PRO Gate and Movement

PRO gate phenomena (as in (1)) were first discussed in Higginbotham (1980). He observed that gerunds with PRO subjects, contrasting with those headed by an overt pronoun, obliterate Weak Cross Over (WCO) effects. An aim of this paper is to explain why certain PROs act as "gates" canceling WCO effects. The account hinges on analyzing (obligatory) control (OC) as a species of A-movement. It is well known that A-movement can skirt the effects of WCO (see (2)). Our claim is that PRO gate effects are an instance of this same process: if OC PRO is simply an NP-t and given that NP-ts are not subject to WCO it follows that OC PROs should function as gates in the manner observed by Higginbotham.

This proposal has two immediate empirical consequences. First, it suggests that not all PROs will function as gates; only those that are formed by movement can so function. Hornstein (1999, 2000) proposes that only OC PROs are residues of movement. This implies that PROs within islands cannot be such. Rather they are base-generated empty pronouns (pro) and should be subject to WCO. They will NOT act as gates. The data in (3) support this line of reasoning. Second, if PRO gates are actually the residues of A-movement, we should find independent evidence that they function like OC PROs. The date in (4)-(7) support this conclusion. We show that the contrast in (4) follows if economy prefers Merge to Move (see below). Furthermore, the obligatory de se reading in (5a) (compare (5b)) and the bound reading in (6a) (compare (6b)) are diagnostic properties of OC (see Hornstein 1999, 2000) and follow on the assumption that PRO gates are OC PROs formed by movement. (7a) indicates that the arbitrary reading of the PRO is excluded and only a bound reading is available.

Empirically, then, PRO gate effects can be seen as further evidence that OC PRO is formed via A-movement. Assuming this to be the case, we next discuss how to implement our proposal. As is evident, the proposed movement is not identical to what one finds in raising or subject control for it involves movement from within a subject to an object position that does not c-command the launch site. Bobaljik and Brown (1997), Nunes (1995) and Hornstein (1999, 2000) have argued that treating movement as the combination of Copy and Merge (rather than as a primitive operation) allows for sideward movement, illustrated in (8). In (8a), we have two subtrees yet unmerged. In (8b) a copy of T in k is made. In (8c) T is merged with the subtree m. We show how sideward movement can be used to derive the PRO gate structures in (1). The derivation is illustrated in (9). The crucial step is (9b) in which 'who' is copied from the gerund and merged with 'annoy'. Thus, sideward movement suffices to implement the idea that those PROs are gates that are formed via A-movement.

It also suffices to explain the fact that PROs that are gates also behave like OC PROs. For an illustration consider the contrast in (4). Here the PRO can be bound by a quantified NP in the subject of 'address'-(4b)- but not the object -(4a). Why? Because the derivation of (4a), but not (4b), violates Merge over Move. Consider the derivations. In each, the gerund is constructed first, then the predicate of which the gerund is the external argument. In the derivation for (4a), 'everyone' is copied and merged with 'address' then the resulting VP 'address everyone' is merged with 'Mary'. The clause is then merged with 'allow' to form 'allow Mary to address everyone' and the resultant VP is merged with the earlier constructed gerund. Note that this derivation violates economy as 'everyone', is moved into the object position in place of merging 'Mary' to that position. As Merge is preferred to Move by economy, this derivation is prohibited as merging 'Mary' leads to convergence. The derivation of (4b) does merge 'Mary' before moving 'everyone' and so the indicating binding is acceptable.

This analysis of PRO gate effects has some interesting theoretical implications. First, it favors a derivational interpretation of grammatical processes. The movement that licenses PRO gate effects is sideward movement. This movement produces a non-standard chain; one which has no apparent c-command relation between its links. Thus, even if the operations executed are legitimate, the object created, the chain, should be suspect if c-command must hold between chain links. Note: this is not a problem if derivations determine grammaticality but it is if we substitute conditions on well-formed chains for derivational histories. This same fact implies that Epstein's (1999) claim that derivations must meet a c-command condition is incorrect. Third, it argues that subjects are not intrinsically islands. We show that a derivational approach to islands reconciles the possibility of sideward movement from subjects with the prohibition against extraction from them (as in Nunes and Uriagereka 2000).

DATA

(1) a. $[PRO_1$ cooking his_1 lunch] annoyed $everyone_1$.
    b. Who_1 did $[PRO_1$ cooking his_1 lunch] annoy t_1?
    c. Who_1 did $[*him_1/??his_1$ cooking his_1 lunch] annoy t_1?

(2) a.   *Who does it seem to his_1 mother $[t_1$ is handsome]?
    b Who_1 t_1 seems to his_1 mother $[t_1$ to be handsome]?

(3) a   ??Who_1 did [the fact that PRO_1 cooking his_1 lunch] is mandatory annoys t_1?
    b.   ?? That $[PRO_1$ leaving early] upset his_1 friend made $everyone_1$ feel lousy.
    c.   ?? The girl [whom PRO_1 shaving his_1 face fascinated] kissed $everyone_1$.
    d.   ??[Any attempt PRO_1 to argue with his_1 mother] would leave $everyone_1$ exhausted.

(4) a.   *PRO_1 shaving his_1 beard allowed Mary to address $everyone_1$.
    b. PRO_1 shaving his_1 beard allowed $everyone_1$ to address Mary.

(5) a. PRO_1 expecting a medal made the $unfortunate_1$ nervous.
    b. His_1 expecting a medal made the $unfortunate_1$ nervous.

(6) a. PRO_1 giving the famous speech made only $Churchill_1$ happy.
    b. His_1 giving the famous speech made only $Churchill_1$ happy.

(7) a. PRO_1 Feeding himself/*oneself annoys $John_1$.
    b. $John_1$ tried PRO_1 to feed himself/*oneself.

(8) a. $[_k....T...]$ $[_m.....]$
    b. $[_k ...T...]$ T $[_m ....]$
    c. $[_k ...T...]$ $[T[_m ....]]$

(9) a.   [who cooking [his lunch]]
    b. $[who_1$ cooking [his lunch]] [annoy $[who_1]]$
    c. $[[who_1$ cooking [his lunch]] [annoy $[who_1]]]$
    d. $[who_1$ [who cooking [his lunch]] [annoy $[who_1]]]]$
    e. $[who_1$ did $[[t_1$ cooking [his lunch]] [annoy $t_1]]]$

REFERENCES: Bobaljik, J.& S. Brown. 1997. 'Inter Arboreal Operations: Head movement and the Extension Requirement.' LI 28. Chomsky, N. 1986. *Knowledge of Language*: Its Nature, Origin and Use. NY: Praeger. Epstein, S. D. 1999. 'Un-principled syntax: The derivation of syntactic relations', In S. D. Epstein & N. Hornstein, eds., *Working Minimalism*. Higginbotham, J. 1980. 'Pronoun and bound variable.' LI 11. Hornstein, N. 1999. 'Movement and control.' LI 30. Hornstein, N. 2000. *Move! A minimalist theory of construal*. Oxford: Blackwell. Nunes, J. 1995. *The copy theory of movement and linearization of chains in the Minimalist Program*. Ph.D., UMD. Nunes, J. & J. Uriagereka (1999) 'Cyclicity and Extraction Domains', Syntax, 3.1.