Incomplete Comparatives as Ellipsis

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Abstract: In this paper, I give an analysis of certain incomplete comparatives in terms of ellipsis. My main arguments for this analysis are the interpretation of pronouns (sloppy vs. strict) and the interpretation of quantifiers (including inverse scope). I show that deleted comparative phrases block extraction of wh-phrases, which is unexpected on a deletion account. I proposed that deleted comparative phrases are islands for overt movement.

Key words: comparatives, strict versus sloppy interpretations, inverse scope, syntactic identity, parallelism

1. Introduction

Following Sheldon (1945) (see also Schwarzschild 2010), I will call a comparative sentence without a *than/as*-phrase an incomplete comparative. Some examples are in (1):

- (1) a. John is taller than Mary, but Bill is shorter
 - b. John is taller than Mary, and Bill is taller too.

The phrase *than Mary* in the first conjunct is the antecedent for an understood comparative phrase in the second conjunct. I claim that the structure of (1) involves a deleted comparative phrase, as in (2) (<...> indicates an unpronounced constituent).

- (2) a. John is taller than Mary, but Bill is shorter <than Mary>
 - b. John is taller than Mary, and Bill is taller <than Mary> too.

I will show that there is evidence for a deletion analysis from strict and sloppy identity and quantifier interpretation (see also Partee 2004: 264, 270 on incomplete comparatives).

2. Range of Phenomenon

Deletion is also possible with equatives:

(3) John is as big as Mary, but not as fast <as Mary>

Terminologically, I group such cases as (3) and (1) together and call them both comparative phrase deletion.

Comparatives and equatives can be combined:

- (4) a. John is bigger than Mary, but not as fast <as Mary>
 - b. John is as fast as Mary, but he is not faster <than Mary>.

In (4) even though *than Mary* is not identical to *as Mary*, deletion is still possible. This lack of identity bears on the analysis of the identity condition on ellipsis. I return to this issue in section 5.

Furthermore, deletion is also possible with quantity comparatives and equatives:

- (5) a. John has as many pencils as Mary, but not as many pens <as Mary>
 - b. John has more pencils than Mary, and also more pens <than Mary>.

Once again, one can combine equatives and comparatives:

- (6) a. John has as many pencils as Mary, but more pens <than Mary>
 - b. John has more pencils than Mary, but not as many pens <as Mary>.

Deletion of the comparative phrases of adverbial adjuncts is also found:

- (7) a. John ran faster than Mary, but Bill ran longer <than Mary>
 - b. John ran faster than was required, and Bill ran slower <than was required>

Whereas example (7a) involves a phrasal comparative (*than Mary*), (7b) involves a clausal comparative (*than was required*) where a finite clause follows *than*. Some further examples of clausal comparatives are given below:

(8) John₁ is faster than everybody thought he₁ would be, and Bill₂ is stronger <than everybody thought he₂ would be>

However, there is variation in acceptability:

- (9) a. John bought more pens than Mary, and Bill bought more pencils <than Mary>
 - b. John₁ bought more pens than he₁ needed, and Bill₂ bought more pencils <than he₂ needed>

While everybody finds (9a) acceptable, with deletion of <than Mary>, some (but not all) people find (9b) degraded with deletion of <than he needed>. I will not investigate this variation in the paper.

Phrases corresponding to different elements of the main clause may occupy the deleted *than/as*-phrase:

(10) a. John has more cats than Mary, and Bill has more dogs <than Mary>.

b. John has more cats than gerbils, (than-object) and Bill has more dogs <than gerbils>

(11) a. John generally plays more golf than Mary, and Bill plays more tennis <than Mary>.

- b. John does more swimming than jogging, (than-object) and Mary does more aerobics <than jogging>
- (12) a. In this class, John studies harder than Mary, and Bill does not study as hard <as Mary>. (than-subject)
 - b. In this class, there are more freshmen than sophomores, and fewer juniors <than sophomores>. (than-associate)

3. Strict and Sloppy Identity

The deletion of comparative clauses gives rise to strict and sloppy interpretations, exactly as VP deletion does. Consider (13):

(13) John is as tall as his father, but Bill is taller.

This sentence has two distinction interpretations:

- (14) a. John₁ is as tall as his₁ father, but Bill₂ is taller than his₁ (John's) father.
 - b. John₁ is as tall as his₁ father, but Bill₂ is taller than his₂ (Bill's) father.

Since these are the same interpretations that obtain with an overt comparative phrase, illustrated in (15), the ambiguity in (13) provides evidence for the deletion account (but see Merchant 2013 who claims that strict and sloppy readings do not provide evidence for ellipsis).

- (15) John is as tall as his father, but Bill is taller than his father.
 - a. John₁ is as tall as his₁ father, but Bill₂ is taller than his₁ father.
 - b. John₁ is as tall as his₁ father, but Bill₂ is taller than his₂ father.

The sloppy readings also obtain with quantified antecedents:

(16) [Every 18 year old boy]₁ is taller than his₁ father, but [every 10 year old boy]₂ is shorter <than his₂ father>.

The sloppy reading also obtains if there is a mismatch in gender, a phenomenon familiar from VP-ellipsis:

(17) [Every boy]₁ is taller than his₁ father, but [every girl]₂ is shorter <than her₂ father>.

4. Quantifier Scope

The deleted *than/as*-phrase can contain a quantifier:

(18) John is taller than many of the girls, and Bill is shorter <than many of the girls>.

This can be true if the group of girls that John is taller than is not the same as the group of girls that Bill is shorter than. This basic fact argues against a null pronoun approach to deleted *than/as*-phrases, since the interpretation of (18) differs from that of (19):

(19) John is taller than many of the girls, and Bill is shorter than them.

To the extent that this is acceptable, it must be that *them* refers back to the girls that John is taller than.

The quantifier facts also argue against a pragmatic approach where the standard of comparison of *shorter* in (18) is set to some contextually specified set. The problem is that there is no contextually specified set that is exactly the set of girls that Bill is shorter than. As noted, Bill does not have to be shorter than the same girls that John is taller than. Furthermore, Bill does not have to shorter than all girls. Rather, Bill has to be shorter than many of the girls, and the set of girls that Bill is shorter than is not referred to by any constituent in the first conjunct.

The same point can be made with quantifiers and sloppy identity:

(20) John is taller than most of the girls in his class, and Bill is shorter <than most of the girls in his class>

This sentence can have a sloppy interpretation, where John and Bill are in different classes. On that interpretation, the two groups of girls concerned are disjoint (from different classes). Because of this it is not possible to paraphrase (20) with any kind of pronoun:

- (21) John is taller than most of the girls in his class, and Bill is shorter than them.
- (21) can mean that Bill is shorter than the girls that John is taller than, but it cannot have the sloppy reading of (20).

In some cases, the comparative complement contains a quantifier that takes wide scope over a subject quantifier, giving rise to inverse scope:

(22) Some 10 year old is 1 inch shorter than every 11 year old.

On the inverse scope interpretation (which some people find difficult), this means:

- (23) For every 11 year old x, there is a 10 year old y such that y is 1 inch shorter than x.
 - (22) should be compared with (24):
- (24) Some 10 year old is 1 inch taller than every 11 year old is.
- (24) clearly lacks the inverse scope interpretation of (22). This suggests that not all phrasal comparatives are underlyingly clausal, as pointed out to me by Roger Schwarzchild. The inverse scope interpretation survives deletion:

(25) Some 10 year old is 1 inch shorter than every 11 year old, and some 12 year old is 1 inch taller <than every 11 year old>

When the first clause is interpreted with inverse scope, the natural interpretation for the second clause in (25) is with inverse scope as well. That is, *every 11 year old* takes scope over *some 12 year old*. I return to a more detailed analysis of (25) in (37) below.

An alternative analysis of (25) is that the universal quantifier *every 11 year old* takes scope over both clauses of the comparative construction, binding a pronoun in the second conjunct:

(26) [Every 11 year old]₁ [some 10 year old is shorter than t₁ and some 12 year old is taller <than pron₁>].

Evidence for this wide scope universal quantifier analysis comes from the following sentence, which does seem to (at least marginally) have the wide scope universal interpretation (where *him* is interpreted as a bound variable pronoun):

(27) Some 10 year old is 1 inch shorter than [every 11 year old]₁, and some 12 year old is 1 inch taller than him₁/the same person₁

On the analysis in (26) there is no evidence that what has been deleted is a quantifier. Rather, what would be deleted in (26) is a pronoun or noun phrase such as that found in (27). The following example avoids this issue:

(28) John is taller than some girl from every class, and Bill is shorter <than some girl from every class>

In (28), it is not necessarily the case that John and Bill are taller and shorter respectively than the same girls. For example, considering the class of freshman, John could be taller than Mary, and Bill could be shorter than Sue (but taller than Mary). Therefore, the following LF-representation will not work (DP₁ is the lower copy of [every class]₁).

(29) [every class]₁ [some girl from DP₁]₂ [John is taller than DP₂ and Bill is shorter <than pron₂>].

In fact, the interpretation of (29), where there is bound variable pronoun, is that of (30):

(30) John is taller than [some girl from every class]₂, and Bill is shorter than her₂.

The only reading of (30) is that John and Bill are taller and shorter respectively than the same girls.

The intended interpretation of (28) is given by the LF representation in (31):

[[every class]₁ [some girl from DP_1]₂ [John is taller than DP_2] and [every class]₁ [some girl from DP_1]₂ [Bill is shorter than DP_2]]

Alternatively the following representation yields the same truth conditions (where the universal quantifier scopes over both conjuncts):

[some girl from DP_1]₂ [John is taller than DP_2] and [some girl from $pron_1$]₂ [Bill is shorter than DP_2]

For either (31) or (32), it is necessary for the deleted phrase to contain a quantifier (not just a pronoun as in (29).

5. Identity and Parallelism

Consider again the examples from section 2 that showed a *than*-phrase as the antecedent of a deleted *as*-phrase, and vice versa:

- (33) a. John is bigger than Mary, but not as fast <as Mary>
 - b. John is as fast as Mary, but he is not faster <than Mary>.

These examples are problematic for a strict syntactic interpretation of the identity condition on deletion, stated below:

(34) Syntactic Identity

A comparative phrase X is deleted under syntactic identity with an antecedent comparative phrase.

In order to give an analysis of (33), consider the relationship between the comparative morpheme (such as *more/-er*) and the *than*-phrase. Bresnan 1973: 338 argues that the *than*-phrase is introduced by the comparative *-er* morpheme: "The co-occurrence between each clause and its governing determiner is easily stated in this assumption. Since the distance between the extraposed clause and its associated determiner can be extended at will, it would be hard to express the co-occurrence otherwise."

Arguing against Bresnan, Larson and Wellwood 2015 claim that "...comparative clauses adjoin to the extended projection of the NP or VP containing the comparative morpheme, and enter into an agreement relation with that morpheme." (see also Alengra, Kennedy and Merchant 2013: 39 for another agreement analysis).

In order to approach this problem, I adopt the analysis of *than* and *as* from Larson and Wellwood 2015: "The form of the than-head is determined via agreement with the degree head, whose form is fixed and encodes the basic comparative semantics." Under this analysis, the form of the head of the comparative phrase is *than* if the degree head is -er, and the form of the head of the comparative phrase is *as* if the degree head is *as*.

But then the mismatch can be understood by the mechanism postulated in Chomsky (1965: 179): "...the features added to a formative by agreement transformations are not part of the formative in the same sense as those which are inherent to it or as those which it assumes as it enters a Phrase-marker.... in the case of Adjectives and the copula (also Verbs, which take part in similar rules) the inflectional features that are added by agreement transformations are

apparently not considered in determining whether the item in question is strictly identical with some other item."

In summary, the agreement approach to *than/as* allows avoidance of a violation of the identity condition in the analysis of (33). The facts in (33) also bear on the semantic analysis of comparatives. A possible analysis of a sentence such as *John is bigger than Mary* is that the *than*-phrase is a quantifier binding a degree variable in the main clause. A parallel analysis can be given of equatives, where in *John is as tall as Mary*, the *as*-phrase is a different quantifier binding a degree variable in the main clause. The facts in (33) argue against such an analysis, because if an *as*-phrase were a quantifier different from a *than*-phrase, an *as*-phrase should not be able to serve as an antecedent for the deletion of a *than*-phrase (nor vice versa). As a matter of fact, standard semantic analyses of *than/as*-clauses do not analyze then as quantifiers, but rather as the restriction of a quantifier contributed by the comparative marker (e.g., *-er/more*).

Consider now the parallelism condition on the deletion of comparative phrases. Although the two clauses may be conjuncts, there is no requirement that they be conjuncts:

- (35) a. Bill bought more books than Mary, and John bought more pens <than Mary>
 - b. Because Bill bought more books than Mary, John bought more pens <than Mary>
 - c. Whenever John runs faster than Mary, Bill runs slower <than Mary>.

In this way, comparative phrase deletion differs from gapping, stripping and relative clause deletion (on the latter, see Collins 2015a).

With these facts in mind, parallelism can be formulated as follows (F(XP) is the focus value of XP as in Fox 1999):

(36) Parallelism

Comparative phrase deletion can only take place in the following structure:

[$_{XP1}$...A...[-er/as Antecedent].....] [$_{XP2}$...B...[-er/as <comparative phrase>]] where B is focused and XP_1 is a member of $F(XP_2)$, the focus value of XP_2 .

I assume a model of syntax where there is no covert movement (operating between Spell-Out and LF). Rather, all movement takes place in the same component, but for QR ("quantifier raising") only the tail and not the head of the movement chain is spelled out (see Fox 2003 for discussion and references). Furthermore, while I assume the copy theory of movement, I only represent one occurrence of the moved constituent.

Consider example (24) above from the perspective of Parallelism. The LF of (24) is given in (37). Note that the higher occurrences of [every 11 year old] are not spelled-out, nor is the deleted constituent <than $DP_1>$ in the second conjunct.

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[<[every 11 year old]<sub>1</sub>> [some 10 year old is 1 inch shorter than DP<sub>1</sub>]] and [<[every 11 year old]<sub>1</sub>> [some 12 year old is 1 inch taller <than DP<sub>1</sub>>]]
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 XP_1 is the LF representation in the first conjunct in (37) and XP_2 is the LF representation in the second conjunct. A is the pair of words 10 and short and B is is the pair of words 12 and tall. The <comparative phrase> is the deleted constituent <that DP_1 >.

According to Parallelism, the antecedent XP_1 has to be in the focus value of the second clause XP_2 . The focus value of XP_2 is defined as the set of LF representations which are

alternatives to XP_2 : $F(XP_2) = \{S: \exists x\exists y [S = [[every 11 year old]_1 [some x year old is 1 inch y-er than <math>DP_1]\}$ where x ranges over numerals that are alternatives to I2 and y ranges over adjectives that are alternatives to I3 is an element of I3 since I3 is of the syntactic form I3 [[every 11 year old]_1 [some x year old is 1 inch y-er than I3 [some x year old]_1 is satisfied.

However, in some cases, it looks like there is no linguistic antecedent for the deletion. The examples given by Sheldon (1945: 163) are all good without linguistic antecedents:

- (38) a. Come out onto the porch; it is cooler here.
 - b. I've rewritten this sentence. Do you like it better?
 - c. Go get some marbles from John; he has more.
 - d. How are you feeling? Better, thank you.

In commenting on these examples, Schwarzchild (2010: 89) argues against an ellipsis approach (see also Larson and Wellwood 2015, and Hendriks and de Hoop 2001: 9, ex. (11)): "The way Sheldon expresses the completions suggests the idea that the Standard Phrase has been elided. That seems wrong to me, as there is no antecedent for the ellipsis in the discourses provided nor does one seem necessary."

Rather Schwarzchild argues in favor of an approach based on a contextual variable C restricting the comparative morpheme (-er/more), in much the same way as Von Fintel 1994 claimed that the domain of quantification is restricted contextually: "So treating the 'completion' of incomplete comparatives like a quantifier domain restriction means adding a domain variable..." (pg. 97). Furthermore, Schwarzchild suggests that the value of the contextual variable C is fixed by pragmatic rules, which he does not elaborate on.

It is unclear to me that Sheldon's examples cannot be analyzed in terms of ellipsis. For example, in the case of (38a) the deleted constituent would be <than inside> or possibly <than in there>. Under such an approach to the sentences in (38), not all deletions would be restricted by parallelism in (36) (see Collins and Postal 2012 on 'ghosting'). Such an approach to ellipsis should have far reaching consequences that I will not explore here.

However, even if an ellipsis account for (36) does not work, it is still possible that some cases of incomplete comparatives should be analyzed in terms of ellipsis. In fact, the quantifier facts presented in section 4 would be difficult explain without ellipsis, since the elided structure contains a quantifier that is needed for interpretation.

For example, take Schwarzschild's approach in terms of a contextual variable C on the comparative marker. Such an approach is incapable of introducing a quantifier meaning into the LF representation of an incomplete comparative, since such an approach can only introduce a set of some kind (C is a set of degrees that the comparative marker quantifies over). A similar point is made about quantifier domain restriction by Collins (2015b).

6. Extraction

It is often noted that extraction is possible from a VP that has been elided, as illustrated in (41) below (from Johnson 2008: 5):

(41) I know which problems you've solved but I don't know which you haven't [VP].

Furthermore, this fact is used to justify an analysis of ellipsis where the syntactic structure of the VP is present, but unrealized phonetically. Under an approach where the elided VP was simply not present syntactically, or where the elided VP was a null pro-form (as in Lobeck 1995), it is predicted that extraction from a VP that has been elided would be impossible.

With this background, consider extraction from a deleted *than/as*-phrase. In (42), extraction from an *as*-phrase is possible. But if the *as*-phrase is deleted, the extraction is no longer possible:

- (42) a. Who is John as big as, and who is he as fast as?
 - b. *Who is John as big as, and who is he as fast?

Other examples illustrated the same generalization:

- (43) a. Who is John as big as and as fast as?
 - b. *Who is John as big as and as fast?
- (44) a. Who is John bigger than, and who is John faster than?
 - b. *Who is John bigger than, and who is John faster?
- (45) a. Who is John bigger than and faster than?
 - b. *Who is John bigger than and faster?

In all cases, deletion of the comparative phrases prevents extraction from the comparative phrase. Such facts would follow if incomplete comparatives involved no covert *than/as*-phrase at all (as in the theory of contextual variables argued for by Schwarzchild 2010, see also Larson and Wellwood 2015).

Even though the absence of comparative phrase deletion would lead to a natural explanation of the facts in (42-45), it does not follow that that there is no comparative phrase deletion. Rather, the sentences in (42-45) could be ruled out by other principles, even if there is comparative phrase deletion. In fact, this is the strategy followed by Aelbrecht (2012), who studies Modal Complement Ellipsis (MCE) in Dutch in great detail. She shows that even though there are strong reasons to think that MCE involves ellipsis, it is not possible to extract objects from the ellipsis site.

So I propose:

(46) Deleted *than/as*-phrases are islands for overt movement

Of course, for this to be convincing, I need to give some reason why deleted *than/as*-phrases (but not deleted VPs and TPs) are islands for overt movement but not for QR. The principle in (46) also brings up questions of the ordering of operations. If extraction took place before deletion, then the *than/as*-phrase should not be an island (since the extraction would not violate (46)).

It is not possible to test whether the generalization in (46) holds for clausal comparatives, since *than/as*-clauses seem to be islands:

(47) a. John watches TV more than Bill reads novels.

- b. ?*What kind of novel does John watch TV more than Bill reads?
- c. ?*This is the kind of novel that John watches TV more than Bill reads.

However, a *than/as*-clause can contain a parasitic gap (see Engdahl 1983). In the examples below, the gap in the *than*-clause is parasitic on the gap in the main clause.

a. What kind of vegetable does John like __ more than Mary likes __?
b. What kind of vegetable does John like __ more than Mary does ike __>?
c. What kind of vegetable does John like __ more than Mary ikes __>?

The following examples show that a *than/as*-clause containing a parasitic gap may be deleted:

- (49) This is the kind of vegetable that John likes __ more than Mary likes __, and that Bill likes __ less <than Mary likes __ >
- (50) This is the kind of vegetable that John likes __ more than Mary likes __. And that is the kind of vegetable that Bill likes __ less < than Mary likes __ >.
- (51) What kind of vegetable does John like __ more than Mary likes __ ? and, what kind of vegetable does Bill like __ less <than Mary likes __ >?
- (52) Every book that John likes __ more than Mary likes __, Bill likes __ less <than Mary likes __>
- (53) Every book that John read __ more than Mary told him to __, Bill read less <than Mary told him to >

These sentences seem awkward but acceptable. But these examples do not show it is possible to extract from a deleted *than/as*-clause, since parasitic gaps in *than/as*-clauses may not involve extraction from the *than/as*-clause (as in Chomsky's 1986 empty operator theory of parasitic gaps).

7. Conclusion

In this paper, I have given an analysis of certain incomplete comparatives in terms of ellipsis. My main arguments for this analysis are the interpretation of pronouns (sloppy vs. strict) and the interpretation of quantifiers (including inverse scope). I have pointed out deleted comparative phrases block extraction of wh-phrases, which is unexpected on a deletion account. I proposed that deleted comparative phrases are islands, but did not provide a deeper account of why some deleted constituents (VP deletion) do not block extraction but some do.

I have left open the question of whether all incomplete comparatives can be analyzed in terms of ellipsis. Since some incomplete comparatives arguably involve deletion, the most uniform and elegant account would be that all incomplete comparatives involve deletion.

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