

# Squibs and Discussion

A NOTE ON SUBCOMPARATIVES  
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Consider the following subcomparative constructions from English and Dutch:

- (1) a. Mary bought more cookies than Pete had sold [*e* candies].
- b. Marie kocht meer koekjes dan Piet [*e* snoepjes] had verkocht.

Bresnan (1975) proposes that there is an “understood” quantifier within the compared constituent of the subcomparative clause. Given that this position cannot be occupied by any overt quantifying element, it seems natural to assume that there is an empty category in the specifier position of the direct object noun phrases in (1).<sup>1</sup>

- (2) a. \*Mary bought more cookies than Pete had sold [three candies].
- b. \*Marie kocht meer koekjes dan Piet [drie snoepjes] had verkocht.

A question that arises is what type of empty category the *e* postulated in (1) is. Chomsky (1977) proposes that it might be a *wh*-trace generated as the result of syntactic *wh*-movement of a phonetically empty, left-branch quantifier to Comp (i.e., [Spec, CP]).<sup>2</sup> Under such an analysis, subcomparatives are de-

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<sup>1</sup> See Grimshaw 1987 for an alternative analysis according to which there is no empty quantifier within the compared constituent. A discussion of her analysis is beyond the scope of this squib.

<sup>2</sup> Chomsky (1977) notes that the tenability of the *wh*-movement analysis of subcomparatives depends on grammaticality judgments of sentences like *Mary bought more cookies than Pete believed he had sold [e candies]*, in which there appears to be an unbounded relation between a gap and an antecedent. If such sentences are considered less acceptable than their comparative equivalents (i.e., *Mary bought more cookies than Pete believed he had sold [e]*), *wh*-movement may not be involved in subcomparative formation.

rived by the same syntactic process as comparatives like *Mary bought more cookies [than Pete had sold \_\_\_\_]*, and hence the two constructions are expected to exhibit the same syntactic behavior.

In this squib I will argue, however, that subcomparatives and comparatives in languages such as Dutch and English should not be interpreted as being derived by the same syntactic process, namely, syntactic *wh*-movement. Although I will assume with Chomsky (1977) that comparatives involve *wh*-movement, I will provide evidence against a *wh*-movement analysis of subcomparatives like (1). After having established that subcomparatives have coordinate-like properties, I will propose a tentative analysis according to which the quantifier gap within the subcomparative clause is construed as a variable at LF by being locally  $\bar{A}$ -bound in an across-the-board fashion by the operator *more/meer* of the antecedent clause, which is raised and adjoined to IP at LF.

### 1 Multiple Subcomparatives

In the literature a number of arguments have already been presented against an analysis involving syntactic *wh*-movement of a quantifying element in subcomparative constructions. First, it is generally impossible to extract an overt left-branch quantifier from within the same syntactic configuration (Bresnan 1975). This is exemplified in (3). Second, in a language like Dutch it is possible to have subcompared constituents within syntactic domains that do not include a [Spec, CP] position, which functions as the landing site for the moved left-branch quantifier (Corver 1990). This is illustrated by (4), where a topicalized VP occupying the [Spec, CP] of the matrix clause contains the compared NP *meisje*.<sup>3</sup> Third, subcomparative formation does not show the cluster of properties generally associated with syntactic *wh*-movement: island behavior, *that*-trace effects (see Grimshaw 1987 for English). The absence of island behavior in Dutch is shown, for example, by (5a), in which a subcompared NP containing a quantifier gap occurs as a complement of a preposition. Normally, removal of a complement of a preposition (see Van Riemsdijk 1978)—as in (5b), the comparative equivalent of (5a)—or subextraction of an element contained within the NP complement—see (5c), involving extraction out of a *wat voor*-phrase—is excluded in Dutch.

- (3) a. \*Many<sub>i</sub> Mary bought [t<sub>i</sub> apples].  
 b. \*Veel<sub>i</sub> kocht Marie [t<sub>i</sub> appels].

<sup>3</sup> Two anonymous reviewers point out that similar examples in English mixing subcomparative formation and VP-topicalization are not very acceptable: \*? . . . and [give [more girls] an apple than [\_\_\_\_ boys] a pear]; John certainly will t<sub>i</sub>.

- (4) [VP [Meer jongens] geslagen dan [\_\_\_\_ meisjes]  
 more boys hit than girls  
 gekust]; zei Jan [CP dat [IP ie t<sub>i</sub> had]].  
 kissed said John that he had  
 'John said that he had hit more boys than he had  
 kissed girls.'
- (5) a. Jan heeft [voor [meer voetbalclubs]]  
 John has for more soccer teams  
 gevoetbald dan hij [voor [\_\_\_\_tennisclubs]]  
 played-soccer than he for tennis clubs  
 getennist heeft.  
 played-tennis has
- b. \*Jan heeft [voor meer clubs] gevoetbald dan hij  
 [voor \_\_\_\_] getennist heeft.
- c. \*Wat<sub>i</sub> heeft Jan [met [t<sub>i</sub> voor meisje]] gedanst?  
 what has John with for girl danced  
 'What kind of girl did John dance with?'

Additional evidence against a *wh*-movement analysis comes from what I will call *multiple subcomparatives*—subcomparative constructions containing more than one “sub-compared” phrase in one and the same subcomparative clause. This phenomenon is illustrated in (6) and (7) for English and Dutch, respectively.

- (6) a. John gave [more girls] [more dolls] than he had  
 given [\_\_\_\_ boys] [\_\_\_\_ pencils].
- b. I've made [as many girls] [as happy] as you've  
 made [\_\_\_\_ boys] [\_\_\_\_ unhappy].
- c. In this class [more girls] know [more Romance lan-  
 guages] than [\_\_\_\_ boys] know [\_\_\_\_ Germanic lan-  
 guages].
- (7) Jan heeft [meer meisjes] [meer peren]  
 John has more girls more pears  
 gegeven dan Marie [\_\_\_\_ jongens] [\_\_\_\_ appels]  
 given than Mary boys apples  
 heeft verkocht.  
 has sold

In these sentences the subcomparative clause contains two compared constituents, which are each being compared with a phrase of the antecedent clause. The obligatoriness of this one-to-one relation is shown by the ill-formedness of the following sentences, in which one of the compared constituents of the antecedent clause is not paired with a compared constituent of the subcomparative clause:

- (8) a. \*In this class [more girls] know [more Romance lan-  
 guages] than [three boys] know [\_\_\_\_ Germanic  
 languages].

- b. \*In this class [more girls] know [more Romance languages] than [\_\_\_\_ boys] know [three Germanic languages].

A multiple subcomparative construction like (6c) receives the following interpretation (see also Von Stechow 1984): 'The number of girls who know Romance languages is larger than the number of boys who know Germanic languages, and the number of Romance languages known by girls is larger than the number of Germanic languages known by boys'. Thus, the number of girls who speak Romance languages is being compared with the number of boys who speak Germanic languages, and the number of Romance languages spoken by girls is being compared with the number of Germanic languages spoken by boys.

The problem that these multiple subcomparatives pose for a derivation in terms of syntactic *wh*-movement is obvious. If subcomparative formation in Dutch and English involves *wh*-movement of an underlying quantifier to [Spec, CP], then multiple subcomparatives are problematic since they would involve multiple *wh*-movement to the [Spec, CP] position. That is, there would be two *wh*-elements in [Spec, CP].<sup>4</sup> As is well known, multiple *wh*-movement to [Spec, CP] is excluded in Dutch and English, because only one landing site is available. For the same reason, the following *wh*-interrogative structures are excluded:

- (9) a. \*I don't know [<sub>CP</sub> who<sub>i</sub> where<sub>j</sub> [<sub>IP</sub> John will meet t<sub>i</sub> t<sub>j</sub>]].  
 b. \*Ik weet niet [<sub>CP</sub> wie<sub>i</sub> waar<sub>j</sub> [<sub>IP</sub> Jan t<sub>j</sub> t<sub>i</sub> zal ontmoeten]].

Multiple comparison within a normal comparative clause is predicted to be impossible, on the assumption that the derivation of comparative constructions involves syntactic *wh*-movement to [Spec, CP]. In fact, this prediction is borne out, as illustrated by the following sentences:

- (10) a. \*[More men] sold [more apples] than [\_\_\_\_] had bought [\_\_\_\_].  
 b. \*John has given [as many boys] [as many parcels] as I've sent [\_\_\_\_] [\_\_\_\_].  
 c. \*I consider [as many boys] [as intelligent] as you consider [\_\_\_\_] [\_\_\_\_].

The multiple subcomparison facts strongly suggest that subcomparative constructions in English and Dutch should not be considered the result of *wh*-movement to [Spec, CP]. But if

<sup>4</sup> It is unlikely that the multiple gap constructions in (6) are analyzed as parasitic gap constructions; left-branch quantifier gaps are not permitted in "normal" parasitic gap environments, for example, inside an adverbial clause: \*I throw away more books than I file [\_\_\_\_ papers] without reading [\_\_\_\_ abstracts] (Grimshaw 1987).

there is a silent quantifier within the compared constituent and if this empty category is not the result of *wh*-movement between D-Structure and S-Structure, then what is the nature of this gap and how is it licensed? In the next section I argue that the empty category in the subcomparative clause is interpreted as a variable at LF. In particular, I propose that the antecedent clause and the subcomparative clause enter into a coordinating relation, and that the empty category is construed as a variable by being locally  $\bar{A}$ -bound by the raised quantifier of the antecedent clause in an across-the-board fashion at LF.

## 2 Coordination and ATB Binding

There are various indications that subcomparatives have a coordinate-like structure. First, they allow gapping, as illustrated in (11a) and (11b) for English and Dutch, respectively (see also Huang 1977, Thiersch 1982). Second, subcomparatives exhibit right-node-raising effects (see (12)). Third, across-the-board (ATB) syntactic movement occurs in subcomparative constructions, as illustrated in (13a), where the *wh*-phrase *which actress* has been moved in an ATB fashion to [Spec, CP].

- (11) a. John knows more Romance languages than Pete Germanic languages.  
 b. Jan kent meer Romaanse talen dan Piet Germaanse talen.
- (12) As many women like, as men hate [the man with the red beard].
- (13) a. Which actress<sub>i</sub> do as many women hate t<sub>i</sub> as men like t<sub>i</sub>?  
 b. \*Which actress<sub>i</sub> do as many women hate t<sub>i</sub> as men like Sue?

The above-mentioned processes are all characteristic of coordinate structures, which leads to the assumption that subcomparative constructions are coordinating. The elements *than/as* in English and *dan/als* in Dutch seem to be able to function as coordinators conjoining the antecedent clause (the left conjunct) and the subcomparative clause (the right conjunct).<sup>5</sup>

Notice now the following parallelism effect in subcomparative structures (the examples in (14) are taken from George 1980).

- (14) a. John killed [more Englishmen] than the Inquisition burned [\_\_\_\_ Frenchmen].  
 b. \*John killed [more Englishmen] than [\_\_\_\_ Frenchmen] fought the Inquisition.

<sup>5</sup> For an interpretation of *than/as* as a coordinator, see also Hendrick 1978 and Emonds 1985, among others.

- c. [More Frenchmen] revered John than [\_\_\_\_ Englishmen] adored Sir Thomas.
- d. \*[More Frenchmen] revered John than Sir Thomas More converted [\_\_\_\_ Englishmen].

In (14a) the two compared NPs are direct objects; in (14c) they are subjects. In the ill-formed structures (14b,d) the compared NPs are not in parallel positions.

Parallelism effects typically occur in coordinate structures in which extraction is involved (ATB movement). In (14), however, the parallelism effect does not seem to be due to syntactic movement (i.e., movement between D- and S-Structure). As shown earlier, syntactic *wh*-movement is not at the basis of subcomparative constructions. How then can we account for the parallelism effect in (14), if no syntactic movement is involved? Possibly, this parallelism effect is due to movement at LF.

We might assume now that in a sentence like (1a), repeated here as (15a), the quantifier *more* is raised out of the NP in the antecedent clause (i.e., the left conjunct), yielding an LF form along the lines in (15b). The gap within the subcomparative clause (i.e., *e* in the S-Structure representation (15a)) is construed as a variable at LF: the empty category is locally  $\bar{A}$ -bound in an ATB fashion by the raised quantifier of the antecedent clause, which is adjoined to IP.<sup>6</sup>

<sup>6</sup> An *LI* reviewer correctly raises the question of why LF movement of a left-branch quantifier is permitted, whereas S-Structure movement is not (e.g., *\*More Mary bought [\_\_\_\_ cookies]*). Presumably, the ill-formedness of this sentence is due to the Empty Category Principle (ECP). If the ECP applies to LF movement, one would expect a representation like (15b) to be ruled out for the same reasons. If we adopt a phrase structural analysis according to which a phrase like *more cookies* is headed by the  $Q^0$  *more* and *cookies* is an NP complement of this head (i.e., [<sub>QP</sub> *more* [<sub>NP</sub> *cookies*]]); see, e.g., Watanabe 1991), this asymmetrical behavior may be dealt with along the following lines: S-Structure movement of the left-branch quantifier yields an ECP violation, since the fronted  $Q^0$  cannot escape the barrierhood of dominating maximal projections (e.g., VP), given the structure preservation requirement on S-Structure adjunction operations (Chomsky 1986). The asymmetry between S-Structure movement and LF movement may now follow from the stipulation that the structure preservation constraint on adjunction does not hold for LF movement; that is, an LF-raised  $Q^0$ -head can adjoin to a dominating maximal projection like VP and escape its barrierhood, thereby escaping an ECP violation. Furthermore, it should be noted that the asymmetry between S-Structure movement and LF movement is a more widespread phenomenon, which goes beyond the scope of this squib: syntactic movement of the phrase *each professor*, for example, yields a *that*-trace effect, ultimately reducible to the ECP: *\*Each professor John thinks that \_\_\_\_ is stupid*. LF movement of the quantified element is permitted, however: *Some student thinks that each professor is stupid*. That is, *each (professor)* can have wide scope.

- (15) a. [<sub>IP</sub> Mary bought more cookies than Pete had sold  
[e candies]]  
 b. more  $x_i$   $\left[ \begin{array}{l} [\text{IP Mary bought } [x_i \text{ cookies}]] \\ \text{IP}[\text{IP Pete had sold } [x_i \text{ candies}]] \end{array} \right]$  than

If we adopt the idea that the variable contained within the compared phrase of the subcomparative clause is licensed via ATB  $\bar{A}$ -binding, the ungrammaticality of (14b,d) follows. The gap in the subcomparative clause is contained within an NP that is not “parallel” to the quantified NP of the antecedent clause. Consequently, the gap in the subcomparative clause cannot be  $\bar{A}$ -bound in an ATB fashion. In (14a,c), on the other hand, the empty category can be interpreted as a variable by being  $\bar{A}$ -bound in an ATB fashion by the raised quantifier *more*, which is adjoined to IP at LF.<sup>7</sup>

In multiple subcomparatives like (6a), the two quantifiers of the antecedent clause are raised at LF and adjoined to IP. Each quantifier  $\bar{A}$ -binds in an ATB fashion the empty category contained within the parallel compared phrase:

- (16) more  $x_i$ , more  $y_i$   
 $\left[ \begin{array}{l} [\text{IP John gave } [x_i \text{ girls}] [y_i \text{ dolls}]] \\ \text{IP}[\text{IP he had given } [x_i \text{ boys}] [y_i \text{ pencils}]] \end{array} \right]$  than

Since ATB licensing of a quantifier gap in subcomparative structures requires a coordinate-like configuration, one would predict subcomparative formation to be impossible in syntactic contexts in which the subcomparative clause is in a clearly subordinate position with respect to the antecedent clause. This prediction is borne out, as indicated by the following examples (see also Pinkham 1982):

- (17) a. \*<sub>[NP</sub> Fewer robbers [than [\_\_\_ thieves] escaped]]  
 were captured by the police.  
 b. Fewer robbers were captured than [\_\_\_ thieves]  
 escaped.  
 (18) a. \*John gave <sub>[NP</sub> more books [than he had given  
 [\_\_\_ pencils] to Sue]] to his best friend Peter.  
 b. John gave more books to his best friend Peter than  
 he had given [\_\_\_ pencils] to Sue.

<sup>7</sup> Example (4), in which a topicalized VP contains a subcompared phrase, can now be analyzed as follows: *dan* functions as a coordinator conjoining two VP conjuncts. The quantifier of the left VP conjunct is raised and adjoined to the coordinated VP. The raised QP locally  $\bar{A}$ -binds the two quantifier gaps in an ATB fashion, and these gaps are then interpreted as variables.

- (19) a. \*[How many more records than Sue owns [\_\_\_\_ books]]; will John buy  $t_i$ ?  
 b. [John will buy more records than Sue owns [\_\_\_\_ books]].

In (17a), (18a), and (19a) the subcomparative clause is clearly subordinate to the quantified antecedent phrase. Consequently, ATB  $\bar{A}$ -binding of the empty category contained within the NP of the subcomparative clause is excluded. The gap remains uninterpreted, yielding an ill-formed sentence. In (17b), (18b), and (19b), on the other hand, the antecedent clause (IP) and the subcomparative clause (IP) can be interpreted as being coordinative, where *than* functions as the coordinating conjunction. Hence, in these sentences the empty category contained within the subcomparative clause can be construed as a variable by being locally  $\bar{A}$ -bound in an ATB fashion by the raised quantifier of the antecedent clause.

Note that comparative formation, as opposed to subcomparative formation, is allowed when the comparative clause is in a subordinate position:

- (20) a. As many prisoners as \_\_\_\_ escaped yesterday have been captured today.  
 b. John gave more books than he had given \_\_\_\_ to Sue to his best friend Peter.  
 c. [How many more records than Sue owns \_\_\_\_]; will he buy  $t_i$ ?

The comparative clause need not be in a coordinate relation with another clause in order to license the empty category, since the ‘‘compared’’ gap is already locally  $\bar{A}$ -bound by the operator, which has been moved to [Spec, CP] between D- and S-Structure (Chomsky 1977).

In conclusion, the asymmetrical behavior of comparative formation and subcomparative formation (e.g., the ill-formedness of multiple comparison versus the well-formedness of multiple subcomparison; the well-formedness of comparative formation in subordinate contexts versus the ill-formedness of subcomparative formation in subordinate contexts) argues against the hypothesis that comparative and subcomparative constructions are derived by one and the same syntactic process.

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DETACHING INTONATIONAL  
PHRASES FROM SYNTACTIC  
STRUCTURE

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Unlike earlier models of prosodic structure (Selkirk 1980, Nespor and Vogel 1986), which postulated a hierarchical set of prosodic constituents each with its own specific constraints, more recent work on the mapping from syntax to prosody has explored the possibility that prosodic structure can be derived from surface syntactic structure by a unified set of primitives combining language-specific parameters and universal constraints. Specifically, Selkirk (1986), following Chen (1987), has proposed that the basic constraint is that the Right (or Left) end of each syntactic constituent of type  $X^n$  in the X-bar hierarchy should coincide with the edge of a constituent of a given type in prosodic structure. Selkirk maintains, however, that this analysis does not extend up to the level of the inton-

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