WCO, ACD and QR of DPs*

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1. Introduction

In this paper I point out a hitherto unnoticed interaction between weak crossover (WCO) and antecedent-contained deletion (ACD) that provides another piece of evidence for an LF A-bar movement account of ACD, and against the A-movement account proposed in Hornstein 1994, adding to the case against Hornstein made in Kennedy 1997. Interestingly, the key piece of evidence, an ACD construction within a definite DP, implies that a quantificational type must be optionally available for definite DPs, but is only exploited when necessary to repair ACD violations.

2. Quantifier raising vs. Case-checking accounts of ACD

Syntactic treatments of antecedent-contained deletion since May 1985 have proposed that at LF, the containment relation evident in (1)a) is eliminated by applying Quantifier Raising, resulting in a structure along the lines of (1)b). The offending DP is no longer contained within its antecedent, and the structure can be straightforwardly interpreted along the lines proposed in Sag 1976.

(1) a. $[_{IP}$ Wakko $[_{VP}$ attacked $[_{DP}$every mogul Dot did $[_{VP}$ e$]_i$] $]_i$] .
b. $[_{IP}$ $[_{DP}$ every mogul Dot did $[_{vp}$ e$]_i$ $]_j$ $[_{IP}$ Wakko $[_{VP}$ attacked $t_j]_i$]]

Hornstein 1994 proposes an alternative account of ACD repair, according to which the elimination of the containment structure is not produced by quantifier movement of the DP to an A-bar position. Rather, the containment relation is eliminated

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by movement of the object DP outside the VP to check Case (either in Spec-AgrO, or under more recent assumptions, by adjunction to vP).

3. ACD in definite DPs and optionality

Movement to check Case, of course, is not restricted to quantificational DPs. ACD is not obviously restricted to quantificational DPs either:

(2) I read the book that John did.

A QR account of ACD has to claim that *the book that John did* raises to an A-bar position to repair the containment, with the theoretical implication that either definites can behave quantificationally, or that the QR operation is available optionally to all DPs, quantificational or not. Heim and Kratzer 1998 make the latter assumption (p. 210), although they are not addressing this construction specifically. Heim and Kratzer's optional-QR approach is not compatible with standard Minimalist Program constraints, however: movement is never optional, as it is motivated by the need to check features. On the other hand, May 1985, p. 8, assumes that examples like (2) constitute evidence that definite DPs are quantificational, and sketches a Russellian interpretation of them.

Hornstein's Case-checking approach to ACD repair, via movement of the offending DP to AgrO outside the VP, seems to have the attractive property of allowing the resolution of ACD in examples like (2) without requiring any unorthodox assumptions about the nature of definite DPs[1]. He can treat them non-quantificationally and still resolve the ACD structure without permitting optional movement: the structure

Carnie, Irene Heim, Jim Higginbotham, Eloise Jelinek, Terry Langendoen, Robert May and Marga Reimer, and two anonymous LI reviewers. All shortcomings are of course my own personal fault.

will automatically be repaired when the definite DP moves outside the VP to check accusative Case. This movement will be non-optional, as it checks Case features, and the DP needn't have a quantificational type.

In the next section, however, I show that whatever type of movement is proposed to repair ACD in examples like (2), it must induce a weak-crossover violation. Hornstein's Case-checking movement then becomes an unlikely candidate, and the standard QR approach to ACD repair appears to be more adequate.

4. ACD-repairing movement of definite DPs must be optional

Contra Hornstein, however, and like Kennedy 1997, I argue here that the movement repairs the containment in (2) must be A-bar movement.

Non-quantificational DPs are usually assumed not to undergo LF A-bar movement, as the standard Weak Crossover (WCO) paradigm illustrates.

(3) a. His_i mother loves $John_i$.
b. *Who_i does his_i mother love t_i ?
c. *His_i mother loves [every boy]$_i$

In (3)a), the pronoun *his* can corefer with *John*, but in (3)b) it cannot be bound by *who*. Similarly, in (3)c), *his* cannot be bound by *every boy*. The large literature dealing with this phenomenon contains many different analyses (for a summary see Huang 1995, or more recently Ruys 2000), but they agree that the violations in (3)b) and (3)c) are parallel; in (3)c) the DP *every boy* raises at LF by QR, resulting in the same configuration that Wh-movement creates in (3)b). Indeed, the ungrammaticality of (3)c) is one of the

[1] The extraposition account of ACD presented in Baltin 1987 would also permit a non-QR approach to examples like (2). I do not consider it here, however; for extensive argumentation against the approach see Larson and May 1990.

primary arguments for QR at LF, as it allows a unified treatment of (3)b) and (3)c), whatever that treatment may be.

It is clear, however, that the DP *John* in (3)a), or the DP *the girl that Sue dislikes* in (4) below, cannot undergo QR at LF, or a WCO violation should result. The self-evident reason that they don't undergo QR is that definite DPs are not, in fact, quantificational, and hence don't need to move to be appropriately interpreted.

(4) Her$_i$ mother loves [the girl that Sue dislikes]$_i$.

If QR is not available for definite DPs, then as outlined above Hornstein's account of ACD repair looks promising for (2). WCO will provide the litmus test, however: the DPs in (3)a) and (4) must certainly be moving for Case-checking purposes. If Hornstein is right, a definite DP in a WCO *and* an ACD configuration will not trigger a WCO violation, because ACD repair is accomplished by the usual A-movement for Case. If such a DP does trigger a WCO violation, then ACD repair is A-bar movement even for definite DPs. In 0, an ACD site is contained within a definite DP that is coindexed with a possessive pronoun in the subject, and a WCO violation does indeed result, illustrated in (5)a) and (b)[2]:

(5) a. *His$_i$ mother [$_{VP}$ loves [the boy that Sue does [$_{VP}$ e$_j$]]$_i$]$_j$
b. The man who knows his$_i$ mother loves [the boy that Sue does]$_i$.

ACD repair is therefore accomplished by A-bar, not A-movement, contra Hornstein. The question then becomes, how can an ACD structure trigger such movement in definites,

[2] Irene Heim (p.c.) points out that while WCO provides an account of the ungrammaticality of the sentence if binding of the pronoun *his* is assumed, there should also be a possible reading under which *his* is not bound but merely "accidentally" coreferential with the DP *the boy that Sue (loves).* Some restriction on coreferential readings like that of Reinhart 1986, which proposes that speakers avoid coreference when binding is syntactically available, would account for this particular case, but as that account has independently shown to be unviable (see, e.g. Lasnik 1986), the unavailability of simple coreference in this reading remains unexplained.

when it is obvious from (4) that such movement does not occur without an ACD structure?

5. Optionally moving or optionally quantificational ACD definites?

It appears from the contrast between (4) and 0 that definite DPs may QR when needed for Full Interpretation (as in 0), but do not QR otherwise (as in (4)). Given Minimalist Program assumptions, however, this cannot be the correct characterization of the facts. The "Last Resort" economy principle (Chomksy 1995), presented here as formulated by Collins 1997, rules out any movement that does not satisfy a feature of the moving element:

(6) *Last Resort*
An operation OP involving α may apply only if some property of α is satisfied.

Movement of ACD-containing definite DPs cannot therefore be triggered by the fact that Full Interpretation will fail, but rather must be triggered by some property peculiar to such DPs.[3] Let us assume in general that QR is triggered by the quantificational nature of the moving DP. Then to capture the contrast between (4) and 0, we must propose that DPs containing ACD structures are quantificational, but that DPs without such structures are not quantificational.

We will get the facts right if we assume that both types are available for definites in general. Then there will be two possible Numerations that can generate the string in (4), one with and one without a quantificational type for the DP *the girl that Sue dislikes*; only the one without a quantificational DP will converge (the other will induce a WCO

[3] It is clear that in general economy principles are at work in ACD structures. In a recent discussion of the properties of ACD in a copy theory of movement, Merchant 2000 shows using Condition C effects that

violation at LF). Similarly, there will be two possible Numerations for the string in (2), one with and one without a quantificational type for *the book that John did*; only the one with a quantificational DP will converge (the other will result in infinite regress in the ACD structure). In the crucial examples in 0, neither possibility will converge, as the quantificational DP type will trigger movement and produce a WCO violation and the non-quantificational DP type will result in no movement and make the ACD structure uninterpretable.

Why should ACD-repairing movement of definites necessarily be quantificational? An anonymous LI reviewer points out that examples like (4) do not argue against the possibility of LF A-bar movement of a non-quantificational type. As shown by Lasnik and Stowell 1991, Topicalization of a DP does not induce WCO:

(7) This book$_i$ I would never ask its$_i$ author to read.

Lasnik and Stowell (1991) argue that such cases show that there are two possible kinds of trace that A-bar movement may leave, which depend on the semantic type of the DP: variable traces left by A-bar movement of a 'true quantifier', which trigger WCO, and 'null epithet' traces left by A-bar movement of a non-quantificational DP, which do not trigger WCO, as in (7). The reviewer notes that covert movement of the non-quantificational, 'null epithet' type might exist in sentences like (4) above.[4]

Even if such non-quantificational LF movement is possible, however, it is not qualified to repair ACD, as the crucial examples in (5) show. Given the standard

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economy principles force deletion of the offending portion of the lower copy of the DP exactly to the degree required to repair the structure, no more and no less.

[4] Note that the example (5) casts some doubt on Lasnik and Stowell's description of what a "true quantifier" is; on their characterization a true quantifier is associated with a nominal term T whose quantified-over range R is a "nonsingleton set" (or more correctly, a set with cardinality ≥ 2, as Postal notes). The

approach to ACD, according to which the trace of the moved DP must be a variable, it follows that only quantificational A-bar movement will leave an appropriate trace, in the typology of Lasnik and Stowell. The contrast between (4) and (5), then, still leaves unaffected the conclusion that definites must have two types.

6. Extension: *even* and WCO repair

An anonymous LI reviewer directed me to a very interesting paradigm noted in Postal 1993 fn. 14. Postal observes that the parallelism between the wh-movement and the QR cases of WCO in (3b) and (c), respectively, breaks down when the crossed-over pronoun-containing DP hosts a focus element like *even* or *only*: *even* can obviate the WCO effect in wh-movement cases but not in the QR cases, as shown in (8):

(8) a. *Which man$_i$ do his$_i$ children dislike?
b. Which man$_i$ do even his$_i$ children dislike?
c. His$_i$ children dislike every man$_i$.
d. *Even his$_i$ children dislike every man$_i$.

Authier 1998 provides a treatment of the lack of WCO in (8)b) in terms of the semantic representation of the existence presupposition introduced by *even* (that is, that there are people other than his children who dislike the man in question), but does not discuss the reasons for the continued poorness of (8)d).

This contrast is taken by Postal to indicate that wh-movement and QR should not be treated as inducing the same kind of WCO violation, contra Lasnik and Stowell (and May and nearly everyone else who has considered the construction). If Postal is correct, the conclusion here that definite DPs with ACD structures in them are quantificational should entail that the WCO induced by the ACD structure should *not* be ameliorated by

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quantificational treatment of definite descriptions still involves a crucially singleton set as the range of the

including *even* in the crossed-over DP. Quite interestingly, however, it *is* repaired by *even*:

(9) Even her$_i$ mother dislikes [the girl that Sue does]$_i$.

While I do not propose to attempt an account of Postal's contrast here, it is worth noting that it seems clear that the ACD-repairing movement of the definite in (5) or (9) cannot be wh-movement. QR is the only extant likely candidate, as I conclude above. We can take (9), then, to mitigate against Postal's position that the facts in (8) necessitate distinct treatments of QR and Wh-movement-induced WCO; (9) is apparently a case of QR-induced WCO that *is* repaired by *even*.

7. Conclusion

In this squib I have introduced a new piece of evidence in favor of the A-bar account of ACD repair, and argued that given the assumptions of the Minimalist Program, a flexible-type approach to definite DPs provides a way to account for the constellation of facts produced by the interaction of WCO and ACD.

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