

MaxElide and the Re-binding Problem

Shoichi Takahashi (MIT) and Danny Fox (MIT)
s_t@mit.edu and fox@mit.edu

1. The Re-binding Puzzle: Sag (1976) and Williams (1977) argue that if a bound variable is free in an elided VP, it must be co-bound with parallel variables in the antecedent VP (so-called Re-binding is impossible). The argument is based on the following contrast, among others.

- (1) a. John_i said Mary_j hit him_i, and BILL_k did <say she_j hit him_{i,k}>, too.
b. John_i said Mary_j hit him_i, and BILL_k said she_j did <hit him_{i,*k}>, too. (Sag 1976:131)

There are, however, many exceptions to this ban on Re-binding (e.g., Evans 1988, Jacobson 1992, Fiengo and Mary 1994, and Schuyler 2001). An illustration is given in (2), (Fiengo and May 1994:107).

- (2) Every sailor_i thinks Sally loves him_i, while every SOLDIER_j thinks MARY does <love him_j>.

Building on work by Merchant (to appear), we suggest that Re-binding is possible but restricted by a constraint that applies derivationally and requires ellipsis to be maximal.

2. MaxElide: Merchant (to appear) attributes the contrast in (3) to a condition that requires the maximization of ellipsis in certain contexts (MaxElide).

- (3) a. *Marge doesn't know who we can invite, but SARA can tell you who we can <invite t>.
b. Marge doesn't know who we can invite, but she can tell you who we CAN'T <invite t>.

In (3)a, the constituent <who we can invite t> is a possible target for ellipsis, which blocks ellipsis of a smaller constituent. In (3)b, ellipsis of the smaller constituent is not blocked since ellipsis of the larger constituent is impossible (due to focused material between the variable in the elided constituent and its re-binder; henceforth, Intervening Focus (IF)). The facts in (1)-(2) can receive the same explanation. The puzzling fact is that MaxElide is only active when an ellipsis site contains a variable to be re-bound. Thus, the maximization of the size of an ellipsis site is not forced in (4).

- (4) a. John said Mary likes Peter. BILL said she does <like Peter>, too.
b. John said Mary likes Peter. BILL did <say Mary likes Peter>, too.

MaxElide is also not active in cases in which variables inside an ellipsis site are co-bound, as shown in (5).

- (5) a. I know which puppy₁ you said Mary would adopt t₁ and FRED said she would <adopt t₁>, too.
b. I know which puppy₁ you said Mary would adopt t₁ and FRED did <say she would adopt t₁>, too.

If MaxElide is the principle that captures the Sag-Williams observation and the facts beyond, the obvious question to ask is why this principle should be active only when Re-binding is involved.

3. The Proposal: We propose that MaxElide is a simple condition which makes no reference to Re-binding.

- (6) **MaxElide:** XP can be deleted only if there is no YP properly dominating XP that can be deleted.

We further suggest that deletion applies derivationally, and is licensed at a given stage of the derivation, *D*, only if it obeys Parallelism *at D*. If this is assumed, Re-binding will have a direct consequence on the stage of the derivation at which deletion applies. Whenever Re-binding is involved, Parallelism can only be satisfied in a structure that is large enough to contain the re-binder. (This, as we show below, is a direct consequence of various theories that allow for Re-binding, e.g., Rooth 1992, and Fiengo and May 1994.)

Suppose that there is an elided XP dominated by a distinct constituent YP that can also be deleted. Deletion of XP would be ruled out by (6) if deletion applied after YP is constructed. But suppose that deletion applied right after XP is constructed. If this were possible in general, MaxElide would have no empirical consequences. The assumptions we have outlined above make this possible, however, only when Re-binding is *not* involved.

4. Detailed Analysis: For concreteness, we assume Rooth's parallelism condition in (7).

- (7) **Parallelism:** An elided constituent, XP_E, must be reflexively dominated by a constituent EP, which

is parallel to an antecedent constituent AP. EP is parallel to AP if the meaning of AP is a member of EP's focus value.

Parallelism can be satisfied at an early stage of the derivation in (4)a. Specifically, when the embedded VP <like Peter> is constructed, it can be deleted under Parallelism with the embedded verb phrase of the preceding clause. The option for early ellipsis results in the circumvention of MaxElide in (4). This is also true for the co-binding case in (5). However, if Re-binding is involved, as in (1) and (3), Parallelism will be violated before the re-binder is introduced. Thus, MaxElide requires the largest deletable constituent to be elided in these cases. (In (1), for example, the meaning of the antecedent VP, *hit him_i*, is not a member of the focus value of the elided VP: {the-meaning-of(hit him_i)}. Once the re-binder is introduced, the meaning of the first conjunct *is* a member of the focus value of the second conjunct, containing ellipsis.)

5.1 Covert Movement: The effect of MaxElide should be observed when Re-binding is the result of covert movement. This prediction is verified by the contrast in (8) from Williams (2003). The availability of inverse scope in (8)a indicates that Re-binding resulting from covert movement is possible. But now the ellipsis site must be maximal as indicated by the unacceptability of (8)b.

- (8) a. At least one doctor tried to get me to arrest every patient and at least one NURSE did, as well. $(\exists > \forall) ?(\forall > \exists)$
b. At least one doctor tried to get me to arrest every patient and at least one NURSE tried to get me to, as well. $(\exists > \forall) *(\forall > \exists)$

If IF is introduced, ellipsis of a smaller constituent does not preclude inverse scope, as shown in (9).

- (9) a. A doctor tried to treat every patient and a NURSE MANAGED to. $(\exists > \forall) (\forall > \exists)$
b. A policeman refused to stand on every building and a SOLDIER WANTED to. $(\exists > \forall) (\forall > \exists)$

5.2 Position of IF: We have shown that the presence of IF makes Re-binding possible ((2), (3)b and (9)). However, it should be impossible when the IF is high enough to allow for a smaller elided constituent. This prediction is corroborated in (10).

- (10) I don't know which puppy you should agree to adopt, but I know which one you SHOULDN'T <agree to adopt t> /*agree to <adopt t>

6. Consequence for the Theory of Ellipsis: We have argued that the maximization of an ellipsis site in a Re-binding context follows from the simple principle in (6) when accompanied by a derivational theory of ellipsis. If MaxElide were to apply to the final representation, it would have to be reformulated as in (11).

- (11) If XP_E is deleted under parallelism between an antecedent and YP_E dominating XP_E , there can be no distinct constituent ZP such that:
a. ZP is a possible target for ellipsis.
b. YP_E dominates ZP and ZP dominates XP_E .

(6) is simpler than (11) thereby providing potential evidence for a derivational theory of ellipsis.

7. Consequence for the Theory of Binding: Re-binding of a variable x is restricted by our proposal under the assumption that Parallelism cannot be satisfied when x is free. This is a consequence of theories that postulate variables and variable names/indices (together with the assumption that meaningless co-indexation is not possible, Heim 1997).

- (12) **No Meaningless Co-indexation:** Two bound variables can be co-indexed only if they are co-bound (i.e. bound by the same antecedent). (Heim 1997)

To the extent, that our account is successful, it provides evidence for theories of this sort, and against alternatives (e.g., Jacobson 1992).

Selected Reference

Merchant, Jason. To appear. Variable island repair under ellipsis. To appear in *Topics in Ellipsis*, ed. Kyle Johnson. Cambridge University Press.