

LFG vs transformational theories: a comparison of certain phenomena in Bantu languages

Malin Petzell

Department of Oriental and African Languages
Göteborg University

malin.petzell@african.gu.se

1. Introduction¹

It has been claimed that Chomskyan grammatical theories work less well for synthetic languages like the Bantu languages. The Chomskyan theories were built around English and other isolating languages and it is well known that they are difficult to apply to languages with a complex morphology. LFG (Lexical Functional Grammar), on the other hand, arose as an alternative to Modern Transformational Grammar (MTG).² LFG supplies analysis in functional and lexical terms instead of in terms of phrase structure configurations and movements. The idea that there is underlying movement is rejected, as is the notion that the surface structure derives from an underlying structure through transformations. Instead, two different levels of syntactic representation exist in parallel and they are related by mapping. The constituent structure (c-structure) is the surface structure that is represented by the phrase structure tree. It correlates to functional structure (f-structure), which represents the abstract grammatical function (SUBJ, OBJ, etc.).³

In this paper, four phenomena that occur in Bantu languages will be discussed and analysed according to LFG as well as MTG. The phenomena in focus include:

¹ The idea for this paper was born during a doctoral course in theoretical morphology given by Kersti Börjars at Göteborg University in 2003. I would like to thank her, Karsten Legère, Erland Gadellii and Henry Muzale for useful comments, and Sandie Fichat for the English proofreading of this paper. Any shortcomings of this article are of course my own.

² For my purposes here, the distinction between the different theories of Transformational Grammar such as Government-Binding, and the Minimalist Program is not essential. For more information on LFG see Bresnan (2001).

³ A list of abbreviations can be found at the end of this paper.

- portmanteau morphs
- general phrase structure including negation
- the mirror principle
- applicative constructions

This analysis will refer to literature on both MTG and LFG. However, there are a few Chomskyan morphologists working on Bantu languages. Mark Baker's 16-year-old work on incorporation is still mentioned in Chomskyan text books (Baker 1988). LFG linguists, on the other hand, have several up-to-date publications on the subject. Joan Bresnan and Sam Mchombo have studied the Bantu language Chewa, which will be referred to in this paper alongside Baker's examples (Bresnan 2001; Bresnan & Mchombo 1987; Mchombo 1997). Some additional ideas derive from Karl Erland Gadellii's (2000) paper in favour of MTG entitled "Why are Chomskyan linguists not interested in Bantu languages?". Furthermore, field data from Swahili and Kagulu⁴ are employed.

2. Bantu morphology template

Most Bantu languages are syntactically head-initial. Each VP starts with a V, etc. The ordering of the morphemes within a word is normally very strict. A template of the VP usually has the following form (in which parentheses indicate optionality):⁵

VP → (NEG) SM T (A) (M) (OM) V (extensions) FV

The following example, from Swahili, contains negation spread:

- (1) *sikumwona* 'I didn't see him/her'
- | | | | | |
|--------|-------|----|----|----|
| si | ku | mw | on | a |
| NEG+SM | NEG+T | OM | V | FV |

It is not only the morphemes preceding the verb root that come in a strict order. There are also certain restrictions on the possible combinations of verbal extensions. In most Bantu languages, for instance, the reciprocal marker cannot be placed after the passive marker, while in Swahili, the applicative comes before the passive. Consider the following examples:

⁴ The Kagulu data was collected within the framework of the doctoral programme at Göteborg University. Note that all Bantu language names occur here without prefixes.

⁵ Note that this is not necessarily an exhaustive template.

- (2) *kupiga simu* ‘to ring’⁶
 ku pig a simu
 CL15 beat FV 9-phone
- (3) *kupigia simu* ‘to ring for someone’
 ku pig i a simu
 CL15 beat APPL FV 9-phone
- (4) *kupigiwa simu* ‘to be rung by someone’
 ku pig i w a simu
 CL15 beat APPL PASS FV 9-phone
- (5) *Erik alipigiwa simu na mwalimu* ‘Erik was rung by the teacher’
 Erik a li pig i w a
 TOP/FOC SM PAST ring APPL PASS FV
 simu na mwalimu
 phone by teacher

3. Portmanteau morphs

In example (1) above, one morpheme carries more than one feature. In this case, *si* is both a negative marker and a subject marker. When a single morpheme expresses two meanings it is called a *portmanteau morph*. Portmanteau morphs as well as feature spreading (two forms and one meaning, eg. the negation spread shown in the same example) are frequent phenomena in Bantu languages. These phenomena may be difficult to account for in a transformational model, where a one-to-one relation between form and content is preferred. While there is no evidence of internal hierarchical structure in a verb, in MTG each feature (like NEG or TENSE) has to be associated with a functional syntactic category that projects to phrasal level, thus yielding a multilevel syntactic tree just for a verb; as in (6) below.

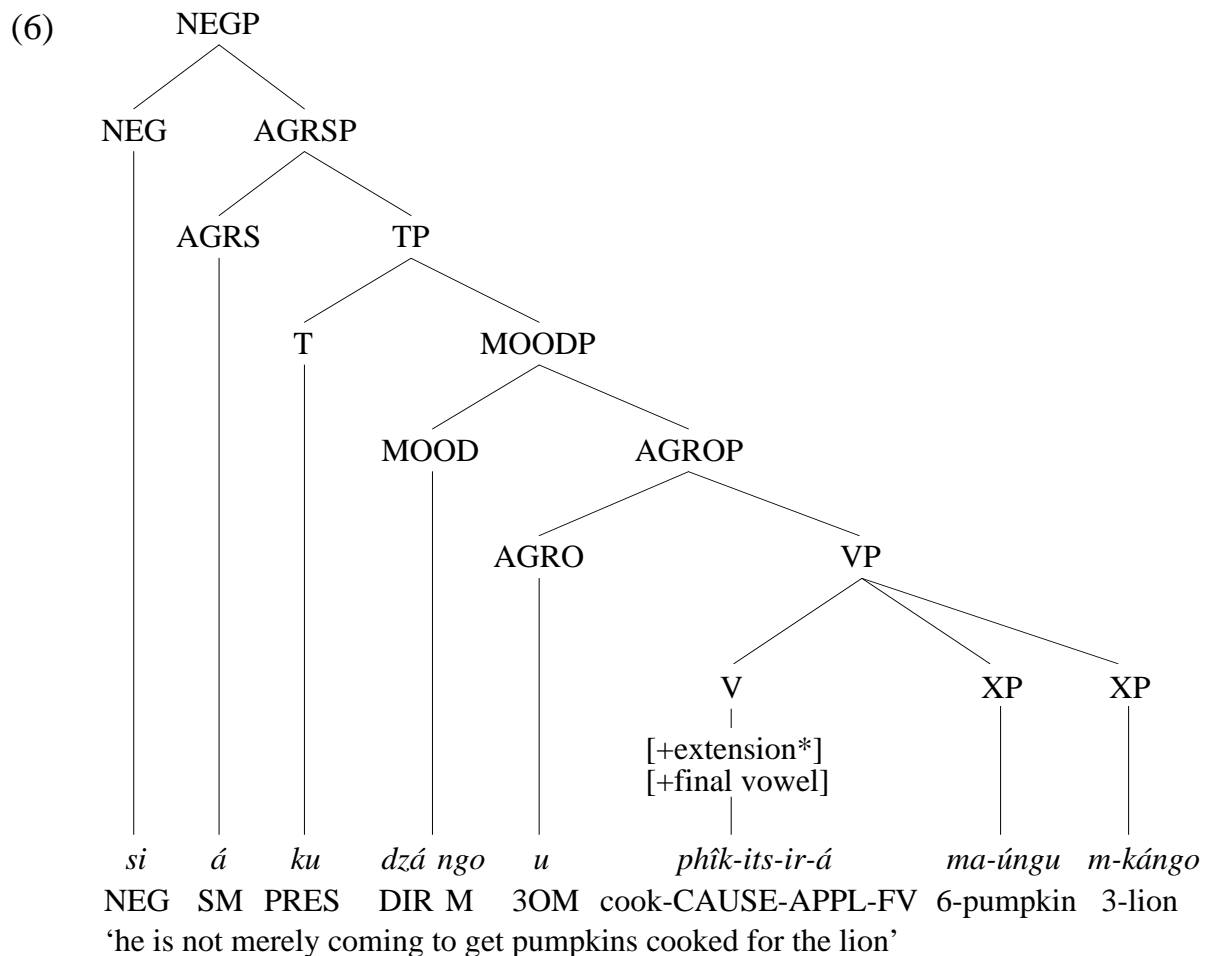
LFG, on the other hand, is combined with an approach to morphology that does not assume a one-to-one relation between form and function. In this approach then, the syntactic constituency information (c-structure) is separate from the functional information (f-structure). In the syntactic tree, a word is always represented as one node, and the constituent morphemes of a word directly contribute to the representation of the meaning of the sentence without

⁶ Note that this is an idiomatic expression; *kupiga* without *simu* means ‘to beat’.

having to be assigned unmotivated syntactic structure. Thus LFG deals with portmanteau morphs by having two functional features in the f-structure displayed by one morpheme in the c-structure. The mapping between the f- and the c- structures allows this.

4. General phrase structure and negation

The difference between the two theories can most strikingly be illustrated by looking at a morphologically complex phrase like the one presented below.



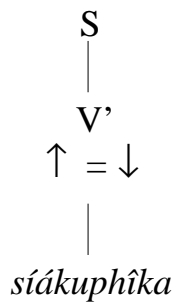
Here, Gadelii (2000) adapts a sentence provided by Mchombo (1997:191) to transformational theory and fits it into the proposed universal hierarchy of functional projections. He demonstrates a Chewa sentence (disregarding possible movements) that lends some support to the MTG idea that AGRSP is high in the tree, AGROP is just above VP, and the TMA projections are between AGRS and AGRO. There is, however, no explanation for the unexpected placement of the negation at the beginning of the sentence (instead of close to the VP or just below AGRSP). Moreover, it is not clear whether the SM constitutes the SUBJ or if a full NP can take its place. The conclusion, therefore,

is that the transformational theory applies to Bantu languages only if one disregards certain features such as the negation. This is not tenable: a theory must be applicable to all phenomena in a language.

An LFG analysis of the same sentence is proposed below. Only the VP, without verbal extension, is represented since the rest is not necessary for my purposes here. The lexical integrity principle states that lexical elements function as a coherent whole and that inflected words are the terminal elements of c-structures. Every word belongs to exactly one node. Here, the entire phrase is one word:

(7) c-structure with lexical entries:

síákuphîka
 ‘s/he does not cook’



- (↑PRED)=‘cook <(↑SUBJ)((↑OBJ))>’ ⁷
- (↑NEG)=+
- (↑TENSE)=PRES
- ((↑SUBJ PRED)=‘pro’) ⁸
- (↑SUBJ NUM)=SG
- (↑SUBJ PERS)=3

f-structure:

(see next page)

⁷ The extra parentheses on the “((↑OBJ))” mark optionality. However, this should be seen as a local lexical property of the verb ‘cook’. Just like in English, there is a general property that unspecified objects (“something”) can be deleted, as in *she is eating*.

⁸ The SM can optionally take on the role as the pronominal SUBJ, but when a full SUBJ NP is present the SM functions as an agreement marker. An MTG approach would find this difficult to cope with given that the SUBJ is a structurally defined notion, that is, you know something is the SUBJ because it occurs in a specific position. So in MTG, the SM would then sometimes license the zero in that position, but it would also allow a full NP to fill it.

SUBJ	PRED 'pro'
	NUM SG
	PERS 3
TENSE	PRES
NEG	+
PRED	'cook <(\uparrow SUBJ)((\uparrow OBJ))>'

What we see here is that the LFG approach is surface-oriented, without the need for configurations or movements to explain the derivation of the structure. LFG does not explain the position of the negation by deriving it from an underlying structure. Instead, LFG describes the syntactic realisation of the phrase and its parallel mapping on the surface level.

5. The Mirror Principle

The fact that the morphemes link together in a certain way makes one wonder why they come in the order that they do. Is there a connection between morphological and syntactic extensions? According to the Mirror Principle in MTG, the ordering of morphemes reflects the properties of Universal Grammar. This principle within generative theory was introduced by Baker (1985).

Conversely, in LFG there is no such thing as a Mirror Principle. Since languages are not consistent, and since they differ in respect of morphological structure, there is no universal Mirror Principle. In Japanese, for instance, the ordering of morphemes is not even consistent within the one language: the honorific and negative elements do not appear in the same order in verbs as they do in adjectives. In verbs, the honorific comes before the negation, but in adjectives it is the other way around (Satoko Berger, pers. comm.).

The LFG 'explanation' as regards the position of morphemes is instead historical. All Bantu languages supposedly arrive from a Proto-Bantu variety, and therein lies the similarity in morpheme consecution.

6. Applicative constructions

The applicative is a common typological trait in Bantu languages. Below is an example in Chewa from Baker (1988:229), who sees the second applicative sentence as derived from the first through preposition incorporation:

(8) *mbidzi zi-na-perek-a msampha kwa nkhandwe*
 zebras SM-PAST-hand-FV trap to fox
 ‘the zebras handed the trap to the fox’

(9) *mbidzi zi-na-perek-er-a nkhandwe msampha*
 zebras SM-PAST-hand-APPL-FV fox trap
 ‘the zebras handed the fox the trap’

Baker (idem) explains this as head movement, obeying the general principles of Universal Grammar. Parallels to the Bantu construction can be found in various Indo-European languages. Swedish, for example, has the following transitive prefixing (Gadellii 2002, referring to E. Engdahl, pers. comm.):

(10) *dom sjöng om/till vår-en*
 they sang about/to spring-the
 ‘they sang about spring’

(11) *dom be-sjöng vår-en*
 they about-sang spring-the
 ‘they sang about spring’

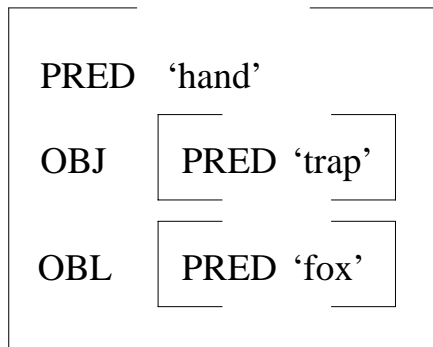
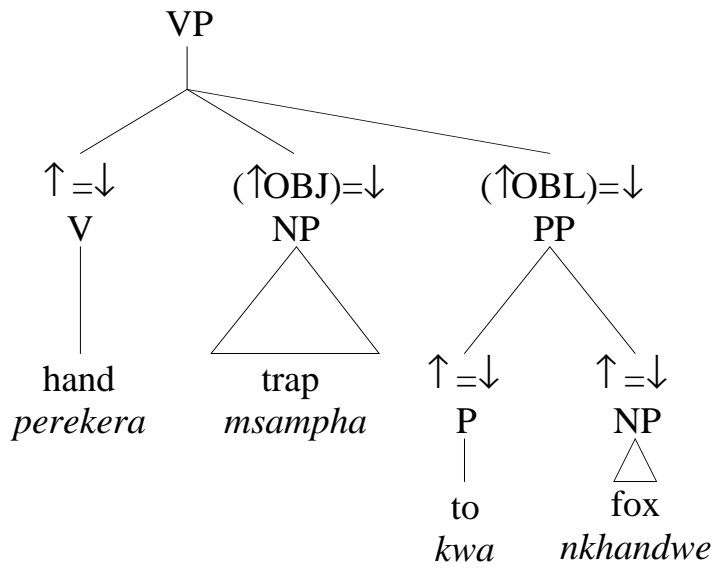
If the Chewa sentences above contain true incorporation, why would the preposition *kwa* be incorporated as *-er* and not **perekkwaa*? Why change the form? It seems more appropriate to follow the LFG explanation, where these sentences would instead be analysed as two separate although related constructions with no movement involved:

(12) VP → V NP PP
 ↑ OBJ=↓ ↑ OBL=↓

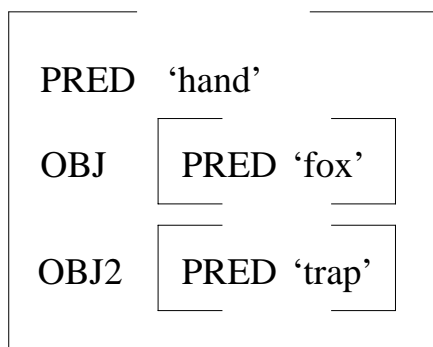
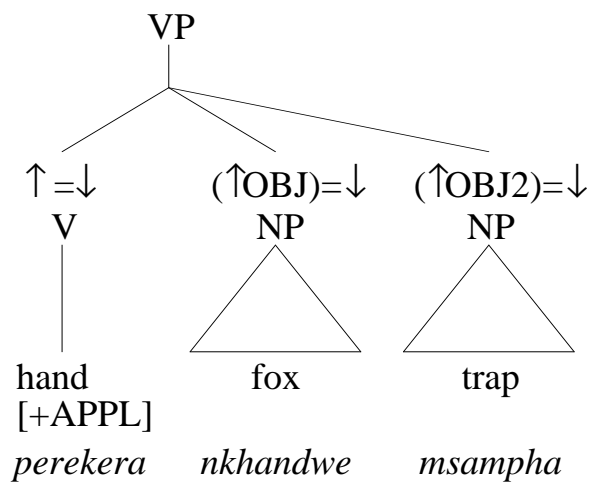
(13) VP → V NP NP
 [+APPL] ↑ OBJ=↓ ↑ OBJ2=↓

In the first projection (14), the object (OBJ) is ‘trap’ and ‘to the fox’ is the oblique (OBL). In the second projection (15), the first object is still ‘fox’, but ‘trap’ becomes the second object (OBJ2) because of the applicative extension on the verb. The content is the same, but it is displayed in two different surface structures:

(14)



(15)



The same can be applied to Kagulu. Following Baker (1988) and MTG, one can see *ne* ‘with’ incorporated as *-il-* (APPL). In the LFG model, there are again two semantically related yet syntactically different constructions:

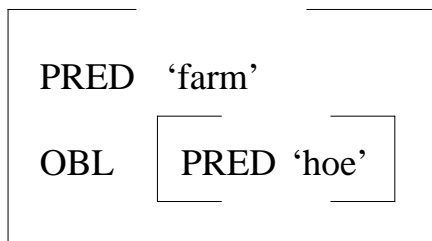
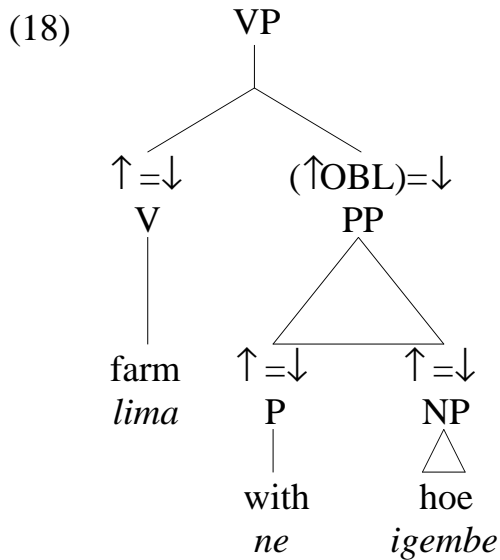
(16) *yakulima ne igembe* ‘s/he is farming with the hoe’

VP → V NP PP
 ↑ OBJ=↓ ↑ OBL=↓

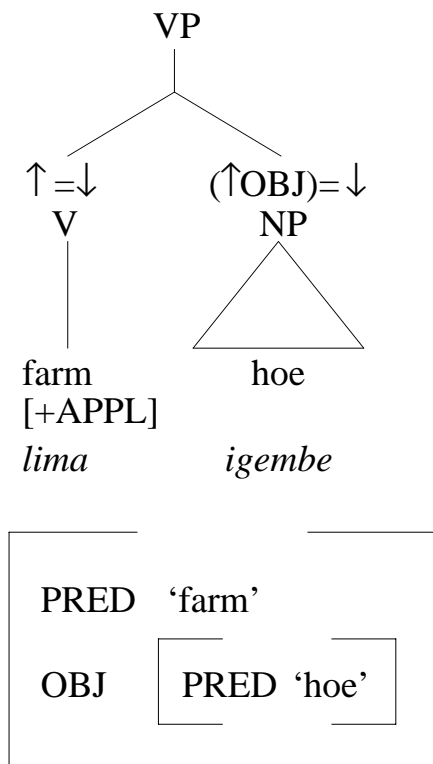
(17) *yakulimila igembe* ‘s/he is farming with the hoe’

VP → V NP NP
 [+APPL] ↑ OBJ=↓ ↑ OBJ2=↓

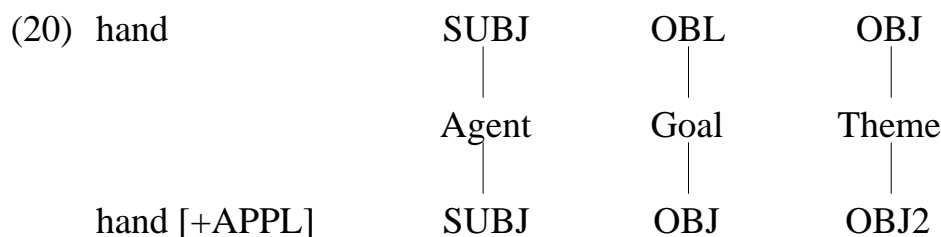
In the first projection (18), the prepositional phrase ‘with the hoe’ is the oblique (OBL). In the second projection (19), ‘the hoe’ becomes the object (OBJ) since the verb is in the applicative.



(19)



The two LFG constructions above simply represent two alternative ways of saying the same thing. The difference between the two is illustrated by lexical mapping. The lexical mapping theory establishes correspondences between semantic roles and grammatical functions:



7. Conclusion

This is a brief illustration of how two theoretical approaches can be applied to Bantu languages. Certain phenomena in Bantu languages, such as most morphological phenomena, would seem to lend themselves better to a surface-oriented, lexical analysis like LFG. In fact, languages with a rich morphology seem to constitute a problem for Chomskyan grammarians. On the other hand, there are phenomena like concord and agreement that can be described in transformational terms. Nonetheless, although there are still complicated matters to deal with, this short paper has shown that LFG is more suitable than MTG for an analysis of syntactic and morphological issues in Bantu languages.

ABBREVIATIONS

-9, -3, etc.	(nominal) class 9, class 3, etc.	NEG	negation
(↑ OBJ)=↓	object of the node above	NP	noun phrase
↑=↓	represents the same as the node above	OBJ	object
A	aspect	OBL	oblique
AGRO	object agreement	OM	object marker
AGROP	position in the tree where object features are checked	PASS	passive
AGRS	subject agreement	PAST	past tense
AGRSP	position in the tree where subject features are checked	PP	preposition phrase
APPL	applicative	PRED	predicate
CL	(nominal) class	PRES	present tense
DIR	directive	SM	subject marker
FV	final vowel	SUBJ	subject
IP	Inflectional phrase	T	tense
LFG	Lexical Functional Grammar	TOP/FOC	topic or focus
M	mood	V	verb
MTG	Modern Transformational Grammar	VP	verb phrase

REFERENCES

- Baker, Mark. 1985. The mirror principle and morphosyntactic explanation. *Linguistic inquiry*, 16, pp 373–415.
- . 1988. *Incorporation*. Chicago & London: University of Chicago Press.
- Bresnan, Joan. 2001. *Lexical-functional syntax*. Malden, MA: Blackwell.
- Bresnan, Joan; Mchombo, Sam A. 1987. Topic, pronoun and agreement in Chichewa. In: *Working papers in grammatical theory and discourse structure*. Edited by M. Iida, S. Wechsler & D. Zec. Center for the Study of Language and Information (CSLI), Stanford University.
- Gadellii, Karl Erland. 2000. Why are Chomskyan linguists not interested in Bantu languages? Papers presented at the 3rd World Congress of African Linguistics, August 2000, Université du Bénin-Lomé, Togo.

Mchombo, Sam. 1997. Contributions of African languages to generative grammar. In: *African linguistics at the crossroads: papers from Kwaluseni*, pp 179–206. Edited by Robert K. Herbert. Köln: Rüdiger Köppe.