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Case and Identity in Comparative Deletion

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1 Varieties of "missing" constituents in comparatives

(1) Jones published more papers than Smith published ø/*[3 papers]. *Comparative deletion*
(2) Jones published more papers than Smith published ø/*[3] books. *Subdeletion*

- *Wh*-movement (Chomsky 1977) or deletion (Bresnan 1973, 1975) of DP or degree term.

(3) a. Jones published more papers than Smith did ø. *Comparative ellipsis*
b. Jones published more papers than Smith ø.
c. Jones published more papers than Smith did ø radical [1]pamphlets.
d. Jones published more papers than Smith ø radical pamphlets.
e. Jones published more papers than radical pamphlets ø.

- Comparative deletion plus some other ellipsis operation, e.g., VP-deletion, (pseudo-)gapping, stripping (Hankamer 1971, Napoli 1983, etc.).

(4) Jones published more papers than Smith thought/expected/predicted. *"Missing CPs"*

- CD plus CP ellipsis or null complement anaphora (cf. Napoli 1983)? Unlikely, since many of these verbs do not allow NCA (e.g., *think, expect, predict*), and CP ellipsis is otherwise unattested in English (Merchant in preparation).

Our proposals
1. "Missing CP comparatives" involve movement of a null (pro)nominal expression from the base position of the missing constituent, not CP ellipsis.
2. Comparative deletion constructions can be analyzed in the same way, solving an old puzzle involving comparative deletion and strict/sloppy identity (Bach, Bresnan and Wasow 1974).

2 Case and missing CP comparatives

In missing CP comparatives involving unaccusative predicates (e.g., adjectives and passive verbs), an expletive may <u>not</u> appear in subject position:

(5) Jones published more papers than (*it) was necessary.
(6) The committee took much longer to decide than (*it) was expected.
(7) The mission turned out to be more expensive than (*it) was originally predicted.
(8) The storm inflicted an even greater amount of damage than (*it) was first reported.

This is surprising, since the putative sources for an ellipsis analysis are perfectly acceptable:

(9) Jones published more papers than it was necessary [for him to (publish)].
(10) The committee took much longer to decide than it was expected [that they would (take to (decide))].
(11) The mission turned out to be more expensive than it was originally predicted [that it would be].
(12) The storm inflicted an even greater amount of damage than it was first reported [that it would (inflict)].

THE CONCLUSION: The missing constituent in (5)-(8) must get Case.

Syntactic analysis

The missing constituent in "missing CP comparatives" is a phonologically null nominal expression that originates in the position of the missing CP, which we will assume to be a variant of the overt *wh*-phrase in questions like (13) and comparatives like (14) (which shows the same sensitivity to Case).

(13) What was (*it) necessary/expected/predicted/reported?
(14) The committee took much longer to decide than what was (*it) expected.

(15) Jones published more papers than $[_{CP}$ ~~what~~ $[_{IP}$ *t'* was necessary *t*]]
(16) The committee took much longer to decide than $[_{CP}$ ~~what~~ $[_{IP}$ *t'* was expected *t*]]
(17) The mission turned out to be more expensive than $[_{CP}$ ~~what~~ $[_{IP}$ *t'* was originally predicted *t*]]
(18) The storm inflicted a greater amount of damage than $[_{CP}$ ~~what~~ $[_{IP}$ *t'* was first reported *t*]]

Like other nominal expressions, "~~what~~ " must receive Case. Because an expletive occupies the subject position in (5)-(8), this is impossible, with the consequence that the sentences are ill-formed.

Semantic analysis

"more" denotes a relation between two degrees/amounts (cf. Postal 1974, Cresswell 1976, Williams 1977, von Stechow 1984, Heim 1985, Moltmann 1992, Hendriks 1995, Kennedy 1997a):

(19) $\|$more'(ιd_1[...d_1...])(ιd_2[...d_2...])$\|$ = 1 iff $d_1 > d_2$

"~~what~~ " does not correspond to a degree term (as in e.g. Moltmann 1992), but is rather a propositional anaphor (cf. Lerner and Pinkal 1995). Assuming the comparative clause denotes a definite description of a (maximal) degree (von Stechow 1984, Rullmann 1995, Kennedy 1997b), the semantic value of "~~what~~" must be a propositional expression that contains a free variable over degrees (or amounts).

(20)a. Jones published more papers than $[_{CP}$ ~~what~~ $[_{IP}$ *t'* was necessary *t*]]
b. $[_{CP}$ ~~what~~ $[_{IP}$ *t'* was necessary *t*]] = ιd[necessary'(**p**)]

(21)a. more'(ιd[∃X[papers'(X) & |X|=d & published'(jones',X)]])(ιd[was-necessary'(**p**)]])
b. **p** = ∃X[papers'(X) & published'(jones',X) & |X|=d]
c. more'(ιd[∃X[papers'(X) & |X|=d & published'(jones',X)]])(ιd[was-necessary'(∃X[papers'(X) & |X|=d & published'(jones',X)])]])

- The promominal status of the "missing" CP both explains Case sensitivity and eliminates the need for an otherwise unmotivated operation of CP-ellipsis (see Merchant in prep for additional disc.).

3 Identity in comparative deletion

The existence of comparative deletion constructions like (22)b (in some dialects of English) suggests that CD in general can also be analyzed in terms of "~~what~~ " (cf. Pinkham 1982, Lerner & Pinkal 1995).

(22)a. Jones read more books than Smith read.
b. Jones read more books than what Smith read.

(23) Jones read more books than $[_{CP}$ ~~what~~ $[_{IP}$ Smith read *t*]]

The value of "~~what~~ " in CD is provided by the nominal material in the matrix–restriction plus (free) degree/amount variable (which we assume to be a constituent at the relevant level of representation).

(24) $[_{CP}$ ~~what~~ $[_{IP}$ Smith read *t*]] = ιd[∃X[read'(smith',X) & **P**(X)]]

(25)a. more'(ιd[∃Y[books'(Y) & |Y| = d & read'(jones',Y)]])(ιd[∃X[read'(smith',X) & **P**(X)]])
b. **P** = λY[books'(Y) & |Y| = d]
c. more'(ιd[∃Y[books'(Y) & |Y| = d & read'(jones',Y)]])(ιd[∃X[read'(smith',X) & books'(X) & |X| = d]])

If this analysis is correct, then it provides the basis for an explanation of an old puzzle involving the interpretation of comparatives. Bach, Bresnan and Wasow (1974) observe that comparative *deletion* disallows "sloppy" identity" interpretations of pronouns, but comparative *ellipsis* does not:

(26)a. Stan lost more of his hair than Jerome lost. [...*of *Stan's/Jerome's hair*]
 b. Stan lost more if his hair than Jerome (did). [...*of Stan's /Jerome's hair*]
(27)a. Sue took more pictures of her children than Jen took. [...*of *?Jen's/Sue's children*]
 b. Sue took more pictures of her children than Jen (did). [...*of Jen's/Sue's children*]

Comparative deletion

If CD involves a pronominal expression, then the difficulty of obtaining a sloppy reading in examples like (26)a and (27)a can be explained in terms of general properties of pronominals in English: except for certain contexts (e.g. "paycheck" and generic sentences), pronoun resolution resists sloppy identity between the pronominal expression and its antecedent.

(28) Stan died his hair blue before Jerome died it red. [**Stan's hair/Jerome's hair*]
(29) Sue carried Julio's picture of her children in her wallet, and 2Jen carried it in her pocket. [*??Jen's children/Sue's children*]

This restriction is not absolute: while there is a clear contrast between the (a) and (b) sentences in (26)-(27), the sloppy reading becomes better in e.g. generic contexts:

(30) Stan publishes more of his manuscripts than Jerome publishes.
(31) Sue takes more pictures of her children than Jen takes.

(32)-(33) show that the same is true of pronouns; this parallelism is expected if the "missing" expression in CD is pronominal.

(32) Stan dies his hair blue; Smith dies it red.
(33) Sue carries Julio's picture of her children in her wallet, and Jen carries it in her pocket.

Comparative ellipsis

The availability of the sloppy reading in comparative ellipsis constructions like (26)b-(27)b is due to the possibility of analyzing such sentences as *subdeletion* constructions that have undergone ellipsis:

(34) Stan lost more of his hair than Jerome (did) ~~[VP lose ø of his hair]~~
(35) Sue took more pictures of her children than Jen (did) ~~[VP took ø of her children]~~

A PREDICTION: If the absence of the sloppy reading in CD is due to the presence of "~~what~~", then comparatives with overt *wh*-phrases should not permit sloppy readings, regardless of whether additional material has been elided. This seems to be correct:

(34)a. Stan lost more of his hair than what Jerome lost. [...*of *?Stan's/Jerome's hair*]
 b. Stan lost more of his hair than what Jerome did. [...*of *?Stan's/Jerome's hair*]
(35)a. Sue took more pictures of her children than what Jen took. [...*of *?Jen's/Sue's children*]
 b. Sue took more pictures of her children than what Jen did. [...*of Jen's/Sue's children*]

4 Conclusions

- *A new fact about English* Missing CP comparatives are sensitive to Case; this follows if a phonologically null pronominal expression is generated in the position of the "missing" clause.
- *Clausal ellipsis* Missing CP comparatives do not provide evidence for CP-ellipsis in English.
- *The interpretation of comparative deletion vs. comparative ellipsis* If CD also involves a null pronominal, we can explain the restrictions on sloppy readings observed by Bach et al. 1974 in terms of general properties of pronoun resolution in English. If comparative ellipsis constructions do involve ellipsis, as we have claimed, then sloppy identity *is* a diagnostic of "deletion rules" (i.e., ellipsis) in English, contra Bach et al.
- *Varieties of comparative "deletions"* Although a uniform analysis of comparatives in English would be desirable, the situation appears to be more complex. While it may be possible to analyze many different types of comparatives in terms of a single operation plus general principles of ellipsis, the facts discussed here indicate the need for a more interpretive analysis of some constructions as well.
- *Implications for the analysis of comparatives cross-linguistically...?*

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