Pronouns, agreement, and the dynamic construction of verb phrase interpretation: A Dynamic Syntax approach to Bantu clause structure

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Pronouns, agreement, and the dynamic construction of verb phrase interpretation: A Dynamic Syntax approach to Bantu clause structure[*]

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1. Introduction

Data from Bantu languages have played an important role in the development of linguistic theory. In the domain of syntax, for example, the complex agreement systems of Bantu languages, as well as the topic of transitivity and valency changing, have been analysed from a number of perspectives, and these two aspects of Bantu structure at least remain thus an important benchmark for any syntactic theory. In this article, we are introducing a comparatively recent approach to syntactic analysis, Dynamic Syntax (DS), and show that this new perspective leads to new, and, as we hope to show, more insightful analyses of Bantu clause structure, while at the same time giving rise to new questions to be asked and new data to be considered, thus building on, and expanding previous analyses. In the following section we are providing a brief discussion of the theoretical background of our work, and then introduce the DS system more formally. The main part of the article is taken up by a discussion of agreement in Bantu (Section 4) and of applicatives and verb phrase construction (Section 5). In both sections we argue that the parsing perspective adopted by DS, and, more technically, the DS notions of LINKed nodes and unfixed nodes, provide insights both into the core syntactic processes of Bantu, as well as into the expression of pragmatic information and information structure in Bantu.

2. Theoretical background

When using natural language, hearers are faced with a linearly ordered string of words which they use for assigning an interpretation to the utterance encountered. In syntactic theory, this time-linear quality of natural language is often opposed to underlying hierarchical structure of natural language sentences. In fact, in most syntactic frameworks, hierarchical structure is taken as the fundamental design principle of language (e.g. levels of representations within Principles and Parameters approaches such as Deep Structure, Surface Structure, Logical Form; c-structure and f-structure in LFG), and linear order is derived from hierarchical structure without any relation to the dynamics of how language is used. The opposite perspective is taken in Dynamic Syntax (DS) (Cann et al. [9], Kempson et al. [19]), a model of syntax which takes hearers' ability to construct semantic representations from time-linearly ordered words as the primary task for syntactic analysis. From this perspective, syntactic knowledge can be characterized as the knowledge to successfully parse well-formed combinations of words in a given context. DS aims to express this knowledge formally through a (competence) model of linguistic ability. The model aims to characterize the knowledge which is

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needed to be able to parse natural language(s). Even though functional in basic assumption, the model is not, however, a model of performance: it does not aim at explaining how, for example, ambiguities are resolved. Rather, it aims at formulating the architecture underlying our ability to parse, and then tries to show how this architecture only can be seen as a model of linguistic knowledge. The underlying claim of the approach is thus that this model of parsing is sufficient in itself to count as a model of syntactic knowledge, without evoking an independently defined static model of grammar, in contrast to more conventional models of parsing, which would have recourse to an independently formulated competence grammar neutral between parsing and production.[1]

More concretely, the model shows how each word taken in turn provides some piece of information which contributes to the establishment of a semantic representation of the utterance, through a combination of lexical information and syntactic transition rules. This level of semantic representation, expressed as a logical tree, is claimed to be the only level of representation of the architecture, and it is invariant between different languages. The dynamics of parsing is natural language is expressed as the building of partial semantic trees which grow when more information is parsed, through the application of (universal) syntactic rules and through lexical information, which is modelled as procedural, providing updates for partial trees. Word-order variation, both within one language and across different languages, results from differing lexical information, and, more generally, from dialogue and information structure considerations, as, for example, topicalized or focused elements may be presented before or after the main assertion. The formal reflex of this are different notions of underspecification, where information provided by lexical information may not be sufficient to fully determine either semantic interpretation (as for example with pronominal elements), or structural position (as for example with fronted elements). In these cases, the available information is used, but there is an expectation that for a full interpretation, more information is provided from the context, or by further lexical information in the parse. In a number of studies, the empirical scope of the approach has been tested, including DS analyses of left and right periphery phenomena, relative clause typologies and asymmetric coordination (Cann et al. [9], [10], Kempson [18], Kempson et al. [19], Marten [22], [25]).

This novel view of syntactic structure is in contrast to most previous analyses of Bantu grammar (and indeed of those of other languages), which often assume several levels of representation. In the following sections, we are looking at two central areas of Bantu grammar – agreement and verb phrase structure – and present DS analyses of a range of constructions, showing that not only can this dynamic perspective be applied to Bantu languages, but also that it leads, at least in our view, to a better understanding of how Bantu languages work.

[1] An immediate question is how this view extends to language production, and the answer to this is, without going into details, that in production, a free process of linearization is 'filtered' through the speaker's parsing architecture (i.e. the DS model), that is, interpretation and production are in an asymmetric relation, with production depending on interpretation, but not vice versa. Cf. e.g. Sperber and Wilson [31] and Kaye [17] for similar asymmetric conceptions of pragmatics and phonology respectively.

3. The Dynamic Syntax model

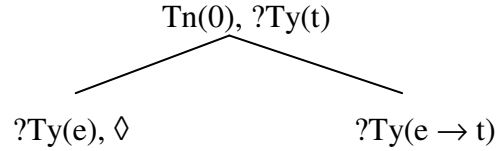
Before presenting our analyses, we will set out the DS model introduced above in somewhat more formal detail. DS uses tree representations of the typed lambda calculus as a vehicle of semantic representation. These semantic trees are described in the 'logic of finite trees' (Blackburn and Meyer-Viol [6]), in which partial trees can be described. DS derivations are thus transitions from a minimal starting tree, through a succession of increasingly complex partial trees until a complete semantic tree is derived which the hearer can assume to be the semantic representation of the utterance encountered. The minimal initial tree of DS derivations is as in (1):

(1) Tn(0), ?Ty(t)

The 'tree' in (1) is a single node labelled as tree-node '0' (Tn(0)), indicating that it is the root node of the tree to be built. At this node, a requirement (indicated by the question mark) holds. Requirements are important driving forces for DS derivations, as one condition on a well-formed final tree is that all requirements are fulfilled. In the case of (1), the requirement is for an object of the semantic type Ty(t), where 't' stands for 'truth evaluable', i.e. for a proposition. This outset of the derivation reflects the intuition that hearers expect speakers to communicate propositions, which enter into general reasoning.

Partial trees like the one in (1) can be developed by syntactic transition rules or by lexical input. A possible next step from the tree in (1) is thus to divide the requirement into sub-tasks, a step licensed by syntactic transition rules:[2]

(2)



In (2), the pointer symbol (◊) indicates the current active node, that is, the node which needs to be developed as the next step. At the current node in the example, a requirement for an expression of Ty(e) (for 'entity') holds, corresponding to a syntactic NP, while at the sister node, a requirement for a predicate (of type Ty(e → t); 'if e, then t') holds. Once these two requirements are fulfilled, they combine (by function-application) to yield an expression of Ty(t), thereby fulfilling the requirement at the root node. The placement of the pointer at the subject node in this example indicates that the subject is expected before the predicate, as is the default case in SVO languages like most Bantu languages. Pointer movement is subject to cross-linguistic constraints, as one means within the DS system to express word-order variation.

Lexical information in DS is modelled to directly interact with the tree description language. For example, the following, somewhat simplified, lexical entry for a name like *Daudi* explicitly states the (tree) context in which information from the entry may be used in the development of a semantic tree:

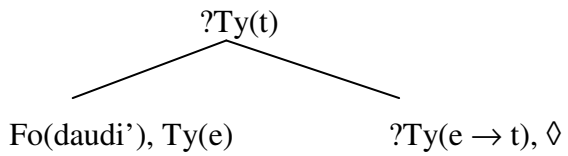
[2] The relevant rules are Introduction and Prediction. For reasons of space, we do not give formal definitions of the rules we use (see Cann et al. [9], Kempson et al. [19]). Also note that the order of the daughter nodes is conventional: argument daughter to the left, functor daughter to the right.

(3) /daudi/

IF ?Ty(e)
THEN put(Fo(daudi'), Ty(e))
ELSE abort

Lexical information has a procedural flavour, as it is formalized as conditional action. The IF statement details the context in which the information from the word can be used, for example in (3), the condition is that the current node in the parse includes a query for a Ty(e) expression. If this condition is fulfilled, the actions in the THEN statement are performed. Here, the current node is annotated with the information (Fo(daudi'), Ty(e)). The formula (Fo) value contains the 'semantic' information from the word. Strictly speaking, this is an instruction to the hearer to access the concept addressed by 'daudi' (or even, the most contextually relevant concept addressed by 'daudi', as one may know more than one Daudi) and retrieve contextually appropriate information from it. The type (Ty) value simply states that Fo(daudi') is of type Ty(e). It is this information which fulfils the requirement ?Ty(e) at the subject node:

(4)



In (4), after the task at the subject node is completed, the pointer moves to the predicate node, the lowest node at which still a requirement holds, in anticipation of the verb. The requirement for an expression of Ty(e → t) corresponds to a requirement for a one-place predicate, or intransitive verb, which would lexically fulfil it. However, in cases where a two-place predicate (or indeed a more-than-two place predicate) is scanned, the tree may be extended, not, as previously, by syntactic transition rules, but by the actions encoded in the lexical entry, as for example in the entry for *likes* (ignoring tense and agreement for the moment):

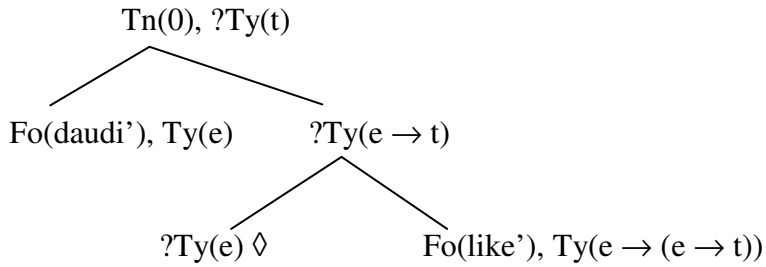
(5) /laik/

IF ?Ty(e → t)
THEN make(<$\downarrow_1$>), go(<$\downarrow_1$>), put(Fo(like'), Ty(e → (e → t))),
go(<$\uparrow$>), put(?<$\downarrow_0$> Ty(e)),
ELSE abort

The THEN clause in the entry in (5) is more complex than in our earlier lexical entry for *Daudi*, as it includes the instructions to build a new predicate daughter node and a new argument daughter node. The 'make' statement says that a new 'down' (<$\downarrow_1$>) (i.e. functor daughter) predicate node should be built (by convention, functor, or predicate nodes are right daughters and indexed by 1, while argument nodes are left daughters indexed by 0), and the 'put' statement licenses the building of a new argument node by

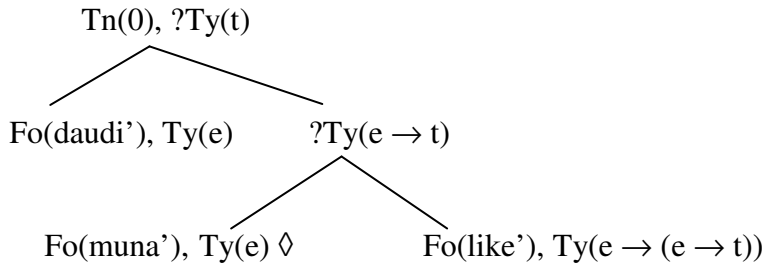
syntactic rule.[3] The new argument daughter node ends up as the current node (it is the last of the actions of the THEN statement), and has a requirement for a Ty(e) expression, corresponding to the object:

(6)



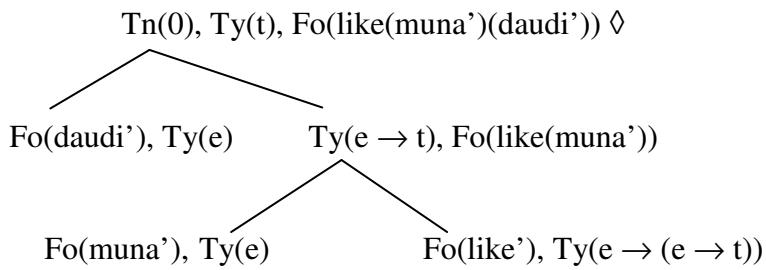
The order of the object node and the lower predicate node in (6) reflect the fact that DS trees are semantic trees: by (universal) convention, the argument node (here the object node) branches to the left, and the functor node to the right. This is so independent of syntactic word order, as the tree merely reflects the semantic predicate-argument structure projected from the utterance. Word order in the DS model results from the steps of transitions in the derivation, for example, whether the object is parsed before or after the verb. In this (SVO) case, the final word introduced in the derivation is the object, which can be supplied by a name like *Muna*, which fills the object slot:

(7)



After all lexical input has been scanned, the final step in the analysis is the compilation of the accumulated information in the tree upwards, so as to fulfil the requirements obtaining at the non-terminal nodes:[4]

(8)



[3] The relevant rule is Prediction. A different way of characterization is to make the lexical information from the verb build the argument daughter directly, by including another 'make' statement. Nothing hinges on this at this juncture.

[4] Terminal nodes are the lowest nodes of the tree, and so non-terminal nodes are all the intermediate ones and the top node. Terminal nodes are in general inhabited by information from lexical (content) words and cannot be further developed, but see the discussion of the 'bottom restriction' below where we modify this.

In the final tree in (8) all lexical information from the words encountered in the utterance *Daudi likes Muna* has been used, and all requirements in the tree are fulfilled. The hearer can thus assume that the representation in (8) is a reasonable interpretation for the string. It is important to note at this juncture that the analysis of natural language strings in DS is not one final tree, but rather the transition of trees from the initial tree to some fully developed logical representation, so that the derivation of different strings may end up with the same final tree, which is, however, derived by different transitions.

An example of such a situation, where identical eventual trees are derived by a different set of transitions, are left-dislocation structures, as for example in (9b) and (9c):

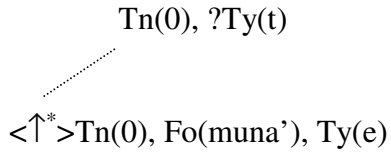
(9a) *Daudi likes Muna.*

(9b) *Muna, Daudi likes.*

(9c) *Muna, Daudi likes her.*

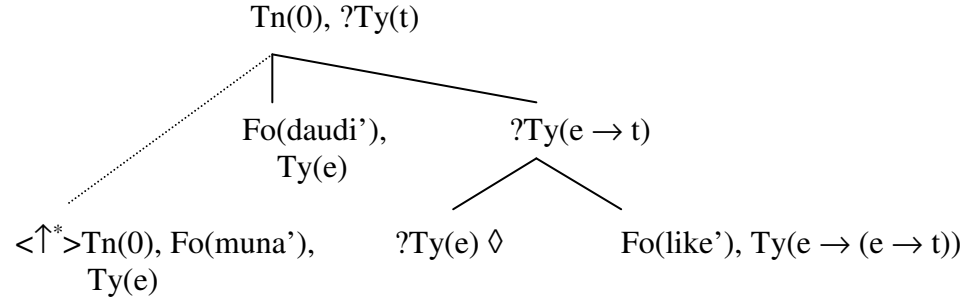
In these examples, the information which eventually will be associated with the object node is found at the outset of the structure. In DS, there are two ways to introduce information earlier than it is needed: either by introducing an unfixed node, or through a LINK structure. In (9b), *Muna* can be analysed as being associated with an unfixed node. This means, the information from *Muna* is part of the tree in which it is introduced, but it is not clear, at the time at which this information is introduced, where in the tree the information holds:

(10)



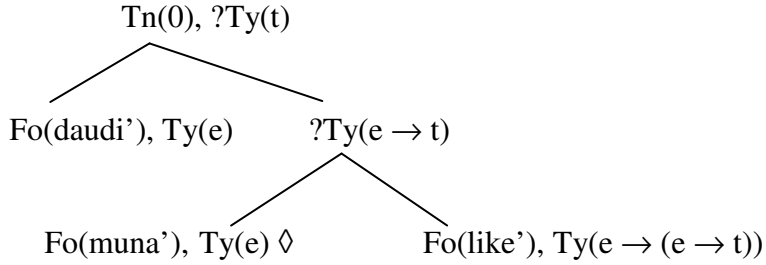
The annotation $<\uparrow^*>$Tn(0) means that the information from *Muna* holds somewhere below the root node (formally, $<\uparrow^*>$ is the reflexive-transitive closure over the 'up' tree relation). This is an instance of structural underspecification, indicating the need for further information later in the parse. The unfixed node remains part of the subsequent trees which are developed normally:

(11)



At this stage, all lexical information has been introduced into the parse, but there is still a requirement for an expression of Ty(e) at the object node (introduced from the lexical information of the verb, as in the first example). As at the unfixed node, Ty(e) holds, the requirement at the object node can be fulfilled by merging the unfixed node and the object node:

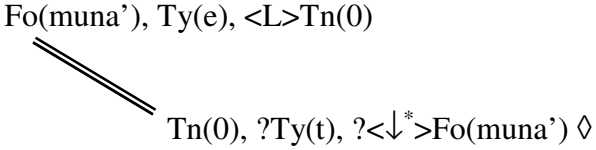
(12)



The resulting tree after merging is identical to the tree in (7) above, and can be developed into a final tree identical to (8) by accumulating information up the tree. The underlying claim is that semantically, (9a) and (9b) mean the same, and that is what is reflected in the fact that both strings derive the same final tree. On the other hand, (9a) and (9b) differ in information structure; for example, (9b) may be associated with a contrastive focus context. In DS, this difference is not expressed through postulating distinct functional projections or predicates (such as in Principle and Parameters and LFG), but rather through the differences in the transitional steps through which the final tree is established. Thus, in (9b), information from *Muna* is projected early in the parse, and associated with an unfixed node, which can be exploited for pragmatic, in particular focussing inferences.

The second way to introduce information early is by establishing a relation between some term which is taken to be (part of) the context and an assertion about this term. We represent this structurally as a LINK relation (<L>) between the structure providing the context and the structure which is being asserted. For example, (9c) could be presented as (13):

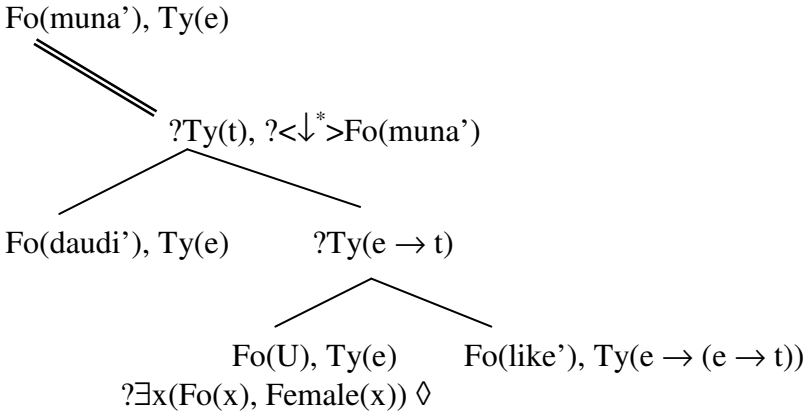
(13)



The double-line between the node associated with *Muna* and the one with the requirement for a Ty(t) expression indicates the LINK relation, which means that the LINKed node, associated with information from *Muna* is not part of the subsequently developed tree (in contrast to unfixed nodes, which are). However, the LINKed node plays a role for building the main tree in that it provides contextual information which needs to be somehow presented in the main tree. This is formally expressed by ?<↓*>Fo(muna'), which means that there is a requirement holding at the root node of the main tree that somewhere below Fo(muna') holds. Since the LINKed node is not part of the main tree, this requirement can only be fulfilled if the information from *Muna* is somehow introduced into the tree by other means, and one obvious way to do this is by

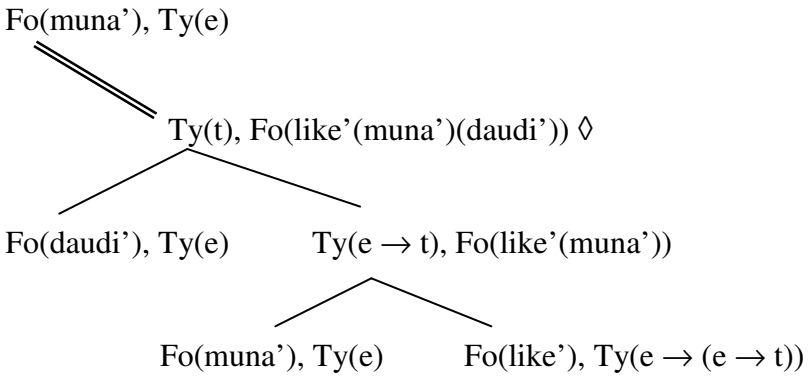
using a pronoun (as found in the object position in 9c), as this is the normal lexical form used to enable reference to a given or discourse-salient antecedent.

(14)



Note the representation of the pronoun here, which projects a type value Ty(e), but only an underspecified formula value (Fo(U)), plus a requirement that some real formula value needs to be found, and that being female is true of this formula value (the latter an encoding of gender).[5] The interpretation of pronouns is free, so that all possible formula values could in principle be chosen for the interpretation of the pronoun in (14). However, only if Fo(muna') is chosen as a value for the pronoun will the requirement at the root node be fulfilled, namely that Fo(muna') be part of the tree. These 'resumptive' uses of pronouns are thus not analysed as a special form of pronouns, but rather as normal pronouns plus a requirement for a particular formula value which is introduced through the LINK relation:

(15)



If the pronoun is interpreted as Fo(muna'), as in (15), the eventual tree will be identical to the final trees of the two previous examples, plus the LINKed node indicating that Fo(muna') is the (or one) contextual topic of this assertion.

The examples discussed in this section have introduced some of the tools of DS and the way in which they serve to model both the building of semantic structure incrementally from words in the order in which they appear, and the relation between

[5] Case information can be included in the lexical entry for pronouns by stating that the eventual tree-position of, for example, the node annotated with information from *her* cannot be dominated immediately by the root node. See Cann et al. [9] for more discussion.

truth-theoretic and discourse-pragmatic information in the model. This introduction to the framework provides the background to the following sections, in which especially different notions of underspecification are used, first, to develop a DS analysis of verbal agreement, and, secondly, building on it, to propose a dynamic notion of verb phrase interpretation in Bantu.

4. Agreement

Among the most frequently discussed topics in Bantu grammar are the question of agreement on the one hand, and valency-changing syntax on the other hand. We will address the latter question in the following section, and focus on agreement in this section.

Bantu verbs, as is well known, can show morphological agreement with different NPs of the clause; with the subject, the direct or indirect object, or with several complements (this latter case is found, for example, in several Great Lakes languages like Kiha or Kirundi, but also in Chaga and more southern languages like Tswana). In addition to variation between the number of object markers, different Bantu languages vary as to the restrictions which are placed on the occurrence of subject, and, more commonly, object markers, in particular in relation to the co-occurrence of object markers with the (co-referential) object. In an often-quoted study, Bresnan and Mchombo [7] propose that, in Chichewa at least, the object marker is, in fact, not an agreement marker, but rather an incorporated pronoun, which may be in anaphoric, as opposed to grammatical agreement, with an overt topicalized object NP. This analysis is based on a number of empirical observations, including the fact that the object NP follows the verb obligatorily without the object marker (16a), but that it can assume any position in the sentence, for example clause-initially as in (16b), when the object marker is present:

(16a) *njûchi* *zi-ná-lúm-a* *alenje* [Chichewa]
10.bees SM10-PAST-bite-FV 2.hunters
'The bees bit the hunters'

(16b) *alenje* *njûchi* *zi-ná-wá-lúm-a* [Chichewa]
2.hunters 10.bees SM10-PAST-OM2-bite-FV
'the hunters, the bees bit them'

Bresnan and Mchombo's idea is, then, that the object marker functions as the object when it is present, and thus prevents the overt NP from being in canonical object position. Rather, the overt object NP is topicalized and in an adjoined position, but not part of the VP. The Chichewa subject marker, on the other hand, as for example *zi-* in (16), in Bresnan and Mchombo's analysis is ambiguous between being – like the object marker – a marker of anaphoric agreement, and a marker of 'true' grammatical subject-verb agreement, namely in those cases in which the subject immediately precedes the verb. Overt NPs immediately preceding the verb can thus be ambiguous between being a normal subject and being a topicalized subject. However, several tests show that the relation cannot be reduced to one or the other.[6]

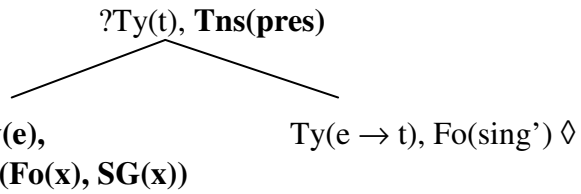
[6] See also the discussion of related facts in Setawana in Demuth and Johnson [14].

Thus, while in Bresnan and Mchombo's analysis, the object marker always functions like an incorporated pronoun, the subject marker is ambiguous between incorporated pronoun and agreement marker.

From the dynamic perspective adopted here, the insights expressed in Bresnan and Mchombo's analysis receive a slightly different formal treatment, as the conceptual space the theory provides for the analysis of pronominal 'agreement' on the one hand, and the relation of NPs to their clause – as either fixed, unfixed, or LINKed – on the other, is slightly bigger. On the other hand, as DS assumes only one level of representation, an LFG-style analysis, which assumes mapping from different primitive structures like c-structure and f-structure, is not an option. In what follows, we thus want to show that the characteristics of subject and object marking in Bantu can be analysed within a model which does not assume different levels of representation. Furthermore, we are also addressing the notion of focus which, in contrast to the notion of topic is less well articulated in Bresnan and Mchombo's work[7], as well as questions of cross-linguistic variation of agreement systems, both within Bantu and in comparison to Romance languages. Let us look at these aspects in more detail.

From the DS perspective, 'grammatical agreement' is an unfortunate term for Bantu, as grammatical (subject-verb) agreement seems best to be interpreted as a requirement imposed by the verb (or verbal morphology) on the Ty(e) expression residing in subject position, as for example by the suffix *-s* in English *sing-s*:[8]

(17)



In (17), the (schematic) contribution of *-s* (in bold) is, first, to annotate the root node with tense information, and, secondly, to annotate the subject node with a requirement for a subject which, furthermore, is restricted to those formula values which can be construed as singular. Importantly, the annotation does not provide any of these: neither formula value, nor a type value, so that the requirement needs to be fulfilled by some other lexical input; that is, in other words, English is not 'pro-drop'. Consequently, just *smokes* is not a well-formed utterance in English.[9] However, this characterization is not well suited for Bantu subject markers, as they *do* provide relevant information:

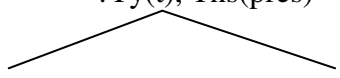
(18a) *a-na-imb-a* [Swahili]
SM1-PRES-sing-FV
's/he sings'

[7] While the notion of topic is central to Bresnan and Mchombo's account, the notion of focus seems to be more used as a diagnostic, but not as a central part of the argument. Thus, for example, the focus interpretation of many post-verbal subjects is not discussed in the article in detail (see esp. [7]: 775).

[8] This is a somewhat simplified characterization, firstly with respect to tense, but also because a configuration as in (17) could not, in fact, arise in English, which is fairly strictly SVO, so that at the time of the introduction of the verb (and *-s*), a subject expression will always be present. However, the important point here is the requirements imposed by the agreement, and not how (and when) they will be fulfilled.

[9] Except in so-called diary contexts (Haegeman [15]), which we will leave to one side for the moment.

(18b) ?Ty(t), Tns(pres)



Ty(e), ?∃x(Fo(x), SG(x), Human(x)) Ty(e → t), Fo(imb') ◊

In contrast to the representation in (17), the subject marker *a-* lexically provides a type value, as shown in (18b). The requirement for a formula value and the attendant requirements for a formula value of a particular kind can then be fulfilled in several ways, including, crucially, pragmatic substitution from the context. In other words, no lexical input is required for the successful annotation of the subject node, and *a-* functions in effect like a pronoun.[10]

At this juncture, mention needs to be made of a more detailed distinction between pronominal elements. As can be seen from the trees depicted so far, lexically supplied formula values inhabit terminal nodes in the tree. This is because once a formula value is supplied, the node cannot be further developed and, for example, then be annotated with a different, possibly conflicting formula value. Pronominal elements, on the other hand, in contrast to full lexical words, function exactly in the way other words don't, namely as explicitly providing a partial characterization of a term which has to be further developed. This is expressed by the underspecified formula value Fo(U) and the accompanying requirement for a full formula value, ?∃x(Fo(x)). A further distinction can then be made as to what kind of further development this place-holding device associated with a pronoun allows, whether the pronoun functions like other words in providing only a decoration on some terminal node, or whether it allows for further downward structural development. The formal reflex of providing only a decoration is the so-called 'bottom restriction': [↓]⊥ ('necessarily, down of me, falsum holds'), meaning that the present node is a terminal node without any possible further downward development. The bottom restriction is part of all lexical entries of full content words, which inhabit terminal nodes. It is also part of some pronominal forms, for example pronouns in English, which though functioning as place-holders for some term to be established contextually, nevertheless otherwise behave like other words in that the formula they provide is projected onto a terminal node in the tree. This means that in English, pronouns are generally construed through setting up anaphoric dependencies with other expressions in the tree (or derived from the context), and they can be updated through Merge only in the exceptional circumstance where the two nodes to be merged happen to have no further development.[11] However, this rather restricted interaction with Merge doesn't apply to all pronouns. Some pronominal forms are freer in not having this bottom restriction, and thus, while retaining their anaphoric

[10] We assume that Bantu subject and object markers encode lexically, like pronouns, a semantic restriction on the required formula value, such as 'Human(x)', and, indeed, that Bantu noun classes are interpreted semantically (e.g. 'ClassKI(x)'). Some confirmation for this view comes from Demuth [13], but we leave a full discussion of this point to a future occasion.

[11] This argument depends on the assumption that names project internal semantic structure much like a quantifying expression, and not merely a simple formula decoration, a matter we won't develop here. One effect of this characterization is that the resumptive use of English pronouns is only possible in topic-like structures, or in relative clauses where because the relative pronoun only carries over a simple formula into the LINKed structure, the pronoun *can* be updated through Merge (see Kempson et al. [19]).

properties, can be freely updated by the two independent processes of Merge and substitution from context. As Bresnan and Mchombo [7] observe, Bantu subject markers are not necessarily associated with topicalized subjects, which, within DS, is an indication that they do not have a bottom restriction.[12] This means that with one lexical characterization of the subject marker, two different subject-verb relations can be modelled – with the subject NP as LINKed on the one hand, or as an unfixed node on the other. The relevant lexical entry for a subject marker like Swahili *a-* is as follows:

(19) Lexical entry for *a-*

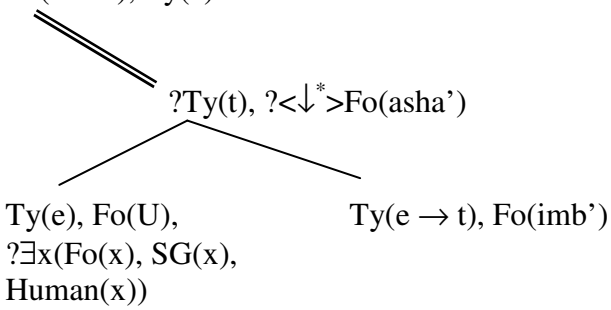
IF	?Ty(t)
THEN	make($\downarrow_0$), go($\downarrow_0$),
	put(Ty(e), Fo(U), ?$\exists$x(Fo(x), SG(x), Human(x))
ELSE	abort

In a sentence without an overt subject, this entry would result in a tree like (18b), above, where the subject node is type-complete and requires a formula update. The assumption here is that sentences like this are only well-formed if the relevant referent for the subject can indeed be identified from the context. Sentences with overt subject NPs like (20) can, under this analysis, be associated with two different structures:

(20) *Asha a-na-imb-a* [Swahili]
Asha SM1-PRES-sing-FV
'Asha sings'

The information from *Asha* can be projected on a LINKed node:

(21)

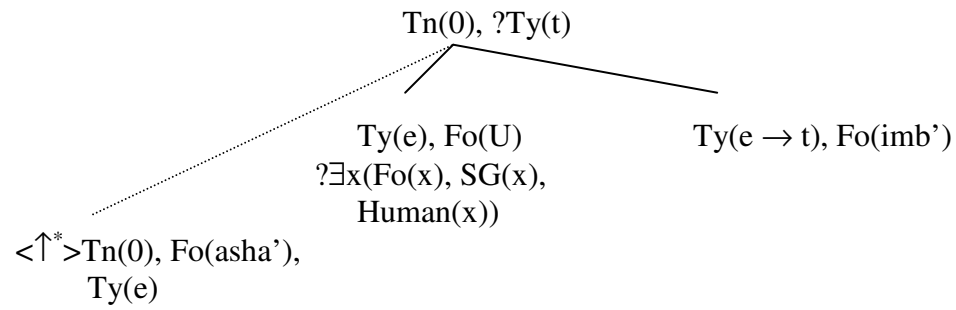


The subject node in this case will be identified from the context, as in sentences without overt subject NPs, but effectively the pragmatic choice is restricted to choosing Fo(asha') – which is presumed to be accessible from the wider context, or introduced into the context by the LINKed structure – so as to fulfil the requirement holding at the root node. These structures can be associated with topic structures.

[12] This corresponds to Bresnan and Mchombo's [7] presence vs. absence of the ($\uparrow$ PRED) feature. However, since this feature corresponds to a marker of semantic content, the loss of the feature in Bresnan and Mchombo's analysis effectively strips the pronoun of any lexical content, and hence characterizes it as essentially different from the anaphoric use.

Alternatively, the overt NP may be projected onto an unfixed node:

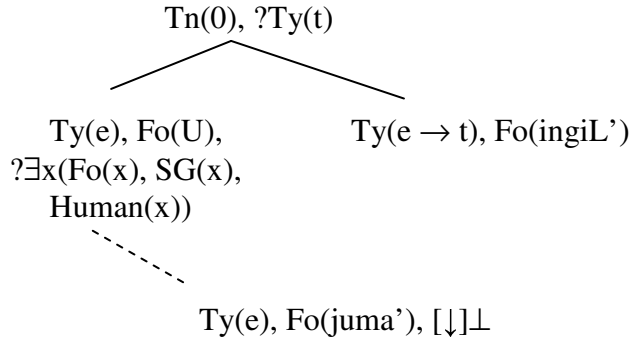
(22)



It is because of the absence of the bottom restriction of Bantu subject markers that structures like (22) are possible. The introduction of pre-verbal subjects through unfixed nodes is the default option and normally not associated with specific pragmatic information. However, unfixed node structures can also be used for post-positioning of subjects (which are then introduced by 'Late-*Adjunction'), resulting in subject-inversion structures often expressing presentational focus:

(23a) *a-li-ingi-a* *Juma* [Swahili]
SM1-PAST-enter-FV Juma
'There entered Juma (lit.: he entered Juma)'

(23b)



Again, these inversion structures are made possible because the clause-final subject can be merged with the subject node annotated from the subject marker.

One may wonder at this juncture whether Swahili subjects can be introduced at fixed nodes. This would be possible if transition rules building a subject node were available in Swahili as they are in English. However, there is a reason for assuming that this is not the case, which is to do not with agreement relations – the two 'subject' nodes built by the subject NP and by the subject marker would just collapse – but with the strict order of morphemes within the inflected verb. We assume here without presenting detailed arguments that inflectional morphemes in Bantu are discrete lexical units, in other words, we are construing part of morphology as syntax. This means that we have to devise lexical entries for subject, object, and tense markers which ensure that they are obligatorily projected, and appear in the right order. Informally, this is done by stating conditions on the IF clause in the relevant lexical entries: Subject markers can only be introduced into the parse in the context of the query of ?Ty(t), and furthermore, if no

daughter has yet been built. Tense markers are introduced only in the context of a query ?Ty(t) with a completed subject node, and object markers are only introduced after the lexical actions from the tense marker. A more complete lexical entry for the subject marker *a-* is thus as in (24), where we have added (in bold) the falsum in the IF clause. Note that this does not mean that the root node cannot be developed further, but that at the time of the introduction of *a-* nothing has been built yet:

(24) Lexical entry for *a-*

IF	?Ty(t), **[↓]⊥**
THEN	make($\downarrow_0$), go($\downarrow_0$),
	put(Ty(e), Fo(U), ?∃x(Fo(x), SG(x), Human(x))
ELSE	abort

But this means that we have to ensure that the subject cannot be built from overt NPs – by assuming (as we have) that the lexical entry from NPs requires the presence of a requirement for ?Ty(e) rather than ?Ty(t), and that no transition rules are available to project a ?Ty(e) from the root node. The empirical consequence of this is that it debars structures without subject markers like:

(25) **Asha na-imb-a*
Asha PRES-sing-FV

While more could be said at this point about the lexical specifications of other verbal morphemes, we leave this to a future occasion and merely note that subjects in Swahili or Chichewa are not projected onto fixed nodes.[13]

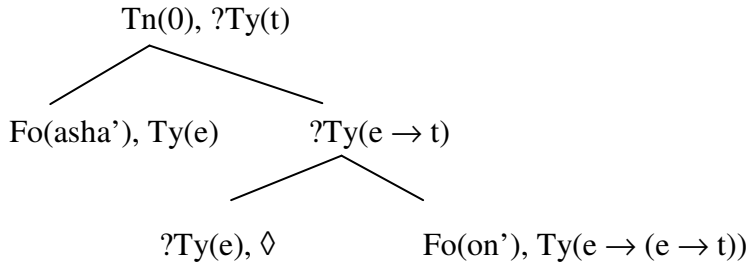
To sum up, the ambiguous status proposed for the subject marker by Bresnan and Mchombo [7] is analysed as lexically unambiguous in DS. The observed differences in interpretation – as 'subject', 'topic' or (post-verbal) 'focus' – are reflected rather by different ways of introducing – as LINKed or unfixed nodes – co-referential overt NPs into the derivation.

In contrast to the subject marker, Bresnan and Mchombo analyse the object marker as an incorporated pronoun. This tallies well with the DS analysis, where even the subject marker can (always) be described as an incorporated pronoun. The difference between subject and object marker in DS is rather that the object marker, in contrast to the subject marker, retains its bottom restriction, so that any co-referential NP has to be analysed as being outside the clause – as LINKed structure. From this perspective, transitive verbs introduce a requirement for a Ty(e) expression in object position:

(26a) *Asha a-li-on-a ...* [Swahili]
Asha SM1-PAST-see-FV ...
'Asha saw ...'

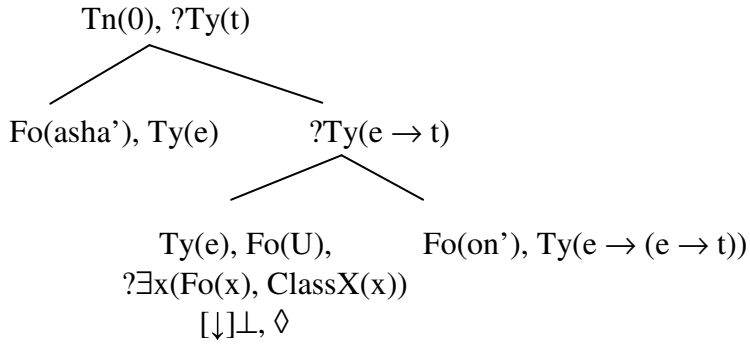
[13] We also leave to one side a characterization of those verb forms which have no overt subject or tense markers such as Swahili habitual or infinitival forms.

(26b)



The tree in (26b) depicts the parse after scanning *ona*, 'see', and shows the requirement for a Ty(e) expression in object position. As this is the current node, indicated by the pointer symbol, the next lexical input has to be the object so as to fulfil the requirement of the object node. In other words, without an object marker, the overt lexical object has to follow the verb immediately and would be projected onto the object node[14]. In contrast, when an object marker is present, it provides a Ty(e) expression at the object node, even before the verb is scanned, so that the (subsequent) requirement from the verb is immediately fulfilled:

(27)



The interpretation of the formula value of the object node can be recovered from context, either without any co-referential overt NP, or with the explicit introduction into the context of a relevant formula value through a LINKed Ty(e) expression. However, due to the presence of the bottom restriction, the overt NP cannot be associated with the fixed object node, nor be an unfixed node, as Merge is not available. This means that the overt NP is LINKed, either at the outset of the parse, or, when following the verb, associated with a so-called specificity restriction:

(28a) *ki-tabu* *Asha a-li-ki-on-a* [Swahili]
7-book Asha SM1-PAST-OM7-see-FV
'the book, Asha saw it'

(28b) *Asha* *a-li-ki-on-a* *ki-tabu* [Swahili]
Asha SM1-PAST-OM7-see-FV 7-book
'Asha saw it, the book'

[14] Thus the overt NP object and the object marker annotate the same tree position. Recall that DS trees are semantic trees and do not directly reflect word order.

The difference in word-order resulting from the absence vs. presence of the object marker thus follows from the way the information from object marker and object is introduced into the emergent tree structure.

The advantages of looking at Bantu agreement this way are twofold. On the one hand, it provides a relatively uniform characterization of the agreement relation between overt NPs and subject and object markers, which is always 'anaphoric' agreement, that is, the normal relation holding between a pronominal element and some associated co-referential term, while at the same time providing a characterization of the difference between subject and object markers (and as we will see shortly between different object markers in different Bantu languages) in terms of the interplay between lexical differences and different forms of structure building.[15]

Furthermore, on a cross-linguistic level, the analysis proposed here receives confirmation from the fact that it extends to the clitic systems of Romance languages, which despite different morphological manifestations, provide a striking parallel to the Bantu case (Cocchi [12]). In Italian, for example, objects follow the verb, but have to be construed as outside the VP – as LINKed structures – in the presence of an object clitic:

(29a) *conosco* *Giovanni* [Italian]
know.1sg Giovanni
'I know Giovanni'

(29b) *lo* *conosco* *Giovanni* [Italian]
him know.1sg Giovanni
'I know him, Giovanni'

Furthermore, there are parallel co-occurrence restrictions between Spanish and Chaga: in both languages, strong pronouns obligatorily require the presence of an object marker/clitic:

(30a) *la* *llamaron* *a* *ella* [Spanish]
her called.3PL a her
'they called her'

(30b) **llamaron* *a* *ella* [Spanish]
called.3PL a her
Intd.: 'they called her'

(30c) *llamaron* *a* *Paca* [Spanish]
called.3PL a Paca
'they called Paca'

(31a) *n-á-í-m-lyì-í-à* *k-èlyá* *ò* [Chaga]
FOC-SM1-PRES-OM1-eat-APPL-FV 7-food 1.PRO
'He/she is eating food for/on him/her.'

[15] A further advantage is that the analysis extends to various cases of agreement with conjoined NPs, which space prevents to discuss in detail here. See Marten [22], [25].

(31b) *n-á-í-kì-lyí-í-à* *m-kà* *kyô* [Chaga]
FOC-SM1-PRES-OM7-eat-APPL-FV 1-wife 7.PRO
'He/she is eating it for/on the wife.'

(31c) *n-á-í-kì-m-lyì-í-à* *òó* *kyò* [Chaga]
FOC-SM1-PRES-OM7-OM1-eat-APPL-FV 1.PRO 7.PRO
'He/she is eating it for/on him/her.'

The Spanish examples in (30), show that the pre-verbal object clitic *la* is mandatory for strong pronouns such as *ella* (30a), as the absence of the clitic in (30b) leads to ungrammaticality.[16] However, with a full NP object like *Paca* in (30c), no object clitic is required. Similarly, the Chaga examples in (31), from Bresnan and Moshi [8] show that full NP objects in Chaga (*k-èlyá* in (31a) and *m-kà* in (31b)) do not co-occur with an object marker. However, when the object is expressed by a pronoun (*ò* in (31a) and *kyô* in (31b)), a co-referring object marker occurs (*-m-* and *-kì-*) – including cases where both objects are pronominalized (31c). This particular trait of both Spanish and Chaga can be explained within the analysis proposed here by assuming that strong pronouns in these two languages are debarred from occurring at a fixed node within the tree: the requirements introduced by the verb have to be fulfilled by the object markers, and the pronouns can only be associated with unfixed or LINK structures, fulfilling not 'ordinary' pronominal functions, but rather functioning as focus or topic, not surprising for languages like Bantu which have a full array of incorporated pronouns at their disposal for the encoding of anaphoric relations.

As a final point, we may note the case of Swahili, where animate NPs require the presence of object markers. This is, from the DS perspective, simply a variation of the general theme, namely the extension of the Chaga bar on free pronouns to occur at fixed tree positions to all animate denoting nouns:

(32a) *ni-li-mw-on-a* *Juma* [Swahili]
SM1s-PAST-OM1-see-FV Juma
'I saw Juma'

(32b) **ni-li-on-a* *Juma* [Swahili]
SM1sg-PAST-see-FV Juma
'I saw Juma'

The examples show that in Swahili, an object like *Juma* can only be introduced in the presence of an object marker. From the DS perspective, these data can be analysed like Chaga and Spanish full pronouns, by assuming that animate NPs can only occur at unfixed or LINKed structures.

The examples discussed in this section, and the DS analysis we have proposed for them show, we believe, how the dynamic perspective adopted here, and the notion of underspecification can fruitfully be applied to questions related to Bantu agreement patterns. In particular, the DS system provides the formal means to bring out small, but

[16] We leave to one side here the contribution of the preposition *a* in these examples.

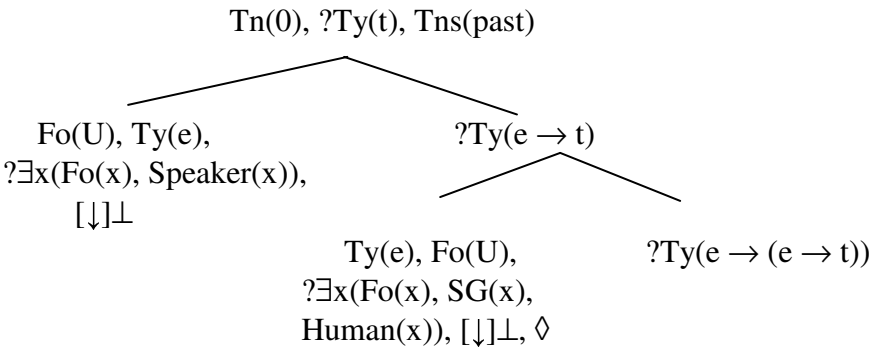
important differences of micro-linguistic variation between the agreement systems of different Bantu languages. In addition, the analysis proposed receives cross-linguistic confirmation by being extendable to the clitic system of Romance languages. Of course, in terms of empirical coverage, we have only provided a short sketch of the variation found in Bantu agreement systems, and a more comprehensive analysis needs to be developed. Yet, we hope we have shown at least the potential explanatory power of the model in this area. In the following section, we turn to a different aspect of Bantu clause structure, namely the construction of verb phrases and its interaction with focus effects.

5. VP structure and unfixed verbs

In the preceding section, we have tacitly assumed that VP structure is not exclusively built by verbal information. In fact, in a clause with a verb which has both subject and object markers, the only structural task of the verb is to fill the predicate node – both argument nodes have already been built by subject and object markers at the time information from the verb is introduced into the parse:

(33a) *ni-li-mw-* ... [Swahili]
SM1sg-PAST-OM1- ...
'I him/her …'

(33b)

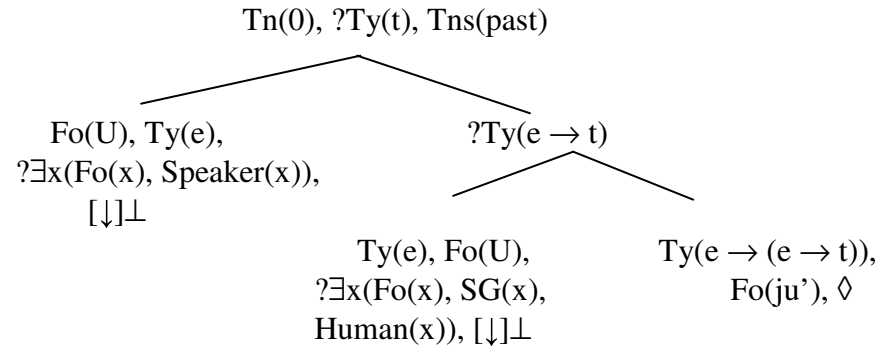


At the stage in the parse depicted in (33b), the basic predicate-argument structure of a transitive clause is in place. All that is missing – like in verb-final languages – is information about the actual predicate holding the arguments together, which will be provided in the next stage of the parse when the information from the verb-stem is duly entered.[17] The object node built from the lexical instructions from the verb will collapse with the object node already present, and the requirement for a Ty(e) expression will be fulfilled by the information found there:

(34a) *ni-li-m-ju-a* [Swahili]
SM1sg-PAST-OM1-know-FV
'I know him/her'

[17] There is room for a more detailed technical discussion here about whether the predicate node is built at this stage, and if so, how this relates to the IF clause in the lexical entries for verbs. We will not engage in this discussion here, but see Marten [23] which discusses in more detail several of the points made in this section.

(34b)



This state of affairs is fine for underived verbs, but becomes problematic with applicative verbs. Applicative verbs are often described as changing the valency of the base verb by adding another object:

(35a) *a-li-andik-a* *barua* [Swahili]
SM1-PAST-write-FV letter
'S/he wrote a letter'

(35b) *a-li-mw-andik-i-a* *shangazi* *barua* [Swahili]
SM1-PAST-OM1-write-APPL-FV aunt letter
'S/he wrote a letter to the aunt'

The verb *andika*, 'write', is used with the object *barua*, 'letter', in (35a), but with two objects – *barua* and *shangazi*, 'aunt'- in (35b), where the verb includes the applicative extension *-i-*. Several analyses of this construction type have been proposed, mainly concerned with the change in valency and how the additional object is syntactically licensed (e.g. Baker [5], Marantz [21], Nakamura [28]). However, the problem with most of these analyses is that they do not address two properties of the construction which, while possibly being less obvious, seem to point to a more complex analysis of the applicative. These properties are that, firstly, applicative verbs do not always induce a change of valency, and, secondly, that applicatives are often associated with particular pragmatic force (see also Harford [16], Mabugu [20], Marten [23], [24] Matsinhe [26]):

(36a) *Juma* *a-me-va-a* *kanzu* [Swahili]
Juma SM1-PERF-wear-FV kanzu
'Juma was wearing a Kanzu'

(36b) *Juma* *a-me-val-i-a* *rasmi* [Swahili]
Juma SM1-PERF-wear-APPL-FV official
'Juma was dressed up officially/formally'

In (36a), *vaa*, 'wear', or more correctly 'put on (clothes)', is used with *kanzu*, a garment worn often in Muslim societies as, for example, in Zanzibar, as object. In (36b), the same verb is used in its applicative form, but not with an additional object, but rather with the

adverb *rasmi*, 'official'. The verbal morphology here thus does not induce an increase in valency, but no change in valency, or indeed a decrease in valency, depending on the analysis of the syntactic status of *rasmi*.[18] Secondly, note that we have changed the translation of the verb from 'wear' to 'dress up', indicating that the verbal semantics here changes: the applicative verb has a stronger interpretation than the non-applicative verb. Two similar examples, showing the absence of change in valency, and a change in semantic interpretation of the predicate, are the following:

(37a) *waziri* *a-li-anguk-a* *chini* [Swahili]
minister SM1-PAST-fall-FV down
'The minister fell down'

(37b) *waziri* *a-li-anguk-i-a* *chini* [Swahili]
minister SM1-PAST-fall-APPL-FV down
'The minister fell down' (with an implied meaning of directionality)

(38a) *tu-ka-ly-a* [Bemba]
SM1pl-FUT-eat-FV
'we will eat'

(38b) *tu-ka-li-il-a* [Bemba]
SM1pl-FUT-eat-APPL-FV
'we will feast' (idiom.: 'enjoy')

(37) is another Swahili example (from Abdulaziz [1]: 32), again with an adverbial-like looking complement, while the Bemba example in (38) has an intransitive use of *-lya*, 'eat', with a strengthened applicative form in (38b). A final example shows that semantic-pragmatic force is independent of the absence of valency change:

(39a) *Bi Sauda* *a-li-kat-a* *mkate* *kwa* *kisu* [Swahili]
Bi Sauda SM1-PAST-cut-FV bread with knife
'Bi Sauda cut bread with a knife'

(39b) (#)*Bi Sauda* *a-li-kat-i-a* *mkate* *kisu* [Swahili]
Bi Sauda SM1-PAST-cut-APPL-FV bread knife
'Bi Sauda cut bread with a knife'

[18] A parallel example attested in Swahili fiction is from Muhammad Said Abdulla's *Mwana wa Yungi Hulewa* ([2]: 52):

(i) *– kijana wa Kihindi,* *ka-val-i-a* *vizuri …*
youth of Indian SCd1.PERF-wear-APPL-FV well …
' – an Indian youth, dressed (up) well …'

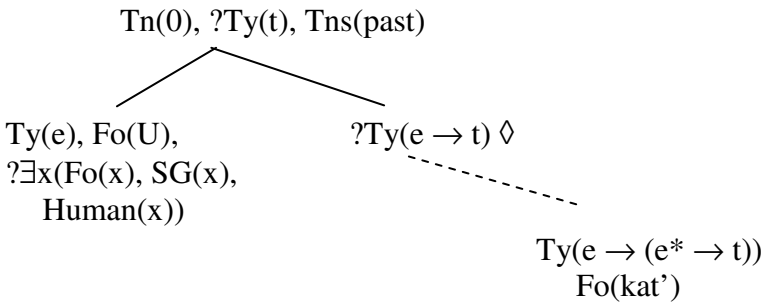
We are grateful to an anonymous reviewer for pointing out to us that examples like (36b) are easily found in other Bantu languages.

(39c) *Bi Sauda* *a-li-kat-i-a* *nini* *mkate* *huo?* [Swahili]
Bi Sauda SM1-PAST-cut-APPL-FV what bread this
'How *did* Bi Sauda cut this bread? (lit: With what *did* Bi Sauda cut the bread?)'

These examples show that instruments are normally introduced in Swahili as prepositional phrases (39a). However, instrument applicatives are possible, but only, as the contrast between (39b) and (39c) shows, when focus is applied to the way in which the action denoted by the predicate is performed.

Taking all these examples together, we propose that applicative morphology signals that the verb is not projected onto a fixed node, but rather that it is projected as locally unfixed. This allows for the introduction of further Ty(e) expressions if necessary, that is, for a change in valency, while at the same time signalling predicate focus, thus combining the possibility for an additional object with the underlying pragmatic function of the construction. Thus, for example, the derivation of (39c) would include the following stage:[19]

(40)

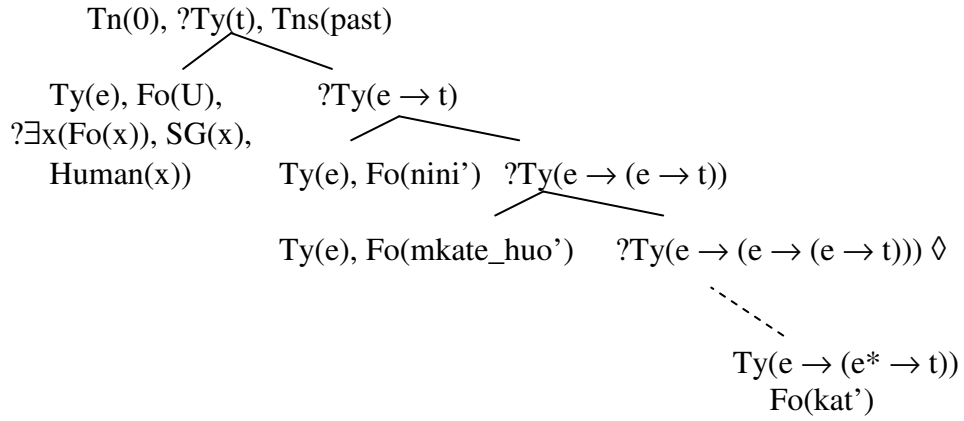


In (40), the verb is projected onto a locally unfixed node, and the pointer returns to the predicate daughter of the root node. The type value of the verb in (40) includes the underspecified type Ty(e* → t), which indicates that the number of arguments the predicate combines with is not fixed, but rather depends on the local syntactic context. The corresponding semantic notion of this underspecification is the process of ad-hoc concept formation (Carston [11]), but for the present discussion, we take unfixed verbs to be interpreted with predicate focus.[20] Like unfixed Ty(e) nodes, then, the verb is interpreted as focused, while at the same time the verb phrase will be built by including post-verbal objects – under the assumption that in this situation, the building of argument nodes is licensed freely:

[19] Alternatively, the unfixed verb could be modelled as still projecting the object node, as part of the unfixed node; this might be the formal reflex of the difference between verb and VP focus. We leave this possibility open for the present.

[20] A more detailed discussion of underspecified verbs is found in Marten [23], where a slightly different analysis of applicative verbs is proposed.

(41)



At the stage depicted in (41), all Ty(e) expressions are included in the tree, and the next step is to merge the unfixed verb with the lowest predicate node, so that the information in the tree can be compiled. The eventual tree, then, will include three arguments, and have Fo(kat') as the predicate. In contrast to purely syntactic analyses, the proposals made here show – at least in outline – how to bring together the syntactic and semantic-pragmatic characteristics of Bantu applicatives, while at the same time keeping in mind the time-linear quality of syntactic construction.

A further question in this context is the question of whether unfixed verbs in Bantu are only lexically adduced, associated with specific applicative morphology, or whether they are found, like unfixed Ty(e) expressions, more freely at the outset or end of the parse. The tentative answer to this question is indeed, yes. There are at least two examples from Bantu languages which seem to indicate an analysis with unfixed predicates. At this stage we do not have a full analysis (or indeed a full description) of these data, but we decided to include them here as being at least suggestive, and relevant for future work.

The first case of potentially unfixed predicates comes from Herero and concerns predicate focus and its interaction with so-called 'tone' cases. Unlike most Bantu languages, southwest Bantu languages like Herero and UMbundu show a systematic tonal distinction between different functions of NPs. For example, Herero distinguishes between 'predicative', 'complement' and 'default' forms of NPs (cf. Möhlig et al. [27]):

(42a) *ókà-kámbé* [Herero]
14-horse
'It is a horse'

(42b) *òmù-ndù* *má* *mún-ú* *òká-kámbé* [Herero]
1-person SM1 see-PAST 14-horse
'The person saw the horse (past 4)'

(42c) *òkà-kámbé* *ká* *vét-é* *òmú-ndù* [Herero]
14-horse SM14 kick-PAST 1-person
'The horse kicked the person'

The distinctive tone marking is found on the nominal prefix (NPx) of the nouns in the examples. The presentative form (42a) has a high tone on the initial vowel of the prefix. The default forms *òmù-ndù* and *òkà-kámbé* are found in subject position in (42b) and (42c) and have two low tones. In contrast, the complement forms of these nouns have a high tone on the second vowel of the prefix. The system is not so much a case system as found, for example, in Indo-European languages, but is at least historically related to information structure sensitive systems involving the augment in Bantu (Schadeberg [30]).[21] In addition, constructions involving the complement case are akin in some respects to the distinction between conjoined and disjoined verb forms, for example in Nguni languages, as well as to phenomena of verbal high-tone retraction observed in a number of Bantu languages. The complement forms in Herero signal not so much 'accusative' but rather that the NP following the verb is part of the VP. Awaiting further analysis, we assume here for our discussion that complement forms are those Ty(e) expressions which fulfil the requirement for a Ty(e) expression introduced by the verb. They are thus not found, for example, in the presence of an object concord (cf. 42c):

(43) *òkà-kámbé* *ké* *mù* *vét-é* *òmù-ndù* [Herero]
14-horse SM14 OM1 kick-PAST 1-person
'The horse kicked him/her, the person'

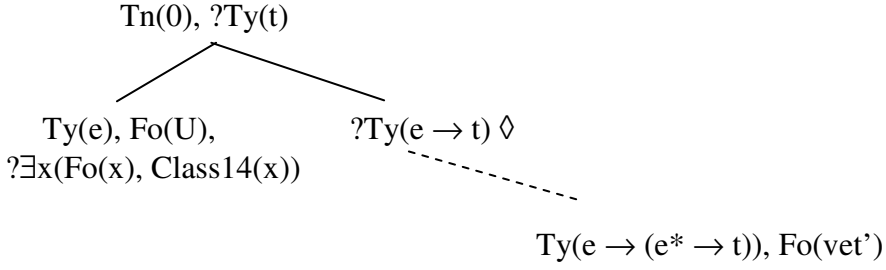
What is interesting here from the point of view of unfixed predicates is that when the verb is fronted and focused, the following NP does not show up in its complement form:

(44a) *ká* *vét-é* *òmú-ndù* *òkà-kámbé* [Herero]
SM14 kick-PAST 1-person 14-horse
'It kicked the person, the horse'

(44b) *ká*$^{\uparrow}$ *vét-é* *òmù-ndù* *òkà-kámbé* [Herero]
SM14 kick-PAST 1-person 14-horse
'It KICKED the person, the horse'

In (44a), the verb is clause initial, followed by the object in complement form, and the inverted subject clause-finally. The contrast between (44a) and (44b) lies in the fact that in (44b), the verb is focused, as indicated by the tonal upstep,[22] and that, because of this, the following NP now occurs in its default form:

(45)



[21] One important aspect here is that complement forms are only found with certain tense aspect distinctions, and never with negative tenses.
[22] In any case, a high tone higher than an ordinary high tone. We leave to one side here a full tonal analysis.

The information from *òmùndù* will now be introduced through the free building of an argument node, but not – as yet – as a complement of the predicate. Of course, at the end of the parse, the information from *òmùndù* will end up as an argument of the predicate introduced by *vete* – in terms of semantic truth conditions, (44a) and (44b) are identical, and will result in identical final trees. But in terms of information structure, the two utterances differ, and this is what is reflected in the analysis by the unfixed verb, and on the surface by the different tone marking on *omundu* in the two examples.

Finally, we briefly point out that our analysis can probably also be extended to verb-doubling constructions, well-known from West African languages (e.g. Aboh [3]: 235ff), but also found in Bantu:

(46) *ku-fagi-a* *a-fagi-a* [Swahili]
15-sweep-FV SM1.PRES-sweep.FV
'As for sweeping, she sweeps' (Ashton [4]: 278)

(47) *Atem* *a* *kɛ̀ʔ* *nčúū* *akendɔ̀ŋ* *čúū* [Nweh, Grassfields
Atem 3s PAST:1 boil plantains boil Bantu]
'Atem BOILED plantains' (Nkemnji [29]: 200)

In these constructions, an inflected verb is doubled by a usually uninflected, nominalized or infinitival verb. Interestingly, the Swahili example in (46) is a topic, not a verb-focus construction (as is clear from Ashton's translation and discussion), indicative of a LINK structure where the formula value of the LINKed, initial verb is supplied in the tree from the inflected verb. The example in (47), in contrast, does convey verb focus, with an uninflected 'copy' of the verb introduced, we assume, by Late-*Adjunction, as in the other examples discussed in this section. If this is right, it means that in these constructions, merging of the inflected and the uninflected verb is possible even though neither of them is an obvious anaphoric expression. However, we will have to leave a full DS analysis of these data for a later time.

5. Conclusion

Our main aim in this paper has been to introduce the framework of Dynamic Syntax, and to show how it can be used for the analysis of different aspects of Bantu grammar. In the first area we discussed – pronouns and agreement – we have argued that the DS architecture provides a more fine-grained analysis of Bantu agreement than hitherto available, which incorporates several aspects of word-order and information structure, and also brings out more formally the parallelism between Bantu agreement and Romance clitics, thus bringing both into a wider, theoretically motivated comparative perspective. One of the main points we wanted to make in the second area we addressed – verb phrase construction, valency and verb focus – was that the analysis of Bantu applicatives needs to include semantic-pragmatic aspects of information structure in addition to purely syntactic observations, and that this perspective then leads naturally to questions of verb focus more widely. Although we have not presented fully worked-out analyses for many of the data presented, we nevertheless hope to have shown that the DS

concepts of LINKed and unfixed nodes are potentially capable of addressing these data in a principled and insightful manner.

On a more general theoretical perspective, we were trying to show that the basic assumptions of DS – the importance of parsing, the postulation of just one level of semantic representation and the attendant procedural view of syntax, and the role of underspecification for natural language structure – are tenable, and that the DS model does indeed provide meaningful analyses for a range of empirical facts. Underspecification in particular, both of content as with pronominal elements, and of tree structure as with unfixed nodes, has turned out to be an important aspect of the analyses we have introduced in this paper, and we hope to have shown that this notion helps to bring together facts which from our perspective can be seen to be closely related on an analytical level, and subject to similar analyses – pronoun doubling and object marking for animates in Swahili, for example, or applicatives and verb focus in Herero and Grassfield Bantu. The overall picture which emerges from these different analyses, is a conception of human language which can be characterized by comparatively few, formally explicit and functionally motivated tools, and that it is the interaction of these tools which results in the complexity of natural languages. Bantu languages, in particular, are a clear example of how many different variations can result within a common theme, and it is the study of variation within closely-knit groups like Bantu which can show the complexity resulting from the interaction of different, but in themselves fairly simple processes. In this paper, we hope to have contributed to this research enterprise.

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