A COMPARISON OF COMPARATIVES

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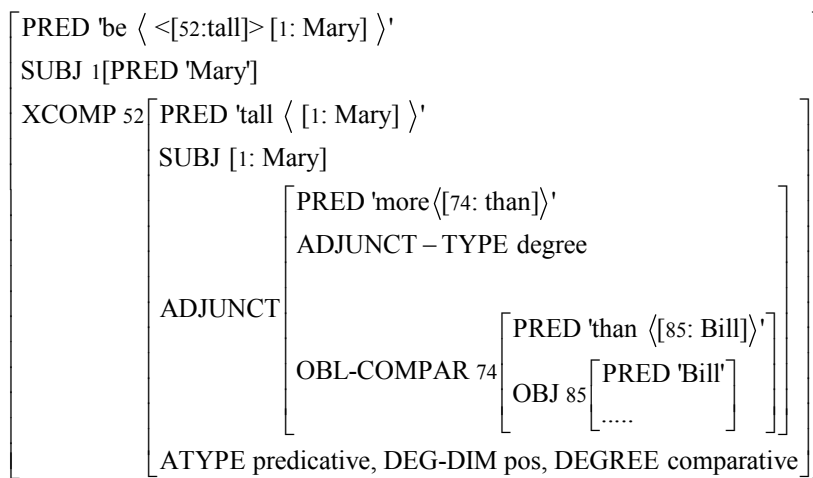Mary Esther Kropp Dakubu (University of Ghana)

1 Introduction[*]

In the Pargram grammar of English (cf. Butt et al. 1999), comparatives of both of the types in (1)

(1) a. Sarah is more intelligent than John
    b. Mary is taller than Bill

are analyzed in f-structure by adjoining a phrase headed by the PRED 'more' to the element expressing the dimension of the comparison (above, the adjectives 'intelligent' and 'tall'); the adjunct in turn takes an OBL-COMPAR object, introducing the 'than'-clause and its object. The f-structure for (1b) is shown, simplified and in XLE format, in (2):

(2)

$$
\begin{bmatrix}
\text{PRED 'be } \langle\, <[52:\text{tall}]> [1:\text{Mary}]\, \rangle ' \\
\text{SUBJ } 1[\text{PRED 'Mary'}] \\
\text{XCOMP } 52
\begin{bmatrix}
\text{PRED 'tall } \langle\, [1:\text{Mary}]\, \rangle ' \\
\text{SUBJ } [1:\text{Mary}] \\
\text{ADJUNCT}
\begin{bmatrix}
\begin{bmatrix}
\text{PRED 'more}\langle[74:\text{than}]\rangle' \\
\text{ADJUNCT} - \text{TYPE degree}
\end{bmatrix} \\
\text{OBL-COMPAR } 74
\begin{bmatrix}
\text{PRED 'than } \langle[85:\text{Bill}]\rangle' \\
\text{OBJ } 85
\begin{bmatrix}
\text{PRED 'Bill'} \\
.....
\end{bmatrix}
\end{bmatrix}
\end{bmatrix} \\
\text{ATYPE predicative, DEG-DIM pos, DEGREE comparative}
\end{bmatrix}
\end{bmatrix}
$$

A principle holding of f-structures is that of *cross-linguistic validity*: e.g., for transitive constructions, no matter whether subject- and objecthood are marked by linear order, case, or other means, the same attributes are used in the f-structures across languages. For comparatives, this is to say that if (2) is an analysis of (1b) as a construction in English, it should be valid also of constructions equivalent to (1b) in other languages, as far as the factors represented in (2) are concerned. These are the factors of *compariso*n, that the comparison reflects a 'positive' dimension, and that there is an *oblique* constituent also somehow involved in comparison - the representation itself doesn't say how, but in the case in question, it is understood that it reflects a term of the comparison. Also said in (2) is that the expression of comparison enters the construction as an *adjunct*.

We may note that (2) plus the invariance principle do *not* claim that all comparison take the form of adjunction: a paraphrase of (1b) could be *Mary's height exceeds Bill's height*, where the key expression of comparison is the main verb, and not an adjunct; we still don't want to see this as a counterexample to the invariance principle. The point is made in Stassen 1985 that all languages, alongside their typical way of expressing comparison, may use a strategy like the one just exemplified; and one may agree that as far as the notion 'comparative construction' is

concerned, the task of grammar is to address the 'typical' patterns. The interest of (2), then, is as a template of 'typical' comparative constructions,[1] not just in English, but across langauges.

An obvious proviso to this point is the possible restrictedness of (2) to simple adjectival comparison: more complex types of content - as may be expressed in comparison of quantities, of manners, and more - may require different constructional patterns, with different schemata. However, again, one will hold that each such type of f-structure schema will be cross-linguistically invariant for the type of content in question. In this note, we will focus on simple adjectival comparison, like what is expressed in (1).

With these preliminaries, let us say where we want to go with the present note. On the one hand, we want to investigate to what extent the schema instantiated in (2), and under the invariance principle, is actually true: when we go to typologically different languages, will simple adjectival comparison still take forms representable with f-structures as in (2)? Here we will look at one language from this point of view, the West-African language Ga, which uses serial verb constructions for the expression of comparison; this will be a topic in section 3.

On the other hand, as noted, to delineate a class of constructions as being 'the same' relative to comparison, it may be relevant to take the semantics of the construction into account. Moreover, to properly construe the sense of the attribute OBL-COMP in (2), we may want to be more precise about exactly what are the 'terms' of a comparison. Such points may be most perspicuously achieved if we can supply an explicit semantic representation going along with each comparative construction, i.e., co-define a semantic structure together with a c- and an f-structure. Adopting the formal construct 's-structure' as defined in Halvorsen 1995, Halvorsen and Kaplan 1995, Fenstad et al. 1985, we will propose a format of semantic representation applied to the analysis of comparatives, and also a way of co-defining this format of representation with other structures. This will be the topic of section 2.
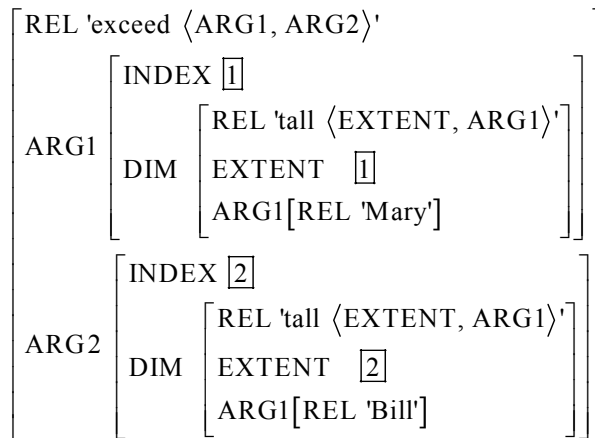
The constructs defined in section 2 will be carried along to the analysis of constructions in Ga, so that a counterpart of (1b) in Ga will indeed be provided with the same s-structure as (1b) has. We assume that this constitutes a formal marking of the necessary equivalence between these constructions, to warrant the question whether they share f-structure properties, and we provide a tentative assessment of this in section 3. We here, in turn, point to a counterpart in still another language, where the answer may be different. Our purpose in this note being only to open for the type of investigation here sketched, we leave this case for further investigation.

2   The semantics of comparatives

In proposing a format of semantic representation applied to the analysis of comparatives, we want to accommodate standardly recognized features of the semantics of these constructions, as reflected, e.g., in Klein 1980, Seuren 1973, Hellan 1981, Heim 2000. Using the format of s-structure, a semantic representation of (1b) can be given as in (3):

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[1] 'Template' in the following way: in the format of a declarative grammar formalism, one does not state "if a construction expresses simple adjectival comparison, then it takes a form involving...". One rather supplies just the template instantiated by (2) as a format for the encoding of such comparison, and no other schema, thereby enforcing this as the only 'channel' of expression as far as factors reflected in f-structure are concerned.

(3)   S-structure of *Mary is taller than Bill:*

$$
\begin{bmatrix}
\text{REL 'exceed } \langle \text{ARG1, ARG2} \rangle \text{'} \\[2pt]
\text{ARG1} \begin{bmatrix} \text{INDEX } \boxed{1} \\[2pt] \text{DIM} \begin{bmatrix} \text{REL 'tall } \langle \text{EXTENT, ARG1} \rangle \text{'} \\ \text{EXTENT } \quad \boxed{1} \\ \text{ARG1}[\text{REL 'Mary'}] \end{bmatrix} \end{bmatrix} \\[4pt]
\text{ARG2} \begin{bmatrix} \text{INDEX } \boxed{2} \\[2pt] \text{DIM} \begin{bmatrix} \text{REL 'tall } \langle \text{EXTENT, ARG1} \rangle \text{'} \\ \text{EXTENT } \quad \boxed{2} \\ \text{ARG1}[\text{REL 'Bill'}] \end{bmatrix} \end{bmatrix}
\end{bmatrix}
$$

This representation assumes an explicit 'exceed' relation interconnecting the degree to which Mary is tall and the degree to which Bill is tall. Each of these degrees is associated with a predication involving 'tall', introduced under the attribute DIM (for 'dimension of comparison') together with the relevant participant and with the attribute EXTENT indicating the *extent* to which the relation in question obtains. This extent may be thought of as standing in a one-to-one relation with whatever 'degree' unit may be invoked in substantiating the comparison. This degree unit is here introduced by the attribute INDEX, for simplicity exposed as identical to the extent, although in principle, it is only functionally related to it
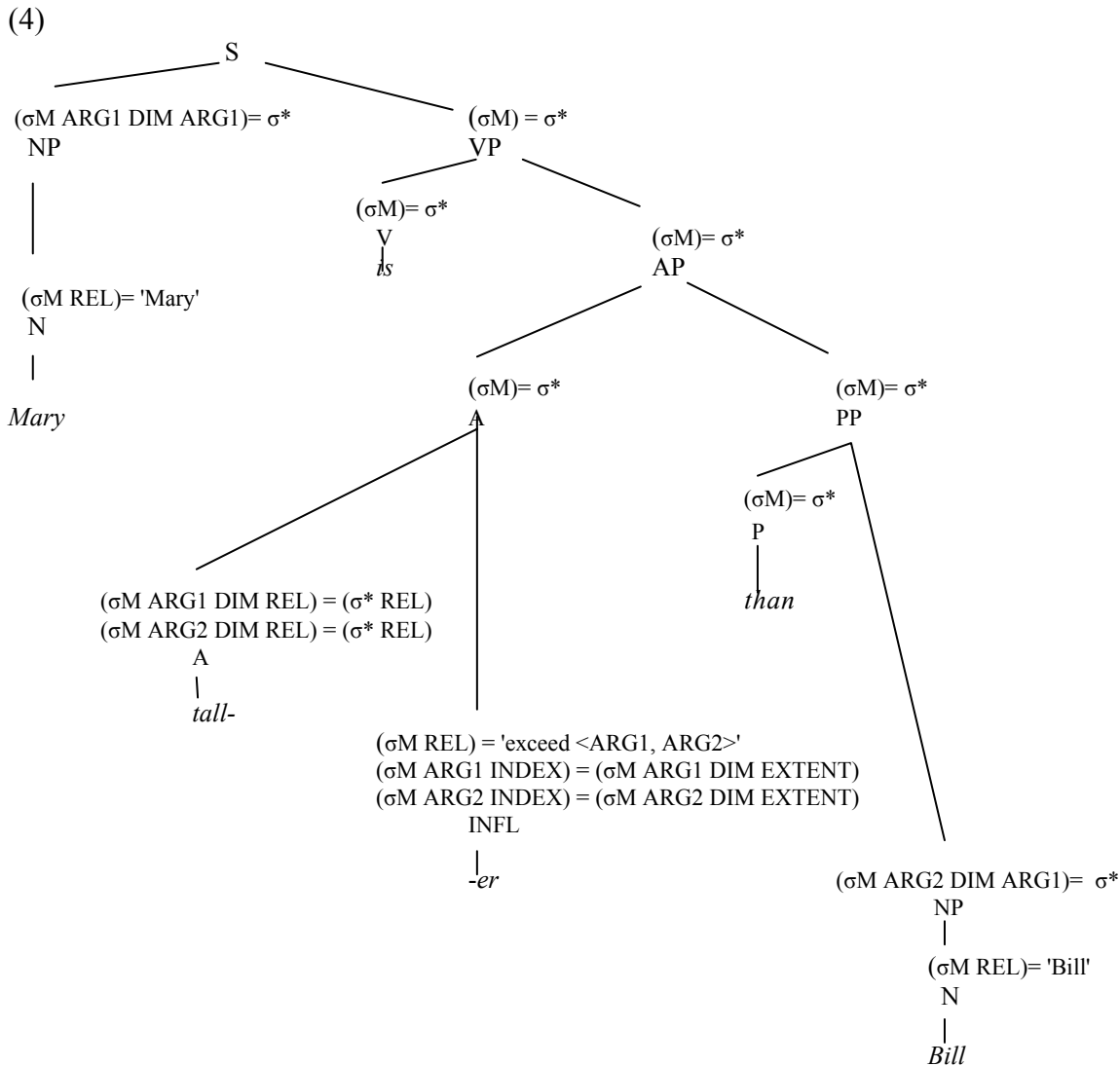
'REL' has two possible values as far as comparatives are concerned, 'exceed' and 'equate' (for *as tall as*), both taking ARG1 and ARG2. 'Exceed' refers to whichever directed dimension of comparison is expressed by the DIM predicate: if the adjective is *small*, then the direction is one of increasingly smaller amounts of height, and if *tall,* increasingly higher amounts.[2]

The values of the paths ARG1 | DIM | REL and ARG2 | DIM | REL need not be the same: in an example like *the lamp is taller than the window is wide*, degrees of height and width are compared. Conversely, the values of the paths ARG1 | DIM | ARG1 and ARG2 | DIM | ARG1 need not be distinct: in *the door is taller than wide*, the ARG1s are the same. All of this variation is allowed by the formalism.

(4) is a display of annotations on the c-structure of (1b) whereby (3) can be obtained. 'σ' is the function from c-structure nodes to s-structure specifications. 'σM' stands for 's-structure of the mother of the current node', and 'σ*' stands for 's-structure of the current node itself'. Shortcutting considerations of adequacy of morphological representation, we here assign a semantic contribution to the affix *-er* directly.[3]

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[2] We thereby avoid the situation induced by the use of the attribute DEG-DIM in (2), which seems to presuppose that every adjective comes as a member of a pair constructible along a 'positive-negative' dimension.

[3] This stays close to early works like Bresnan (1973) and Davis and Hellan (1975). However, a more correct way, both for the capturing of morphological generalization (given the highly different ways in which comparative morphology can be realized - as *-er*, as *more*, or through suppletion) and for adherence to lexical integrity, would be to base this part of the semantics on morphological features already accommodating the morphological variation.

(4)

```
                              S
        ┌─────────────────────┴──────────────┐
(σM ARG1 DIM ARG1)= σ*                   (σM) = σ*
    NP                                       VP
    |                              ┌──────────┴──────────┐
    |                         (σM)= σ*                (σM)= σ*
(σM REL)= 'Mary'                  V                      AP
    N                            |s            ┌─────────┴─────────┐
    |                                      (σM)= σ*            (σM)= σ*
  Mary                                        A                   PP
                                   ┌──────────┤          ┌────────┴────────┐
                                   │          │     (σM)= σ*               │
                                   │          │        P                   │
                                   │          │        |                   │
                                   │          │      than                  │
        (σM ARG1 DIM REL) = (σ* REL)│                                       │
        (σM ARG2 DIM REL) = (σ* REL)│                                       │
                   A                │                                       │
                   |                │                                       │
                 tall-             │                                        │
                                    │                                       │
                (σM REL) = 'exceed <ARG1, ARG2>'                            │
                (σM ARG1 INDEX) = (σM ARG1 DIM EXTENT)                      │
                (σM ARG2 INDEX) = (σM ARG2 DIM EXTENT)                      │
                          INFL                                              │
                           |                           (σM ARG2 DIM ARG1)= σ*
                          -er                                 NP
                                                              |
                                                      (σM REL)= 'Bill'
                                                              N
                                                              |
                                                            Bill
```
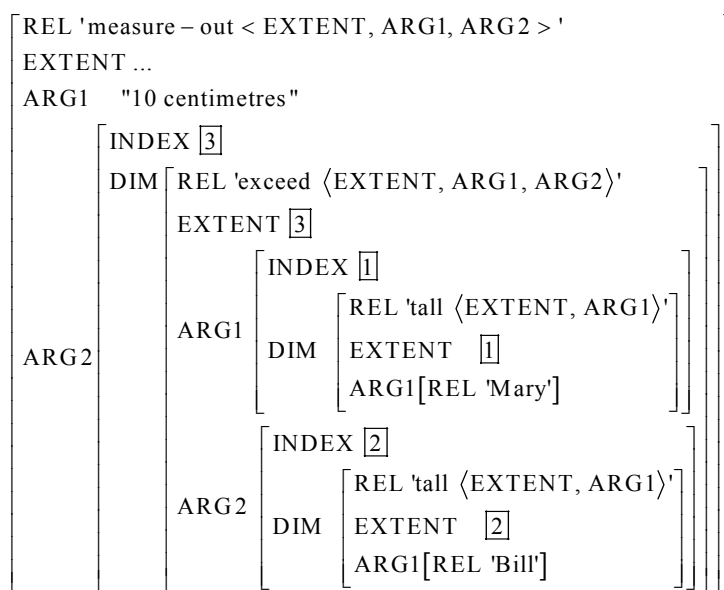
As will be noted, the inflected adjective *taller*, through the impact of the comparative morphology, acts as the semantic head of the construction, and thereby defines the main frame of the AVM in (3), leaving for *tall, Mary* and *Bill* to contribute their parts in a compositional fashion. *Than* is treated as semantically empty; any contributions that one might want to associate with it are here carried by *-er*, although a plausible alternative could be to co-allocate some of the specifications on *taller* to *than*, subject to unification in the compositional assembly.

Note that in order for such an annotated tree to extend beyond the particular structure in (1b), some further annotation is needed. The case where *tall* can unproblematically be taken to serve as DIM|REL of both of the degree arguments - as induced by the specification (σM ARG1 DIM REL) = σ* REL and (σM ARG2 DIM REL) = σ* REL in (4) - is restricted to those occurrences of *than* where it is followed only by an NP. As soon as something else follows, as a more or less truncated clause, allowance must be made for this part to include an adjective, as in *the door is taller than it/the window is wide*. Following Hankamer 1973, one can distinguish two variants of *than* in accordance with this, one being a preposition and the other a complementizer, and in the tree annotation, make the specifications (σM ARG1 DIM REL) = σ* REL and (σM ARG2 DIM REL) = σ* REL for the adjective non-conditional only in the case where *than* is a P. Analogously, for cases like *the door is taller than wide*, one must have the option of specifying the subject NP as providing the REL also for the second degree's DIM1|ARG1: this is *allowed* when *than* is a complementizer, but not required. We will not try to spell out here the exact disjunctive and

conditional specifications needed to cover this array of possibilities, or, alternatively, explore the possibility of capturing these cooccurrence patterns through differential meaning assignments to *than*.

The role of EXTENT in (3) may be seen as that of 'measuring out' - it measures out the height of Mary, and the height of Bill. In cases like *Mary is 10 centimetres taller than Bill*, one may say that the role of *10 centimetres* is in turn to measure out the *exceed* relation holding between Mary's height and Bill's height. Accordingly, we will regard the presence of an EXTENT as generally associated with any relation, and represent the sentence *Mary is 10 centimetres taller than Bill* in the way of (5):

(5)   S-structure of *Mary is 10 centimetres taller than Bill:*

$$
\begin{bmatrix}
\text{REL 'measure\,--\,out} < \text{EXTENT, ARG1, ARG2} > ' \\
\text{EXTENT ...} \\
\text{ARG1} \quad \text{"10 centimetres"} \\
\text{ARG2} \begin{bmatrix}
\text{INDEX } \boxed{3} \\
\text{DIM} \begin{bmatrix}
\text{REL 'exceed } \langle \text{EXTENT, ARG1, ARG2} \rangle ' \\
\text{EXTENT } \boxed{3} \\
\text{ARG1} \begin{bmatrix}
\text{INDEX } \boxed{1} \\
\text{DIM} \begin{bmatrix}
\text{REL 'tall } \langle \text{EXTENT, ARG1} \rangle ' \\
\text{EXTENT } \quad \boxed{1} \\
\text{ARG1} \begin{bmatrix} \text{REL 'Mary'} \end{bmatrix}
\end{bmatrix}
\end{bmatrix} \\
\text{ARG2} \begin{bmatrix}
\text{INDEX } \boxed{2} \\
\text{DIM} \begin{bmatrix}
\text{REL 'tall } \langle \text{EXTENT, ARG1} \rangle ' \\
\text{EXTENT } \quad \boxed{2} \\
\text{ARG1} \begin{bmatrix} \text{REL 'Bill'} \end{bmatrix}
\end{bmatrix}
\end{bmatrix}
\end{bmatrix}
\end{bmatrix}
\end{bmatrix}
$$

Here the value of ARG2 | DIM | EXTENT records the extent to which Mary's height exceeds Bill's height, and is reentered as INDEX of the ARG2 of *measure-out.* The more precise details of the representation of *10 centimetres* we leave open for now, the point presently made being only that a general treatment of 'degree recursion', as further exemplified in *Mary is almost 10 centimetres taller than Bill, Mary is more than 10 centimetres taller than Bill, Mary is 10 centimetres less than half a meter taller than Bill,* etc., can be obtained through exploiting an EXTENT attribute along similar lines as illustrated in (5).[4]

We have now indicated how a semantics of comparatives can be given expression using the formalism of s-structure,[5] and indicated a mapping algorithm between c-structure and s-

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[4] This applies to composition of s-structure specifications; for f-structure specification, these types of construction are fully accounted for in the English PARGRAM grammar.

[5] We make no proposal here concerning superlatives. In an s-structure representation, they may conceivably be quite like comparatives, since they too express an exceed relation. The second term of this type of comparison is typically expressed through a partitive-like PP (as in *tallest of the boys*), which supplies a set of which the first term in the comparison is a member (or subset). This is a relation between the values of the paths ARG1 | DIM | ARG1 and ARG2 | DIM | ARG1, and once formalized, e.g., through a relation *instantiate*, little more need be said in s-structure distinct from what is said for comparatives. It will then seem reasonable to have a marking of 'superlative' be part of the f-structure representation, corresponding to the sub-specification 'DEGREE comparative' in (2).

As REL-values in the s-structure representations of comparatives we have so far proposed using *exceed, equate, measure-out* and now *instantiate* in the case of superlatives (and presumably partitives); although this is little more than a preliminary sketch of an analysis, are we in a position to say whether this brings us close to a complete list of notions involved in this area of analysis? Presumably, 'yes', twice - as for what to expect.

structure adequate for simple adjective comparison. Once representations like (3) and (5) are available at the level s-structure, a question may be whether some of the f-structure attributes in (2), such as DEGREE and DEG-DIM, might be redundant; this is a possibility, but not one that we will explore here.[6] Another issue is how mappings to f-structure and s-structure may interact: in this example, they may seem fairly independent, but in, e.g., transitive structures, the assignment of status as ARG1 and ARG2 relative to the verb in s-structure will clearly be dependent on f-structure information about grammatical functions and diathesis; thus, in a more concise outline of the design envisaged, this aspect of interaction between mappings clearly will need to be stated.

An aspect of the f-structure (2) which is definitely not shared with the s-structure (5) is the specification of the comparative as an *adjunct*; and this is a point we address in the next section. We here turn to a pattern of comparison instantiated in the West-African language Ga. This pattern deviates from the comparative construction in English in two respects: it is a multiverb construction, and the comparative meaning is expressed through a verb with a meaning 'exceed'. The latter, as we will note, is a widely used pattern, also for the 'typical' construction of comparison in a language.

3 'Exceed'-comparative languages

Stassen (1985) observes that cross-linguistically, one of the major strategies for expressing comparison is using a free-standing lexical item with a meaning like 'exceed'; the strategy used in most Indo-European languages, such as the one in English, is in the larger perspective less prevalent. For example, the 'exceed' type comparative construction is the typical pattern in the West-African languages, and for illustration, we will look at comparatives from the Kwa language Ga, spoken in the Accra area of Ghana

3.1   Comparatives in Ga
Examples of comparatives in Ga are given in (6). These examples employ the verbs *fe* "surpass, exceed, be more than" and *tamɔ* "resemble, be like". Both belong to a limited class of verbs which have been called *verbids* (cf. Dakubu 2004), whose distinguishing feature is the ability to occur as the second part of a multiverb construction while *not* being subject to a requirement of argument sharing and tense/aspect agreement with the preceding verb. In effect, verbids, which are morphologically fullfledged verbs, have a function very much like that of event-modifying prepositions in a language like English:

(6)
Verbid *fe* "surpass, exceed, be more than"
a.   Ado kɛ   fe   Kofi
       Ado be.tall   exceed Kofi
       'Ado is taller than Kofi'
b.   Ado é-!kɛ́ɛɛ   fè   Kofi
       Ado NEG-be.tall.IMPERF   exceed Kofi
       'Ado is not taller than Kofi'
c.   Ado ye-ɔ   yɛlɛ pii   fe   Kofi
       Ado eat-HAB yam much   exceed Kofi
       'Ado eats more yam than Kofi'

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[6] Some opinions have already been stated in footnotes 2 and 5, however.

d. Nyέ !έ   Àdo   ye yɛlɛ pii   fe   Kofi
    Yesterday TOP Ado   ate yam much exceed Kofi
    'Yesterday Ado ate more yam than Kofi did'
e. Ado ye-ɔ   yɛlɛ pii   fe   bɔ-ní   Kòfí   yè-ɔ   amádàá
    Ado eat-HAB yam much   exceed manner-REL Kofi eat-HAB   plantain
    'Ado eats more yam than Kofi eats plantain'
f. Ado ye-ɔ   fufuí òyáòyằi fe   Kofi
    Ado eat-HAB fufu fast   exceed Kofi
    'Ado eats fufu faster than Kofi does'

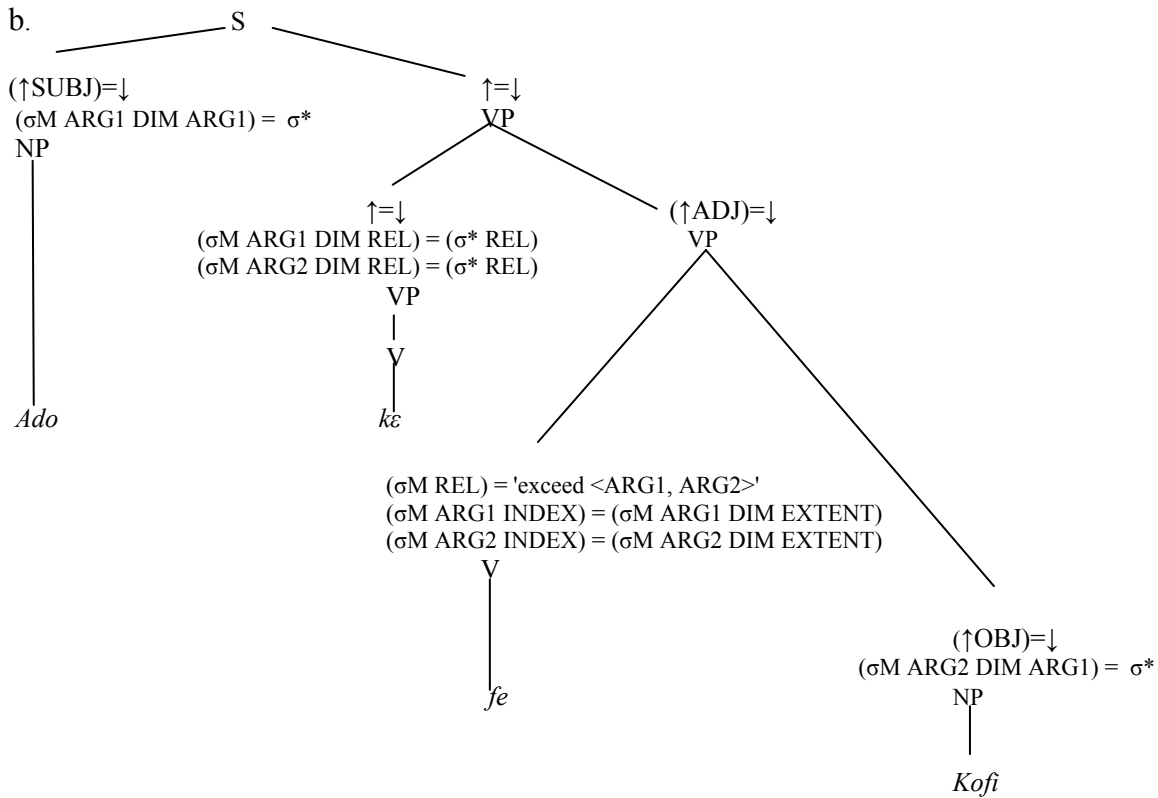Verbid *tamɔ* "resemble, be like"
g. Ado kɛ   tamɔ Kofi
    Ado be.tall   resemble Kofi
    'Ado is as tall as Kofi'
h. Ado é-!kέɛɛ   tàmɔ Kofi
    Ado NEG-be.tall.IMPERF   resemble Kofi
    'Ado is not as tall as Kofi'
i. Ado ye-ɔ   yɛlɛ tamɔ   Kofi
    Ado eat-HAB yam resemble Kofi
    'Ado eats yam as much as/ the way that Kofi does'
j. Ado ye-ɔ   yɛlɛ pii   tamɔ Kofi
    Ado eat-HAB yam much   resemble Kofi
    'Ado eats as much yam as Kofi does'
k. Ado ye-ɔ   fufuí   hwàŋhwaŋ   tamɔ Kofi
    Ado eat-HAB fufu   greedily   resemble Kofi
    'Ado eats fufu as greedily as Kofi does'

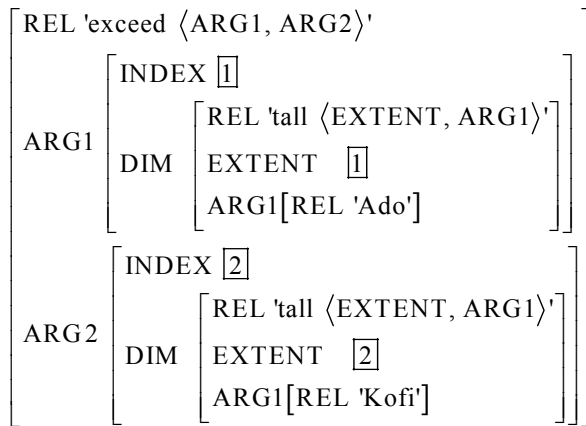*3.2   Assignment of s-structure to Ga comparatives*
A semantics of comparatives centered around a relation 'exceed' will appear quite natural for a
language of this type. The way in which this 'naturalness' can be formally spelled out is through
an annotation like the one associated with *-er* above, but with the verbid head of the second verb
phrase as the carrier of the equations. The following thus illustrates the Ga analogue of the
annotated c-structure for English given in (4), for the sentence (6a) repeated as (7a); (8) below is
in turn the associated s-structure. As argued in Dakubu (op.cit.) and Dakubu and Hellan (2003),
it is reasonable to treat the verbid VP as an adjunct relative to the preceding VP. We reflect this
assumption as well in the annotation in (7b), which combines the sigma- and the phi-functions,
the latter written with the standard up- and down-arrows.

(7)
a. (= (6a))   Ado   kɛ   fe   Kofi
               Ado   be.tall   exceed Kofi
               Ado is taller than Kofi

b.

S

(↑SUBJ)=↓
(σM ARG1 DIM ARG1) = σ*
NP

      ↑=↓
      VP

↑=↓
(σM ARG1 DIM REL) = (σ* REL)
(σM ARG2 DIM REL) = (σ* REL)
VP

V

Ado

kɛ

(↑ADJ)=↓
VP

(σM REL) = 'exceed <ARG1, ARG2>'
(σM ARG1 INDEX) = (σM ARG1 DIM EXTENT)
(σM ARG2 INDEX) = (σM ARG2 DIM EXTENT)
V

fe

(↑OBJ)=↓
(σM ARG2 DIM ARG1) = σ*
NP

Kofi

(8)   S-structure of (7a):

$$
\begin{bmatrix}
\text{REL 'exceed } \langle \text{ARG1, ARG2} \rangle\text{'} \\[4pt]
\text{ARG1} \begin{bmatrix}
\text{INDEX } \boxed{1} \\[4pt]
\text{DIM} \begin{bmatrix}
\text{REL 'tall } \langle \text{EXTENT, ARG1} \rangle\text{'} \\
\text{EXTENT } \quad \boxed{1} \\
\text{ARG1} [\text{REL 'Ado'}]
\end{bmatrix}
\end{bmatrix} \\[16pt]
\text{ARG2} \begin{bmatrix}
\text{INDEX } \boxed{2} \\[4pt]
\text{DIM} \begin{bmatrix}
\text{REL 'tall } \langle \text{EXTENT, ARG1} \rangle\text{'} \\
\text{EXTENT } \quad \boxed{2} \\
\text{ARG1} [\text{REL 'Kofi'}]
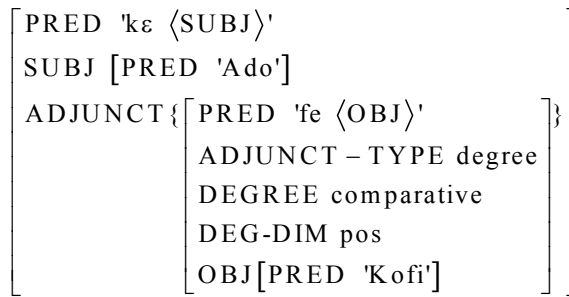\end{bmatrix}
\end{bmatrix}
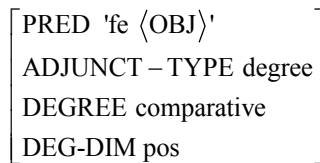\end{bmatrix}
$$

3.3   *Invariance of f-structures*

By the annotations in (7b), the f-structure for (7a) will be as in (9a), if we assume that in addition to the lexical sigma-specifications given in (7c), we have a phi-specification for *fe* as in (9b) (now using a more informal notation than in (2); we leave open here to what extent it will be motivated to classify a verbid with exactly the same attributes as have been used in the Pargram grammar for the English comparative morphology - for the purpose of comparison, we minimize these differences):

(9)

a.   *possible f-structure for (7a):*

$$\begin{bmatrix} \text{PRED} & \text{'kɛ} \langle \text{SUBJ} \rangle \text{'} \\ \text{SUBJ} & [\text{PRED 'Ado'}] \\ \text{ADJUNCT}\{ & \begin{bmatrix} \text{PRED} & \text{'fe} \langle \text{OBJ} \rangle \text{'} \\ \text{ADJUNCT} - \text{TYPE degree} \\ \text{DEGREE comparative} \\ \text{DEG-DIM pos} \\ \text{OBJ}[\text{PRED 'Kofi'}] \end{bmatrix} \} \end{bmatrix}$$

b.

$$\begin{bmatrix} \text{PRED} & \text{'fe} \langle \text{OBJ} \rangle \text{'} \\ \text{ADJUNCT} - \text{TYPE degree} \\ \text{DEGREE comparative} \\ \text{DEG-DIM pos} \end{bmatrix}$$

The main difference between (2) and (9a) is that in (2), the predication of tallness is exposed as embedded in a 'raising'-like structure, whereas in (9a), it sits at the outermost layer. Aside from this, however, they both expose the comparative as an adjunct. In this critical respect, the f-structure representations of simple adjectival[7] comparison in Ga and English thus have the same structure, in conformity with the invariance principle of f-structures.
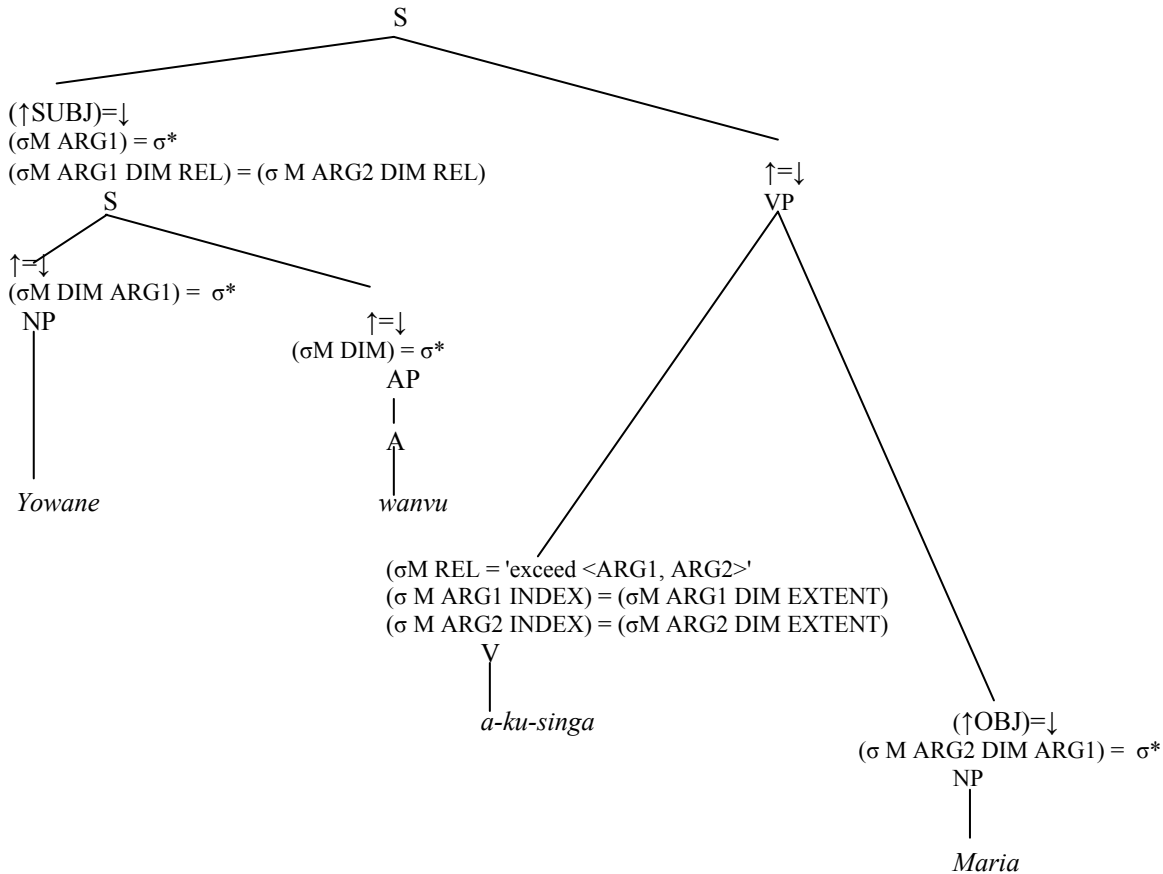
3.4   A potentially different case
Comparative constructions in Luganda, a representative of the Bantu family, employs the same 'exceed'-verb strategy as Ga, with one exception: the verbal constituent preceding the 'exceed'-verb acts like a subordinate clause. An example is given in (10a), and an approximate annotated c-structure in (10b):

(10)

a.   Yowane   mu-wanvu   a-ku-singa   Maria
       John(NL.1)   NL.1-tall   IV-INF-exceed   Maria
              John is taller than Mary

---

[7] In Ga, the relevant item is actually a verb, but this is not a matter of consequence here.

b.

S

(↑SUBJ)=↓
(σM ARG1) = σ*
(σM ARG1 DIM REL) = (σ M ARG2 DIM REL)
    S   ↑=↓
                                         VP

↑=↓
(σM DIM ARG1) = σ*
  NP   ↑=↓
              (σM DIM) = σ*
              AP

              A

Yowane   *wanvu*

(σM REL = 'exceed <ARG1, ARG2>'
(σ M ARG1 INDEX) = (σM ARG1 DIM EXTENT)
(σ M ARG2 INDEX) = (σM ARG2 DIM EXTENT)
             V

             a-ku-singa   (↑OBJ)=↓
                                         (σ M ARG2 DIM ARG1) = σ*
                                          NP

                                           Maria

In this structure, as indicated by the functional annotation, the 'exceed' verb is the head of the whole construction, whereas the predicate 'tall' is part of the SUBJ argument relative to this head verb. The s-structure induced by the sigma-annotation will be exactly the same as we have seen earlier, i.e., in this case (11) below, while in this case, it is doubtful whether the comparative expression can be counted as an adjunct.

(11)   S-structure for (10a):

$$
\begin{bmatrix}
\text{REL 'exceed} \langle \text{ARG1, ARG2} \rangle ' \\
\text{ARG1} \begin{bmatrix} \text{INDEX } \boxed{1} \\ \text{DIM} \begin{bmatrix} \text{REL 'tall } \langle \text{EXTENT, ARG1} \rangle ' \\ \text{EXTENT } \boxed{1} \\ \text{ARG1} [\text{REL 'Yowane'}] \end{bmatrix} \end{bmatrix} \\
\text{ARG2} \begin{bmatrix} \text{INDEX } \boxed{2} \\ \text{DIM} \begin{bmatrix} \text{REL 'tall } \langle \text{EXTENT, ARG1} \rangle ' \\ \text{EXTENT } \boxed{2} \\ \text{ARG1} [\text{REL 'Maria'}] \end{bmatrix} \end{bmatrix}
\end{bmatrix}
$$
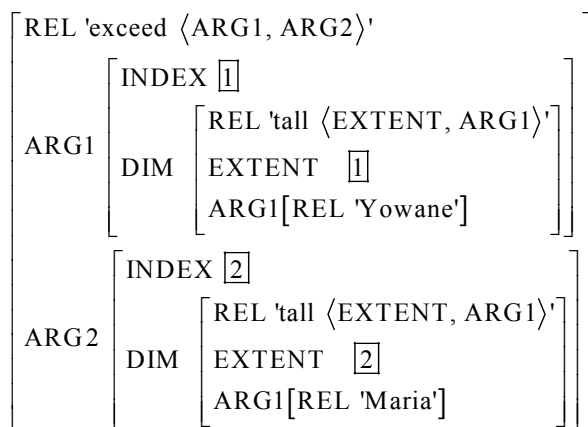
Pursuing a more careful analysis of the relevant patterns in Luganda exceeds the bounds of this note, so we leave this case as a potential challenge to the invariance principle of f-structures.

4 Summary

We have outlined a format for the specification of the semantics of comparatives, using s-structure assigned on the basis of c-structure annotation. The s-structure representations are intended to be uniform across languages, highlighting the universal notion of comparison as interrelating extents. In the current setting, for simple adjectival comparatives of three languages with highly diverse c-structures, we have induced such structures through c-structure annotation.

   More essential still to the LFG design is the invariance of f-structures relative to construction types across languages. The parallel analyses of English and Ga comparatives suggest that at least for this pair of languages, whose strategies for expressing comparison on the surface (and in c-structure) appear very different, an interesting degree of invariance can be argued to hold. Further research will show whether this will prevail throughout the 'exceed' type languages, and, of course, throughout further typological diversity.

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