

Movement of properties and properties of movement

Problem: Postal (1994) observes that there are syntactic environments in English that can be targeted by some types of \bar{A} -movement, but not others. For example, in existential constructions, *wh*-movement can target the post-verbal position (1b), but topicalization cannot do so (1c). In the interest of space, only four of these environments are given here: existential constructions (1), change-of-color verbs (2), predicate nominals (3), and naming verbs (4). Postal also observes that these environments reject pronouns like *it*, a property which he labels *antipronominality*.

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| (1) a. There is { a book / *it} on the table. | (3) a. Pat became { a teacher / *it}. |
| b. ✓ What ₁ is there ___ ₁ on the table? | b. ✓ What kind of teacher ₁ did Pat become ___ ₁ ? |
| c. * A book ₁ , there is ___ ₁ on the table. | c. * A math teacher ₁ , Pat became ___ ₁ . |
| (2) a. Mary painted the house { blue / *it}. | (4) a. Helen called the cat { Garfield / *it}. |
| b. ✓ What color ₁ did Mary paint the house ___ ₁ ? | b. ✓ What name ₁ did Helen call the cat ___ ₁ ? |
| c. * Blue ₁ , Mary painted the house ___ ₁ . | c. * Garfield ₁ , Helen called the cat ___ ₁ . |

Based on (1)–(4), Postal argues against the uniformity of \bar{A} -movement (Chomsky 1977, 1981). For Postal, the asymmetry is rooted in antipronominality. He proposes that some types of \bar{A} -movement leave an ordinary trace, e.g. *wh*-movement, while others leave a covert resumptive pronoun, e.g. topicalization, the latter of which crucially violates antipronominality.

Claim: We argue that the \bar{A} -movement asymmetry in (1)–(4) can be derived from two *independent* factors: (i) the semantic nature of the environments, namely that they host property-denoting DPs, and (ii) the representation of different movement types at LF, namely whether they shift scope and thus leave a trace of type *e*. Antipronominality results from some pronouns lacking a property-type denotation. This analysis preserves the syntactic uniformity of \bar{A} -movement.

Generalization I: Properties: The apparently heterogeneous syntactic environments that exhibit the asymmetry are environments where the DP denotes a *property*, i.e. semantic type $\langle e, t \rangle$. To support this characterization, we appeal to independently-motivated arguments in the literature for each of the environments: existential constructions (Milsark 1974; Heim 1987; McNally 1997), change-of-color verbs (Kratzer 2005), predicate nominals (Williams 1983; Partee 1986), and naming verbs (Matushansky 2008). We refer to these environments as **Π-positions**.

Generalization II: Scope: Movement cannot target a Π-position if that movement shifts the scope of the moved DP. Some movement types, e.g. topicalization, can be shown to shift scope obligatorily (5), and this is why they can never target a Π-position.

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| (5) a. <i>Everyone</i> likes a different TV show . | ✓every >> a; ✓a >> every |
| b. A different TV show ₁ , <i>everyone</i> likes ___ ₁ . | *every >> a; ✓a >> every |

However, other movement types, e.g. *wh*-movement, can be shown to shift scope optionally (6). Crucially, these movement types can only target Π-positions when they do not shift scope (7).

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| (6) [How many books] ₁ should Nina read ___ ₁ this summer? | |
| a. For what number <i>n</i> : There are <i>n</i> -many particular books <i>x</i> such that Nina should read <i>x</i> this summer. | <i>Wide scope</i> : how many >> should |
| b. For what number <i>n</i> : It is necessary for there to be <i>n</i> -many books <i>x</i> such that Nina reads <i>x</i> this summer. | <i>Narrow scope</i> : should >> how many |
| (7) a. <i>Existential constructions</i> | *how many >> should; ✓should >> how many |
| [How many books] ₁ should there be ___ ₁ on the table? | |

- b. *Change-of-color verbs* *how many >> should; ✓should >> how many
 [**How many colors**]₁ should Nina paint the house ___₁?
- c. *Predicate nominals* *how many >> should; ✓should >> how many
 [**How many kinds of teacher**]₁ should Nina become ___₁?
- d. *Naming verbs* *how many >> should; ✓should >> how many
 [**How many nicknames**]₁ should Nina call the cat ___₁?

The scope generalization predicts that Π -positions prohibit QR. This prediction is borne out, as shown in (8), where it is impossible to take inverse scope over the subject from a Π -position.

- (8) a. There aren't **two books** on the table. ✓not >> two; *two >> not
 b. A (*different*) contractor painted the house **every color**. ✓a >> every; *every >> a
 c. A (*different*) student became **every kind of teacher**. ✓a >> every; *every >> a
 d. A (*different*) child called the cat **every dumb name**. ✓a >> every; *every >> a

Proposal: Scope-shifting movement is incompatible with Π -positions because it must leave a trace of semantic type e in order to shift scope, which does not furnish the correct semantic type $\langle e, t \rangle$ expected by the Π -position, yielding a type mismatch and ungrammaticality (9). Movement that does not shift scope instead reconstructs. Thus, if a DP would not ordinarily violate the property-requirement of a Π -position, it will not under reconstruction either (10).

- (9) * [DP₁ λx_e ... [... [x_e] _{Π -pos} ...]]
 ↙ type e trace
- (10) ✓ [___₁ ... [... [DP₁] _{Π -pos} ...]]
 ↙ reconstruct ↗

Thus, the Π -position asymmetry is the result of the ungrammaticality of the configuration in (11), which notably resembles Heim's (1987) formulation of the Definiteness Restriction.

- (11) * [x] _{Π -pos}, where x is an element of type e

Some pronouns can in fact occur in Π -positions, e.g. *that* (12). We propose that antipronominality is the result of not all pronouns having valid property-type denotations. Only pronouns like *that*, which do have property-type denotations, can occur in a Π -position.

- (12) a. Mary wanted to be a teacher, and she became {✓**that** / ***it**}.
 b. Mary picked out a paint color, and Sue painted the house {✓**that** / ***it**}.

(11) also raises the question of how DPs that appear to be type e are interpreted in Π -positions in *non-movement* contexts, e.g. *I painted the house that shade of green*. We will argue that property-type denotations of DPs in Π -positions are always derived via nominal type shifting (Partee 1986), in particular PRED and \mathcal{BE} , which shift from the individual and generalized-quantifier domains respectively into the property domain. We will then propose that a ban on type shifting traces follows from the complementarity of Trace Conversion and nominal type shifting.

Implications: First, the two novel generalizations show that the Π -position asymmetry is not an arbitrary distinction between movement types, but reduces to scope. This recharacterization leads to an analysis that preserves the syntactic uniformity of \bar{A} -movement. Second, Π -positions show that movement cannot create λ -abstractions over properties. Otherwise, scope-shifting movement would be able to target Π -positions. Π -positions thus provide a novel argument for the hypothesis that syntactic operations only ever create λ -abstractions over individual types, e.g. e (entities) and d (degrees) (Romero 1998; Fox 1999; Landman 2006). Third, since quantificational elements can occur in Π -positions but only with in-situ scope, there must be some general mechanism for interpreting quantifiers in-situ in English (e.g. Champollion 2015).