, but some other type of nominal classifiers. I will assume this to be the case. In Djapu, according to Dryer the plural word always immediately follows the noun. I will tentatively assume it to be a clitic, which attaches to the noun by lowering.

respect to Kiswahili shortly. A detailed investigation is therefore warranted before counter-examples can be argued to disconfirm my proposal. Second, it seems likely that both grammatical number words and determiners have close relatives which occupy distinct syntactic positions from those considered here. A precise understanding of the semantic and syntactic properties of items resembling determiners/demonstratives and grammatical number words is obviously prerequisite to their classification and analysis. In broad terms, it seems that number may be expressed overtly either as morphology or as an independent word, and that the latter appears 'inside' of the position of determiner-like items, but 'outside' that of nominal modifiers and arguments. The hypothesis advanced in this thesis is intended to capture these generalizations. I do not expect that it will provide an account of all function words which appear in the vicinity of nouns.

Finally, the word order in English NPs is not obviously compatible with this proposal, and therefore requires some explanation. While plural in English is affixal, the position of the plural noun in (5) is such that raising to acquire plural morphology is not a possibility, unless obligatory raising and adjunction of either adjectives or complements and specifiers of N is stipulated:

- (5) a. intelligent students of physics
b. surprising rumors about Nancy

I will assume that affix-hopping operates in the English nominal system to bring N and plural morphology together, just as it does in the verbal system between V and the morphology of INFL. I will not pursue the reasons for this here.

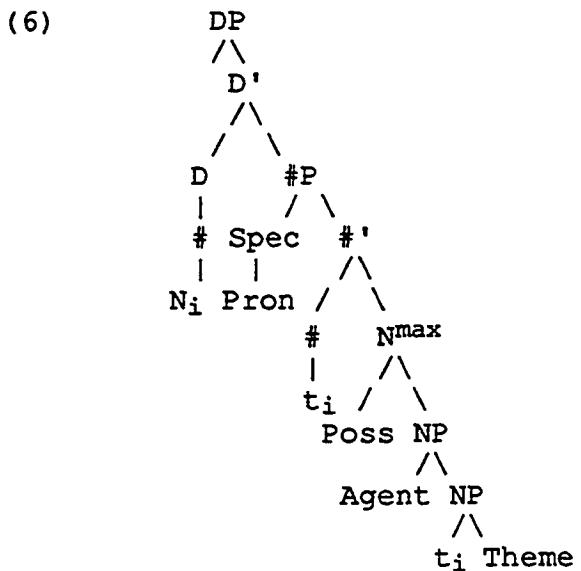
3.2 **The Syntax of Genitives**

3.2.0 **Introduction**

I will now present evidence that Kiswahili genitive pronouns occupy a unique structural position, located to the left of the base position of N. I will analyze this position as [Spec, #P]. From this it follows that the Kiswahili noun has raised beyond #, to D⁰. I will argue that lexical genitives are always situated lower in the tree than their pronominal counterparts. The proposed structure is shown in (6) (cf. Ritter (1990), Valois (1990), Sportiche (1990); Koopman & Sportiche (1990) on IP structure).⁷

⁷ cf. also Torrego (1988) who proposes that possessors and agents originate in NP, much as illustrated here.

I label the highest nominal projection N^{max}, on analogy with v^{max} in Koopman & Sportiche (to appear). While this is more for expository convenience than from commitment to a special constituent of this type (see below), full parallelism between VP- and NP-internal subjects will be proposed in chapter 4.



3.2.1 Constraints on Pronominalization

In Kiswahili, as in English and other well-studied languages, genitive phrases can be of a variety of thematic types, of which possessors are but one. (7) provides examples of a few of these:

Within the framework of Sportiche (1990), which Valois (1990) adopts, each XP containing an argument is fully phrasal and has an empty head (cf. also Larson (1988)). I will not adopt this approach largely because of questions it raises about agreement. For our purposes, however, any representation with the appropriate hierarchical relations would do. Base-generation of all arguments attached to iterated X' projections is equally workable (cf. Fukui & Speas (1986)).

- (7) a. kitabu cha Zeinabu [possessor]
 7book 7of
 'Zeinab's book'
- b. uandishi wa vitabu wa Toni Morrison [agent, theme]
 14write 14cf 8book
 'Toni Morrison's writing of books'
- c. mkutano wa jana [time adjunct]
 3meeting 3of 9yesterday
 'yesterday's meeting'
- d. nguo za rangi mbalimbali [modifier]
 10clothes 10of 10color various
 'clothes of many colors'

In their surface realization, Kiswahili phrasal genitives are reminiscent of the rather freely ordered, post-nominal de-phrases of Spanish. An obvious difference is that Kiswahili -a, which introduces all non-pronominal genitives, always agrees with the noun to which the genitive is related.

Internal and external arguments of both result and process nominals are fairly freely ordered relative to each other as shown in (8) and (9), although there appears to be a dialect split on the preferred order, between NSO and NOS. If only one NP occurs with such a noun, it must be interpreted as patient, as in (10) (cf. Kayne (1984), Safir (1986), Grimshaw (1990), and others for discussion of this phenomenon).

- (8) picha ya Doug ya Nanji
 9picture 9of 9of

1. Doug's picture of Nanji (Doug = possessor or agent)
2. Nanji's picture of Doug (Nanji = as above)

(9) uharibifu wa mfalme wa maadui yake
14destruction 14of 1king 14of 2Aenemy 2Aposs

1. the king's destruction of his enemies
2. the destruction of the king by his enemies

(10) uharibifu wa mfalme
14destruction of 1king
'the destruction of the king'
(king = patient, *agent)

(11) and (12) show that while genitive arguments may be pronominalized, multiple genitive pronouns are disallowed ((11e), (12f)). Where agent and patient/theme arguments co-occur, the agent may be realized as a pronoun, but pronominalization of the theme/patient is not acceptable ((11b)-(11d), (12c) vs. (12d)). Of the pair (possessor, theme) only the possessor may pronominalize (see (13)).⁸ Word order is relatively strict when a pronoun is involved: the pronoun may not be separated from the head noun by another of the noun's arguments. Thus in the case of a pronominal possessor or agent co-occurring with a lexical theme, the pronoun is immediately post-nominal ((11c), (12e)).

(11) a. uharibifu wa mfalme wa maadui
14destruction 14of 1king 14of 2Aenemy
'the king's destruction of the enemies'
'the enemies' destruction of the king'

⁸ The co-occurrence of possessor and agent is not terribly felicitous. This will be discussed in 3.2.3, as will the restrictions on pronominalization illustrated here. See also chapter 4.

- b. uharibifu wake wa maadui
 14destruction 14his 14of 2Aenemy
 'his destruction of the enemies'
 *'the enemies' destruction of him'
 - c. uharibifu wa mfalme wao⁹
 14destruction 14of 1king 14their
 *'the king's destruction of them'
 ??'their destruction of the king'
 - d. uharibifu wao wa mfalme
 14destruction 14their 14of 1king
 'their destruction of the king'
 *'the king's destruction of them'
 - e. * uharibifu wake wao/ wao wake
 14destruction 14his 14their/14their 14his
- (12) a. habari za watalii za Nairobi
 10news 10of 2tourist 10of
 'the tourist's news (reports) of Nairobi'
- b. habari zake
 10news 10its
 'news of it'
 - c. * habari zake za watalii
 10news 10its 10of 2tourist
 'the tourist's news of it'
 - d. habari zao za Nairobi
 10news 10their 10of
 'their news of Nairobi'
 - e. * habari za Nairobi zao
 10news 10of 10their
 'their news of Nairobi'
 - f. * habari zao zake/habari zake zao
 10news 10their 10its/10news 10its 10their
 'their news of it'
- (13) a. picha yangu ya Busi
 9picture 9my 9of
 'my picture of Busi'

⁹ This phrase is acceptable on the irrelevant reading, "the destruction of their king", because agreement of Classes 14 is homophonous to that of Class 1.

- * 'Busi's picture of me'
- b. * picha ya Busi yangu
 9picture 9of 9my
 'my picture of Busi'
 'Busi's picture of me'

While (11), (12) and (13) would be consistent with an adjacency requirement holding between N and a genitive pronoun, and therefore with a cliticization account, the examples in (14) argue against this. (14) illustrates the occurrence of a demonstrative between N and a pronominal argument. This is the demonstrative's preferred position (see Section 3.5 for discussion of this fact).

- (14) a. uandishi huu wake wa vitabu vyatapenzi
 14writing 14this 14her 14of 8book 8of 6love
 'this her writing of romantic books'
- b. ? habari zote zao za Nairobi
 10news 10all 10their 10of
 'this their news of Nairobi'

I conclude that the judgements in (11c) and (12e) are not due to a clitic property of pronouns, but reflect a difference between their structural positions and those of lexical arguments.

Note that Kiswahili has no alternative means of realizing genitives. The -a phrases and pronouns illustrated in these examples are the only possibilities.

3.2.2 Analysis: Pronouns are in [Spec, #P]

I propose that Kiswahili genitive pronouns differ from lexical arguments in being restricted to a particular Spec

position - specifically, [Spec, #P]. This position is base-generated empty, and pronouns arrive at it by movement.

Let us begin by considering the impossibility of multiple genitive pronouns. Such a situation also obtains in several familiar languages: only one argument may be realized as a prenominal genitive pronoun in Spanish, French, Italian, or English:

- (15) a. * su mi foto [Spanish]
b. * mon leur foto [French]
c. * la sua mia foto [Italian]
d. * his my picture

This fact, and their distinctive prenominal location, argues strongly that only a single structural position exists for such pronouns. I suggest that the Kiswahili facts presented in (11)-(13) warrant the same interpretation. Suppose genitive pronouns are always restricted to a particular structural position, in Kiswahili as in these languages. Then despite the absence of a corresponding upward bound on the number of genitive phrases, only one genitive pronoun will be possible. This is what I will assume.

I have argued that nouns raise to #. As genitive pronouns occupy a unique position to the right of the noun's S-structure location, but to the left of its other arguments, I analyze their location as an intervening

specifier position. The identity of the particular Spec involved remains to be determined.

Based on cross-linguistic factors discussed in Valois (1990), I will consider that genitive pronouns are in [Spec, #P]. I will further assume that Kiswahili nouns raise beyond #, to D⁰, in order to account for the order [N-pronoun-X].

Valois (op cit) derives differences between French and English word order in DP from the assumption that while English N remains *in situ*, N in French raises to # (= NUM) ((16) and (17) from Valois (18) and (23)).

- (16) [DP The [Num_P [NP complete invasion of Jupiter]]]

- (17) [DP L' [Num_P [Num invasion_i [NP complète t_i de Jupiter]]]]

According to Valois (in progress), French pronouns raise to [Spec, #P] and then cliticize to D, as shown in (18b). This derives their position to the left of N, and their complementary distribution with determiners. Italian differs in that genitive pronouns remain in [Spec, #P], as in (18a):

- (18) a. [DP [D la] [*P mia [* [N casa] [NP t_i t_N]]]]
the my-f house(f)
'my house'

- b. [D O-mai [*P t_i [* [N maison] [NP t_i t_N]]]]
my-f house(f)
'my house'

Kiswahili has no overt determiners, and genitive pronouns are always to the right of the noun, as noted above. Suppose D^0 is present but always empty in Kiswahili, and that the noun therefore raises to it obligatorily. Under this assumption, we need not posit any difference across languages in the S-structure position of pronouns,¹⁰ apart from localized idiosyncracies of the type exemplified by cliticization in French.

It remains to be explained how genitive pronouns and lexical arguments come to occupy distinct positions, and where they originate. I assume that pronouns are base-generated at the same places in the tree as lexical arguments. The question of their relative positions is the concern of the Section 3.2.3.

To sum up, I have suggested that Kiswahili genitive pronouns occupy [Spec, #P], and that nouns raise to # and then to D. This derivation is exemplified in (19).

- (19) [D uimba-ji_# [#P wake_i [# t_# [NP t_i [NP t_N wa wimb_o]]]]]]]
14sing-NOM 14her 14of 14song
'Her singing of the song'

While the pronominal occupant of [Spec, #] in (19) is an agent, possessors and themes may also appear in this position.

¹⁰ Thanks to Tim Stowell for pointing this out.

- (20) a. picha yake
9picture 9poss
'his picture (pronoun = theme)'

- b. [D picha [#P yakei [#' t_N [NP ti [N'...t_{N.} ti]

Further evidence in favor of equating the position of Kiswahili genitives with that of prenominal genitives in English and the Romance languages is supplied by an additional shared restriction. 'unaffected' theme arguments of certain nouns may not be realized as pronouns in Kiswahili. A prohibition on the realization of these arguments as prenominal genitives is well-documented for English and Romance (cf. Anderson (1978), Cinque (op cit)):

- (21) a. u-ju-zi wa esimu
14-know-NOM 14of 9linguistics
'the knowledge of linguistics'

- b. ujuzi wake
14knowledge 14poss
*'its knowledge (= 'knowledge of it')'
'his/her knowledge (pronoun = possessor)'

- (22) a. hamu ya sigara
9desire 9of 9cigarette
'the desire for a cigarette'

- b. hamu yake
9desire 9poss
*'its desire'
'his/her desire (pronoun = possessor)'

- (23) a. mahitaji ya ujuzi
6need 6of 14knowledge
'the need for knowledge'

- b. mahitaji yake
6need 6poss
*'its need'
'his/her need (pronoun = possessor)'

An account in which the ungrammaticality of these pronominal themes is connected to their structural position will relate these facts to both the English **his knowledge* (*his* = theme) and **John's knowledge* (*John* = theme), as is clearly necessary.

These data provide interesting evidence regarding the synchronic status of Kiswahili genitive pronouns. The genitive pronouns are morphologically transparent: they consist of agreement on the vowel -a, plus an ending which bears the person features of the possessor. -a is likely the so-called '-a of relation': the prepositional -a which introduces phrasal genitives. What we have seen regarding the distribution of genitive pronouns in Kiswahili argues against an otherwise highly plausible analysis of them: that they are PPs (or KPs¹¹) just like phrasal genitives, with incorporated objects, 'of+it', 'of+me', etc. Were this the end of the story, we would not expect (21)-(23), since the status of the so-called pronouns would have no reason to differ from that of phrasal genitives. I conclude that the similarity of Kiswahili genitive pronouns to 'of+pronoun' forms is strictly morphological and historical. In synchronic syntax, they are simple pronominals.

¹¹ I adopt a KP analysis of -a phrases in Chapter 4, cf. Travis (1987).

I have argued that pronominal genitives are restricted to [Spec, #P], which is located to the left of the noun's D-structure position. Lexical arguments appear lower in the tree. I assume that pronouns originate in the same positions as their lexical counterparts and raise to Spec obligatorily. On the necessity of pronoun raising, Koopman (1990) argues that pronouns are in general attracted to Spec positions. I will return to this point in Chapter 4.

In the next section, I will provide evidence confirming that despite the freedom in their relative positions illustrated in (8), (9), and (11), lexical arguments of N are hierarchically arranged.

3.2.3 Binding in NP

(11)-(13) demonstrated that a theme in Kiswahili cannot be pronominalized if an agent or possessor is present. These judgements parallel findings in the Romance languages, discussed in Cinque (1980). Cinque points out that in Italian, the realization of genitive arguments as prenominal clitics must adhere to a hierarchy, such that a theme may not cliticize in the presence of an agent or possessor, nor may an agent cliticize in the presence of a possessor.¹² In work on NP structure this has typically

¹² This is a considerable simplification, for expository convenience. Cinque distinguished several classes of nouns.

been taken to indicate that the arguments of N are hierarchically organized, in the top-to-bottom order Possessor, Agent, Theme/Patient (cf. Sportiche (1981), Zubizaretta, (1982), Torrego (1986), Mallen (1989), Giorgi & Longobardi (1990) among others, for versions of these assumptions). Raising for cliticization across a higher argument violates movement theory.¹³ (11) and (12) argue that this proposal be extended to Kiswahili.

The case is difficult to reproduce with respect to the relative positions of possessors and agents, because these two arguments do not co-occur with great felicity. The clearest judgements are obtained from relativization structures. I will be assuming that relativization out of NP does not involve wh-movement, because it crucially includes a resumptive pronoun, and violates diagnostic movement constraints - in (24) the Subject Condition and in (25) the Coordinate Structure Constraint.¹⁴

¹³ Within the framework of Sportiche's and Valois' assumptions, this is attributable to the generation of arguments of N in the Spec positions of iterated NPs. The same insight may be couched in terms of Condition A of the Binding Theory (Chomsky (1981)); or intervening potential binders under Relativized Minimality (Rizzi (1990)). Nothing in this analysis hangs on the choice among these approaches.

¹⁴ It is likely that the so-called *amba*-relatives of these examples never involve movement (cf. Jackson (1986)), and that agreement functions as a resumptive pronoun for relativization in other categories. The facts of the so-called "tensed relative" are more complex, and outside the scope of this investigation - however, "tensed relatives"

- (24) Huyu ni mwimba-ji amba-ye uimba-ji wake wa
 1this COP 1sing-NOM COMP-1RC 14sing-nom 14her 14of
 wimbo wa taifa u-li-ni-pend-ez-a
 24song 14of 9nation 14agr-pst-1S-please-caus
 'This is the singer who [[her singing of the National
 Anthem] pleased me]'

- (25) Huyu ni mwānamke ambaye ni-na-penda uimbaji
 1this COP 1woman COMP-RC 1S-pres-like 14sing-NOM
 wake na uimbaji wa Juma
 14her and 14sing-nom 14of
 'This is the woman who I like [[her singing] and
 Juma's singing]]'

However, the head of a relative clause must be linked to a resumptive pronoun, and pronominalization within the DP is by assumption derived by DP-internal movement of a pronoun to [Spec, #]. The hierarchy to which pronominalization adheres is therefore respected by relativization.¹⁵

With this in mind, consider (26) - (28). These examples show that where three arguments of N co-occur and one is relativized, it can only be interpreted as possessor.

do exhibit movement effects (Jackson, (op cit)). A resumptive pronoun is nonetheless required. This would appear to be a kind of 'that-trace' effect within DP.

¹⁵ The influence of this hierarchy on extraction out of NP is well-documented, in Cinque (1980) and related work.

(26) ??hii ni idara ambayo ni-na-penda picha
9this COP 9department COMP-9RC 1S-pst-like 10picture

zake za walimu wake za wanafunzi wao
10its 10of 2teacher 2its 10of 2student 2their

'this is the department which I like its teachers'
pictures of their students'

(27) ??hawa ni walimu ambaa ni-na-penda picha
2this COP 2teacher COMP-2RC 1S-pres-like 10picture

zao za idara yao za wanafunzi wao
10their 10of 9department 9their 10of 2student 2their

'these are the teachers of whom I like their students'
pictures of their department'

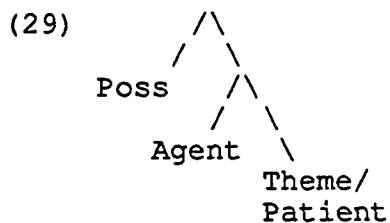
(28) ??hawa ni wanafunzi ambaa ni-na-penda picha
2this COP 2student COMP-2RC 1S-pres-like 10picture

zao za idara yao za walimu wao
10their 10of 9department 9their 10of 2student 2their

'these are the students of whom I like their teachers'
pictures of their department'

In each case, only the possessor reading is available for the head of the relative clause. I conclude that Kiswahili possessors are structurally superior to agents.

These data support the hierarchical arrangement of nominal arguments shown in (29).



Further support for (29) is provided by a binding-theoretic test. Data involving binding of pronouns by quantifiers reveal consistent asymmetries within the pairs

(agent, theme) and (possessor, theme), arguing that the first member c-commands the second (cf. Barss & Lasnik (1986), Marantz (1990) on these tests).

- (30) a. mauaji ya rais wake ya kila waziri
6killing 6of 1president 1his 6of every 1minister
'every_i minister's killing of his_i president'
* 'his_i president's killing of every_i minister'¹⁶
- b. mauaji ya kila rais ya waziri wake
6killing 6of every 1president 6of 1minister 1his
'every president_i's killing of his_i minister'
* 'his_i minister's killing of every president_i'
- (31) a. usomaji wa kila mwandishi wa kitabu chake
14reading 14of every 1writer of 7book 7poss
- b. usomaji wa kitabu chake wa kila mwandishi
14reading 14of 7book 7poss 14of every 1writer
'every writer_i's reading of his_i book'
- (32) a. * usomaji wa mwandishi wake wa kila kitabu
14reading 14of 1writer 1poss 14of every 7book
- b. * usomaji wa kila kitabu wa mwandishi wake
14reading 14of every 7book 14of 1writer 1poss
'its_i author's reading of every book_i'
- (33) a. picha ya kila mwanafunzi ya mwalimu wake
9picture 9of every 1student 9of 1teacher 1his
'every student's picture of his teacher'
* 'his teacher's picture of every student'
(student = possessor)
- (30) through (33) demonstrate that an agent or possessor QP may bind a pronoun in the theme or patient NP, but not

¹⁶ I assume that the (b) examples of this set are ruled out both because c-command of the pronoun by the quantifier fails, and because Weak Crossover violations will occur at LF.

vice-versa. I take this as confirmation for the view that the agent and possessor arguments are structurally higher than the patient or theme.

Judgements on possessor-agent-theme combinations are unfortunately fairly murky, as (34)-(36) show. Based on (26)-(28) and the contrast in (35), I assume nonetheless that they may co-occur in D-Structure, as shown in (6). I will argue in Chapter 4 that the unacceptability of (34)-(36) is due to Case theory.

- (34) ?? picha ya Doug ya Busie ya Nanji
9picture 9of 9of 9of
'Doug's picture of Busie taken by Nanji'
'Busie's picture of Nanji taken by Doug'
'Nanji's picture of Doug taken by Busie'
etc.
- (35) picha za kila idara za walimu
10picture 10of every 9department 10of 1teacher

wake za wanafunzi wao
lits 10of 1student 1their

?? 'every department's pictures by its teachers of
their students'
* 'their student's pictures by every department of
its teachers'
* 'its teachers pictures of every department by
their students'
etc.
- (36) ?? picha yake ya Nanji ya Doug
9picture 9poss 9of 9of
'her picture of Nanji by Doug'
'Doug's picture of Nanji by her'
'Nanji's picture of her by Doug'
'Doug's picture of her by Nanji'
etc.

This completes my overview of Kiswahili genitive phrases. The next few sections of this chapter will be

devoted to fleshing out the representation of the Kiswahili DP, by locating APs, demonstratives, and quantifiers in the base.

3.3 APs

In this section I will show that Kiswahili APs are located between [Spec, #P] and the position of a lexical possessor or agent in N^{max}. I will propose that this position corresponds to an N^{max} adjunction site.¹⁷

Kiswahili adjectives appear to the right of the noun, as shown in (37) and (38). Native adjectives agree with the head noun, as in (37). Many adjectives are borrowings, and do not agree. (38) provides two representative examples.

- (37) a. magari **mapya** [agreeing adjectives]
6car 6new
'new cars'
- b. * **mapya** magari
- c. magari **mazuri**
6car 6good
'good cars'
- d. * **mazuri** magari
- (38) a. magari **rahisi** [non-agreeing Arabic adjectives]
6car cheap
'cheap cars'

¹⁷ I ignore here the question of ordering restrictions among adjectives and their implications (cf. Valois (*op cit*)).

- b. * **rahisi** magari
- c. magari **ghali**
6car expensive
'expensive cars'
- d. * **ghali** magari

The AP precedes all lexical arguments of N, regardless of their ordering with respect to each other. I show this for representative result and process nominals in (39) and (40).

- (39) a. picha **mpya** ya Amira ya Hasan ok[N-AP-arg-arg]¹⁸
9picture 9new 9of 9of
- b. * picha ya Amira **mpya** ya Hasan * [N-arg-AP-arg]
9picture 9of 9new 9of
- c. * picha ya Amira ya Hasan **mpya** * [N-arg-arg-AP]
9picture 9of 9of 9new
'Amira's new picture of Hasan'
'Hasan's new picture of Amira'
- (40) a. uharibifu **yamkini** wa mji wa adui ok[N-AP-P-A]
14destruction probable 14of 3town 14of lenemy
- b. uharibifu **yamkini** wa adui wa mji ok[N-AP-A-P]
14destruction probable 14of 1enemy 14of 3town
- c. * uharibifu wa mji **yamkini** wa adui * [N-P-AP-A]
14destruction 14of 3town probable 14of 1enemy
- d. * uharibifu wa adui **yamkini** wa mji * [N-A-AP-P]
14destruction 14of 1enemy probable 14of 3town
- e. * uharibifu wa adui wa mji **yamkini** * [N-A-AP-P]
14destruction 14of 1enemy 14of 3town probable
'the enemy's probable destruction of the town'

¹⁸ arg=argument, N=noun, AP=Adjective Phrase, P=patient, A=agent.

APs typically follow genitive pronouns, as can be seen in

(41)-(46).

- (41) a. picha yake **mpya** ya Hasan
9picture 9poss 9new 9of
'her new picture of Hasan'
- b. ??picha **mpya** yake ya Hasan
- c. * picha **mpya sana** yake ya Hasan
9picture 9new very 9her 9of
'her very new picture of Hasan'
- d. picha yake **mpya sana** ya Hasan
9picture 9her 9new very 9of
'her very new picture of Hasan'
- (42) a. gari lake **jipyा**
5car 5his 5new
'his new car'
- b. ??gari **jipyा** lake
- c. * gari **jipyा sana** lake
5car 5new very 5his
'his very new car'
- d. gari lake **jipyा sana**
- (43) a. uandishi wake **mzuri** wa vitabu
14writing 14his 14good 14of 8book
'His good writing of books'
- b. ??uandishi **mzuri** wake wa vitabu
14writing 14good 14his 14of 8book
'His good writing of books'
- (44) a. * uharibifu **yamkini** wao wa mji
14destruction probable 14their 14of 3town
'their probable destruction of the town'
- b. uharibifu wao **yamkini** wa mji
14destruction 14their probable 14of 3town
'their probable destruction of the town'

- (45) a. ??gari **rahisi** langu
5car cheap 5my
'my cheap car'

b. gari langu **rahisi**

- (46) a. ??nyumba **ghali** yako
9house expensive 9your
'your expensive house'

These data demonstrate that APs are situated in between the surface position of a pronoun ([Spec, #P]) and that of a lexical argument (N^{\max} and below). I propose that they are adjoined to N^{\max} .

The impossibility of initial APs remains to be explained. It has been suggested that the site of attachment of APs is determined by their selectional restrictions, analogously to that of adverbs (Valois (1990)). Assuming this, we can conclude that no class of APs is specified for a DP attachment site, as Valois suggests.

3.4 -ote - 'all'

I will argue in this section that -ote - 'all' is base-generated as head of an Adjective Phrase, in adjoined position. Unlike other APs, -ote may raise to [Spec, DP] in the syntax. This allows it to saturate a noun's argument position, in the sense of Hudson (1989), Higginbotham (1985).

-ote - 'all' shares crucial distributional properties with adjectives, despite its quantificational meaning. Its syntactic position is to the right of a genitive pronoun, as shown in (47a).

- (47) a. wanafunzi wangu **wote** wa esimu
2student 2my 2all 2of 9linguistics
'all my students of linguistics'
- b. ??wanafunzi **wote** wangu wa esimu
2student 2all 2my 2of 9linguistics
'all my students of linguistics'

I propose that -ote is an adjective by category, and that its maximal projection is adjoined to N^{\max} .

It would be consistent with (47a) to suppose instead that -ote heads a QP, and selects an NP as its complement, out of which the noun raises. Such an instance of noun-raising would violate the Head Movement Constraint of Travis (1984), however, in crossing over -ote:

- (48) [D N [*P...[QP [Q -ote [NP...t_N...]]]]]
| _____ |
| _____ |

- (49) Head Movement Constraint: an X^0 may only move to the Y^0 that properly governs it.¹⁹

Under the analysis of -ote as an adjective, this problem does not arise.

Interestingly, however, -ote differs from other adjectives in being able to appear pre-nominally:

¹⁹ I follow Chomsky (1986a) in assuming this to derive from the ECP, as noted in chapter 1. This does not concern us here, however.

(50) a. ? vyote vitabu vyangu
8all 8book 8my

b. vitabu vyangu vyote
8book 8my 8all
'ali my books'

I suggest that this is indirectly due to -ote's logical properties as a quantifier. Higginbotham (1985) proposes that nouns have one argument slot, accounting for their ability to function as predicates. When they form NPs,²⁰ this argument position is bound by the definite determiner, or by a quantifier like every.

Hudson (1989) argues that it is occupants of the structural position [Spec, DP] which may bind the noun's theta-role in Higginbotham's sense, and that definite determiners and certain quantifiers appear in this position. Suppose -ote patterns with this group, as a potential theta-role binder of N. If it is to perform this function, it must raise to [Spec, DP].^{21, 22}

It is possible that when -ote appears *in situ* at S-Structure, it will raise to [Spec, DP] at LF. However, we

²⁰ This is Higginbotham's wording.

²¹ Thanks to K. Kinyalolo for suggesting this approach to -ote and the demonstratives (see 3.5). Any flaws in its implementation are of course my own.

²² See 3.5 for discussion of this derivation *vis-a-vis* movement theory.

will see below that LF raising to this position cannot be obligatory. I will return to this question shortly.

3.5 Demonstratives

In this section I will argue that Kiswahili demonstratives are base-generated as adjuncts to #P, and that they undergo optional raising to [Spec, DP]. I assume that they are potential binders for the noun's theta role, because of their deictic properties.

While overt articles are lacking in Kiswahili, there are three demonstratives: near, far, and aforementioned (AM), as in (51). Demonstratives resemble -ote in that their location may be either pre- or post-nominal.

- (51) a. kitabu hiki/hiki kitabu
7book 7this
'this book'
- b. kitabu kile/kile kitabu
7book 7that
'that book'
- c. kitabu hicho/hicho kitabu
7book 7AM
'the aforementioned book'

As (52) and (53) show, post-nominal demonstratives precede all lexical arguments of N.

- (52) a. wanafunzi hawa wa Mario [N-DEM-POSS]
2student 2this 2of
'these students of Mario's'
- b. * wanafunzi wa Mario hawa *[N-POSS-DEM]
2student 2of 2this
'these students of Mario's'

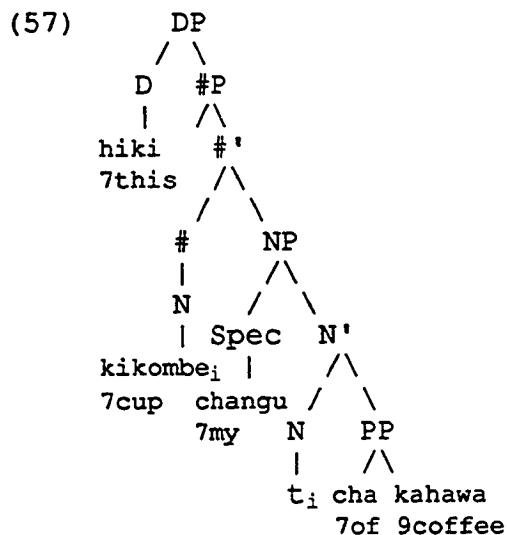
- c. wanafunzi wale wa esimu [N-DEM-COMPL]
 2student 2that 2of 9linguistics
 'those students of linguistics'
- d. * wanafunzi wa esimu wale *[N-COMPL-DEM]
 2student 2of 9linguistics 2that
 'these linguistics students'
- (53) a. usoma-ji huu wa wanawake wa hesabu
 14read-NOM 14this 14of 2women 14of 9math
 'this study of mathematics by women'
 ok[N-DEM-AGENT-THEME]
- b. * usoma-ji wa wanawake huu wa hesabu
 14read-NOM 14of 2women 14this 14of 9math
 'this study of mathematics by women'
 *[N-AGENT-DEM-THEME]
- c. * usoma-ji wa wanawake wa hesabu huu
 14read-NOM 14of 2women 14of 9math 14this
 'this study of mathematics by women'
 *[N-AGENT-THEME-DEM]
- (54) shows that this order holds between demonstratives and pronominal arguments.
- (54) a. * usomaji **wangu** huu wa esimu
 14study 14my 14this 14of 9linguistics
 'this my study of linguistics'
- b. usomaji huu **wangu** wa esimu
- (55) a. * kikombe **chako** **hiki** cha kahawa
 7cup 7your 7this 7of 9coffee
 'this cup of coffee of yours'
- b. kikombe **hiki** **chako** cha kahawa

- (56) a. * uharibifu **wake** **huu**
 14destruction 14his 14this
 'this his destruction'

- b. uharibifu **huu** **wake**

In summary, we can see that demonstratives precede all arguments of N, including pronouns in [Spec, #P].

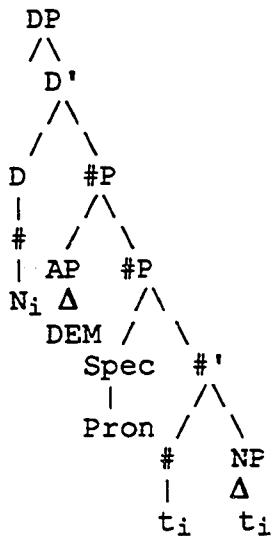
A priori, one might expect demonstratives to be a species of determiner. The order [DEM-N-XP] would be easily explicable, if we revised our conclusion that N raises to D. The representation in (57) suggests itself:



Unfortunately the most common order, [N-DEM-XP], would be difficult to derive. Movement of N across the X⁰ demonstrative to some higher position would violate the Head Movement Constraint (49). Syntactic lowering of the demonstrative to adjoin to NP is also not a desirable solution, in that it would not be structure-preserving in the sense of Chomsky (1986a).

I conclude that demonstratives are adjuncts to #P, perhaps because they are a type of adjective whose selectional restrictions demand this level of attachment, based on considerations of compositionality (cf. Marantz (1984)). The representation of (58b) is thus (58a).

(58) a.



b. kikombe hiki changu
7cup 7this 7my
'this my cup'

As in the case of -ote, when the demonstrative appears prenominally it has moved to [Spec, DP]. Like -ote, demonstratives may bind the noun's argument from this position.

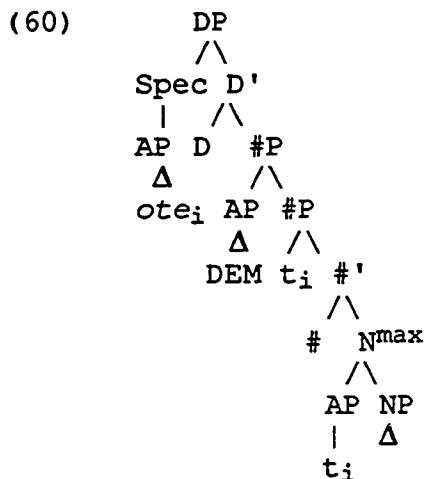
Now consider the restrictions on the co-occurrence of -ote and the demonstrative, shown in (59). These examples show that -ote and the demonstrative cannot precede the noun simultaneously. If the two co-occur, -ote must follow

the demonstrative. The demonstrative itself may be either pre- or post-nominal in this case.

- (59) a. * wote hawa wanafunzi
2all 2this 2student
- b. * hawa wote wanafunzi
2this 2all 2student
- c. * wote wanafunzi hawa
2all 2student 2this
- d. * wanafunzi wote hawa
2students 2all 2these
- e. hawa wanafunzi wote
2this 2student 2all
- f. wanafunzi hawa wote
2student 2this 2all
'all these students'

Assuming -ote and the demonstrative compete for [Spec, DP] as the only prenominal position, we explain the ungrammaticality of their cooccurrence in (59a) and (59b). The contrast between (59d) and (59f) shows that post-nominal -ote may not precede the demonstrative. This I attribute to their adjunction sites: the demonstrative adjoins to #P, and -ote to N^{max}. (59c) vs. (59e) show that this order may not be altered by raising: where they cooccur, only the demonstrative may raise to [Spec, DP]. From the standpoint of movement theory, it is interesting to note that the presence of a pronoun in [Spec, #P] does not prevent -ote from appearing in prenominal position.

I suggest that the AP -ote may raise to [Spec, DP] by adjunction to #P, just in case the demonstrative is not present.²³ This derivation yields a violation of Relativized Minimality, however, if the demonstrative intervenes between -ote and its trace (cf. Rizzi (1990)).



To sum up, I have suggested that demonstratives originate as adjuncts to #P, and may raise to [Spec, DP] to bind the noun's argument slot. -ote may also do this, but only if the demonstrative is not present.²⁴ This is because

²³ In this I differ with Valois (*op cit*), who proposes that adjunction to #P is impossible. Were adjunction ruled out, and Spec-to-Spec movement forced, there would be no licit route that -ote can travel to [Spec, DP] as long as a genitive pronoun is present. The demonstrative, however, would be expected to be irrelevant.

²⁴ If neither -ote nor the demonstrative is present, I assume that non-overt determiners perform this function. Presumably when a demonstrative is included in the DP, the null D is contentless, to prevent the equivalent of **every the dog*, which Higginbotham rules out as vacuous quantification. This suggests that the demonstrative must

the demonstrative creates an opaque domain for antecedent-government of -ote's trace.

3.6 *kila*

The last nominal modifier I will consider is *kila* - 'every/each'. *kila* may only appear prenominally.

- (61) a. *kila mwanafunzi wa esimu*²⁵
 every 1student lof 9linguistics
- b. * *mwanafunzi kila wa esimu*
 1student every 1of 9linguistics
- c. * *mwanafunzi wa esimu kila*
 1student lof 9linguistics every

 'every linguistics student'

I will assume that *kila* is a true quantifier, and heads a QP. *kila* takes a DP as its complement.²⁶

raise at LF. Since all the boys is well-formed, I will not extend this assumption to -ote.

²⁵ The fact that *kila* does not agree is probably not of syntactic significance, since it is an Arabic borrowing (see 3.3).

²⁶ At this point there is no reason to prefer this analysis over one in which the QP headed by *kila* occupies [Spec, DP]. We will see in the following section that every 'light' XP may scramble rightwards. As *kila* may not do this, I have opted for the analysis presented here. Note that *kila* must select a DP rather than an NP, to ensure raising of N beyond a pronoun in (ii).

- (ii) *kila kitabu chake*
 every 7book 7her
 'her every book'

(ii) exemplifies a curious difference between Kiswahili on the one hand, and Hungarian/English on the other, since in the latter two languages the order shown in the gloss is

It is interesting to note that *kila* may not cooccur with either the demonstrative or *-ote*, regardless of whether the latter two are pre- or post-nominal.

- (62) a. * *kila kitabu hiki*
every 7book 7this
- b. * *kila hiki kitabu*
every 7this 7book
- c. **hiki kila kitabu*
'this every book'
- (63) a. * *kila kitabu chote*
every 7book 7all
- b. * *kila chote kitabu*
every 7all 7book
- c. * *chote kila kitabu*
'every all (of the) book'²⁷

Srivastav (p.c.) points out that while 'all' is plural, and demonstratives are either singular or plural, 'every' and 'each' type quantifiers are distributive. I will assume that the ill-formedness of the co-occurrences in (62) and (63) relates to the mismatch in these items' semantic properties. While there is undoubtedly more to be said on this topic, it is outside the scope of this study.

found (cf. Szabolcsi (1987)). Given the cases of lexical idiosyncracy we have seen with respect to 'this' and 'all', this is perhaps not surprising, but nonetheless it requires consideration beyond what is possible here.

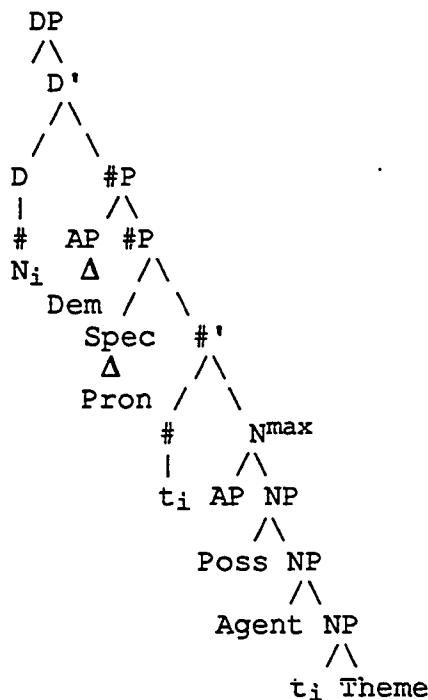
²⁷ *-ote* in the singular can mean 'all' in the sense of 'the whole thing'. This seems the most likely meaning were the phrase grammatical.

3.7

Conclusion

I have argued that Kiswahili noun phrases are DPs with empty D^0 s, to which nouns raise. Number is represented in grammar as a functional category $\#$, which projects $\#P$, the complement to D^0 . Arguments of N are hierarchically arranged in the downwards order [possessor-agent-theme/patient], within projections of N. Genitive pronouns raise obligatorily to [Spec , $\#$], from their base-positions. APs (including -ote and demonstratives) are base-generated as adjuncts. The complete structure is shown in (64).

(64)



Before leaving this topic, let us consider briefly some word order alternations characteristic of the

Kiswahili DP. (65a)-(65d) illustrates the freedom of order which typifies 'light' constituents:

- (65) a. shati hili langu zuri
9shirt 9this 9my 9good
- b. hili shati langu zuri
5this 5shirt 5my 5good
- c. shati langu zuri hili
5shirt 5my 5good 5this
- d. shati langu hili zuri
5shirt 5my 5this 5good
- e. * shati zuri langu hili
5shirt 5good 5my 5this
- f. * shati hili zuri langu
5shirt 5this 5good 5my
- g. * shati zuri hili langu
5shirt 5good 5this 5my
- h. * langu shati hili zuri
5my 5shirt 5this 5good
- i. * zuri shati hili langu²⁸
5good 5shirt 5this 5my

'this my nice shirt'

(65a) is the expected order, and (65b) derives from it by raising of the demonstrative (cf. Section 3.5). I suggest that (65c) is derived by rightwards movement and adjunction of the demonstrative, and that in (65d) this is followed by rightwards adjunction of the AP. (65e), (65f), (65g), and (65i) are ungrammatical because they involve dislocation of the genitive pronoun, which can only appear in Spec. Any

²⁸ Additional ungrammatical permutations involving non-initial N are ignored here, for the sake of space economy.

derivation of (65h) will involve either movement of the pronoun or of the noun, the latter impossible since not structure-preserving.

(65a)-(65d) argue that any lexical XP may undergo rightwards movement and adjunction. We have seen various counterexamples to this, however, two of which I reproduce below.

- (39) a. picha **mpya** ya Amira ya Hasan ok[N-AP-arg-arg]
9picture 9new 9of 9of

- b. * picha ya Amira **mpya** ya Hasan *[N-arg-AP-arg]
9picture 9of 9new 9of

- c. * picha ya Amira ya Hasan **mpya** *[N-arg-arg-AP]
9picture 9of 9of 9new

'Amira's new picture of Hasan'
'Hasan's new picture of Amira'

- (40) a. uharibifu **yamkini** wa mji wa adui ok[N-AP-P-A]
14destruction probable 14of 3town 14of 1enemy

- b. uharibifu **yamkini** wa adui wa mji ok[N-AP-A-P]
14destruction probable 14of 1enemy 14of 3town

- c. * uharibifu wa mji **yamkini** wa adui *[N-P-AP-A]
14destruction 14of 3town probable 14of 1enemy

- d. * uharibifu wa adui **yamkini** wa mji *[N-A-AP-P]
14destruction 14of 1enemy probable 14of 3town

- e. * uharibifu wa adui wa mji **yamkini** *[N-A-AP-P]
14destruction 14of 1enemy 14of 3town probable

'the enemy's probable destruction of the town'

In these examples, an AP is unable to scramble across lexical arguments.

I suggest that the contrast between (65) on the one hand and (39) and (40) on the other indicates that relative

heaviness of constituents contributes to the determination of acceptability, as a stylistic factor. The lack of ordering restrictions on lexical arguments of N follows, since their relative weight is comparable.

This concludes my sketch of the Kiswahili noun phrase. In the next chapter, I will propose a theory of agreement and Case in DP, based on the representation developed here.

4.0

Introduction

In this chapter I examine agreement and Case relations within the extended Noun Phrase (ENP). ENP is an important domain from the standpoint of agreement theory, since only within it are both a head and its arguments the bearers of ϕ -features. VP, IP and CP are comparatively limited in what they can reveal, since within these categories arguments alone bear ϕ -features. I therefore consider that the evidence from ENP is of particular importance to the theory of agreement generally.

I will first argue that two distinct relations bring about the spread of agreement features: government, and the [Spec, head] relation. I will show that languages which have government-based agreement (GBA) in ENP also have post-nominal subjects in most cases, whereas languages with [Spec, head] agreement in this domain have obligatory subject raising. I will propose that full parallelism exists between subjects of NP and subjects of VP: both originate internally to these categories, and both have *in situ* and movement strategies for obtaining Case (cf. Koopman & Sportiche (1990), Ritter (1990)). I will attribute the correlation between government-based agreement and Exceptional Case Marking for subjects *in situ* to the gender feature characteristic of languages with GBA:

only when a [+gender] noun incorporates into $\#^0$ is N^{max} is transparent to $\#^0$, under my account.

Finally, I will show that even when raising to [Spec, #P] occurs within the ENP of a language having government-based agreement, [Spec, head] agreement does not occur. I will attribute this fact to binding requirements on agreement morphology.

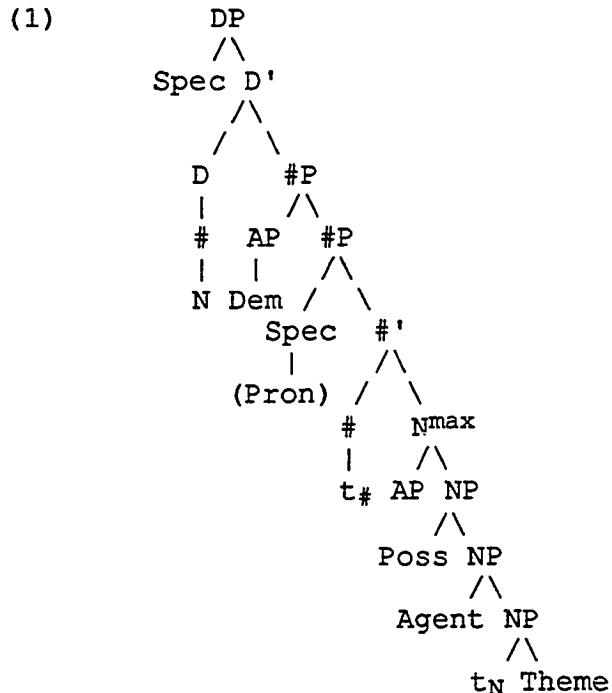
The chapter has seven sections. In 4.1, I present the evidence that agreement is spread through both the [Spec, head] relation, and structural government. In 4.2, I propose to partition languages into two groups, each characterized by shared specifications for six properties having to do with Case, agreement, and the position of subjects. In 4.3, I propose an account of three such properties in terms of the two strategies for Case to subjects proposed in Koopman & Sportiche (op cit). These three properties are the appearance of a possessor or agent in a prenominal Spec position, the triggering of [Spec, head] agreement by that argument, and the presence of morphological Case on the same argument. In 4.4 I argue that all correlations characterizing the two groups of languages relate directly or indirectly to the presence or absence of grammatical gender, and suggest an explanation. In 4.5, I show that [Spec, head] and government-based agreement do not co-occur within ENP, and propose the

Agreement Licensing Principle to account for this. In 4.6 I consider the Hebrew data in Ritter (1990), in light of the proposed theory. 4.7 sums up the findings, and considers two alternative analyses.

4.1 Two Kinds of Agreement

4.1.1 Agreement under Government

In Chapter 3, I proposed that Kiswahili DPs have the representation in (1).



Aside from a few borrowings, all of the modifiers of N agree with it in number and gender. Pronouns also agree with N, as does "associative" -a, the Case marker introducing all lexical arguments. I provide

representative examples in (2)–(5), from two morphologically distinctive genders (Gender B, = Classes 3 & 4, and Gender D = Classes 7 & 8).¹

- (2) a. mti **mzuri** [APs agree]
3tree 3good
'a nice tree'
- b. miti **mizuri**
4tree 4good
'nice trees'
- c. kisiwa **kizuri**
7island 7good
'a nice island'
- d. visiwa **vizuri**
8island 8good
'nice islands'
- (3) a. mti **ule** [demonstratives agree]
3tree 3that
'that tree'
- b. miti **ile**
4tree 4that
'those trees'
- c. kisiwa **kile**
7island 7that
'that island'
- d. visiwa **vile**
8island 8that
'those islands'

¹ Adjectives are unique among modifiers and arguments of N in that they bear the prefixes of nouns, rather than standard agreement morphology. I assume that the spellout of \emptyset -features as Noun Class prefixes is triggered by the [+N] feature. Category sensitivity of the agreement relation is well-motivated (see Carstens & Kinyalolo (1989)).

- (4) a. mti **w**angu [genitive pronouns agree]²
 3tree 3my
 'my tree'
- b. miti **y**angu
 4tree 4my
 'my trees'
- c. kisiwa **ch**angu
 7island 7my
 'my islands'
- d. visiwa **v**yangu
 8island 8my
 'my islands'
- (5) a. mti **w**a mkulima [-a agrees]
 3tree 3of 1farmer
 'the farmer's tree'
- b. miti **y**a wakulima
 4tree 4of 2farmer
 'the farmer's trees'
- c. kisiwa **ch**a Halima
 7island 7of
 'Halima's island'
- d. visiwa **v**y a Halima
 8island 8of
 'Halima's island'
- b. usomaji **w**a Juma **w**a kitabu
 14read-NOM 14of 14of
 'Juma's reading of the book'

I turn now to demonstrating that agreement features are assigned under government. The facts in (2)-(5) do not provide quite enough information to support this conclusion: looking at the tree in (1), we can see that

² Phonological changes accompany agreement on genitive pronouns in (4) and -a in (5), these items being vowel initial. i and u appear as glides y and w respectively, and k palatalizes before a.

(2)-(5) would be consistent with the claim that everything within the noun's c-command domain agrees with it, aside from items with their own gender features.³ We need to see a case in which a governed category has governees of its own, to determine the precise locality constraints on the agreement relation.

(6) demonstrates that while the -a Case-marker agrees with the head noun, the modifiers and arguments of the lexical argument it introduces may only agree with the latter.

- (6) a. kisiwa cha mjomba wangu ~~mfupi~~/***changu** ***kifupi**
7island 7of 1uncle 1my 1short/*7my *7short
'my short uncle's island'

³ cf. *mkulima* - 'farmer', *Juma*, *kitabu* - 'book' in (5), which do not agree. It is interesting to note that while the genitive pronouns in (4) exhibit only person and number features, those of some Bantu languages are gender-specific, and yet agree. (i) and (ii) are from Lusoga, a Ugandan language:

- (i) li-a-gu-o
5agr-a-3agr-o
'its (Class 3, of a Class 5 possession)'

(ii) gu-a-li-o
3agr-a-5agr-o
'its (Class 5, of a Class 3 possession)'

Note that these are pronouns, and do not cooccur with lexical possessors.

b. usoma-ji wa mtoto **yule/*ule**
14read-NOM 14of 1child 1that/*14that

wa kitabu **kile/*ule/*yule**
14of 7book 7that/*14that/*1that

'that student's reading of that book'

Consider the definitions in (7)-(9). (7) provides a definition for government in terms of barriers. (8) defines barrier in terms of *minimality*: this is the only kind of barrier we need consider here. (9) gives formal content to the notion *exclude*, such that if α is not inside of any single projection of a category γ which dominates β , then γ^{\max} excludes α , and is therefore a potential barrier between α and β .⁴

(7) **Government:** α governs β iff α m-commands β , and no barrier for β excludes α .⁵

(8) **Minimality:** γ is a barrier for β if γ is a projection of δ , a zero-level category distinct from β .

(9) **Exclusion:** γ^{\max} excludes α iff no γ^n dominates α .

In addition to these definitions, I will be relying on some assumptions about morphology which were introduced in chapter 1, and utilized in chapter 2. I reiterate these

⁴ These definitions from Chomsky (1986a). I assume that Minimality is relative to the type of government considered, in the sense of Rizzi (1990). I will be concerned only with head-government, however.

⁵ I take m-command to be defined relative to x^{\max} - i.e. if β is adjoined to α^{\max} , α governs it.

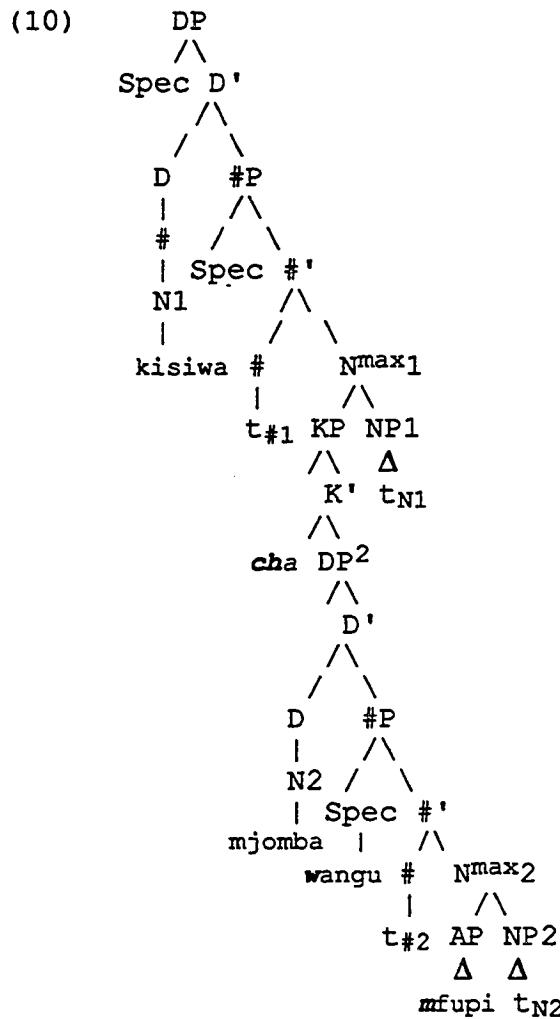
briefly. First, I assume with Baker (1988) that an X^0 with an item incorporated into it inherits the government domain of the incorporated item (cf. the Government Transparency Corollary (GTC), introduced in chapter 1). This means that when N^0 incorporates to $\#^0$, and $\#^0$ subsequently raises and incorporates to D^0 , the derived D^0 then has the government domains of t_* and t_N . Once the government domain of t_N is delineated, we may therefore add this to the government domain of t_* , and so forth.⁶

Second, I assume that the features of the derived item include all the features of its members, so long as these do not clash (see *Percolation*, Chapter 1). This is crucial, since number features can only be transmitted from $\#^0$ to the complement of N in (5) by virtue of N -incorporation.⁷ Otherwise, $\#^0$ does not govern N 's complement (as will be illustrated below), and N itself has no number features to assign.

Now let's look at a close-up of the structure of (6a), shown in (10). I analyze -a as head of a Case Phrase (KP) (cf. Lamontagne & Travis (1987)).

⁶ See section 4.5 for revision of this notion, however.

⁷ I am ignoring here the possibility of #-lowering, although I assume it to be in principle possible. #-lowering to N would also result in assignment of #s features by N to its arguments, under *Percolation* (see Chapter 1 for definition, 4.5 for discussion).



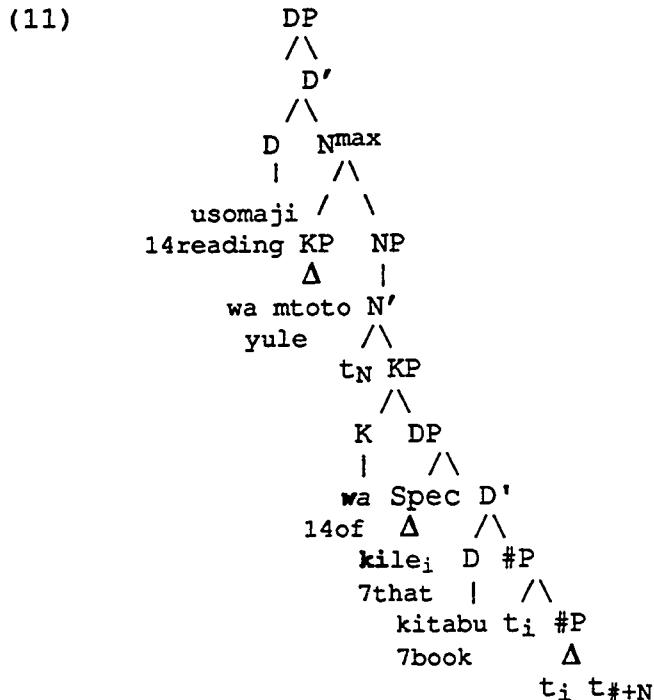
Under (8), and assuming the Government Transparency Corollary, $[D[\#[Nkisiwa]]]$ governs KP because the trace t_{N1} governs it. It also governs -a as the head of this KP, since no projection is a barrier for its head under (8). As government gives rise to the transmission of \emptyset -features, -a bears number and gender agreement with $[D[\#[Nkisiwa]]]$ (Class 7 = Gender D, singular, under the assumptions of chapter 2). $[D[\#[Nkisiwa]]]$ does not govern the complement

to *-a*, however. Since KP includes DP and excludes [_D[*[_N*kisiwa*]]) and members of its chain (*t_{#1}*, *t_{N1}*), KP is a barrier for DP under (8). It is expected, then, that everything in DP2 agree with N2, as shown in (6a)/(10).⁸

The case of a prenominal demonstrative or prenominal *-ote* differs only slightly. Consider (6b), as represented in (11). When *-le* in this example raises to [Spec, DP], it is governed by [_D[*[_N*kitabu*])), under m-command. Given the version of Minimality we adopted in (8), nothing more need be said. However Rizzi (1990) argues that [Spec, XP] is accessible to government by the governor of XP, just in case X is a functional head. It is interesting to consider what this entails, with respect to (11). Under such an assumption, *-le* is governed by *-a*. Note, however, that *-le* cannot agree with the features of *usomaji*, transmitted by *-a*. If we assume that it is in principle impossible for the recipient of agreement features to reassign them, under some principle like (12), these agreement facts become compatible with Rizzi's proposal. The projections of *-a*

⁸ Agreement on the head of a KP complement to the noun, shown in (5b), is perhaps a less controversial illustration of the importance of the GTC and percolation. Complements are widely assumed to be protected by their selecting heads from outside governors. Assuming this, number agreement on the head of a complement should be impossible, unless incorporation of N into # makes possible the transmission of #'s features throughout N's government domain.

protect -le from government by [$D[\#Nusomaji]$] and members of its chain. The only possibility then is for the demonstrative to agree with [$D[\#Nkitabu]$].



usomaji wa mtoto yule/*ule wa kile/*ule
 14read-NOM 14of 1child 1that/14that 14of 7that/*14that

kitabu
 7book

'the reading of that child of that book'

- (12) **Recycling prohibition:** Second-hand \emptyset -features may not be reassigned.

Note that the KP *wa kile kitabu* in (11) is a complement, and thus protected from government by $\#$ under any standard definitions of government and barrier. The fact that it agrees in number with the singular [$\#$ *kitabu*] is accounted for by the Government Transparency Corollary.

I have argued that the domain in which agreement features are assigned within the Kiswahili DP is the domain of government. Agreement with the head noun typifies DPs in Bantu languages: I provide examples from KiLega (Zaire) Shona (Zimbabwe), Zulu (S. Africa), and Chichewa (Malawi) in (13)-(15).

Based on the close resemblance between these facts and those of Kiswahili, I will assume that government is the relevant relation in these languages, and in the many other Bantu languages which manifest this pattern. Romance languages appear also to belong in this group:

- (17) la mia casa bella [Italian]
the-fem my-fem house-fem pretty-fem
'my pretty house'

⁹ For the sake of consistency, in (14) I substitute the Meinhoff Class for the Class 3, plural specification provided by Nyembezi, the latter being part of a Zulu-specific numbering system. Note that the latter system is gender based.

- (18) las peliculas malas suyas [Spanish]
 the-fem-Pl movie-fem-Pl bad-fem-Pl 3Sposs-fem-PL
 'his bad movies'

There are two main differences between the Bantu and Romance pattern of facts. First, the post-nominal Case-marker does not inflect in these languages, as (19), (20), and (21) show. Carstens & Kinyalolo (1989) argue that what heads bear agreement is partially a matter of lexical idiosyncracy. I assume that the Proto-Romance Case-marker simply was not specified as an agreement-bearer, and that its descendants have maintained this property.¹⁰

- (19) la casa di Genarro [Italian]
the-f house-f of
'Genarro's house'

(20) el avion de Juan [Spanish]
the-m plane-m of
'Juan's airplane'

(21) la voiture de Paul [French]
the-f car-f
'Paul's car'

Second, determiners are overt, and agree in gender. This is interesting, as they do not stand in either of the structural relationships with nouns which is typically associated with the spread of agreement features.

¹⁰ Torrego (1988) argues that Spanish *de* is ambiguous between a Case-marker and a true preposition (see 4.3). It could be that these Case-markers all descend from a preposition in the ancestor language, which did not necessarily occur in governed positions, and therefore could not consistently inflect.

Following Stowell (1987), Torrego (1988), I suggest that determiners belong to gender classes themselves, and therefore are not actually agreeing elements. I will not pursue this here.

In general, the examples in (17) and (18) show a strong resemblance to those of Bantu. I conclude that agreement in ENP is assigned under government in Romance, as in Bantu.

Hausa, an Afro-Asiatic language of the Chadic group, also appears to have gender agreement under government. Tuller (1986) shows that both APs and the heads of KP arguments agree in gender ((22) taken from Tuller (*op cit*), chapter 1, (34) and (48)).

- (22) a. na Aisha /ta Ali
of-masc. Aisha/of-fem. Ali
'Aisha's (m) //'Ali's (f) '
- b. gidaa na Aisha
house of-m
'Aisha's house'
- c. mootaa ta Ali
car of-f
'Ali's car'
- d. karamaar rigaa bakaa
small-f-L gown-f black-f
'little gown which is black'¹¹

¹¹ L = linker, a morpheme borne by prenominal adjectives, according to Tuller.

This pattern of agreement facts is thus attested in languages of diverse genetic affiliation, which have in common the specification of their nouns for grammatical gender. I will argue that the correlation of gender and government-based agreement is non-accidental, in 4.5.

4.1.2 **Spec-head Agreement: Hungarian, Turkish, Chamorro, Yup'ik, Tzutujil**

The Kiswahili pattern of agreement in ENP instantiates one of two major types, the other being [Spec-head] agreement (SHA). In this section I will briefly review a few cases of SHA in ENP which have been documented in the linguistic literature (cf. Kornfilt (1984), Abney (1987), Szabolcsi (1981), (1987), Chung (1983)).

While in Kiswahili a genitive pronoun agrees with N, in Turkish, the reverse is true: N agrees with the genitive pronoun (I reproduce these examples from Abney (1987), who cites Underhill (1976)).

- (23) a. el
'the/a hand'
- b. (sen-in) el-in
(you-GEN) hand-2S
'your hand'
- c. (on-un) el-i
(he-GEN) hand-3S
'his hand'

A lexical genitive also triggers agreement (24b). The noun may only agree with one argument, however (24c).

- (24) a. ben-im resm-im
I-gen picture-1S
'my picture'
- b. Ahmet ve Ali-in resm-i
and -gen picture-3PL
'Ahmet and Ali's picture'
- c. * ben-im Ahmet ve Ali-in resm-im-i/-i-im
I-gen and -gen picture-1S-3PL/3PL-1S
'my picture of Ahmet and Ali'
- d. * ben-im on-un resm-im-i/-i-im
I-gen he-gen picture-1S-3S/3S-1S
'My picture of him'

Similar restrictions that we have encountered on the distribution of genitive arguments in other languages suggests that (24c) and (24d) are attributable to the availability of only a single position for genitives, as both Kornfilt (op cit) and Abney (op cit) assume. Turkish appears to lack a Case-marker like English *of* and Kiswahili *-a*; the position which triggers agreement seems similar to the position of a genitive phrase bearing English '*s*', as opposed to that of an *of*-phrase. I follow Kornfilt (op cit) and Abney (op cit) in taking this to be a Spec position, as is consistent with its singularity and its phrase-initial location (24). The position shares with English its tolerance for lexical DPs, in contrast with the restriction of Kiswahili and Romance [Spec, #P] to pronouns.

The facts of Hungarian as described in Szabolcsi (1987) are quite similar (see (25), = Szabolcsi's (6c)). One major difference between the two languages is that a theme *DP-rol* - 'of DP' phrase is possible with result nouns like *kep* - 'picture' in Hungarian, as shown in (26). Only the theme may appear in a *-rol* phrase, however, as these examples show. An argument which does not bear the post-position *-rol* appears prenominally, and triggers agreement ((25), (26c), (26d)). (26e) shows that the co-occurrence of agents and possessors is impossible (cf. Kiswahili facts described in chapter 3). As in Turkish, I assume that the agreement trigger is in a Spec position (cf. Szabolcsi (*op cit*), Abney (*op cit*)). It is interesting to note the tolerance for lexical genitive arguments in the Hungarian pre-nominal position, as in Turkish.

- d. a mi-0 kepu-nk Mari-rol
 art we-NOM picture-1PL Mary-of
 'our picture of Mary'
- e. * a mi-0 kepu-nk Mari-rol Zsuzsa-rol
 art we-NOM picture-1PL Mary-of Susan-of
 'our picture of Mary by Susan/by Mary of Susan'
- f. * a mi-0 Zsuzsa kepu-nk-e Mari-rol
 art we-NOM picture-1S-3S Mary-of
 'our picture of Mary by Susan'

Another difference between Turkish and Hungarian is that the genitive is preceded by an article in the latter but not in the former. It is possible that N in Turkish raises to D, as it does in Kiswahili, while in Hungarian it occupies a lower head position (presumably #, as in the Romance languages). This would place genitives in Turkish in [Spec, DP], as Abney proposed. We could assume that those of Hungarian differ in occupying [Spec, #P], as in Romance and Bantu. The positing of such a difference has fairly major implications for the theory of Case assignment in ENP, which I will consider in 4.3. For the time being, I assume without argument that the null D of Turkish remains empty, and that the position of prenominal arguments is uniformly [Spec, #P].

Chamorro, as described in Chung (1983), appears to be a language in which a genitive argument triggers Spec-head agreement on N, while N raises to a higher position. (27a) shows agreement with a lexical agent in Chamorro. (27b) exemplifies *pro-drop* of an agreed-with possessor.

- (27) a. i bisita-nā si Francisco as Teresa
 the visit-AGR(3sg) Unm of
 'Francisco's visit to Teresa'
- b. i lepblo-nña (*gui')¹²
 the book-AGR(3sg) s/he
 'his/her book'

As Chung points out, this construction is analogous to VSO with subject *pro-drop* at the sentence level. I assume that Chamorro NSO is analogous to the Germanic, V-to-C type of verb-inversion: like V-to-C, Chamorro NSO involves a subject raised to Spec, triggering agreement, and additional raising of the noun across this subject. It is not clear, however, what position the noun has raised to: D is occupied by the overt determiner *i*, and the word order rules out #⁰ as a possible landing site, since #⁰ is positioned to the right of [Spec, #], the assumed position for agreed-with subjects. The Chamorro noun appears the the subject's left. There are two possibilities: N has

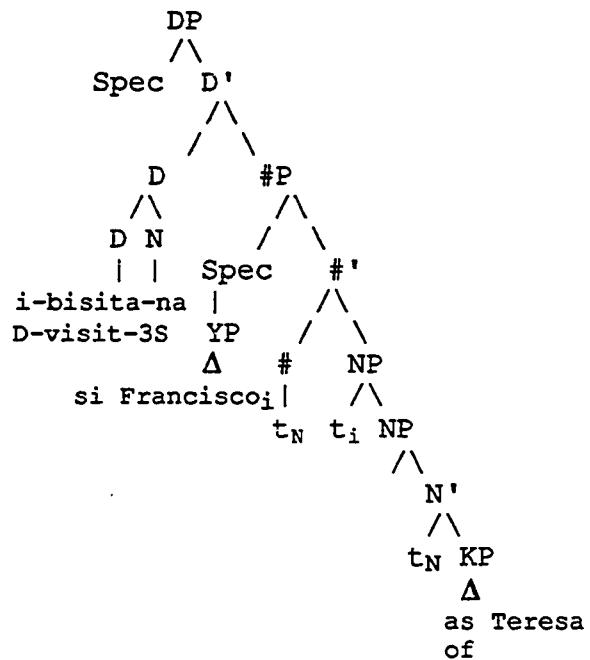
¹² This example shows that overt pronouns may not "double" agreement, a fact which need not concern us here.

According to Chung, *si* in (27a) is a morphologically unmarked "Case-marker" for proper nouns. The fact that it does not appear with common nouns argues strongly against equating it with *of*, as does the fact that *si* introduces proper nouns within IP ((iii) = (8a) in Chung (1990)):

- (iii) Ha-bisita si Dolores si Juan
 3S-read Unm Unm
 'Dolores visited Juan'

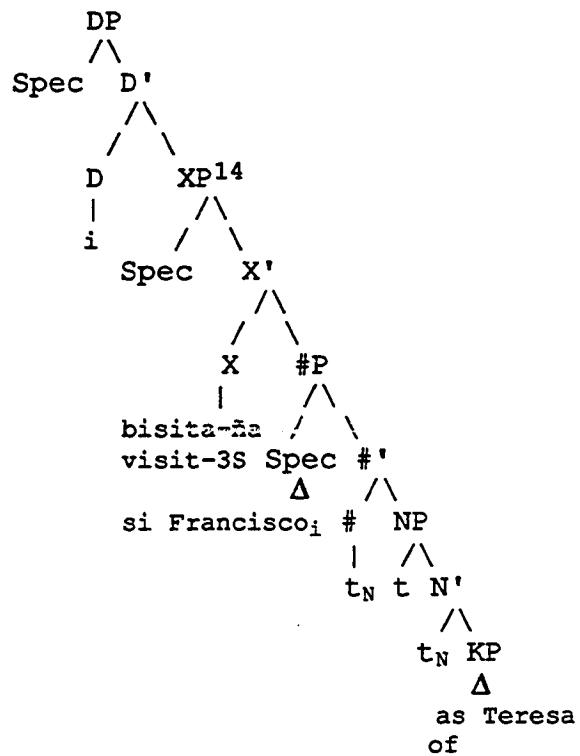
cliticized to D as shown in (28), or an additional functional projection exists within ENP, as in (29):¹³

(28)



¹³ The Chamorro data show that agreement in ENP can be licensed under reconstruction. This will be important in section 4.5.

(29)



I provisionally assume (28), as the conservative choice. If empirical evidence (from AP adjunction sites, cross-linguistic word-order variation, and the like) disconfirms this, (29) should be adopted.

Abney (1987) provides two additional examples of this agreement pattern: Yup'ik and Tzutujil ((30) and (31) = adapted from Abney's (24) and (35) respectively. Abney cites Dayley (1985) for (31)).

¹⁴ The reverse hierarchical order of #P and XP is also a possibility. In light of evidence that IP = two functional projections (Pollock (1989), (Chomsky (1989))), and given the parallelism of IP and DP noted by many researchers, (29) merits exploring in some detail.

- (30) a. angute-m kuiga-0
 man-ERG river-SM
- b. angute-t kuiga-t
 man-PL river-PL
 'the men's (pl.) river'
- c. angute-k kuiga-k
 man-dual river-dual
 'the men's (du.) river'
- (31) a. qa-tza⁷ⁿ
 1PLerg-nose
 'our nose'
- b. ee-tza⁷ⁿ
 2PLerg-nose
 'your (pl.) nose'
- c. kee-tza⁷ⁿ
 3PLerg-nose
 'their nose'

4.1.3 Summary

In this section we have seen data from five languages in which one argument of N triggers agreement on N. In all but the Chamorro case, the argument of concern is prenominal; while this is not the surface order in Chamorro, I have argued that noun-raising obscures an otherwise parallel derivation. The arguments triggering agreement do not appear in of-phrases; in four languages they bear a morphological Case, and in three of these the Case involved is one typical of subjects of IP.¹⁵ The

¹⁵ Case in Chamorro appears not to be overtly marked, in general.

languages of this group also differ from those of Section 4.1.1 in having no grammatical genders.

4.2 The Gender Parameter

The languages discussed in the preceding sections divide typologically into two groups. I will refer to the Bantu and Romance group as Type I languages, and to Chamorro and the languages of Abney's (1987) study as Type II languages. Their areas of contrast are summarized in (32). I label this partitioning "the gender parameter", since gender is one of its critical elements. I will argue in 4.4 that the presence of grammatical gender plays a crucial role in determining the characteristics of Type I languages.

(32) The Gender Parameter	Type I	II
a. gender	+	-
b. GBA ¹⁶ in ENP	+	-
c. lexical subjects in post-nominal position	+	-
d. lexical subjects in [Spec, #P]	-	+
e. morphological Case on lexical subject	-	+
f. [Spec, head] agreement in ENP	-	+

The remainder of this section is devoted to sketching out an account of (32).

16 GBA = government-based agreement.

4.3

A Case Account

A subset of the correlations in (32) is highly reminiscent of certain facts at the sentence-level. Kuroda (1986), Fukui & Speas (1986), Koopman & Sportiche ((1990), (henceforth K&S)) argue that subjects of IP always originate VP-internally, and that languages differ as to whether Case may be assigned to that position or not. K&S note that raising correlates with subject agreement:¹⁷ if the subject does not raise to [Spec, IP] for nominative Case, there is no subject-verb agreement, as this is [Spec, head] agreement between [Spec, IP] and INFL. Welsh and Arabic are examples of languages in which raising is optional, according to K&S. (33) illustrates the correlation between full agreement and subject-initial order in Arabic. When the subject follows the verb, as in (33b), only default, third person singular agreement is possible. When the subject precedes, as in (33a), full agreement in person, number, and gender appear (these examples from Mohammad (1987)).

- (33) a. al-?awlaad-u jaa?uu
the-boys-NOM came 3PM
'the boys came'
- b. jaa?a al-?awlaad-u
came 3SM the-boys-NOM
'the boys came'

17 cf. also Kuroda (op cit) on this correlation.

- c. * jaa?uu al-?awlaad-u
came 3PM the-boys-NOM
'the boys came'
- d. * al-?awlaad-u jaa?a
the-boys-NOM came 3SM
'the boys came'

I propose that possessors and agents of a Type I language are similar to VP-internal subjects in Arabic, in that they may receive Case *in situ*. An NP-internal subject therefore need not raise to [Spec, #P] in a Type I language.^{18,19} In Type II languages, subjects must raise for Case. In summary, I propose (34).

- (34) **Generalized internal subject hypothesis:** All arguments originate within lexical categories, and may raise to the Specs of functional projections as necessary.²⁰

Case-theoretic considerations are the standard motivation for such raising, but movement to an A'-position is also movement to a functional Spec, for scope purposes, and other factors are imaginable.

It seems that the realization of Case assigned to *in situ* subjects of N is always an *of*-like morpheme – not one of the Cases that # assigns to its Spec in Type II

¹⁸ Pronouns in Kiswahili and Romance are an exception (see Chapter 3).

¹⁹ cf. Ritter (1990) for a Case account of genitive-raising in Hebrew, to be discussed in 4.6.

²⁰ cf. Fukui & Speas (1986) for the same idea, arrived at via a different route.

languages, which are often INFL-like, and spelled out as morphology on the head of the argument DP. of (and its analogues in other languages) is generally the Case-marker for complements of N, and often serves as a kind of default Case-marker within ENP, having the ability to introduce both arguments and modificational DPs, as in the Kiswahili (35).

(35) uvamizi wa hakika wa nguvu wa Kuwait
14invasion 14of 9certainty 14of 9strength of

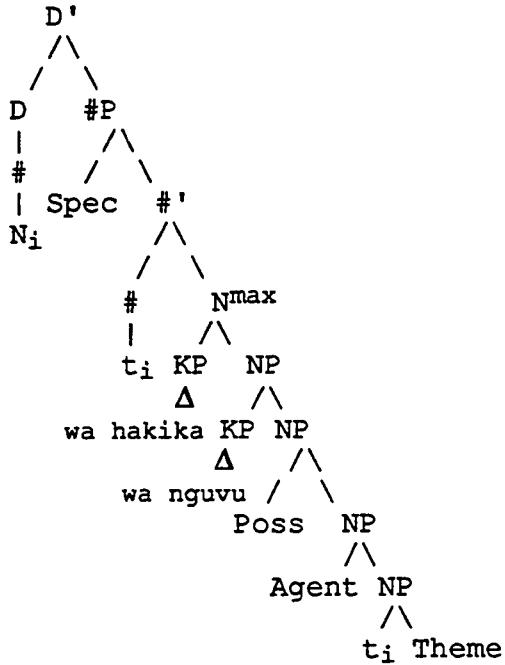
wa Saddam Hussein
14of

'the certain, forceful invasion of Kuwait by Saddam Hussein'

I suggest that where arguments are concerned, of provides a means of indirect assignment of the Case feature of # or N, the latter being a "defective" Case assigner in a way that I will not attempt to make precise here. That #'s Case should share this formal realization when assigned under ECM will be discussed in 4.4. I also assume that # has only one Case to assign, whether it assigns it to Spec or under ECM to the subject *in situ*. This accounts for the difficulty in possessors and agents co-occurring in Kiswahili. It raises two questions, however. First, we must explain why a Kiswahili possessor may not be generated in one of the modificational -a-phrases of (35). To put the question slightly differently, in the structure in (36),

what Case is *-a* marking, and why is this Case unavailable for a possessor?

(36)



It seems clear that *-a* in the modifiers *-a hakika* - 'certain' and *-a nguvu* - 'forceful' is not the realization of Case assignment by any head; rather, these KPs, taking the role of APs where adjectives are not available, function something like bare NP adverbs in coming equipped with their own Case (cf. Larson (1985)). Arguments typically do not have this option. Both possessors and agents therefore require Case from some head.

In light of this claim, it is interesting that Romance languages do not exhibit the same co-occurrence restriction ((37) = (58) in Torrego (1988)). I assume that *de* in *de la guerra* marks the Case of the noun, and a second *de*, in

either the agent or the possessor phrase, marks the Case of #. The question then is why a third de-phrase is possible.

- (37) Las fotos de la guerra de Capa de ese coleccionista
'The picture of the war by Capa of that collector's'

Torrego (1988) argues that argument de-phrases are ambiguous between DPs, PPs, and *by*-phrase-type adjuncts: the complements to unaccusative nouns are PPs, and agent de-phrases are in the equivalents of *by*-phrases, according to Torrego. Assuming this to be true, *de DP* has the ability to show up in contexts where Kiswahili -*a DP* cannot.²¹ We might suppose, for example, that in (37) the possessor bears #'s Case, and the agent is in an adjunct de-phrase. These data thus do not present a real challenge for the hypothesis that # can assign Case to only one "subject" argument.

I have proposed that the parameter of Koopman & Sportiche (1990) applies within DP, much as in IP. Assuming this to be correct, we derive (32c), (32d), (32e), and (32f). In Type I languages, lexical subjects are post-nominal. The type of Case they bear is oblique, transmitted by *of*, and they do not trigger agreement on the head noun because they do not raise to a Spec position. In Type II languages, lexical subjects raise for Case to

21 I ignore here the Kiswahili strategy of realizing adjective-like meanings in a *DP* modifiers, discussed above.

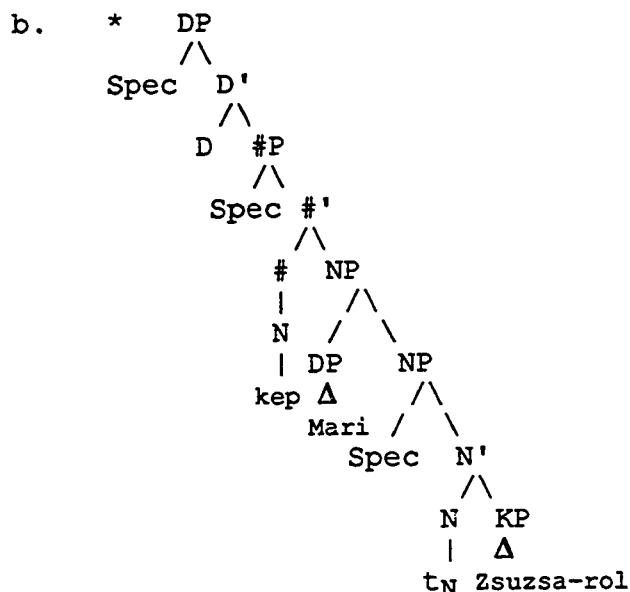
[Spec, #P]. In that position they receive a direct Case that may show up as morphological nominative, ergative, or genitive. Simultaneously they trigger [Spec, head] agreement on the head noun. I illustrate with Hungarian data. (38b) shows the structure of the ungrammatical (38a), in which the subject remains *in situ*. (38c) and (38d) illustrate the grammatical versions.²²

- (38) a. * a kep Mari(-rol) Zsuzsa-rol
art picture Mary(-of) Susan-of
'the picture (of) Mary of Susan'

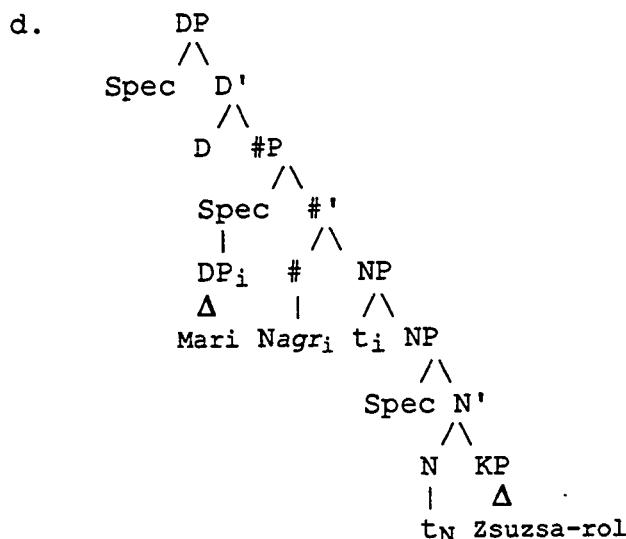
²² Given that no noun raising occurs in English (see chapter 3), an apparent similarity between English and Hungarian results from different factors. In English, (iva) would not be possible regardless of the availability of Case for the subject *in situ*, since the subject's base position is to the left of the noun (ivb). I assume the grammatical (ivc) results from string-vacuous raising of the possessor to [Spec, #P].

- (iv) a. * the destruction of the enemy of the city
b. * [NP the enemy [NP [N' destruction of the city]]]
c. [*P the enemy's [t# [NP destruction+...]]]

(see chapter 3 on the assumption that # lowers to N in English).



- c. a Mari kep-e Zsuzsa-rol
 art Mary picture-3S Susan-of
 'Mary's picture of Susan'



Let us turn now to (32a) and (32b), which have to do with gender and government-based agreement. These two factors are of much less obvious relevance to the pattern of facts under consideration. At the same time, it seems

unlikely that all the Type II languages of Abney's study lack gender and government-based agreement accidentally, while all Bantu and Romance languages have both these features and *in situ* subjects by similar coincidence.

4.4 The Relevance of Gender

In section 4.2 I proposed that certain specifications for a range of properties correlate parameterically. I reproduce (32).

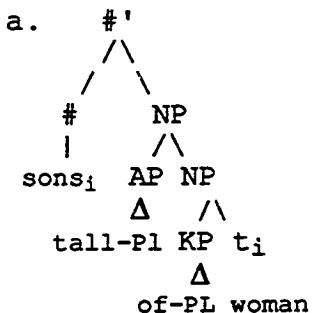
(32) The Gender Parameter	Type I	II
a. gender	+	-
b. GBA in ENP	+	-
c. lexical subjects in post-nominal position	+	-
d. lexical subjects in [Spec, #P]	-	+
e. morphological Case on argument in Spec	-	+
f. [Spec, head] agreement in ENP	-	+

So far, I have proposed the following:

- (39) a. A subject of ENP (possessor or agent) is base-generated within NP.
- b. # is the only universally available Case assigner for such an argument (although language-particular strategies, exist - cf. Spanish *de*).
- c. # assigns Case either to Spec (Type II), or under government to the subject *in situ* (Type I) (ECM).
- d. [Spec, head] agreement in #P cannot co-occur with ECM, since [Spec, #] is empty.

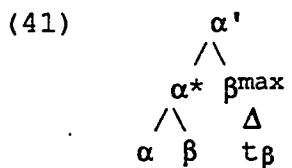
The inclusion of gender among the correlations in (32) reflects the absence of a sub-pattern like (40), among the available data.

(40) -gender, +government-based agreement:



'the woman's tall sons'

GBA and ECM seem to correlate with the assignment of gender features in particular, as (32) implies.²³ I have assumed that # governs the subject's base position only as a result of the Government Transparency Corollary. In light of the consistent correlation between gender features and ECM, I propose to weaken the GTC such that only if a noun percolates gender features to [#+N] does # govern the subject *in situ*. Stated somewhat more broadly, in (41), only percolation of a certain type of feature from β to α^* makes β^{\max} transparent to government by α^* .



²³ I do not intend to predict that (40) is non-occurring; only to observe that it is not the pattern. I expect that numerous language-particular factors produce apparent counterexamples to the generalizations argued for here, as to other grammatical generalizations (Subjacency, that-trace...).

Now, given that nouns assign both Case and gender under my assumptions, we must ask why the noun's Case feature does not suffice to make β^{\max} transparent to α . It seems to me that a very natural explanation exists for this difference between gender features on the one hand, and Case on the other. We can think of gender as an "identity" feature of N, somewhat similar to the referential index of a DP. If β percolates such a feature to the derived word α^* , then α^* bears an identity index of β ,²⁴ and thus becomes "nondistinct" from it, in Baker's sense.

Case is not a feature of this type - it identifies its assignee as holder of a particular structural position, rather than its assigner (except as to category). There is in fact good evidence that Case need not percolate to α^* at all. Consider the situation where β is a verb, and α is INFL. Koopman (1984) shows that accusative Case-assignment is possible in this circumstance. We would not expect accusative to be able to percolate to INFL, however, in the presence of the nominative feature, under *Percolation* (Selkirk (1984)). If it were able to do so exceptionally, one would expect the two Cases to be distributed randomly among [Spec, IP] and [NP, VP]. Instead, it appears that

²⁴ This will be among other indices of its own: thus number percolates either singular or plural, and so forth.

accusative Case is not percolated; rather, it remains a property of the verb's chain, and is assigned through the verbal trace. The same point can be made for Case in the nominal system, with respect to the noun's Case for its complement on the one hand, and the Case of # on the other. In contrast, a derived noun never exhibits multiple gender specifications (cf. section 2.4.2 on Chichewa diminutives, 2.5 on Kiswahili locatives). If α and β are of different genders, α 's gender specification clearly overrides that of β .^{25,26}

25 A distinction is motivated, then, between government by α^* into β 's government domain, and government by the incorporated β through its trace.

26 This analysis predicts that Nouns bearing locative prefixes in Kiswahili may not have agreeing arguments or modifiers, since # = α^* does not govern into $N^{max} = \beta^{max}$, the gender feature of $N = \beta$ being unable to percolate. In fact, while possessors are possible, complements and APs are precluded, unlike in Chichewa locatives (cf. 2.4.2).

- (v) * sanduku-ni mwa/ya nguo
9box-loc 18of/9of 10clothes
'in the box of clothes'
- (vi) * meza-ni pakubwa/kubwa
9table-loc 16big/9big
'on the big table'
- (vii) chumba-ni mwangu
7room-loc 16my
'in my room'

For this reason I suggest that locative agreement on, e.g., the possessor in (vii) indicates that the possessor is an argument of the null locative nominal (see 2.4.2 on this possibility in Chichewa). The impossibility of the complement and AP in (v) and (vi) respectively suggests

I restate the GTC to reflect this view, in (42).

- (42) **Government Transparency Corollary (revised):**
A derived word α^* inherits the government domain of its subpart β , just in case α inherits identity features from β .

Where $\beta = \alpha$, the "identity feature" requirement is trivially satisfied.

Assuming (57), # does not govern the subject *in situ* in non-gender languages, *contra* the original Government Transparency Corollary. ECM to the subject will therefore be impossible, so raising to [Spec, #P] will be forced.

(42) also entails that # cannot assign number features to any element of N^{max} , unless it incorporates with a gender-bearing noun.

I propose to include number features in the set of identity features also, to account for feature assignment from D. I assume that identity features percolate obligatorily, to derive standard percolation effects, exhibited in the case of Kiswahili locatives and Chichewa diminutives. From this it follows that when $[#N]$

that these items agree obligatorily, as a morphological requirement.

Chichewa diminutives would be expected to pattern with Kiswahili locatives, but I assume that complementation and modification within the NP complement to a diminutive affix is impossible for independent reasons. For example, since the cup and not the coffee is small in (vii), (b) should not be possible:

- (vii) a. * [DIMIN [cup of coffee]]
b. [DIMIN [cup] of coffee]

incorporates into D in Kiswahili, it must percolate its features to D, and D will assign them. It is possible that the gender feature of N is sufficient to accomplish this, and that number features play no role. I have no evidence that this is the case, however, and the fact that both number and gender features control agreement suggests that the two features form a natural class. I take this to be the null hypothesis.

To sum up, I have related both ECM and the assignment of number features within N^{\max} to the presence of gender, under the assumption that only a noun's gender feature will make N^{\max} transparent to government by #. I have attributed this to the importance of "identity features" in indexing the derived word α^* with an incorporated item β .

In light of this analysis, it is interesting that ECM in ENP is always realized by means of the of-type Case marker, canonically associated with indirect assignment of N's Case. I suggest that the realization of the Case assigned by α^* to an argument of β , under indexing with β 's features, is consistent with β 's canonical Case.²⁷

27 This means that since VP-internal subjects are not accusative, some difference exists with respect to how V^{\max} becomes transparent. As it is not clear what a verbal "identity feature" would be, this is not surprising. I will not pursue this question here.

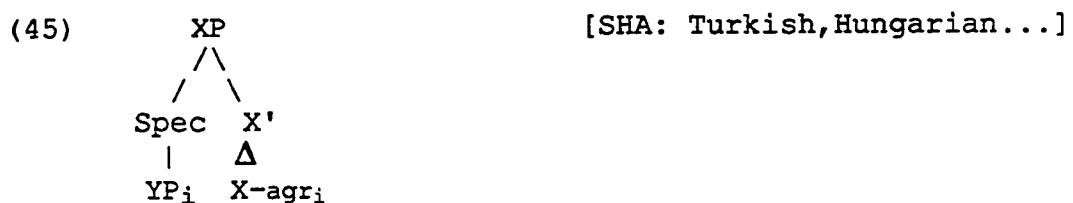
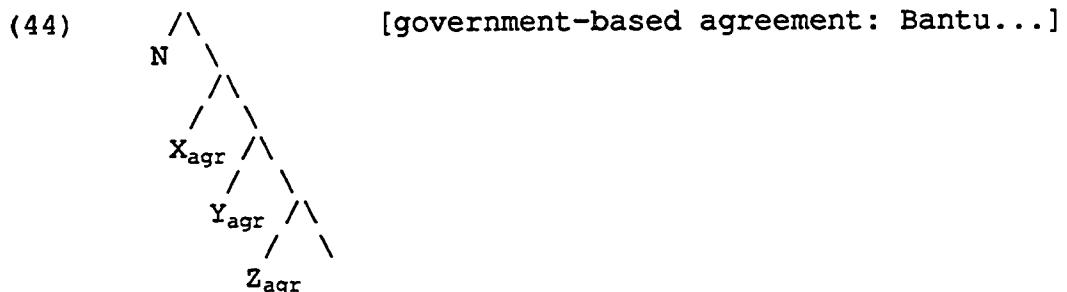
Why should subjects in Bantu and Romance not be able to raise to [Spec, #P], optionally? Chomsky's (1989) Least Effort Principle provides a possible explanation, but it is puzzling that both options are freely available for VP-subjects on this view. I will assume that move α is not "costly" in the relevant sense (see Pesetsky (op cit)). Instead, I suggest that a prohibition on the co-occurrence of [Spec, head] and government-based agreement gives rise to the general avoidance of raising in languages with gender. In the next section I will describe the prohibition, and propose an account of it. I will then argue that raising necessitates the suppression of one type of agreement. As an *ad hoc*, language-particular device, suppression is "costly" (cf. Pesetsky (1989)). As a result, raising is avoided.

4.5 The Agreement Mixing Prohibition

In this section I will demonstrate the existence of systematic gaps in predicted agreement patterns, summarized in (43).

- (43) **The Agreement-Mixing Prohibition:** [Spec-head] agreement and government-based agreement may not co-occur within the extended Noun Phrase.

I have shown that agreement features are spread by two structural relations: government, and the [Spec, head] relation (SHA).



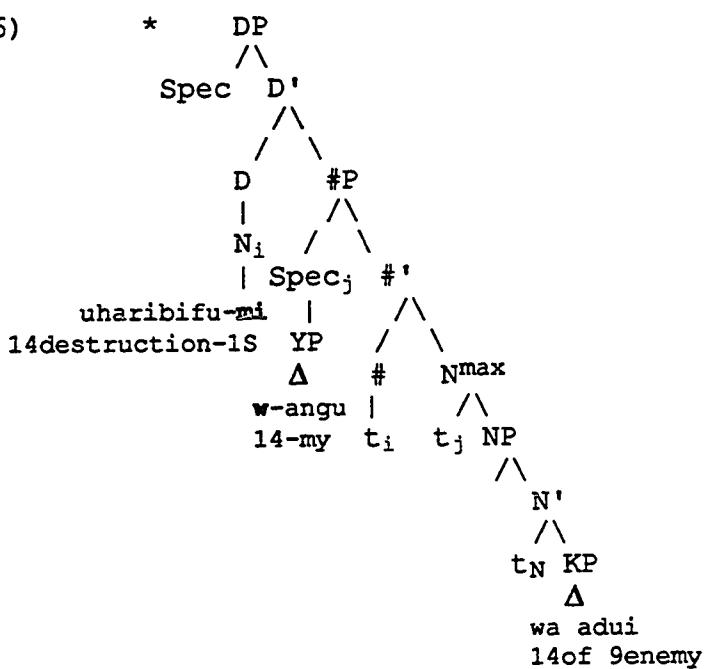
It is interesting to note that the two types of agreement never cooccur within DPs in the languages we have examined. *A priori* we would expect the grammar to generate such co-occurrences freely.

4.5.1 Missing Patterns of Co-occurrence

(46) illustrates a case where [Spec-head] agreement might be expected to co-occur with government-based agreement, in a sort of hypothetical Kiswahili variant.²⁸ This pattern would result if Kiswahili pronouns were to assign [Spec-head] agreement from their S-structure positions in [Spec, #P].

²⁸ The ungrammaticality of the examples in this section should not be attributed to a general absence of reconstruction effects for agreement (see the Chamorro facts in 4.1.2, and discussion of (6) and (11)).

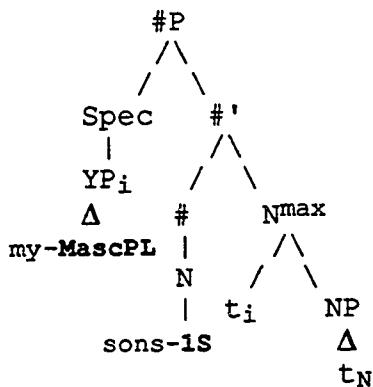
(46)



'my destruction of the enemy'

A similar language is imaginable, like Kiswahili in having both gender and raising of pronouns, but different in that these items raise to a position higher than the head noun, as in Romance. Here again we would expect bidirectional agreement to occur, mediated in one direction by a trace.

(47)



I suspect that these patterns are unattested, as I have not encountered them in the descriptions of a variety of languages belonging to the Niger-Congo, Romance, Germanic, Celtic, Afro-Asiatic, and Nilo-Saharan families. They are also absent in the additional languages described in 4.2. Assuming that they do not occur, then [Spec, head] and government-based agreement are in complementary distribution within ENP, cross-linguistically. It is perhaps worth emphasizing, however, that the non-occurrence of SHA and GBA in the ENP of any language with overt agreement requires a principled explanation, since the two structural relations involved should generate their co-occurrence freely.

4.5.2 Licensing Agreement

We have seen that [Spec-head] and government-based agreement may not co-occur within ENP. I propose that this derives from a licensing requirement on agreement morphology. It has been noted that agreement morphology is anaphoric in nature (cf. Borer (1986)). Let us assume (48):

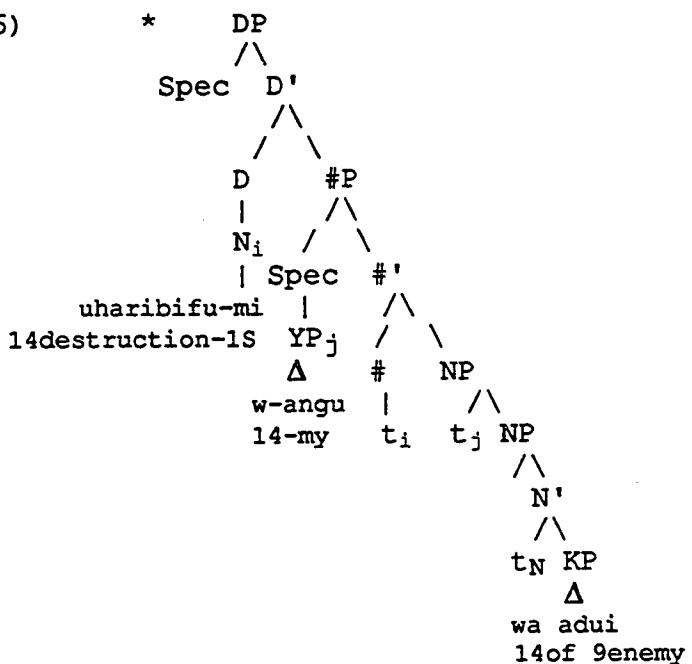
- (48) **The Agreement Licensing Condition:** agreement must be bound by a category with matching \emptyset -features, within a local domain.

My suggestion is that if some potential agreement antecedent α comes to bear the \emptyset -features of an additional category γ by virtue of agreeing with it, the binding of an agreement morpheme β by α must fail. This is because β has only a partial set of α 's total features. (48) and (49) together should ensure this.

- (49) **Assigned feature visibility:** assigned features are visible to feature-matching.

Let's see how (48) and (49) work to account for the facts of (46). *uharibifu* - 'destruction' in (46) bears *mi*-agreement with *-angu*, the first person singular genitive pronoun. But *-angu* bears the number and gender features [singular, Group G], inherited from *uharibifu*. It therefore does not match the \emptyset -features of *mi*, and licensing fails. Simultaneously, *uharibifu-mi* fails to match the features of *w-* agreement on *-angu*, and licensing fails again.

(46)

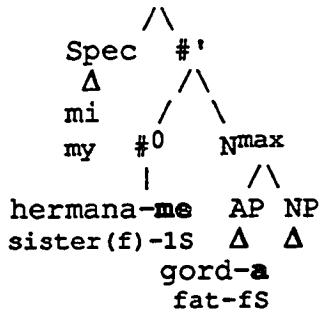


'my destruction of the enemy'

The account of (47) will be identical.

Since (46) and (47) involve double violations of (48), they bear some resemblance to cases of referential circularity (**his_i* wife_j likes her_j husband_i). I believe that this is not the source of their ungrammaticality, owing to the impossibility of (50). (50) is a kind of pseudo-Spanish, in which a pronoun in Spec does not agree with the head noun, but does trigger agreement on that noun in #, as in Type II languages. Simultaneously, [#N] controls gender and number agreement on an AP. The unacceptable result is not "circular" in the way that (46) and (47) are, but is ruled out by (48).

(50) * #P



To sum up, co-occurrences of SHA and GBA are precluded within ENP, by the Agreement Licensing Condition. Avoiding the movement of arguments to Spec is one way to circumvent this problem. Suppression of one form of agreement is a second possibility. I have proposed that the avoidance of movement is the more economical approach, and is therefore chosen for lexical arguments. As pronouns must move to Spec (see chapter 3, and Koopman (1990)), suppression is the only option.

It is interesting to note that when movement does take place, as in the case of pronouns, what is suppressed is always [Spec, head] agreement. An imaginable alternative would be the suppression of GBA in a language with gender, as in the hypothetical language in (51).

(51) [his beautiful-0 sisters-Masc.**sing**] laughed-Fem.Pl.
 The fact that this option is not elected in any of the Type I languages considered suggests that GBA is the default choice, in languages with gender. This would seem to follow from the dominance of heads over their specifiers, in terms

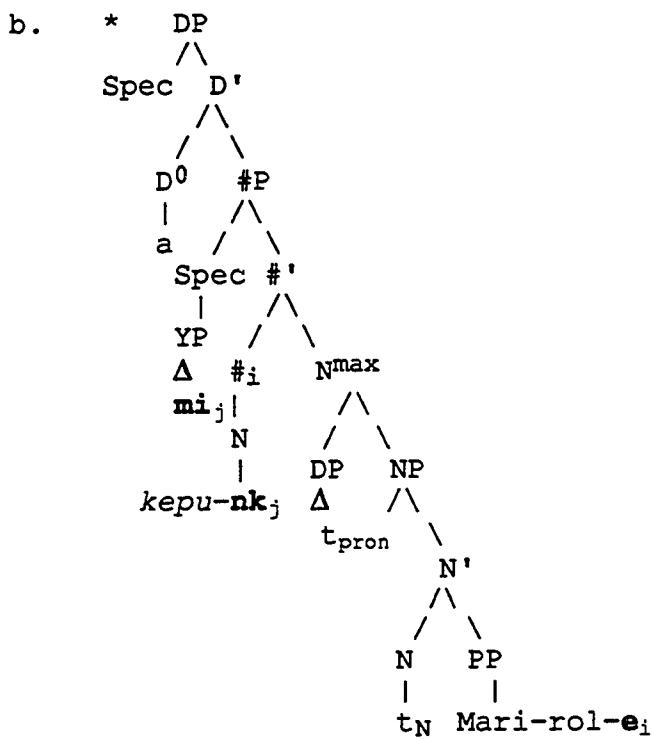
of feature percolation. Since # is the head of #P, in the event of a clash, its features take precedence.

(52) illustrates a final non-occurring pattern of co-occurrence, which is ruled out by our revision of the Government Transparency Corollary. Here, the head noun of a Type II language agrees with its specifier, while simultaneously assigning agreement to the head of its KP argument, as Kiswahili nouns do. But as the noun has no gender, N^{\max} is not transparent, so number agreement cannot be spread. The derivation is therefore impossible.²⁹

- (52) a. * a mi kepu-nk Mari-rol-e
 art we picture_i-1PL Mary-of-Si
 'our picture of Mary'

²⁹ Regarding person features, I assume that there are only two persons, first and second (cf. Kinyalolo (1990) for arguments that third person is just the unmarked singular/plural opposition).

Note that this is the same case as (50), but in a non-gender language. The impossibility of agreement on an AP makes the same point.



4.5.3 Against a Parametric Account

Before leaving this topic let me address the possibility that a choice exists between [Spec-head] and government-based agreement, parametrically. In this connection it is important to note that Bantu languages typically manifest [Spec-head] agreement in several major categories, as pointed out in chapter 1.³⁰ I reproduce in (53) examples showing subject agreement, object agreement,

³⁰ Type I languages, typically have full subject agreement, licensing pro-drop.

and COMP agreement (with a relative operator). I indicate their proposed structures in (54)-(56).³¹

- (53) a. Tu-ta-(zi)-nunua mboga
 1Pl-fut-(100A)-buy 10vegetables
 'We will buy (the) vegetables'
- b. kitabu amba-cho ni-li-ki-soma
 7book COMP-7RA 1S-pst-70A-read
 'the book I read'

- (54) Relative agreement: kitabu_i CP
 7book /\
 Spec C'
 | /\
 Opi C⁰ TP
 | Δ
 amba-cho_i ti
 COMP-7RA

- (55) Object agreement:
- ```

 T'

 /\

 T VP

 | /\

 OAi-V / \

 Spec V'

 Δ |

 DOi tv

```

- (56) Subject agreement:
- ```

      TP  

      /\  

      Spec   57'  

      |    /\  

      NP    T   VP  

      Δ    |   Δ  

      proi   AGRi-T-V
    
```

³¹ See also Carstens & Kinyalolo (op cit), Kinyalolo (1991) for extensive discussion of [Spec, head] agreement in Kiswahili and KiLega, and Kinyalolo (op cit) on [Spec-head] agreement in PP in KiLega.

Given that Bantu manifests GBA in ENP and SHA in other categories, it would not be possible to assume that languages select one of the two strategies and adhere to it across the board. [Spec-head] vs. government-based agreement is not a very plausible parameter in any case, since the two possibilities are not different values for the same property. But such a parameter can be rejected on empirical grounds, even under the assumption that it applies category by category. This is because if a language can choose [Spec, head] agreement for IP, and government-based agreement for DP, there is no obvious way to stop it from selecting [Spec, head] agreement for #P. Such a combination would likely yield (46). Alternatively, under the hypothesis of category-particular choice, a language might select [Spec, head] agreement for #P, and government-based agreement for NP, deriving the pattern in (50). Either combination for #P and NP would yield (47).

I conclude that a parametric approach to the choice between Spec-head agreement and government-based agreement cannot account for the facts.

4.6

Hebrew

I proposed in section 4.5 that raising is avoided in languages with grammatical gender, because the suppression

of [Spec, head] agreement that it entails is more "costly" to the grammar than ECM. The prediction then is that lexical subjects will always remain *in situ* in Type I languages. Facts from Hebrew discussed in Ritter (1990) show that this is not universally true, however. Hebrew is interesting in that it presents a mixed case:³² it has gender, and government-based agreement in ENP, as (58) demonstrates. However, subjects raise optionally, as the examples in (59) show. (59a) and (59b) demonstrate that if the subject is introduced by the preposition *Sel*, it must remain *in situ*. (59c) and (59d) show that a bare subject must raise, to be assigned Case in [Spec, #P] by #, under Ritter's assumptions. A raised subject does not, however, trigger (overt) [Spec-head] agreement. (58a) and (58b) = (10) in Ritter (op cit), (59) = Ritter's (4) and (5)).

- (58) a. ha-yelad-ot ha-nexmad-ot
the girl-f.pl the-nice-f.pl.
'the nice girls'
- b. ha-yelad-im ha-nexmad-im
the-boy-m.pl. the-nice-m.pl.
'the nice boys'

- (59) a. ha-axila **ha-menumeset Sel dan et ha-uga**
the-eating the-polite of Dan ACC the-cake
'Dan's polite eating of the cake'

³² For evidence that Hebrew N raises to #, and that its subject raises optionally to [Spec, #P], see Ritter (op cit). This discussion is based on her analysis.

- b. * ha-axila Sel dan **ha-menumeset** et ha-'uga
the eating of Dan the-polite ACC the-cake
- c. axilat dan **ha-menumeset** et ha-'uga
eating Dan the-polite ACC the-cake
'Dan's polite eating of the cake'
- d. * axilat **ha-menumeset** dan et ha-'uga
eating the-polite Dan ACC the-cake

Hebrew thus appears to manifest the equivalent in the nominal system of the Welsh and Arabic pattern K&S describe for the sentence-level: the option exists for subjects either to receive Case *in situ*, or to raise.

I suggest that this deviation from the Type I pattern reduces to properties of the Hebrew Case-marker *Sel*. *Sel* differs from the *of*-like Case-markers we've considered so far, in two ways. First, it is not the Case-marker for the object of a noun. This can be seen in (59), where *ha-uga*, the object of the process noun, is marked accusative. Second, a *Sel*-phrase may double a pronominal clitic, as shown in (60) (= Ritter's (8)).

- (60) ahavat-o *Sel* dan et iSt-o
love-his of Dan ACC wife-his
'Dan's love of his wife'

As Ritter points out, the genitive clitic on *ahavat* in (60) must absorb the genitive Case borne by a lexical argument in (59c).³³ *Sel* in (60) therefore cannot be considered to be assigning the Case of #.

³³ While there is no example indicating that a bare DP agent is unacceptable in the presence of the clitic, this is implicit in Ritter's discussion.

It is clear that *Sel*, unlike *of*, Kiswahili *-a*, and Spanish *de*, is not the indirect assigner of N's Case, and that in (60) it is not the indirect assigner of #'s Case. I conclude that it does not have this property at all: rather, it is a pure preposition. Perhaps, since nouns do not assign Case indirectly in this language, the appropriate Case marker is simply unavailable, so that true ECM is not a possibility in Hebrew. The subject either raises to [Spec, #P] for Case, necessitating the suppression of [Spec-head] agreement, or it appears in an NP-adjoined PP headed by *Sel*. As both of these are *ad hoc* procedures, I assume them to be of equal "cost".

This raises a question as to why agents don't optionally raise to [Spec, #P] in Spanish, since I follow Torrego (*op cit*) in assuming that they appear in *by*-phrase-type adjuncts. The realization of agents in adjunct phrases is a universally available option,³⁴ and thus perhaps less "costly", in the relevant sense. An understanding of the reasons for this treatment of agents in Spanish is prerequisite to a more detailed answer, so I will leave this aside.

³⁴ I mean this in the sense that one might say nominative Case is universally available - its occurrence does not rely on anything language-particular. That some languages do not have it reflects language particular properties.

The Hebrew data argue that transparency of N^{\max} must be viewed as a necessary condition for ECM, but not a sufficient one: a lexical item able to assign the Case of N or $\#$ indirectly is also required. Variation on the availability and characteristics of Case-markers is clearly considerable, and this is not restricted to Type I languages. In Turkish, for example, we saw that only gerunds may have two overt arguments, since no *of*-strategy exists to license a noun's object (4.1.2). Gerundive forms assign accusative Case, leaving [*Spec*, $\#P$] free to be occupied by a subject. In true nominals in Turkish, an argument in [*Spec*, $\#P$] is the only one that may appear.

What is most significant about the Hebrew situation is that it shows that subjects may be licensed independently of ECM from $\#$, or of movement to [*Spec*, $\#P$]. It is a logical possibility for a preposition like *Sel* to occur in a Type II language, or for there to be a Type I language with neither the *of*-analogue nor a *Sel*-preposition, making raising obligatory. The apparent scarcity of these situations is supportive of the view that they derive from language-particular lexical gaps and idiosyncracies, while the typological homogeneities expressed in (29) in contrast reflect parametric linkages.

4.7

Conclusion

I have proposed in this chapter that possessors and agents originate in NP, and have raising and *in situ* Case possibilities analogous to those available for VP-internal subjects. I have argued that the manner of Case assignment to these arguments is linked to parametric variation on the presence of grammatical gender. These proposals have made possible an account of several coincidental properties of the languages of this study.

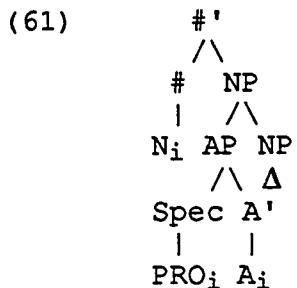
I have shown that [Spec, head] and government-based agreement fail to co-occur when expected, in a number of languages. This finds a natural explanation in a binding condition on agreement morphology.

Yet to be addressed are the precise locality constraints on this binding, and the surprising parallelism between # and INFL (= Tense). It is very interesting that both these categories should assign nominative and ergative Cases. A possibility that comes to mind is that # and Tense have the same inventory of Cases available, owing to similarities in their properties reflected in their parallel relations to NP and VP respectively. The apparent ability of # to assign genitive Case is rather anomalous, under this view. We might suppose that genitive is a Case assigned only by nominal elements: N and D. For this to be true, however, prenominal possessors bearing genitive, in,

e.g., Turkish, would have to move to [Spec, DP] without receiving Case from #. Further research is needed to determine whether this possibility exists.

There are two final points that I would like to make regarding the nature of agreement. The first concerns adjective agreement, and the possibility that it is a special type of control (cf. Valois (1990)). The second has to do with the consequences of treating agreement as a head.

Valois (op cit) suggests that adjectives agree because APs have PRO subjects, controlled by the head noun. These PRO subjects therefore inherit the noun's \emptyset -features, and share them with the adjective under [Spec, head] agreement:



This is quite plausible, but once the possibility is admitted in Type I languages, it seems to me that it cannot be prevented in Type II languages. The absence of adjective agreement in languages of the Turkish/Hungarian type would therefore require an explanation. Unless a principled account of this lack is found, it seems to me far simpler to assume the government-based account extends

to adjective agreement, in Type I languages. Under the assumptions of this chapter, only a head X agrees with [Spec, XP], as this is a special feature-sharing relationship. Nothing extra then need be said about the failure of adjectives to agree with Spec positions in Type II languages.³⁵

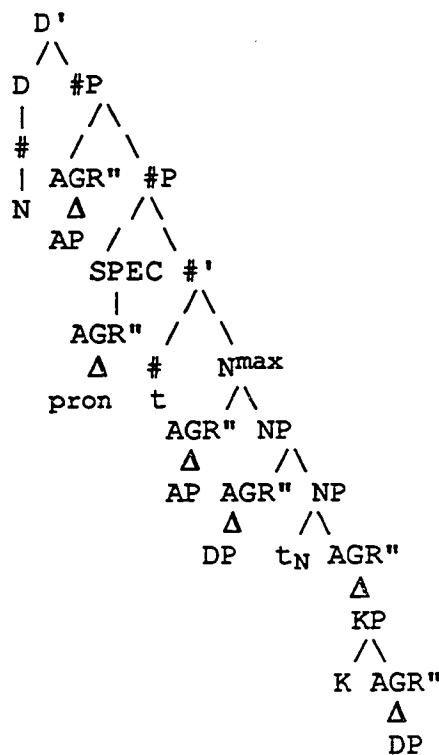
The second question relates to the recent proposals of many researchers to the effect that agreement morphology is inserted at D-structure, and projects a phrase (cf. Kayne (1987), Pollock (1990), Chomsky (1989)). The question is, how do this theory and my investigation impact on each other?

Under the view that agreement is a head, arguments and modifiers within Kiswahili DP are encased in Agreement Phrases, as shown in (62).

35 Adjectives should be able to agree in number in a non-gender language, providing they are governed by #. This would be true of an AP adjoined to #P, as demonstratives are in Kiswahili.

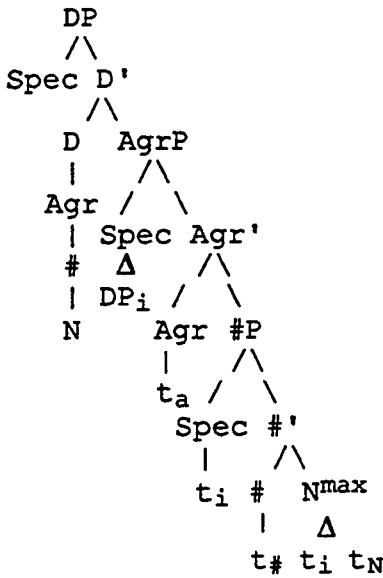
(62)

[Type I: Kiswahili]



One might suppose that in [Spec, head] agreement languages, the presence of only one agreement morpheme indicates that only one agreement phrase is present, analogous to that proposed for subject agreement in Chomsky (1989)).

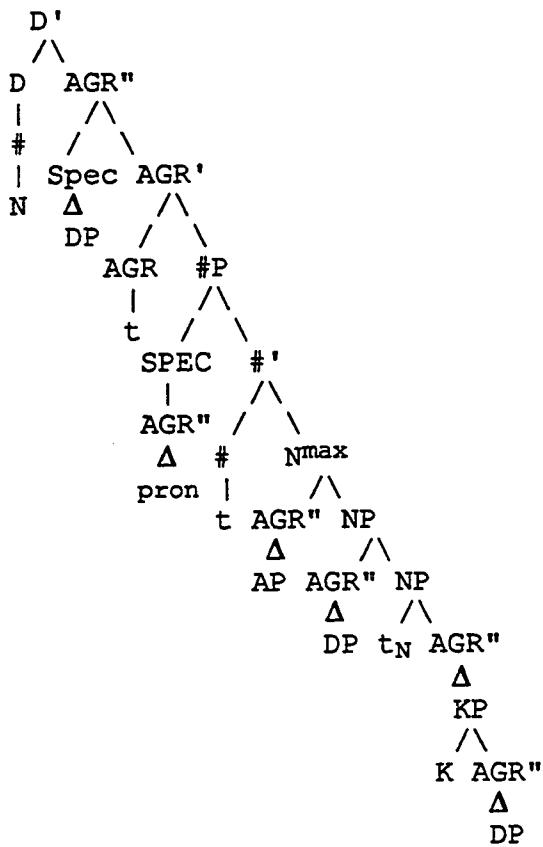
(63) [Type II]



In a language like Kiswahili, however, where the presence of grammatical gender makes both kinds of agreement possible in principle, I have derived the distribution of agreement from S-structure factors: whether raising to [Spec, #P] takes place; and if it does, whether the Agreement Licensing Principle is violated by [Spec, head] agreement. It would seem more likely then that when overt [Spec-head] agreement is ruled out, an empty category [AGR e] is present (see Lamontagne & Travis (1987) on empty Case). Under this assumption, the representation of DP in a Type I language should include the AgrP of (63), as shown in (64).

(64)

[Type I revised]



It is not clear how empty agreement will be licensed in this structure. For the theory to be viable, some account of how the overt/null agreement alternation works must be provided.

Returning to Type II languages, as these lack the gender feature which causes agreement to be manifested throughout the government domain, it would seem reasonable to omit AgrPs from their representations, as in (63). This proposal highlights an odd property of the AGR-head theory: the putative AgrP is not usually in a position to be selected by the assigner of agreement features. It is not

clear, then, how one could formally motivate the omission of superfluous AgrPs in languages without gender. If the AgrPs are included in the representation of every language, licensing their null heads is an issue. The licensing strategy must be one which is unavailable in Type I languages, to derive all and only the correct results.

Continuing to consider Type II languages, the absence of gender has no obvious parallel in the systems of Case, Determiners, Tense, Aspect, or Number. In each of the latter cases covert elements of the relevant category seem well-motivated, whereas for gender agreement, this does not seem appropriate.

[Spec, head] agreement raises a problem for Agr-head theory, in that D-structure insertion is uninformed regarding the features of the S-structure trigger. This being the case, it is not clear that insertion at D-structure is preferable to attachment of the morphology in the lexicon. Syntactic arguments against the lexical affixation of inflectional morphology would seem to be voided by this proposal.

I have pointed out some problems which my investigation raises for the treatment of agreement as a syntactic head. In general, I think that the presence of Agreement Phrases in the representations of the languages we have considered would have little consequence for the

analysis of the phenomena of concern in this chapter. For this reason I have ignored them.

5

Class 15: Infinitives and Gerunds

5.0

Introduction

This chapter will be concerned with the analysis of gerunds and infinitives, which are homophonous in Kiswahili. I will argue that Kiswahili has the equivalent of English *acc-ing* and *poss-ing* gerunds, and that both types are projections of a single morpheme instantiated in English as *-ing* and in Kiswahili as *ku-*. I will refer to this morpheme as *M*. In *poss-ing* gerunds, *MP* is selected by *#*, whose maximal projection is always complement to *D⁰*. *poss-ing* gerunds are thus DPs (cf. Abney (1986)), whose genitive subjects occupy [Spec, #P], barring language-particular restrictions (cf. Chapter 4). *acc-ing* gerunds are bare MPs. Finally, Kiswahili infinitives include *MP* as a case of indirect complementation: *M* subcategorizes for a VP complement, while Tense in Kiswahili never selects VP directly (cf. Carstens & Kinyalolo (1989)).

The chapter is organized around an investigation of Class 15, the Kiswahili Class consisting entirely of verbs bearing the prefix *ku-*. These verb forms may trigger Noun Class agreement (1a), just as other nouns do (1b).

- (1) a. ku-imba ni ku-zuri
15-sing COP 15agr-good
'singing/to sing is nice'

- b. kisu ni ki-kali
7knife COP 7agr-sharp
'the knife is sharp'

Verbs with the *ku*-prefix pattern with nouns in other respects. They may take genitive subjects and adjectival modifiers (2) both of which bear Noun Class agreement.

- (2) kuimba kwake kuzuri ku-li-ni-pend-ez-a
15sing 15poss 15good 15agr-pst-me-like-CAUS-fv
'His good singing pleased me'

The acceptability of the adjective in (2) indicates that the *ku*-prefixed verb in this example cannot be a gerund of the so-called *poss-ing* type. The examples in (3) demonstrate the familiar fact that while English *poss-ing* gerunds typically permit genitive subjects, they differ from *-ing* nominals in being unable to take adjectival modifiers.

- (3) a. John's buying a house surprised us
b. John's impulsive buying *(of) a house surprised
us

The difference between gerunds and nominals employed diagnostically in (3) is the ability of the former, but not the latter, to license NP objects. Within GB theory, this is attributed to a difference in the Case assigning properties of the two categories: *-ing* gerunds, but not *-ing* nominals, assign accusative Case.¹ The preposition *of* must therefore appear in (3b), for the NP complement a *house* to meet the Case Filter.

¹ See Grimshaw (1988) for a different view.

As (4) shows, the addition of an object NP to the Kiswahili sentence in (2) is acceptable only if -a - 'of' introduces it:

- (4) kuimba (kwake) *(kwa) wimbo wa taifa kuzuri
15sing (15poss) (15of) 14song 14of 9nation 15good
ku-li-ni-pend-ez-a²
15agr-pst-me-like-CAUS-fv

'(His) good singing *(of) the national anthem pleased
me'

The nominal status of *kuimba* in (2) and (4) thus seems beyond question. What remains to be established is whether this conclusion should be extended to all *ku*-phrases - that is, are all *ku*-phrases nominal, or are they of various types, like English V+ing? I will provide evidence for the latter position.

The structure of this chapter is as follows. 5.1 is concerned with distinguishing 4 types of *ku+V* phrases. I begin in 5.1.1 by motivating a partitioning into two groups: those *ku+V* forms which are nominal at all levels of representation, and those which possess the verbal characteristic of assigning accusative Case. In 5.1.2, I argue that the latter group includes infinitives and gerunds. In 5.1.3, I show that gerunds alone of these may

² This word order, in which the genitive pronoun precedes the lexical direct object, is that found in nominals. I will propose an account in 5.1.4.

have overt subjects: both prenominal subjects, which I will analyze as Case-marked by an external head, and post-verbal, genitive subjects, discussed in 5.1.4. I will argue that these options show Kiswahili to have gerund types precisely analogous to the *acc-ing* and *poss-ing* varieties of English. 5.2 provides evidence that infinitives and both types of gerunds have clausal structure. In 5.3, I present agreement asymmetries, and explore their implications for the distribution of *acc-ing* and *poss-ing* gerunds. 5.4 argues that extraction asymmetries support the DP analysis of *poss-ing* gerunds. In 5.5 I review the proposal of Abney (*op cit*) and show that it cannot account for all the facts of Kiswahili. 5.6 presents conclusions.

5.1 The Facts

5.1.1 Partitioning *ku+V* Forms

We saw that within the nominal *ku*-phrase in (4) a complement may not appear unless introduced by *-a -* 'of'. (5) demonstrates that *ku*-phrases without adjectival modifiers may include bare direct objects. I have chosen examples without overt subjects in (5), although we will see in 5.1.3 that the possibility of a bare NP complement is compatible with two kinds of overt subjects as well. I

will provide a characterization of apparently subjectless *ku*-phrases before considering these.

- (5) a. Kuimba nyimbo za mapenzi ni kuzuri/
15sing 10song 10of 6love COP 15good/

ku-na-wa-pend-ez-a³
15agr-pres-them-like-CAUS-fv

'Singing/to sing love songs is nice/pleases
them'

b. Wa-li-penda kuimba nyimbo za mapenzi
3PL-pres-like 15sing 10song 10of 6love
'They liked to sing/singing love songs'

I conclude from a comparison of (2) and (5) that [ku+V] forms are of two different types. The D- and S-structures of that exemplified in (5) contain a verb which assigns accusative Case. That shown in (2) is a kind of derived nominal, and can assign only genitive Case.

- (6) a. [ku+V]1 - [+N] at all levels, assigns genitive Case to its complement

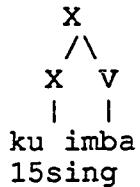
b. [ku+V]2 - includes a verb at D- and S-structure, assigns accusative Case to its complement

ku- in (6b) does not seem amenable to an analysis as number morphology such as I proposed for Noun Class prefixes, in Chapter 2. If *ku*- in (6a) is to be considered other than accidentally homophonous, a single analysis needs to be applicable to both cases. I suggest that *ku*- in both cases is itself a head, whose only requirement is a morphological

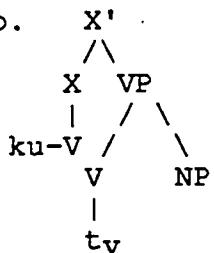
³ Not all speakers accept *ku*-phrases with bare NP complements as occupants of subject position. See 5.4 for discussion.

subcategorization for a verbal host (cf. Baker (1985), Milsark (1988) on *-ing*). This can be satisfied as in (7a), where *ku-* takes a bare V⁰ complement, yielding (6a), or as in (7b), where *ku-* takes a VP-complement, producing the forms described in (6b). In the latter case, V⁰ will have to raise to *ku-* in the syntax.

(7) a.



b.



While the sentences in (5) do not provide a basis for determining whether [ku+V]₂ is gerundive or infinitival, in what follows I will argue that both gerunds and infinitives are included in this group. I will propose that *ku-*'s ability to be selected by a variety of non-overt heads accounts for its presence in a wide range of constructions.⁴ As *ku-* itself makes no semantic or categorial contribution to these constructions, I am going

⁴ Thanks to Tim Stowell for this idea.

to assume that it has no category specification of its own (cf. Milsark on *-ing*, (op cit)).

5.1.2 **Infinitives vs. Gerunds**

Well-known differences in their interpretations make infinitives and gerunds clearly distinguishable, despite some similarities in their syntactic properties. While infinitives are interpreted as referring to unrealized time (cf. Bresnan (1972)), gerunds lack any time reference of their own, and acquire one from syntactic context - usually, the matrix verb. This difference is observable in the examples in (8) (= (46a), (47a), in Stowell (1981)). In (8a), the action of the embedded infinitival verb takes place subsequent to the remembering; in (8b), the action of the gerundive verb is simply the content of the recollection, and therefore is interpreted as prior to the act of remembering.

- (8) a. Jenny remembered [to lock the car]
 b. Jenny remembered [locking the car]

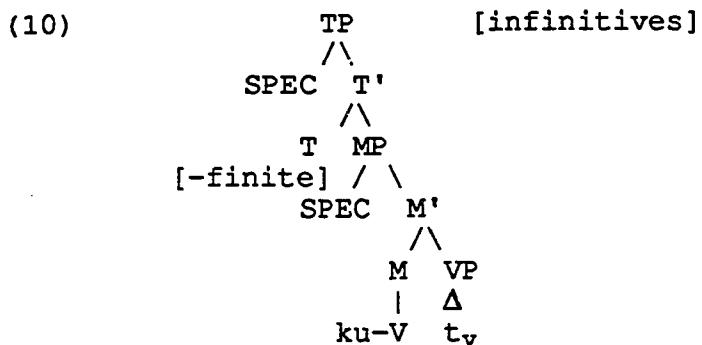
To account for this difference, Stowell (1981) proposes that infinitives are [+TENSE], while gerunds lack tense specification. I will assume that this is correct. Since many contexts neutralize the effects of this distinction, I will utilize the disambiguating complement position of the verb *kumbuka* - 'remember' in the analysis of Kiswahili *ku-*phrases.

In this light, consider (9). Both the infinitival and gerundive interpretations are available for the *ku*-phrase complement to *kumbuka* - 'remember':

- (9) Ni-li-kumbuka kufunga mlango
1S-pst-remember 15close 3door
1. 'I remembered closing the door'
2. 'I remembered to close the door'

The difference between reading 1 and reading 2 may be at least partially accounted for under Stowell's assumptions, by supposing that the infinitival TENSE is present in the representation of reading 1, but not in that of reading 2. I hypothesize then that some *ku*-forms are tenseless gerunds, and others are infinitives. Assuming with Pollock (1989), Chomsky (1989) that tense heads its own maximal projection, this difference will result in the addition of a Tense Phrase in the representation of the infinitive, absent in gerunds (10).⁵ Although I am going to be assuming that *ku*- has no category features, I will label its projections MP to distinguish them from XP in the sense of "any projection of a head".

5 I will entirely omit discussion of null subjects of infinitives and gerunds in this chapter, for reasons of length. The phenomena associated with controlled and arbitrary PRO in English are entirely replicable in Kiswahili, however (see Rindner (in progress) for discussion).



In the following section, I will show that preverbal subjects are acceptable in Kiswahili *ku*-phrases, but are only compatible with the gerundive interpretation. This supports the gerundive/infinitival distinction I have proposed, and suggests that the subject position of a Kiswahili infinitive is protected from external governors, while that of the gerund is not.

5.1.3 Preverbal Subjects of Gerunds

ku+V forms may have preverbal subjects (11), although these are somewhat restricted in use in Kiswahili. They seem to be most felicitous as generalizations on some state of affairs, as in (11b).⁶

- (11) a. Ni-li-kumbuka Juma kufunga mlango
 1S-pst-remember 15close 3door
 'I remembered Juma closing the door'

⁶ My impression is of a stylistic markedness not shared by the same construction in other, closely related Bantu languages (cf. Harford-Perez (1985) on Shona and Kikuyu).

- b. Watoto ku-to-faulu katika mitihani ni
 2child 15-NEG-succeed in 4exam COP
 shida kubwa nchi-ni kwetu
 9trouble 9big 9nation-LOC 17our
 'Children not passing their exams is a big
 problem in our country'

(12) shows that Kiswahili preverbal subjects are not compatible with the infinitival reading.

- (12) a. * Ni-na-(wa)-taka watu wote kuzungumza na Juma
 1S-pres-(3PLOA)-want 2person 2all 15-talk with
 'I want everybody to talk to Juma'

- b. ? Ni-li-(*)-penda Juma kuimba kila jioni
 1S-pst-(3SOA)-like 15sing every 9evening
 'I liked Juma singing every evening' (implied:
 he did sing)

'I liked for Juma to sing every evening' (but perhaps he did not)

- c. * Ni-na-(m)-fikiri/amini Juma kuwa mjinga
 1S-pres-(3SOA)-think/believe 15be 1fool
 'I think/believe Juma to be a fool'

I conclude from (11) and (12) that only a gerund may have a preverbal subject - an infinitive may not.⁷ This indicates a difference between English and Kiswahili infinitives. Infinitival complements to certain English verbs may have overt accusative subjects (13), assumed to receive Case under "S'-deletion" (Chomsky (1981)). (12) argues that

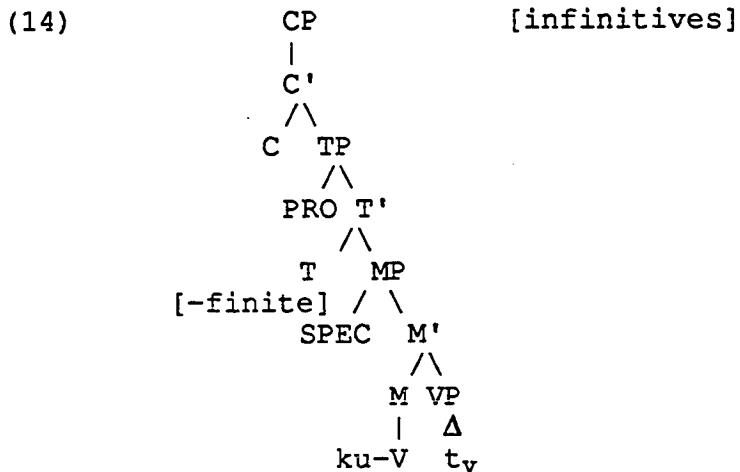
⁷ [ku+V] forms rather predictably fail to allow preverbal subjects.

- (iii) * Ni-na-kumbuka Juma kuimba kuzuri
 1S-pres-remember 15sing 15good
 * 'I remember Juma singing good'

there is no S'-deletion in Kiswahili: a barrier to government always intervenes between the subject position of an infinitival clause, and any higher Case assigner.

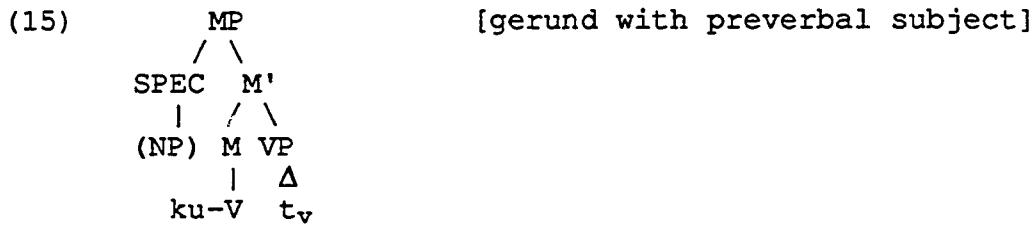
- (13) a. I believe [him to be a fool]
b. I want/like [her to sing every evening]
c. * Ni-na-taka [watu wote kuzungumza na Juma]

I assume then that Kiswahili infinitives are always CPs, as shown in (14). In other words, TP only appears as complement to C⁰ in Kiswahili.



Let us consider the question of how the preverbal subjects of Bantu gerunds meet the Case Filter. We can be sure that they are not assigned genitive Case, as this is marked by -a preceding the genitive NP (cf. Chapters 3 and 4, and example (4)). Assuming that nominative Case is assigned by a tensed INFL, preverbal gerundive subjects cannot acquire nominative Case within the gerund, as it has no tense. As this exhausts the Cases one might expect to find assigned to this position from within the gerund, I

conclude that preverbal subjects of Kiswahili gerunds receive Case from an external Case-assigner. For this to be possible, the maximal projection dominating the preverbal subject must be governed by the Case-assigner in question. The governor of this non-lexical category will also govern its specifier (cf. Rizzi (1990)). It follows that gerunds with preverbal subjects are bare MPs (15). The matrix verb or Tense⁰ assigns Case to the NP subject in [Spec, MP].



What is the Case of the preverbal subject? Since in e.g. (11a) and (12b), the Case assigner is a transitive verb, it is most likely that the subject in these examples receives accusative. In (11b) nominative is the obvious candidate, as the head which governs the gerund is the INFL of the matrix clause. In English, however, nominative pronouns in this position are vastly worse than accusative pronouns, although the latter themselves are none too good:

- (16) a. * He leaving would be a mistake
 b. ? Him leaving would be a mistake

The Case of the preverbal subject in Kiswahili is less transparent, because Cases are not differentiated

morphologically. While agreement seems to provide an indicator of an argument's Case, it is not available here - neither subject agreement on the gerund nor object agreement on a matrix verb is ever possible.⁸ Since in other respects, Kiswahili gerunds with preverbal subjects seem identical to English *acc-ing* gerunds, I propose a unified treatment. I will assume that the Case assigned in this position originates as nominative, but that its assignment is indirect, in a way to be made precise in 5.2. As a result, its morphological realization is the default Case, which for English is accusative.⁹ I assume that the Kiswahili gerund's preverbal subject bears whatever is Kiswahili's default Case.

5.1.4 Gerunds with Genitive Subjects

Kiswahili gerunds may also have post-verbal, genitive subjects. Such gerunds are distinguishable from nominals by the fact that complements within them are not introduced by *-a*.

⁸ With respect to object agreement, this means that the gerundive subject cannot raise to [Spec, VP], for reasons that do not concern us here. *ku-* itself never bears subject agreement.

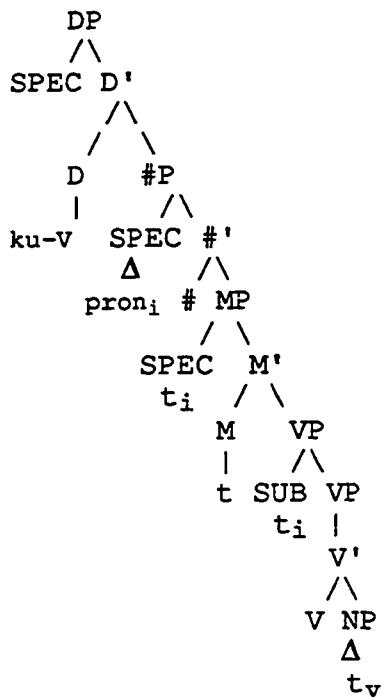
⁹ I owe this idea to Carol Rosen.

- (17) a. Ni-li-kumbuka kufunga kwake mlango
 1S-pst-remember 15close 15poss 3door
 'I remembered his closing the door'
- b. ??Ni-li-kumbuka kufunga mlango kwake
 1S-pst-remember 15close 3door 15his
 'I remembered his closing the door'
- c. Ni-li-kumbuka kufunga mlango kwa Juma
 1S-pst-remember 15close 3door 15of
 'I remembered Juma's closing the door'
- d. * Ni-li-kumbuka kufunga kwa Juma mlango
 1S-pst-remember 15close 15of 3door
 'I remembered Juma's closing the door'

I will refer to these as *poss-ing* gerunds, in view of their similarity to the English constructions of the same name.

The word orders shown in (17a) and (17c) are strongly preferred, and bring to mind the asymmetry of lexical vs. pronominal subjects within DP. Recall from chapter 4 my proposal that genitive pronouns occupy [Spec, #P], whereas lexical genitives are lower in the tree, in their base positions. In light of (17), I suggest that pronominal subjects of *poss-ing* gerunds are in [Spec, #P] as well. This will follow if MP can be selected by #. We will see in 5.3 and 5.4 that Kiswahili *poss-ing* gerunds have a number of DP-like properties, motivating the conclusion that #P is complement to DP, here as in ENP. Anticipating this result, I assign (17a) the structure (18).

(18)



I assume that successive incorporations of V to M, M to #, and # to D derive the surface position of the *ku+V* form to the left of the genitive pronoun, as illustrated above.

What of the lexical subject? Under the assumption that ECM is assigned by #, it is not clear how the internal subject position can receive genitive Case in (17b). Furthermore, the strong preference for *ku+V-O-S* order is not consistent with the facts of lexical subjects within DP.¹⁰

¹⁰ That is, my consultant from mainland Tanzania, who supplied these judgements, has no preference for NOS: he generally prefers NSO, although NOS appears to be a strong preference for Zanzibari speakers.

It is interesting to note that *kwa DP* functions as a DP-level *by*-phrase, in Kiswahili. This is demonstrated in (19a).

- (19) a. maua-ji ya wanafunzi kwa serekali
6kill-NOM 6of 2student KWA 9government
'the killing of students by the government'

b. ??maua-ji kwa serekali ya wanafunzi
6kill-NOM KWA 9government 9of 2student
'the killing by the government of students'

I suggest that the lexical agent in a Kiswahili *poss-ing* gerund does not receive ECM *in situ*, as there is no Case assigner available, # being too far removed. Instead, it must be realized in a 'by' phrase, like the agent in (19).

To sum up, I have argued that *ku+V* phrases in Kiswahili include nominals, infinitives, and gerunds. The gerunds are of two kinds: those with preverbal subjects, which (by assumption) receive Case from a governor outside the gerund itself, and those with genitive subjects, which I have analyzed as DPs. I have dubbed these *acc-ing* and *poss-ing* gerunds respectively, borrowing the terms coined for their English counterparts.

5.2 Evidence for Clausal Structure

I have proposed that infinitives, *acc-ing* gerunds and *poss-ing* gerunds all contain VP and have clausal structure, largely because the complements of the verbs within them are not introduced by -a, like the complements of nouns.

The account therefore predicts that VP- and clause-level constituents should be found within all three constructions. In this section I will show that this is the case.

First, infinitives and both kinds of gerunds may contain VP adverbs, as shown in (20).

- (20) a. kusoma sana/pole pole kwa Juma [ADV in poss-ing]
15read a lot/slowly 15of
'Juma's reading a lot/slowly...'
- b. Juma kusoma sana/pole pole [ADV in acc-ing]
15read a lot/slowly
'Juma reading a lot/slowly'
- c. A-na-taka [ku-soma sana/pole pole] [ADV in infin]
3S-pres-want 15-read a lot/slowly
'He wants to read a lot/slowly'
- d. *u-soma-ji sana/pole pole [*ADV in derived N]
14-read-NOM very/slowly
'reading slowly/a lot'
- e. *kusoma kwake kwerevu polepole [*ADV in ku-N]
15read 15poss 15clever slowly
'His clever reading slowly'

Second, the complement within a gerund or infinitive behaves like [NP, VP] in crucial respects. Although there is no morphological Case in Kiswahili, [NP, VP] is distinguishable by the type of agreement it triggers, and by its ability to be realized as an anaphor. Direct objects within Kiswahili gerunds and infinitives may have all the forms available for [NP, VP]: in addition to the lexical NPs shown above, the object of a verb within an infinitive or gerund may be empty and identified by object

agreement (21), or it may be one of the anaphoric object clitics *ji-* 'oneself' or *-an-* 'each other'. I illustrate with *ji-*, an accusative anaphor which must be bound by a subject (22).

- (21) a. ku-ni-alika kwake/kwa Nuru [pro/OA in poss-ing]
 15-me-invite 15poss/15of
 'Her/Nuru's inviting me'
- b. Nuru ku-ni-alika [pro/OA in acc-ing]
 15-me-invite
 'Nuru inviting me'
- c. A-li-kataa [ku-ni-alika] [pro/OA in infinitive]
 3S-pst-refuse 15-me-invite
 'She refused to invite me'
- d. * u-ni-alika-ji [*pro/OA in derived N]
 14-me-invite-NOM
 'the inviting of me'
- e. * ku-ni-alika kwake kwerevu [*pro/OA in ku-nominal]
 15-me-invite 15poss 15clever
 'Her clever inviting of me'
- (22) a. ku-ji-ona kwake/kwa Nuru [ji- in poss-ing]
 15-JI-see15poss
 'her/Nuru's seeing herself'
- b. Nuru ku-ji-ona [ji- in acc-ing]
 15-JI-see
 'Nuru seeing herself'
- c. A-li-taka [ku-ji-ona kiooni] [ji- in infinitive]
 3S-pst-want 15-JI-see 7mirror-loc
 'She wanted to see herself in the mirror'
- d. * u-ji-ona-ji [*ji- in derived N]
 14-JI-see-NOM
 'seeing oneself'
- e. * ku-ji-ua kwake kwerevu [*ji- in ku-nominal]
 15-self-kill 15poss 15clever
 'her clever suicide'

These constructions also have in common an ability to contain negation (23). I assume negation to be external to VP universally, based on its position in languages of relatively greater transparency in this regard (viz. Germanic and Romance languages, Yoruba, Bambara, etc.).

- (23) a. Ku-to-ondoka kwake [NEG in poss-ing]
15-NEG-leave 15poss

ku-li-tu-furahi-sh-a
15-pst-us-be+happy-CAUS-fv

'Her not leaving made us happy'
- b. Ni-me-kubali ku-to-mw-on-a Hasan [NEG in infinitive]
1S-perf-agree 15-NEG-3SOA-see
'I have agreed not to see Hasan'
- c. Amira ku-to-ondoka [NEG in acc-ing]
15-NEG-leave

ku-li-ni-furahi-sh-a
15-PST-me-happy-CAUS-fv

'Amira not leaving made me happy'
- d. * u-to-ondoja-ji [*NEG in derived N]
14-NEG-leave-NOM
'not leaving'
- e. * ku-to-imba kwerevu kwake [*NEG in ku-nominal]
15-NEG-sing 15clever
'his clever not singing'

Following Pollock (1989) and related work (Ouhala (1988), Laka (1989), Zannutini (1989)), I consider negation to be a functional head. These data show that the selectional requirements of *ku-*, both morphological and syntactic, may be satisfied by NEG(P). I suggest that [Neg [V]] inherits

a verbal feature by percolation, and that this accounts for its ability to be complement to *ku-*.

To sum up, the facts of (20)-(23) provide a clear indication that VP is included in infinitives and both gerund types. In addition, the presence of negation indicates that VP is contained within an optional NegP.

5.3 **Agreement Asymmetries and Case Assignment**

I will now illustrate some asymmetries in agreement possibilities, between *poss-ing* gerunds on the one hand and infinitives and *acc-ing* gerunds on the other. On the basis of these, I will argue that *acc-ing* gerunds pattern with infinitives and tensed clauses, in avoiding argument positions. I will provide an account in terms of the Case Resistance Principle of Stowell (1981). *poss-ing* gerunds, on the other hand, pattern entirely with DPs.

We have seen that infinitives, nominals, and both kinds of gerunds trigger subject agreement.¹¹ (24) shows that this is obligatory.

¹¹ As mentioned in note 3, infinitival and *acc-ing* subjects are not acceptable to all speakers; however those who do accept them are consistent in rejecting any but *ku-* agreement on the predicate. Assuming that infinitives and *acc-ing* gerunds vacate argument positions (as I will argue below) we might expect that Class 9 agreement, which is that which occurs in *it...S'* constructions, would be an available alternative, but curiously, it is not.

- (24) a. Kuimba nyimbo hizi *(ku)-na-wa-pendeza
 15sing 10song 10this 15agr-pres-please
 'Singing/to sing sad songs pleases them'

b. kuimba kwake kuzuri *(ku)-li-ni-pend-eza
 15sing 15poss 15good *(15agr)-pst-me-please
 'His good singing pleased me'

c. kusoma kwake kitabu kile *(ku)-li-ni-pendeza
 15read 15poss 7book 7that *(15)-pst-me-please
 'her reading that book pleased me'

d. Watoto ku-to-faulu katika mitihani
 2child 15-NEG-succeed in 4exam
 'Children not passing their exams

*(ku)-na-leta umaskini
 *(15)-pres-bring 14poverty
 brings poverty'

The facts of object agreement are somewhat different. OA is generally an available option where DPs are concerned, and preferred if they are definite. This is also the pattern for *ku*-nominals and *poss-ing* gerunds ((25a) and (25b)). OA is completely impossible with an *acc-ing* gerund or an infinitive ((25c) and (25d)), for all speakers consulted.

- (25) a. Ni-na-ku-penda [kuimba kwake kuzuri]
 1S-pres-150A-like 15sing 15poss good
 'I like his good singing'

b. Ni-na-ku-ogopa [kuua kwake binadamu]
 1S-pres-150A-fear 15kill 15his 1person
 'I fear his killing people'

c. Wa-li-(^{*}ku)-taka [kutunga mashairi]
 3PL-pres-(^{*}150A)-want 15compose 6poetry
 'They wanted to write poetry'

d. Si-(^{*}ku)-kumbuki [Nuru kupika ugali]
 1SNEG-(^{*}150A)-remember 15cook 9maize meal
 'I don't remember Nuru cooking maize porridge'

Similarly, (26) illustrates that a left-dislocated *poss-ing* gerund must be associated with OA, but an *acc-ing* gerund in the same position may only bind a gap:

- (26) a. Ku-imba kwa Amira, ni-na-*(ku)-penda,
15-sing 15of lagr-pres-*(15OA)-like
'Amira's singing, I like *(it),

lakini kuimba kwa Zeinabu ni kelele tu
but 15sing 15of COP noise just
but Zeinabu's singing is just noise'

- b. Amira ku-imba, ni-na-(**ku*)-penda, lakini
15-sing lagr-pres-15OA-like but
'Amira singing, I like (*it), but

Zeinabu ku-imba ni kelele tu
15-sing COP noise just
Zeinabu singing is just noise'

The impossibility of object agreement with an infinitive or *acc-ing* gerund is reminiscent of some facts to do with the distribution of English sentential arguments. Sentences in English may not be "hemmed in" to argument positions, by Subject-Aux Inversion (27a) or adverbs (27b) (Koster (1978), Emonds (1976), Stowell (1981)). Stowell accounts for these facts by means of the Case Resistance Principle (28), under the assumption that S' bears a Case feature. This bars S' from positions to which Case is assigned.

- (27) a. * Did [that John left] bother you?
b. [that John left] [e] bothered me
c. ? Mary said [that she was leaving] loudly
d. Mary said [e] loudly [that she was leaving]
(28) Case Resistance Principle: Case may not be assigned to a category bearing a Case-assigning feature.

Under Stowell's account, a sentential argument is grammatical only if it is able to move out of its base position¹², as happens in (27b) and (d), but not (27a) or (27c).

Suppose *acc-ing* gerunds inherit the Case feature of their VP complements, and therefore are Case-resistant. If we further assume that Kiswahili object agreement is associated with a Case position, (25) and (26) may be analyzed just as (27). The difference between the facts of subject and object agreement requires an explanation, however. Since subject agreement with infinitives and *acc-ing* gerunds is possible (and in fact necessary), should we conclude that, unlike in English, these categories may remain in [Spec, TP] at S-structure? (29) argues otherwise. (29a) shows that a *poss-ing* gerund may appear in the subject position within a relative clause. (29b) shows that this is not true of an *acc-ing* gerund.

- (29) a. mtu ku-li-ye-m-pendeza ku-ni-alika
1person 15agr-pst-1RA-1OA-please 15-me-invite

 kwako
 15your

 'the person who your inviting me pleased'

¹² Alternatively the sentential argument may be base-generated in an *it...S'* chain:

- (iv) Did it bother you [that John left]?

b. * mtu ku-li-ye-m-pendeza Amira ku-ni-alika
1person 15agr-pst-1RA-10A-please 15-me-invite
? 'the person who Amira inviting me pleased'

(29b) is highly reminiscent of (27a). If we assume that subject agreement in (24) is always with a trace, the infinitive or gerund having topicalized string-vacuously, this resemblance is explained: both the English sentence and Kiswahili *acc-ing* gerund occupy the structural subject position at some point in the derivation, but as [-N] categories they vacate it at S-structure to meet (28).

Under this account, the impossibility of object agreement with infinitives and *acc-ing* gerunds suggests that they never occupy the position from which agreement is triggered. Such a view is consistent with recent proposals that an argument must occupy [Spec, XP] in order to serve as an agreement trigger - as complements generated under V', infinitives and gerunds will not trigger OA in their base positions. If on the other hand they move to Spec, the assignment of Case to that position will be forced by the requirement that an A-chain have a Case-marked head and a Caseless tail (cf. Chomsky (1986a), Kayne (1987)). As a result, the movement which triggers agreement is necessarily movement to a Case position. For infinitives and *acc-ing* gerunds, this violates the CRP.¹³

¹³ This view entails that *acc-ing* gerunds do not need Case assigned to the chains in which they appear. In Stowell's terms, this makes them similar to infinitives,

This analysis brings us to a question regarding the Exceptional Case Marking of an *acc-ing* subject. A gerund of this type might be expected to be able to remain in a position governed by a Case assigner, if this Case is assigned to the subject. The gerund would then be [-Case], and its [+N] subject [+Case] (30). The evidence we have seen argues that *acc-ing* gerunds with preverbal subjects are barred from argument positions at S-structure, however ((25d), (26b), (29b)). For this reason, I assume that the derivation represented in (30) is not possible.

(30) * V [NP [ku-V [t (NP)]]] (see (30) - (33))
[+Case] [-Case]

I conclude that ECM to the gerundive subject "contaminates" the gerund itself. This might come about if Case is assigned to the gerund, trickles down to its head *ku-*, and then is assigned to the gerundive subject.¹⁴ To save the gerund from the CRP, this transfer of Case must be mediated by a trace, which the gerund binds from an adjoined position. Such a derivation must simultaneously prevent the gerund from violating the CRP, and its subject from violating the Case Filter, as shown in (31).

rather than tensed clauses. I will assume that this is the case.

¹⁴ This proposal has much in common with proposals of Reuland (1983) and Battistella (1983). A comparison with those approaches follows.

(31) V [e_{acc}]_i [ASP" NP_{acc}...]_i
|
|
Case

Will the same mechanism work for assigning Case to gerundive subjects and for English ECM to infinitival subjects? (32) argues that it will not. (32) shows that while an *acc-ing* gerund must be extraposed, an infinitive with ECM subject may not.¹⁵

- (32) a. * I believe [e]_i strongly [John to be a fool]_i
b. I remember [e]_i vividly [Mary dancing on the table]_i
c. ? I remember [Mary dancing on the table] vividly

We may conclude two things from the contrast in (32). First, the infinitive doesn't need to extrapose like the gerund does. Presumably, its position in (32) is not a Case position. Second, I take the fact that the infinitive may not extrapose like the gerund to indicate that its subject may only receive Case under adjacency with the verb *believe*. A difference in the mechanisms of ECM in these two cases is thus required.

I assume that *M* differs from a true [-finite] Tense in being able to function as an indirect Case assigner in the way described, owing to its lack of inherent feature specification. *to* and its analogues in other languages are

¹⁵ My thanks to Wayne Harbert for pointing these data out to me.

specified as the caseless, [-finite] Tense. This (or any) definite lexical identity precludes the flexibility of function which characterizes *ku-*.

The approach to ECM for gerunds that I have sketched out is a variation on proposals of Reuland (1983) and Battistella (1983). Reuland draws the same distinction between standard ECM and Case assignment to the gerundive subject, based in part of the passivization asymmetry exemplified in (33).

- (33) a. John is believed [t to be a fool]
b. * The boys were hated [t eating fish]

Reuland also considers that properties of -ing make it uniquely capable of a Case-transfer like the one I have posited, although in his terms, it is the status of -ing as AG(reement) to which this capacity is attributed. The major difference between our accounts is that Reuland explicitly rules out the possibility that Case is assigned to the gerund as a whole and then devolves upon the subject, as he argues this would entail a violation of the i-within-i Condition.

Battistella argues for "Case-dropping" from the containing category to the subject through the mediation of the category's head, and in this respect his analysis is very close to that which I have proposed. However,

Battistella argues for this as a unified account of ECM, and on this our approaches diverge.

To sum up, we have seen that infinitives and both types of gerunds can be accounted for in terms of a single morpheme *ku-*, whose maximal projection may be selected by infinitival T⁰, #⁰, or appear unselected.

5.4 *poss-ing* is an Island

Extraction facts reveal an additional asymmetry between *poss-ing* gerunds on the one hand, and *acc-ing* gerunds and infinitives, on the other. As (34a) and (34b) show, objects are readily extractable out of the latter two constructions. (34c) shows that they may not be extracted out of *poss-ing* gerunds.

- (34) a. kitabu ni-li-cho-kumbuka ku-soma
7book 1S-pst-7RA-remember 15-read
'the book which I remembered to read'
- b. kitabu ni-li-cho-kumbuka Juma ku-soma
7book 1S-pst-7RA-remember 15-read
'the book which I remembered Juma reading'
- c. * kitabu ni-li-cho-(ku)-kumbuka ku-soma kwa Juma
7book 1S-pst-7RA-(15OA)-remember 15-read 15of
? 'the book which I remembered Juma's reading'¹⁶

Assuming *poss-ing* gerunds are DPs, this is expected: there is no extraction out of DP in Kiswahili (cf. chapter 3).

¹⁶ The judgements I report here for Kiswahili have also been claimed for English (cf. Reuland (1983), Horn (1975)). Agreement on such facts is to be expected, under the treatment I propose.

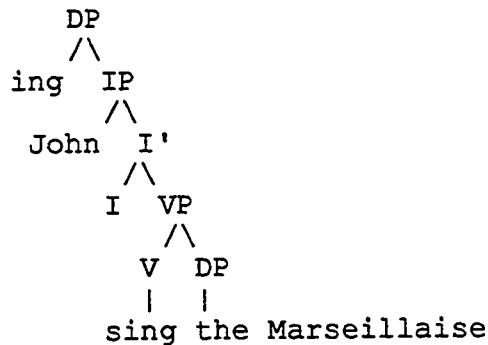
5.5

Abney (1987)

In this section I will demonstrate that an alternative analysis, that proposed by Abney (1987) for English -ing-constructions, fails to account for the Kiswahili facts, while the account I have developed applies successfully to both languages.

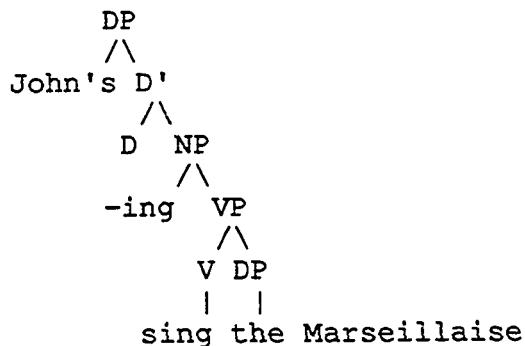
Abney proposes the following structures for -ing gerunds and nominals:

(35) a. *Acc-ing:*



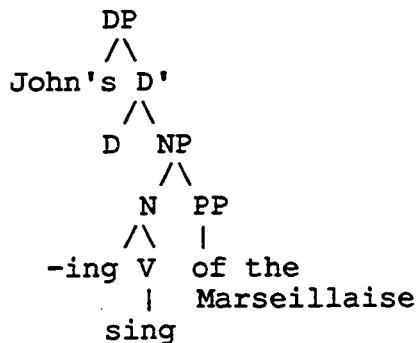
"John singing the Marseillaise"

b. *Poss-ing:*



"John's singing the Marseillaise"

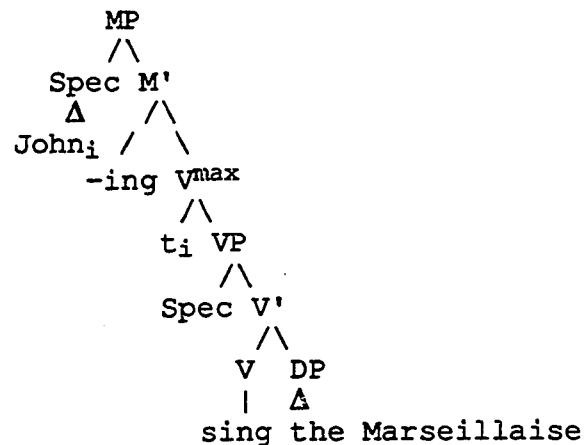
c. *Ing-of:*



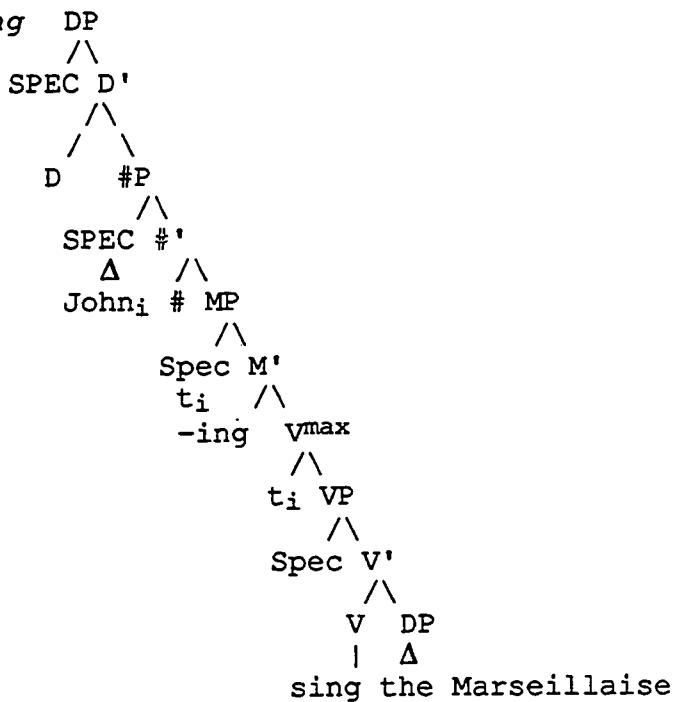
Under (35a), *acc-ing* gerunds should have the distribution of DPs. We have seen that this is not the case (cf. sections 5.3 and 5.4). Also, since Kiswahili has verb-raising, rather than affix-lowering (Carstens & Kinyalolo (1989)), the verb in this structure in a Kiswahili *acc-ing* gerund would be expected to precede the subject, contrary to the facts. (35b) and (35c) also give rise to word-order problems. They predict S-V order in Kiswahili *poss-ing* gerunds and nominals, while in reality the order is V-S (see section 5.1.4).

Under the theory I have proposed, English *acc-ing* and *poss-ing* gerunds would be represented as shown in (36). Affix-lowering applies in each case.

(36) a. *acc-ing*



b. *poss-ing*



With respect to *ku-nominals* and *ing-of*, I suggest that an X^0 -level concatenation of [M+V] is selected complement to a nominalizing zero-morpheme. The conclusions of chapter 6 suggest an account for why this is licit in English, while attachment of a zero-morpheme deriving verbs

from nouns could not be licensed: in a derived word [v 0-[M M- [V]]], the zero-morpheme is not identified by unambiguous features on the outermost bracket. This is because, the features of M being indeterminate, the verbal feature introduced by the zero-morpheme can be associated with the overt verb.

In Kiswahili, I suggest that the zero-morpheme belongs to locative Class 17. This is also the Class of the 'there'-type expletive, and agreement with Class 17 is homophonous with that of Class 15.

5.6 Conclusion

I have argued that Kiswahili verbs bearing *ku-* include two varieties of gerunds, infinitives, and deverbal nouns. I have proposed that *ku-* is equivalent to the -*ing* of English gerunds and nominals, in that both are morphemes which require verbal hosts, and which project XPs of indeterminate category.

It is interesting that Kiswahili includes *ku-* in infinitives, while -*ing* may not appear in their English counterparts. The similarity in the distribution of these two morphemes makes this surprising. I have not said much about constraints on -*ing* and *ku-*'s appearance, but I assume that Least Effort considerations (Chomsky (1989))

play a major role. This being the case, differences in the distribution of *ku-* and *-ing* require an explanation.

Carstens & Kinyalolo (op cit) argue that in Kiswahili, selection of VP by Tense is always indirect complementation, through a null aspectual. I suggest that the [-finite] tense is not a proper governor for such an empty aspectual, and so instead selects the overt *ku-*.

Under the account that I have proposed, there is only one *ku-* morpheme, of indeterminate category. It is therefore somewhat surprising that agreement with a *ku-* phrase is possible, since only [+N,-V] items have gender specifications (see 2.5.1). As I mentioned above, the 'there'-type of expletive agreement is the homophonous *ku-* agreement of Class 17, however:

- (37) ku-li-nyesha mvua jana
17past-rain 9rain yesterday
'It rained yesterday'

I propose that Class 15 agreement is really always that of Class 17. If this is true, Class 15 does not exist in Kiswahili at all.

6.0**Introduction**

I argued in Chapter 2 that Kiswahili diminutives and augmentatives are formed by zero-affixation, as shown in (1). The affixes involved have their own gender specifications, and the formation of augmentatives and diminutives is therefore accompanied by gender-change.

(1)	N [Gender D, Dimin]
	/ \
	N N
	toto 0
	[Gender A] [DIMIN]
	[Gender B]

[structure of *kitoto* - 'small child', prior to attachment of *ki-* singular morpheme]

In this chapter I will pursue several questions that arise with respect to augmentative and diminutive formation (henceforth AF and DF). The analysis will rely on four assumptions. First, three Well-formedness Conditions (WFCs) restrict the output of Kiswahili morphological processes. Second, a kind of morphological rescue operation exists, in the form of an epenthetic syllable *ji-*, which salvages forms that fail to meet these conditions. Third, the three WFCs and *ji*-epenthesis apply cyclically. Finally, zero-morphemes, like empty categories at the phrasal level, are subject to an identification requirement.

6.1

Cyclic Application of the Two Mora Constraint

I demonstrated in 2.4 that diminutive nouns bear the morphology of Gender D (Classes 7/8), and trigger D agreement. Augmentatives are found in both Genders B and C (Classes 3/4 and 5/6). (2c), (2d) and (3b) exemplify diminutive formation; (2e), (2f), and (3c) show the augmentative pattern:

- | | | |
|-----|---|---|
| (2) | a. mtoto
1child
'child' | b. watoto
2child
'children' |
| | c. kitoto
7child
'tiny child' | d. vitoto
8child
'tiny children' |
| | e. toto
5child
'big (ugly) child' | f. matoto
6child
'big (ugly) children' |
| (3) | a. sanduku/masanduku
5box/6box
'box/es' | b. kisanduku/visanduku
7box/8box
'small box/es' |
| | c. msanduku/misanduku
3box/4box
'big boxes' | |

Now consider the examples in (4)-(6), which demonstrate that monomoraic stems may not bear the prefixes of the diminutive or augmentative Classes directly. *ji-* must appear between stem and prefix. The (a) examples show each noun with the number prefixes of its lexical gender. The (b) and (c) examples demonstrate that these prefixes may not be replaced by the prefixes associated with AF and DF alone. The (d) and (e) examples

illustrate the acceptable forms, involving the prefix *ji-* inside the standard prefixes.

- | | | | |
|--------|---|----|---|
| (4) a. | jicho/macho
5eye 6eye
'eye/eyes' | b. | *mcho/*micho
3eye/4eye
'big eye/eyes' |
| c. | *kicho/*vicho
7eye 8eye
'small eye/eyes' | d. | mjicho/mijicho
3JIeye 4JIeye
'big eye/eyes' |
| e. | kijicho/vijicho
7JIeye 8JIeye
'small eye/eyes' | | |
| (5) a. | jiwe/mawe
5stone/6stone
'stone/s' | b. | *mwe/*miwe
3stone/4stone
'big stone/s' |
| c. | *kiwe/*viwe
7stone/8stone
'small stone/s' | d. | mjiwe/mijiwe
3JIstone/4JIstone
'big stone/s' |
| e. | kijiwe/vijiwe
7JIstone/8JIstone
'small stone/s' | | |
| (6) a. | mtu/watu
1person/2person
'person/people' | b. | *mtu/*mitu/*matu
3person/4person/6person
'giants' |
| c. | *kitu/*vitu
7person/8person
'little person/s' | d. | jitu/majitu/mijitu
5person/6JIperson
'4JIperson
'giants' |

(7) and (8) demonstrate that it is mora count, rather than syllable count, which is relevant, since *ji*-insertion does not occur with monosyllabic nouns having long vowels.

- | | | | |
|--------|---|----|--|
| (7) a. | taa/taa
9lamp/10lamp
'lamp/s' | b. | kitaa/vitaa
7lamp/8lamp
'small lamp/s' |
| c. | mtaa/mitaa
3lamp/4lamp
'big (weird) lamp/s' | d. | jitaa/mataa
5lamp/6lamp
'big lamp/s' |

- (8) a. mguu/miguu
 3leg/4leg
 'leg/s'
 b. kiguu/viguu
 7leg/8leg
 'small leg/s'
 c. (ji)guu/maguu¹
 5leg/6leg
 'leg/s'

ji- is traditionally analyzed as a Class 5 prefix for monosyllabic stems (5a).^{2,3} Polysyllabic stems of Class 5 bear no prefixes. What we see in (4) - (6) is that *ji-* appears also on monomoraic stems of augmentatives and diminutives, whether they are Class 5 or not. The similarity involved argues for a unified account; however the distribution of *ji-* must be explained.

¹ While Zawawi (1979) lists the prefixless augmentative, my consultant prefers the form with *ji-*. In my consultant's judgement, Gender C (Class 5/6) augmentatives of many words bear *ji-* as a singular prefix, although regular Gender C singulars do not do so unless their prefixless forms would violate a well-formedness condition. This is a distinct phenomenon from the *ji-* insertion cases of concern to this section, since it affects singulars only, and is not predictable. I attribute such variation in singular augmentative forms to lexical idiosyncracy. The differences between his judgements and those of Zawawi (the latter being in general more regular) are dialectal - my consultant is from Tanga, on the Tanzanian mainland, while Zawawi is Zanzibari.

² *ji-* is also required on vowel-initial stems, both Class 5 and diminutive/augmentative. I will consider such cases shortly.

³ But see Reynolds (1990) and Shepardson (1982) on *ji-* in (super-) augmentatives and diminutives. I turn to these facts in 6.4.

The crucial difference between the two cases in terms of *ji*'s distribution is that ordinary monomoraic nouns of this gender bear *ji*- only on singulars, apparently because singulars alone are prefixless. Plurals, prefixed with *ma*-, do not bear *ji*-.

(9) illustrates the paradigm of concern: Class 5/6 nouns of more than one mora have no *ji*-, as shown in (9a); monomoraic nouns of 5/6 bear *ji*- in the singular only, as seen in (9b); and augmentative and diminutive monomoraic nouns bear *ji*- inside other prefixes, as in (9c), (9d).

- | | |
|--|---|
| (9) a. gari/magari
5car/6car
'car/s' | b. jiwe/mawe
5stone/6stone
'stone/s' |
| c. kijiwe/vijiwe
7JIstone/8JIstone
'small stone/s' | d. mjiwe/mijiwe
3JIstone/4JIstone
'big stone/s' |

I will consider that Class 5 has no prefix, and that *ji*- in all the cases under consideration has a unitary function: that of "rescuing" stems which would otherwise violate a requirement that Kiswahili nouns have more than one mora. I formalize these observations in (10) and (11):

(10) **The Two Mora Constraint:** *[_N μⁿ], n < 2

(11) ***ji*-insertion:** prefix *ji*- to a form which fails to satisfy (10).

Regarding underived nouns, only monomoraic stems of Class 5 motivate *ji*-insertion,⁴ since only this Class lacks overt prefixes (9b) vs. (9a). Other nouns are made disyllabic, and therefore bimoraic, by the addition of Noun Class prefixes.

The presence of *ji*- in (9c) and (9d) suggests that nouns are checked for well-formedness more than once: a check is motivated somewhere in the derivation of augmentatives and diminutives, as well as after the addition of regular singular/plural prefixes. However monomoraic stems are clearly **not** checked prior to the spellout of number features in general, since this would trigger *ji*- insertion before plural formation derives e.g. *mawe*. The result would be the unacceptable **majiwe* - 'stones'. Assuming *ji*-insertion not to be restricted to Classes 5/6 at any level, the same point can be made with respect to monomoraic stems of any Classes (*mtu/watu* - 'person/people' (Class 1/2), rather than **mjitu/wajitu* with the same meaning). The Two Mora Constraint thus applies only in derived environments, and it applies cyclically.⁵ I propose (12).

⁴ By chance these are all monosyllabic, hence traditional confusion over the requirement.

⁵ These are the canonical properties of phonological rules of the lexical component (cf. Kiparsky (1982)); it is interesting that this Kiswahili WFC should share them.

- (12) **Cyclicity of Well-formedness Conditions:** WFCs apply cyclically, to the output of each morphological process.

Assuming (12), when a stem like -we is made augmentative or diminutive by zero affixation, it is immediately checked for well-formedness, and fails. The result is that *ji-* is inserted prior to the affixation of number morphology on the derived forms, and therefore is present even if singular or plural formation adds a further syllable, as shown in (13)I. Class 5/6 monosyllabic stems like -we - 'stone' are checked only after syntactic singular and plural formation rules apply, yielding singular *-we as in (13)II, and plural *mawe* as in (13)III. *ji-* insertion is required only in the former case, as desired.

(13)	I.	II.	III.
	-we	-we	-we
dimin. form.	-we+0	--	--
check	*	--	--
ji-insertion	<i>jiwe</i>	--	--
singular/ plural form.	<i>kijiwe</i>	<i>0-we</i>	<i>mawe</i>
check	ok	*	ok
ji-insertion	--	<i>jiwe</i>	--
	<i>kijiwe</i> 'small stone'	<i>jiwe</i> 'stone'	<i>mawe</i> 'stones'

Note the support that these data provide for the assumption that Noun Class prefixes are not themselves the diminutive/augmentative morphemes. Were this the case, no account would be available for the contrast in grammaticality between *mawe* - 'stones' and **kiwe* - 'small stone'.

The Two Mora Constraint applies also to adjectives as shown in (14a,b) and to verbs, as in (14c,d). In the latter case, the epenthetic morpheme employed is not *ji-* but the morpheme *ku-* (cf. chapter 5).

- | | |
|---|--|
| (14) a. gari (*ji)dogo
5car 5(*JI)small
'small car' | b. gari *(ji)pya
5car *(JI)new
'new car' |
| c. (*ku)soma!
(*to)read
'read!' | d. *(ku)la!
*(to)eat
'eat!' |

The facts of (14) suggest the revision of the Two Mora Constraint shown in (15), and a second epenthesis rule (16). I assume the category-specific strategy of *ku*-insertion blocks the application of *ji*-epenthesis for verbs, by the Elsewhere Principle (Kiparsky (1982)).

- (15) The Two Mora Constraint (final version):

*[_w μⁿ], n<2.

- (16) **ku-epenthesis:** prefix *ku-* to [v, where (15) is violated.

There are three exceptions to (15). The *-a* case-marker and *ni* copula are monomoraic, as (17) shows. An additional set

of copula-like elements, consisting essentially of agreement prefixes occurring as independent words, are monomoraic (18).

- (17) a. picha **ya** Juma
9picture 9of
'picture of Juma'
- b. huyu **ni** rafiki yangu
1this COP 1Afriend 1Amy
'this is my friend'
- (18) a. **yu** mzima
3S 1well
'he's fine'
- b. **ki** mezani
C7 table-loc
'it (Class 7) is on the table'

As there are no prepositions, and inflectional morphology is affixal, this exhausts the inventory of possible cases to consider. I will adopt the maximally general statement in (15), and assume that non-lexical categories⁶ are exempt from this particular WFC.

6.2 The Initial Vowel Prohibition

ji-insertion is also required with diminutives and augmentatives of native nouns beginning with vowels other than *u-* (cf. Ashton (1944)). (19a), (19c), and (19e) provide examples of vowel-initial stems bearing number

⁶ Here I have in mind not functional categories in the sense of Abney (1987), but all closed-class items.

prefixes.⁷ (19b), (19d), and (19f) show that *ji-* is inserted when these stems undergo diminutive formation. (19g)-(19h) demonstrate that nouns beginning with *u-* may be prefixless, and do not undergo *ji-*-insertion upon diminutivization.

- | | |
|--|---|
| (19) a. mwana/wana
1child/2child
'child/ren' | b. kijana/vijana ⁸
7JIchild/8JIchild
'youth/s' |
| c. nyoka/nyoka
9snake/10snake
'snake/s' | d. kijoka/vijoka
7JIsnake/8JIsnake
'small snake/s' |
| e. mwiko/miiko
3spade/4spade
'spade/s' | f. kijiko/vijiko
7JIspoon/8JIspoon
'spoon/s' |
| g. uso/nyuso
11face/10face
'face/s' | h. kiuso/viuso
7face/8face
'little face/s' |

⁷ I include no *e*-initial stems here because they are relatively few, and those I have found do not adhere to this pattern. *mwezi/miezi* - 'moon/s', for example, has only diminutive and augmentative forms in which the prefix of the derived Class occurs outside that of the stem's lexical gender: *kimwezi/vimwezi* - 'little moon/s', *jimwezi/majimwezi* - 'big moons'. One *e*-initial noun exists, *embwe/embwe* - 'gum from the baobab plant'. This violates the Initial Vowel Prohibition (see (20)), but as a singleton it does not warrant revision of the condition, or the setting up of a special exception class for *e*-initial nouns. We will see in (23) that *e*-initial adjectives are subject to the Initial Vowel Prohibition, lending support to its generality. I will put the two residual problems raised by *mwezi* and *embwe* aside, as beyond the scope of this work.

⁸ The *-i-* of *ji-* is dropped in these examples because it precedes another vowel.

As it happens, there are few nouns in the language beginning with vowels other than *u*- . Leaving the latter group aside temporarily, I propose that the Well-formedness Conditions for Kiswahili words include (20). I broaden *ji*- insertion to apply in these cases:

(20) **Initial Vowel Prohibition:** *[_N V

(21) ***ji*-epenthesis (revised):** prefix *ji*- when Well-formedness Conditions are not met.

Exceptions to (20) fall into three classes. First, there are non-native nouns beginning in a larger range of vowels, most of them Arabic borrowings, like the words *insha* - 'essay', and *amri* - 'law'. I assume that non-native vocabulary is not recognizable as part of the domain of this WFC's application. Second, deverbal nouns violate this generalization: cf. *agano* - covenant < *ku-agana* - 'to form an agreement'; *ono* - 'perception' < *ku-onsa* - 'to see'; *elezo* - 'explanation' < *ku-eleza* - 'to explain'. I suggest that a verbal feature percolated to the derived noun ensures that it continues to pattern with verbs in relation to the WFCs. Assuming then that the Initial Vowel Prohibition ignores these two groups for the reasons given, only the special status of *u* remains to be explained.

One large group of *u*-initial nouns are those bearing the Class 14 *u*- prefix. As this prefix is reconstructed by Guthrie (1967) as **bu*, it seems that the Initial Vowel

Prohibition's treatment of such nouns is consistent not with the prefix's synchronic form, but with its historical antecedent. Other *u*-initial nouns seem to descend from a variety of consonant-initial sources - *ua* - 'flower' from **duba* (Meeussen (1980)); *unga* - 'flour', now a prefixless noun of Kiswahili Class 9, Meeussen places in proto-Bantu Class 14, which suggests that it bore the **bu* prefix. It appears then that all *u*-initial nouns may have gained this shape recently, through historical changes.

To sum up, there is a prohibition on vowel-initial nouns, which I assume must have applied across the board at one time. While it has accumulated a number of exceptions in modern Kiswahili, the general pattern remains clear.

It is also clear from the non-occurrence of, e.g., **mijiko* - 'spades' in (19e) and **mujana* - 'child' in (19a) that once again, diminutivized nouns are undergoing a check prior to Noun Class prefixation, which the underived nouns are not. Vowel-initial stems must bear *ji-*, but only in the prefixless Class 5 ((22a) vs. (22b), (22c)).

- (22) a. *moto/mioto* b. *joto* (>*ji+oto*)
 3fire/4fire 5heat
 'fire/s' 'heat'

 c. *jino/meno* (>*ma+ino*)
 5tooth/6tooth
 'tooth/teeth'

The Initial Vowel Prohibition is thus a cyclic, derived-environment constraint, like the Two Mora Constraint.

The Initial Vowel Prohibition may also be broadened slightly. While it does not apply to verbs, as (23) demonstrates, its effects on adjectives are visible in (24). I modify the prohibition accordingly, in (25).

- (23) a. angalia! b. eleza! c. ingia!
 'look!' 'explain!' 'enter!'

- d. ondoka! e. ungama!
 'depart!' 'confess!'

- (24) a. gari dogo b. gari jeupe (ji+eupe)
 5car 5small 5car 5JIwhite
 'small car' 'white car'

- d. jua jingi (ji+ingi)
 5sun 5JImuch/many
 'much sun'

- e. jua jangavu (ji+angavu)
 5sun 5JIBright
 'bright sun'

- f. vazi jororo (ji+ororo)
 5garment 5JIssoft
 'soft garment'

(25) **Initial Vowel Prohibition (final version):**

* [+N V

Thus far we have seen that Kiswahili words are subject to two filters on well-formedness, one of which rejects words of less than two moras, and one of which disallows [+N] items beginning in vowels (with exceptions as noted). These filters apply when augmentatives and diminutives are formed by zero-affixation, and also after

the addition of number morphology. I have proposed that the application of Well-formedness Conditions is cyclic, since it follows each of the morphological processes we have considered (12). I will consider (12) in detail in 6.6.

6.3 Blocking by homophony

Now let's consider some further asymmetries in augmentative and diminutive forms. We have seen that diminutives belong to Group D (Classes 7/8), and augmentatives to Groups B and C (Classes 3/4, and 5/6). It is therefore interesting to note that nouns present in these Groups by virtue of lexical gender show no ambiguity: as shown in (26a), underived Group D nouns do not allow a diminutive reading, nor do nouns of Groups B and C allow augmentative readings ((26b) and (26c)). These facts are representative of a general pattern of avoidance of ambiguous outputs, which I will refer to as blocking by homophony⁹ (BBH).

- | | |
|--|--|
| (26) a. kitabu/vitabu
7book/8book
'book/s'
*'little book/s' | b. gari/magari
5car/6car
'car/s'
*'big car/s' |
|--|--|

⁹ I appropriated this term from an e-mail message from Mark Aronoff, whom I thank for it.

c. mti/miti
3tree/4tree
'tree/s'
*'big tree/s'

For the time being I will assume that there is a WFC of the form in (27), which compares output forms to existing forms, looking for duplication. We will see below that this treatment permits us to explain additional cases of *ji*-epenthesis, and accounts for the fact that BBH is cyclic (see 6.4). In 6.5 I will revise (27) such that the role played by homophony (in (27), "duplication") is assumed by deeper principles.

(27) **Blocking by Homophony:** * α , α a derived word, where α duplicates the form of an existing lexical item β .

The wording of (27) is designed in part to prevent it from applying to the homophonous singular/plural pairs of Gender E (9/10) (cf *ndizi/ndizi* - banana/s, *taa/taa* - 'lamp', etc). As derivatives of a single lexical item, each member of these pairs will avoid triggering (27), while still conforming to WFCs generally.

Note that the data we have considered are equally compatible with a ban on attachment of an affix to a stem of the same gender. This would not account for (28), however. (28) shows that augmentatives homophonous with existing forms are impossible, even when distinct in gender from the forms in question. Were this not the case, *mdudu* - 'bug', a noun of Class 1 (Gender A), would be expected to allow an augmentative reading, under

interpretation of its *m-* prefix as the homophonous prefix of Class 3 (Gender B). BBH accounts for this; a gender-related account of (26) could not.

- (28) a. mdudu
 1bug/*3bug
 'bug/*big bug'
 b. mtoto
 1child/*3child
 'child/*big child'
 c. mwaniamke
 1woman/*3woman
 'woman/*big woman'

The augmentative interpretations are impossible despite the fact that differences in agreement would disambiguate the forms, as (29) shows. The facts of (29) confirm that BBH is a formal check on lexical items, and cannot be directly attributed to pragmatic considerations.

- (29) a. mtoto huyu/yule - 'this/that child'
 b. *mtoto huu/ule - 'this/that big child'

Only the prefixes of Class 1 are homophonous with those of a distinct augmentative Class, so (28) is representative of the scope of this phenomenon. For expository reasons I will put (28) aside until 6.4.2, and concentrate on gender-matching cases until then.

There are a couple of strategies for circumventing BBH. Since two genders of augmentatives exist, there is always at least one successful derivation available of the standard type ((30b), (31b)).

- (31) a. mkono/mikono
 3arm/4arm
 'arm/s'
 *'big arm/s'
- b. kono/makono
 5arm/6arm
 'big (bad) arm/s'

Of particular interest is a strategy involving epenthetic *ji*- . Diminutives of Group D nouns are well-formed, just in case they bear *ji*- between stem and Group D prefix as in (32).

- (32) a. kikombe/vikombe
 7cup/8cup
 'cup/s'
- b. kijikombe/vijikombe
 7J1cup/8J1cup
 'little cup/s'
- c. kitabu/vitabu
 7book/8book
 'book/s'
- d. kijitabu/vijitabu
 7J1book/8J1book
 'little book/s'

5/6 nouns, in addition to 3/4 augmentatives ((30a) and (30b)), may have 5/6 augmentatives with *ji*-insertion ((33a), (33b)). 3/4 nouns, in addition to 5/6 augmentatives ((31a), (31b)), may have 3/4 augmentatives with *ji*-insertion ((34a), (34b)).¹⁰

- (33) a. gari/magari
 5car/6car
 'car/cars'
- b. jigari/majigari
 5J1car/6J1car
 'big car/cars'
- (34) a. mlima/milima
 3mountain/4mountain
 'mountain/s'
- b. mjilima/mijilima
 3J1mountain/4J1mountain
 'big mountain/s'

¹⁰ Which option is available depends on the noun, however (i).

(i) a. *mjikono/*mijkono b. *lima/*malima
 3JIarm/4JIarm 5mountain/6mountain
 'big arm/s' 'big mountains'

I attribute gaps in the augmentative paradigms to lexical idiosyncracies.

At what point does BBH apply to produce these outputs? Assuming *ji*-epenthesis to be prefixation, as in (21), cyclicity will force BBH to apply prior to the addition of number morphology (Class prefixes). An alternative account, treating *ji*-epenthesis as infixation, succeeds for Classes with overt prefixes ((35b), (35c)), but fails for those without ((35f); (37c)):

- (35) a. Hypothetical infixation rule: insert *ji*- after the first syllable of a noun which fails a WFC.
- | | | |
|---------------|--------------|------------|
| b. kikombe | c. kiJIkombe | |
| 7cup | 7JICup | |
| '*little cup' | 'little cup' | |
| d. gari | e. jigari | f. *gaJIRI |
| 5car | 5JICar | |
| '*big car' | 'big car' | |

I conclude that *ji*-insertion is indeed prefixation, and that it applies to stems, triggered by BBH. As a WFC, BBH itself is triggered by the attachment of the zero-morphology of diminution/augmentation.

Note that all stems bearing zero-morphology are homophonous with their inputs. However, a stem whose gender is distinct from the gender of the zero morpheme that it bears survives BBH, to be overtly differentiated from its input by the addition of Noun Class prefixes at a later point (pace (28)). This argues that BBH is sensitive to gender information. On the other hand, the zero-morpheme and internal brackets of the derived form clearly do not make it non-distinct from the root to which

it is compared. This is apparent from the fact that when DF of [Grpc -tabu] produces [Grpc [Grpc -tabu]-0] as in (19a), the latter is blocked as a duplicate, unless *ji*-insertion applies. These observations will be important in consideration of (28), in 6.4.2. I will take them up again in 6.5.

To sum up, the morphological processes of DF and AF are subjected to a third WFC, Blocking by Homophony, which rejects duplicates of existing forms. Offending forms are rescued by *ji*-epenthesis, just as in the case of the Two Mora Constraint and the Initial Vowel Prohibition.

6.4 **Cyclic application of BBH: two arguments**

6.4.1 **'super-augmentatives' and 'super-diminutives': argument #1**

Shepardson (1982) and Reynolds (1990) show that several grades of augmentatives and diminutives exist, and that *ji*- is crucially involved in the formation of so-called super-augmentatives and super-diminutives (see (36)). I will propose an account of this phenomenon in terms of cyclic BBH application.¹¹

¹¹ My account is very much in the spirit of Shepardson, who develops an analysis based on the same kind of blocking approach, minus the notion of cyclicity. See also Reynolds (op cit) for an alternative analysis of -*ji*.

- (36) a. ndege/ndege b. kidege/videge
 1bird/2bird 7bird/8bird
 'bird/s' 'small bird/s'
 c. kijidege/vijidege d. dege/madege
 7J1bird/8J1bird 5bird/6bird
 'tiny bird/s' 'big bird/s'
 e. jidege/majidege 5J1bird/6J1bird
 'huge bird/s'

Consider first diminutive formation. I have argued that diminutives are formed by zero affixation of a Group D element (above (1)). If this process applies to a Group D noun, we have seen that *ji-* is inserted to salvage the result from BBH, in keeping with the *ji*-epenthesis rule of (21). Now, suppose the output of DF is itself diminutivized, by submition to a second application of the process. Under my assumptions, the second zero-affixation would yield a form indistinguishable from its input, as shown in (37b) vs. (37c). The derivation upon reapplication of DF would be entirely parallel to diminution of a noun whose lexical gender was Group D. BBH and *ji-* insertion should apply, by the logic of our account, and as (37d) shows, that is indeed what happens.

- (37) a. [Grp A dege] b. [Grp D [Grp A dege]-0]
 stem of 'bird' derivation of *kidege/videge* -
 'bird/s' 'little bird/s'
 c. [Grp D [Grp D [Grp A dege]-0]-0]
 derivation of *kidege/videge* - 'tiny bird/s', * by
 BBH

- d. kijidege/vijidege [salvaged by *ji*-epenthesis]
7JIbird/8jibird
'tiny bird'

Augmentatives of augmentatives exhibit the same behavior in both of the available genders, as shown in (38c) and (38e). The analysis sketched out in (37) applies directly.

- (38) a. kitabu/vitabu b. tabu/matabu
7book/8book 5book/6book
'book/s' 'big book/s'

c. jitabu/majitabu¹² d. mtabu/mitabu
5JIbook/6JIbook 3book/4book
'huge book/s' 'big (weird) books'

e. m jitabu/mijitabu
3JIbook/4JIbook
'huge book/s'

Zawawi (1979) also cites examples of triple DF and AF.

- (39) a. kijijidege
7JIJIBird
'very very little bird'

b. majijidege
6JIJIBird
'very very big bird'

¹² Shepardson reports a semantic difference between 5/6 (Gender C) augmentatives and those of 3/4 (Gender B), the latter indicating greater size than the former. My own consultant does not share this intuition. In his view, 3/4 and 5/6 augmentatives differ only in that the former permit (but don't require) an out-of-the-ordinary, somewhat negative reading, "weird, surprising, ugly". In the dialect of Shepardson's study, the meaning of the 3/4 affix is apparently slightly different.

(39) suggests that recursion through DF and AF is in principle unlimited, and that its output is submitted to WFCs on each occasion.¹³

6.4.2 Homophony between distinct genders: argument #2

The analysis of a BBH relationship between nouns of distinct genders provides the second argument for cyclicity of WFCs (cf. (28), (40)). (41a) illustrates the representation of underived Group A *mdudu* - 'bug', prior to prefixation of number morphology (Group A = singular Class 1 and plural Class 2). In (41b) I show the same noun made augmentative by the addition of the Group B zero affix. Comparison of this form to that in (41a) will yield no violation of BBH, according to my assumptions, because the two are distinguished by gender features. In fact, the acceptability of a Group B plural (Class 4) augmentative in (28d) is evidence that this is as it should be: ruling out (41b) would make both singular and plural Group B augmentatives impossible.

¹³ My consultant's judgements again differ from those of Zawawi, in tolerating only double diminutives and augmentatives. I will avoid positing any deep difference between the grammars of these dialects by relying on a surface filter to rule multiple *ji*-s out in the relevant dialect.

- (40) a. mdudu/wadudu
 1bug/2bug
 'bug/bugs'
- b. *mdudu/^{ok}midudu
 3bug/4bug
 '*big bug/^{ok}big (weird)
 bugs'
- c. dudu/madudu
 5bug/6bug
 'big bugs'
- (41) a. [GrpA dudu] (root for 'bug')
 b. [GrpB [GrpA dudu]-0] (after augmentative formation)

As this particular problem clearly lies in the homophony between the prefixed singular forms of (39a) and (39b), I propose that a second application of BBH, following the prefixation of number morphology, rules out the Group B singular augmentative.

A small problem remains, however. (42a) and (42b) provide plausible representations for the the licit noun *mdudu* - 'bug' and its illicit augmentative. In these representations, the internal brackets of the augmentative have been eliminated by bracketing erasure (Chomsky & Halle (1968)). Gender and number information remain in evidence, as they will determine syntactic agreement. Now, even though the addition of number morphology has yielded homophonous instances of *mdudu*, the difference in their gender features should prevent BBH, under the account I have proposed.

- (42) a. [GrpB sing *m*-dudu] (augmentative with # prefix)
 b. [GrpA sing *m*-dudu] (underived N, with # prefix)

That the singular augmentative form in (40b) is unacceptable is therefore not yet explained. I suggest that BBH application following prefixation has access only to lexical material. One way of thinking of this is to suppose that lexicalization of the \emptyset -features as prefixes eliminates them as diacritics on the N^0 bracket - the lexical realization replaces the abstract one, at this level.¹⁴

My account makes a prediction: if *ji*-epenthesis is to the stem, and therefore salvages only forms rejected by BBH prior to prefixation, this should not be possible on the post-prefixation application. *mji-* augmentatives should not be available. (43) confirms this.¹⁵

- | | | | |
|-----------|-----------|------|-------------|
| (43) a. * | mjidudu | b. * | mjitoto |
| | 3JIbug | | 3JIchild |
| | 'big bug' | | 'big child' |
| | ' | | |
| c. * | mjivulana | d. * | mjisichana |
| | 3JIboy | | 3JIgirl |
| | 'big boy' | | 'big girl' |

To sum up, I have argued that a third Well-formedness Condition, BBH, applies cyclically, eliminating derived

14 Gender/number information are still percolated to the maximal projection, however, to account for agreement phenomena.

15 Also impossible are forms in which *ji*- has attached outside the number prefix (**jimdudu*, **jimtoto*, **jimvulana*) I suggest that selectional restrictions of *ji*- prevent this.

forms homophonous with existing ones. BBH triggers *ji-*-epenthesis, in the same way as the Two Mora Constraint and the Initial Vowel Prohibition.

6.5 Licensing conditions on zero-morphemes

While Blocking by Homophony clearly patterns as a WFC, it differs in certain crucial ways from its companion conditions. In this section I will offer an interpretation of BBH as derivative of a licensing requirement on zero-morphemes. Viewed in this way, BBH exhibits the generality of other WFCs.

The problem with BBH as formulated in (27) is as follows. The Two Mora Constraint and the Initial Vowel Prohibition express structural criteria for wordhood in Kiswahili, with which all surface forms comply. In contrast, BBH is not structural. Nor is there a general intolerance of homophony in the language - many surface forms are ambiguous in precisely the way that diminutives and augmentatives are not, as (44a) demonstrates. In fact, even diminutives and augmentatives may be ambiguous, as long as their diminutive and augmentative readings are not in question. (44b) provides one example.

- (44) a. kamba/kamba - 'rope' (Gender E)
 'shrimp' (Gender A, # rules of E)

- b. kikamba/vikamba
ok'little rope'
ok'little shrimp'

It is worth noting that the examples in (44b) do not violate BBH, since e.g. *kikamba* on either reading does not duplicate an existing lexical item. It duplicates another potential derived item, but this is no problem for the WFC. BBH thus achieves descriptive adequacy, but lacks motivation as a general condition on Kiswahili words, and is therefore anomalous in its inclusion among the WFCs.

I propose that homophony is not the true issue - rather, BBH derives from a problem of recoverability. The null affixes in the crucial forms are not identified in any way, and thus they fail to survive the derivation unless *ji*-epenthesis flags their occurrence. I assume (45).

(45) **Zero-morpheme Licensing Principle:** Zero-morphemes must be identified.¹⁶

What does identification consist of? The facts of Blocking by Homophony suggest that distinctive gender-features on the derived form's outermost bracket makes the crucial

¹⁶ See also Pesetsky (1990) for a suggestion along these lines. Pesetsky proposes that certain morphemes (inflection, -er and -able in English) can license zero-morphemes. The Kiswahili facts show that zero-morphemes must be evaluated prior to subsequent affixations, however (see (35) and surrounding discussion of *ji*-epenthesis as prefixation, not infixation). Reanalysis of the facts Pesetsky considers is outside the scope of this chapter.

difference as to whether a zero-morpheme survives, in Kiswahili. Different types of features are apparently able to license zero-morphemes in non-gender languages: in a case like the English [_N father]/[_V father], the category feature perhaps suffices.

Consider the range of possible and impossible diminutives and augmentatives in Kiswahili, represented schematically in (46) (subscript = gender).

(46) a. ok	N _D	b. *	N _D	c. *	N _D	d. *	m-N
	/ \		/ \		/ \		/ \
	N 0 _D		N 0 _D		N _D 0 _D		N 0 _B
					/ \		
	toto _A		tabu _D		N 0 _D		toto _A
	kitoto		kitabu		toto _A		mtoto
	'little child'		'little book'				'big child'
					kitoto		
					'tiny child'		

To account for these patterns I propose (47):

- (47) **Zero-morpheme identification condition:** A zero-morpheme is identified if and only if its features are unambiguously represented on the derived word.¹⁷
- (47) holds in (46a), in that the derived word's gender cannot be attributed to the lexical item -toto which it contains. In (46b), however, the gender diacritic on the highest N⁰ node is of ambiguous origin. In (46c), the outermost zero-morpheme necessarily fails to meet (47).¹⁸

¹⁷ "derived word" should be interpreted relative to cyclic applications.

¹⁸ Percolation conventions should block the problematic interpretations of the gender features in question, but

Finally, in (46d), *m-* is ambiguous between Gender A and Gender B interpretations. This is the case under my assumption that once the gender feature has been spelled out as morphology, it is no longer visible on the affixed x^0 as a diacritic (see discussion of (42)).

It is interesting to note the resemblance between the licensing of zero-morphemes in Kiswahili, and the licensing of both *pro* and the subphrasal *pro^w* that I argued for in chapter 2: in all three cases empty categories are permissible because of the wealth of "identity" features which characterizes the Kiswahili nominal system. Although zero-morphemes are attested in languages without gender, it seems likely that gender features have a special ability to license zero-morphemes, just as agreement licenses *pro*. Given their dependence on features for identification, we might think of zero-morphemes as relatives of *pro* on a smaller scale: *pro^m*, perhaps. Such an approach is made attractive by the fact that diminutive and augmentative zero-morphemes in Kiswahili play the same role as the subphrasal empty categories *pro^w* of Chichewa.

While the Zero-morpheme Licensing Principle is clearly a manifestation of general recoverability requirements, I

apparently do not. I suggest that if not identified unambiguously zero-morphemes are simply invisible, in keeping with the general invisibility of empty categories to the phonological component (cf. Carstens (1986), McHugh (1985)).

would like to suggest that in the domain of morphology these relate to a condition that the internal constituency of words (and, thereby, the compositional basis for their meanings) be reconstructible in a kind of identity check. Kiparsky (1982) suggests that lexical entries be viewed as identity rules. Assuming this, we might think of this condition as in (48).

- (48) **Morphological Bijection Requirement:** For all words ω , ω is well-formed if and only if its meaning is derivable via bijective correspondence of morphemes and lexical entries.

One half of (48) corresponds roughly to Chomsky's (1986b) Principle of Full Interpretation. While the PFI requires that all expressions have an interpretation, (48) also requires that every interpretation be licensed by an expression. Under the Zero-morpheme Identification Condition, a non-identified zero-morpheme will not be visible to fulfill this condition. A diminutive interpretation for a Group D noun, for example, will involve a failure to supply a morpheme in the word corresponding to the diminutive meaning. In a well-formed diminutive, both the diminutive affix and the root will map to lexical entries, which together yield the correct interpretation. In the problematic cases, nothing but the root's meaning is accessible.

It is possible that (46d) involves a failure to meet the Morphological Bijection Requirement only, and not the Zero-morpheme Identification Condition at all. The zero-morpheme in this example should satisfy the Zero-morpheme Identification Condition on its first check, after augmentative formation and prior to the affixation of number morphology. Cyclicity should prevent re-evaluation of the zero-morpheme's status thereafter. However, assuming that the Morphological Bijection Requirement applies again, and seeks a hypothesis as to the internal constituency of *mtoto* that will derive its meaning as 'big child', a violation will occur.

I have proposed that words are subject to the Morphological Bijection Requirement, which checks them for well-formed correspondences of meaning and constituency. Zero-morphemes are only licit contributors to words if they satisfy the Zero-morpheme Identification Condition, as required by the Zero-morpheme Licensing Principle. Together these requirements yield the effects of Blocking by Homophony, which under this analysis is epiphenomenal. I propose that the requirements are universal.

The precise means by which *ji-* salvages violations of the Zero-morpheme Licensing Condition must be slightly different from its role with respect to the Two Mora Constraint and the Initial Vowel Prohibition, since in the

latter cases the phonological material of *ji-* suffices to correct the violation in question. I suggest that with respect to the Zero-morpheme Licensing Principle, *ji-*'s function is analogous to that of a resumptive pronoun in syntax: A null affix being unacceptable, the overt, "dummy" *ji-* stands in. I assume that something along the lines of the Least Effort Principle (Chomsky (1989)) blocks the presence of *ji-* when it is not required.

6.6 Navajo vs. the cyclicity hypothesis

I will now explore an apparent counter-example to the cyclic theory of WFCs. I will show that the problematic data are easily analyzed in a way compatible with the adoption of this proposal as a universal.

Speas (p.c.) points out a potential counterexample to WFC cyclicity, from Navajo. Navajo is somewhat reminiscent of Kiswahili in having an intolerance for monosyllabic verbs, and an epenthetic syllable *yi-* (cf. Kari (1976)). However, *yi*-insertion does not apply unless all affixations fail to produce a disyllabic form, indicating that well-formedness is checked only after the full sequence of morphological operations has taken place. (49a) shows that the imperfective aspect has a *yi-/null* alternation: *yi-* is obligatory in the first person singular, whose morphology is nonsyllabic. On the other

hand, *yi-* does not co-occur with the syllabic second person singular morpheme *ni-*. I assume with Kari (who cites Hale (1970)), that the imperfective is phonologically null, and that *yi-* is epenthetic. A Well-formedness Condition blocks **shcha* ((49) adapted from Kari p.106))

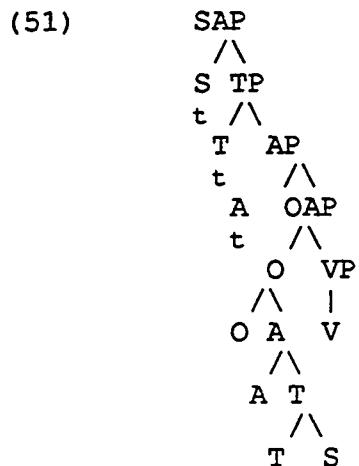
- (49) a. *(*yi*)-sh-cha
*(YI)-1S-cry
'I am crying'
- b. (**yi*)-ni-cha
(*YI)-2S-cry
'You are crying'

(50) shows that the presence of any syllabic verbal morphology prevents *yi-* insertion in the first person singular of the imperfective ((50) from Young & Morgan (1987)).

- (50) a. (**yi*)-na-sh-cha
iter-1S-cry
'I cry repeatedly'
- b. (**yi*)-wo-sh-cha
opt-1S-cry
'Would that I might cry'

The order of morphemes in these forms complicates the question somewhat, as it renders the derivation rather opaque. Speas (1990) argues that the inflectional morphemes form a complex by head-lowering one to the other, and then the verb stem suffixes to the resulting complex, thereby

deriving the order O(bject agreement)-A(spect)-T(ense)-S(ubject agreement)-V(erb):¹⁹



Under Speas' analysis, there are a number of ways of looking at these data which are compatible with the cyclic theory of WFC application for which I have argued. One can imagine a WFC which rules out monosyllabic verb forms in particular, and therefore is indifferent to intermediate stages of this derivation, because the verb is not yet part of the form. Meanwhile, the verb itself would trigger no WFC application, since it would not yet have undergone any morphological rules. In a minor variation, the WFC might apply to the verb and not to the morphology

¹⁹ In a (1991) manuscript Speas proposes to eliminate agreement heads from this representation, and derive agreement from Spec-head feature-sharing (Carstens & Kinyalolo (1989)). I see no consequences for the discussion at hand from this change.

before attachment, because it is concerned with lexical categories only.

Alternatively, we could attribute maximal generality to this WFC, and seek a less idiosyncratic account. In that case we should assume that addition of SA to a null T or A is in fact equivalent to the circumstance in which Kiswahili *ji-* insertion applies in, e.g., *kijiwe* - 'small stone', adding an extra syllable between number morphology and stem. (49b) ought to be a *yi*-epenthesis environment, but is not.

A plausible approach available under this assumption is to recognize a difference between inflectional and derivational morphology. Suppose derivational morphology is lexical, but inflection is syntactic (cf. Anderson (1984)). We have seen that the Kiswahili WFCs share properties of the rules of the lexical phonology (see note 5). Extending the analogy, we might suppose that WFCs apply cyclically within that component, but just once to the output of syntactic affixation, in keeping with the standard view of postlexical phonological rules.

A final possibility is parameterization, such that WFCs are cyclic in some languages, but not others, as shown in (52).

(52) **Cyclicity of WFCs, parametrized**

Kiswahili	Navajo
Rule 1 --> WFCs	Rule 1
Rule 2 --> WFCs	Rule 2
Rule n --> WFCs	Rule n --> WFCs

(52) is certainly not necessary to accomodate the facts of Navajo, but the generality of WFC cyclicity is an empirical question. The strongest possible claim is that WFCs are universally cyclic in their application, and this is therefore what requires testing in future work. If evidence against this claim is found, then (52) will be motivated.

All of the remaining possibilities seem reasonable approaches to this set of Navajo data. The Two Mora Constraint of Kiswahili provides a precedent for sensitivity restricted to lexical categories, while the Initial Vowel Prohibition does the same for category sensitivity. The account based on the distinction between derivational and inflectional morphology is also attractive in that its premise is well-established. As each of these hypotheses makes distinct predictions, I leave the choice among them open to empirical research.

6.7 Conclusion

This concludes my treatment of augmentative and diminutive formation in Kiswahili. I have argued that the application of three Well-formedness Conditions, and a

process of *ji*-epenthesis, account for variation in augmentative and diminutive surface forms, leaving a small residue of lexical idiosyncracy (footnotes 1 and 7). I have also made three proposals of a general, theoretical nature: (i) that WFCs may apply cyclically, (ii) that zero-affixes must be identified unambiguously by features on the derived word, in order to be visible, and (iii) that an identity check matches morphemes to lexical entries.

It is clear that while roots do not meet the minimal criteria for wordhood that the Kiswahili language imposes, the output of each morphological operation must do so. Aronoff (1976) claimed that Word Formation Rules take words as their input, and produce words. The latter claim is supported by these data. In the reconstructions of Guthrie (1967), all proto-Bantu roots are consonant-initial, and no monomoraic open class items are found. In other words, in Guthrie's analysis of proto-Bantu, the same WFCs we have considered here were not restricted to derived environments, but determined the shapes of lexical entries as well. Thus both halves of Aronoff's claim were true of proto-Bantu.

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