# A Puzzle about P-Stranding and a Possible Solution*

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In English, A′-movement operations that move elements to the left are able to strand prepositions – (1) – but those that move elements to the right – (3b) – cannot, as observed by Ross (1967).

(1) a. Who$_1$ did you look at $t_1$?

b. It was Mary$_1$ that I looked at $t_1$.

(2) a. John saw [the man who lived next door] in the living room yesterday.

b. John saw $t_1$ in the living room yesterday [the man who lived next door]$_1$.

(3) a. John looked at [the man who lived next door] in the living room yesterday.

b. *John looked at $t_1$ in the living room yesterday [the man who lived next door]$_1$.

cf. John looked in the living room yesterday at [the man who lived next door].

Why the difference? Bresnan (1976) presented an ingenious account based on the A-over-A condition (Chomsky 1964). Indicating that "Heavy NP Shift" can apply to PPs as well as to NPs, she formulated the process in terms of [-V], the feature assumed to be shared by N and P. She then observed that the operation of a transformation extracting a heavy NP out of a heavy PP would violate the A-over-A. There is at least one difficulty with this account: rightward movements of NP and PP seem to have different properties, hence are unlikely to be captured by the same transformation (short of Move alpha, of

course, but then all bets are off). In particular, rightward movement of NP does indeed usually require that the NP be (phonetically) heavy:

(4) ?*I saw yesterday Jim

(5) ??I saw yesterday Harry

(6) I saw yesterday Alexander

But there is no such requirement for PP movement:

(7) I spoke yesterday to him [or even "to'm"]

To our knowledge there exists no current explanation for the directional asymmetry in preposition stranding. We would like to suggest that it can be explained given three currently common assumptions:

(a) Spellout is cyclic (Chomsky 2000, Uriagereka 1999), and the output of the linearization operation that gives an ordering at PF has the form proposed in Fox & Pesetsky (2003). More specifically, linearization applies at every phase delivering a set of linearization statements of the form "X precedes Y."[1] The union of the sets of these statements must be consistent for the derivation to converge at PF.

(b) PP is a phase. Languages differ in whether or not intermediate movement to [Spec,PP] is possible, i.e. in whether or not PP has an "escape hatch." P-stranding is

possible only when such an escape hatch exists.[2] This approach to P-stranding goes back to van Riemsdijk (1978) and Baltin (1977), and has recently been revived in a minimalist setting in Abels (2003).[3]

(c) Linearization applies so that $P^0$s linearly follow their escape hatches. This seems an empirically correct assumption, which may follow on independent grounds if escape hatches are specifiers. Chomsky (2004, p. 110) notes that (whatever the merits of the strict antisymmetric theory[4]) specifiers are typically or always on the left. For current purposes, any linearization procedure that situates PP escape hatches on the left edge of PP will serve.

Given (a)-(c) the asymmetry noted above follows trivially. In order to "escape" a PP, a DP must move via [Spec,PP]. However, as PP is a linearization domain, this will yield a linearization in which P follows the DP. This will then block any operation that subsequently moves the DP to the right in another linearization domain, since an inconsistent set of linearization statements would thereby result. Movement to the left suffers no such fate for obvious reasons. The relevant structure at the point of Spellout of the PP is illustrated in (8).

(8)….[ $_{PP}$ $DP_1$ [ $_{P'}$ P $t_1$]]…

The same logic seems to apply to recent antisymmetric approaches to rightward movement (Kayne 2000, p. 250), where apparent rightward movement of XP is taken to

be leftward movement of XP followed by remnant movement of a constituent immediately (or very nearly immediately) below the landing site of XP. Once Spellout has applied at the point in the derivation shown in (8), any future derivational operations must respect the ordering statement "DP precedes P." Thus, whatever the intricacies of the syntactic operations that eventually place the DP on the right, a linearization conflict will arise.

Assumptions (a)-(c) have implications for the analysis of rightward movement in general, since they have the consequence that successive-cyclic rightward movement is impossible. If finite clauses are always "strong" phases, a form of Ross's Right Roof Constraint is derived. The constraint derived will be stricter than the original in those cases where vP is a strong phase, and (as we have seen) in the case of extraction from PP.

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[1]The relevant notion here is precedence, not immediate precedence.

[2]Our account crucially depends on the phase-theoretic assumption that for an XP to escape a PP it *must* transit through the edge of the PP. In contrast, Fox and Pesetsky (2003) do not assume that movement out of a linearization domain must necessarily proceed via the edge of that domain; this is only necessary insofar as it is necessary to avoid linearization conflicts. It seems to follow (we believe contrary to fact) that for α in configuration [ $_{XP}$ … [ $_{YP}$ … [ $_{ZP}$ … α ]]], with XP, YP, ZP linearization domains and α rightmost in each, α should be able to move to right-adjoin to XP in a single step.

[3]Abels hypothesizes that PPs are not phases in languages which allow preposition stranding (since if they were phases, the complement of P would have to move to [Spec,PP] in order to be extracted, and this would violate a prohibition on short movement). Contra Abels, we assume that PPs are phases in all languages. However,

Abels notes (p. 227) that an alternative to assuming that P is not a phase head in P-stranding languages is to assume that in these languages a further projection intervenes between P and its (apparent) complement.

[4]Kayne (1994).