PF output constraints and elliptical repair in SAI comparatives

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The object of this paper is to document and assay an explanation of a novel generalization concerning the co-occurrence of Subject-Auxiliary Inversion (SAI; analyzed here as I-to-C movement) and VP-ellipsis in comparative clauses. Although VP-ellipsis is usually optional (as in (2)), in comparative clauses in which I-to-C movement has occurred, it is obligatory, as in (3) (data which is supported by the results of two extensive corpus searches as well). This generalization is stated in (1).

(1) *Comparative SAI and VP-ellipsis generalization*:
I-to-C movement in comparative clauses can occur only if VP complement to I^0 is deleted.

(2)   a.   Abby can play more instruments than her father can.
        b.   Abby can play more instruments than her father can play.
(3)   a.   Abby can play more instruments than can her father.
        b.   *Abby can play more instruments than can her father play.

While this peculiar fact might be easy to encode in grammar formalisms that make direct reference to constructions (such as Construction Grammar or some recent versions of HPSG; see Goldberg 1995, Ginzburg and Sag 2001, and others), it poses a much more severe challenge for theories of grammar that attempt to reduce such apparently construction-specific phenomena to general principles that operate across the grammar without restriction. In this paper, I show that such a general account is possible, and that the seemingly parochial generalization in (1) does not provide evidence against grammatical theories that eschew reference to constructions (such as current work in Minimalism and OT). In particular, I argue that the peculiar generalization in (1) finds its explanation in the interaction of the properties of head-movement involved in SAI with the licensing of traces of wh-movement, where the licensing in question must be formulated as a kind of ECP applying at PF.

In essence, the analysis is built on the idea that VP deletion is saving an otherwise illicit structure; VP-ellipsis repairs some kind of defect brought about by SAI. I propose that this defect is the ill-formedness of the intermediate trace of wh-movement that occurs in the comparative clause. A number of lines of evidence indicate that wh-extraction out of a VP proceeds via adjunction to that VP (see Chomsky 1986, Fox 1999); if so, comparatives like (2b) and (3b) will have the structures in (4b) and (5b).

(4)   a.   Abby can play more instruments than her father can play.
        b.   ... than [$_{CP}$ Op_1 her father can [$_{VP}$ t_1' [$_{VP}$ t_{SU} play t_1]]]
(5)   a.   *Abby can play more instruments than can her father play.
        b.   ... than [$_{CP}$ Op_1 can [$_{IP}$ her father t_{can} [$_{VP}$ t_1' [$_{VP}$ t_{SU} play t_1]]]]

The intermediate trace t_1' will be subject to the Empty Category Principle (ECP), the disjunctive approach to which advocated in Chomsky 1981, 1986 and much other work I modify here. Crucially, however, I propose a condition that applies at PF, conceptually reminiscent especially of the proposal in Aoun *et al.* 1987 (also Rizzi 1990:39), who also argue that part of the ECP applies at PF. The definitions are given in (6)-(10).

(6)   *The Empty Category Principle at PF* (ECP$_{PF}$):
    At PF, a trace of A'-movement must either be
        i.   PF-head-governed, or
        ii.   PF-antecedent-governed
(7)   *PF-head-governs* iff
        i.   a.   is a head, and
             b.   c-commands , and
             c.   respects Relativized Minimality wrt , and
        ii.   is PF-active
(8) A link $_i$ in a chain < $_1$, ... , $_n$ > is *PF-active* iff $_i$ is the link at which lexical insertion occurs

(9)   *PF-antecedent-governs*   iff
        i.   a.   and   are co-indexed, and
                b.   c-commands   , and
                c.   respects Relativized Minimality wrt   , and
        ii.   is PF-visible
(10)   An expression   is *PF-visible* iff   has phonetic exponence

These definitions have the effect that the head-movement in SAI will leave the intermediate trace t_1' in (5b) unlicensed, since t_1' is neither PF-head-governed (because I has moved to C, and it is the highest link that is PF-active) nor PF-antecedent-governed (because the wh-operator is null, having no phonetic exponence). When SAI does not apply, as in (4b), t_1' satisfies the ECP_{PF}; likewise whenever the wh-operator is overt, as in matrix wh-questions like (11a), with the structure in (11b), and in affective inversion structures, and *no sooner-*, *little-*, *so-*, and *as-*constructions. Other environments with SAI, such as yes-no questions, literary counterfactuals and concessives, non-wh-exclamatives, and imperatives and hortatives show no evidence of wh-extraction from IP, having therefore no intermediate traces subject to the ECP_{PF}.

(11)   a.   How many instruments can Abby play?
         b. $[_{CP}$ How many instruments$_1$ can $[_{IP}$ Abby t_{can} $[_{VP}$ t_1' $[_{VP}$ t_{SU} play t_1 $]]$ $]]$?

Consider now the case of (3a), with the structure in (12b).

(12)   a.   Abby can play more instruments than can her father.
         b.   ... than $[_{CP}$ Op_1 can $[_{IP}$ her father t_{can} [~~$_{VP}$ t_1'~~ [~~$_{VP}$ t_{SU} play t_1~~]] $]]$

Because VP-ellipsis has deleted the intermediate trace t_1' contained in the deleted VP, t_1' will not violate the ECP_{PF}; deletion removes the offending trace from the PF-object considered by the ECP_{PF}, since the ECP_{PF} is a well-formedness condition applying at the PF interface. The logic here is very similar, then, to the logic applied to other PF violations voided by ellipsis as discussed in Lasnik 1995, 1999, Kennedy and Merchant 2000, Kennedy and Lidz 2002, and Merchant 2001. This approach makes the further correct prediction that mere VP-ellipsis in the comparative clause is not enough: VP-ellipsis must target the VP sister to I, as seen in (13).

(13)   a.   *Abby has been awarded more accolades than has her father been.
         b.   *Abby has been awarded a more prestigious accolade than has her father been.
         c.   *Abby has been playing piano longer than has her father been.

I conclude the paper with a consideration of comparatives with PF-visible operators, of the interaction of SAI, VP-ellipsis, and pseudogapping, and of V-to-I movement, showing how this account makes the correct predictions across a wide range of additional data.

The analysis lends new support both to the claim that wh-movement out of a VP proceeds via adjunction to that VP, and to the idea that certain types of constraints are operative as static, representational output constraints at the PF-interface. The result is an analysis of the surprising and subtle generalization in (1), which furthermore is compatible with all other instances of subject-auxiliary inversion in English, and which does not rely on construction-specific statements or restrictions.

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