

Locality Constraints on Movement: How General?

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- (1) As observed by Goldberg (1995), and reiterated by David Pesetsky in his presentation in To Move or not to Move, Chomsky (1955) (LSLT) is in some respects a theory of grammatical constructions, each with its own transformation.
- (2) Already, though, there are intimations of generality and modularity.
- (3) Chomsky points out that passive questions don't require a special T. Rather, the interaction of Passive and Interrogative automatically give such sentences as:
- (4) Was John chosen by Mary
- (5) A similar point could be made about negative questions. LSLT has a Negation T, but no negative question T, since negative questions are given for free, by the interaction with the Interrogative T.
- (6) Isn't Mary singing
- (7) With respect to locality of transformations, later developments of transformational grammar are dramatically different from LSLT.
- (8) There is virtually no discussion of locality in LSLT. The only hint is in the p. 437 discussion of a certain restriction on the WH transformation:
- (9) Whom did [your interest in __] seem to me rather strange
- (10) Chomsky suggested incorporating the constraint into the transformation itself. Thus, different constructions have their own individual locality requirements.
- (11) In the three versions of "Current Issues in Linguistic Theory", Chomsky hinted at a new way of looking at locality, motivated in large part by considerations of explanatory adequacy.
- (12) Discussing an example abstractly similar to (9), Chomsky (1964b) proposed what is, as far as I know, the first general statement of what can reasonably be called a locality constraint, the constraint dubbed the A-over-A by Ross (1967):
- (13) "Consider the sentences:
 - (6)(i) who(m) did Mary see walking toward the railroad station?
 - (ii) do you know the boy who(m) Mary saw walking to the railroad station?
- (7) Mary saw the boy walking toward the railroad station.
- (7) is multiply ambiguous; in particular it can have either the syntactic analysis (8i) or (8ii)

- (8) (i) NP - Verb - NP - Complement
 (ii) NP - Verb - NP

where the second NP in (8ii) consists of a NP ("the boy") with a restrictive relative clause. The interpretation (8ii) is forced if we add "who was" after "boy" in (7); the interpretation (8i) is forced if we delete "ing" in (7). But (6i, 6ii) are not subject to this ambiguity; the interpretation (8ii) is ruled out, in these cases. Once again, these are facts that a grammar would have to state to achieve descriptive adequacy...

The problem of explanatory adequacy is again that of finding a principled basis for the factually correct description. Consider how (6i) and (6ii) must be generated in a transformational grammar for English. Each must be formed by transformation from a terminal string S underlying (7). In each case, a transformation applies to S which selects the second NP, moves it to the front of the string S, and replaces it by a wh-form... But in the case of (7) with the structural description (8ii), this specification is ambiguous, since we must determine whether the second NP -- the one to be prefixed -- is "the boy" or "the boy walking to the railroad station," each of which is an NP. Since transformations must be unambiguous, this matter must be resolved in the general theory. The natural way to resolve it is by a general requirement that the dominating, rather than the dominated, element must always be selected in such a case. This general condition, when appropriately formalized, might then be proposed as a hypothetical linguistic universal. What it asserts is that if the phrase X of category A is embedded within a larger phrase ZXW which is also of category A, then no rule applying to the category A applies to X but only to ZXW." pp. 930-931

- (14) What is new and modern about this is that the constraint is stated in a general way, covering all movement transformations. This frees up individual transformations from the burden of having to incorporate the restriction. The transformations themselves can therefore be stated in quite simple ways, as in the following statement of wh-movement from Chomsky (1964a):
- (15) $Y - Wh+X - Z \Rightarrow Wh+X - Y - Z$
- (16) In Ross (1967) that we find a full blown development of this fundamental idea.
- (17) "It is probably unnecessary to point out that it is commonplace to limit the power of the apparatus which is available for the description of particular languages by 'factoring out' of individual grammars. principles, conditions. conventions and concepts which are necessary in all grammars: to factor out in this manner is to construct a theory of language. So, for example, when the principle of operation of the syntactic transformational cycle has been specified in linguistic theory, it is unnecessary to include another description of this principle in a grammar of French... The present work should be looked upon as an attempt to add to this list a precise specification of the notion syntactic variable. This notion is crucial for the theory of syntax, for without it the most striking fact about syntactic processes -- the fact that they may operate over indefinitely large domains - cannot be captured. And since almost all transformations either are most generally stated, or can only be stated, with the help of variables, no transformation which contains variables in its structural index will work properly until syntactic theory

has provided variables which are neither too powerful nor too weak. It is easy to construct counterexamples ... for almost every transformation containing variables that has ever been proposed in the literature on generative grammar. It is for this reason that attempts to constrain variables ... are so important: without the correct set of constraints, it is impossible to formulate almost all syntactic rules precisely, unless one is willing to so greatly increase the power of the descriptive apparatus that every variable in every rule can be constrained individually. But one pursuing this latter course will soon come to realize that many of the constraints he imposes on individual variables must be stated again and again; that he is missing clear generalizations about language. Thus, the latter course must be abandoned: the only possible course is to search for universal constraints."

- (18) Among Ross's constraints:
- a. Coordinate Structure Constraint
 - b. Complex NP Constraint
 - c. Sentential Subject Constraint
- (19) In support of his position that the constraints are general, Ross provided evidence that many different transformations, though all of a particular type, obey the constraints.
- (20) The relevant transformations are 'reordering' transformations – those that displace a constituent without leaving behind a pro-form.
- (21) Relativization; 'Question'; Exclamatory fronting; Infinitival relativization; Clefting; Pseudoclefting; Topicalization; VP fronting; *Though* preposing; *The more*; Comparative; ...
- (22) *Here is the snowball which I chased the boy who threw at our teacher
cf. Here is the snowball which I think the boy threw at our teacher
- (23)a *What did Bill buy potatoes and
b *What did that Bill wore surprise everyone
cf. What did it surprise everyone that Bill wore
- (24)a How brave you are!
b *How brave I know a boy who is!
c How brave they must believe (*the claim) that you are!
d *How brave he is tall and!
- (25)a Here's a knife for you to cut up the onions with.
b *Here's a pole for you to kiss the girl who tied the string around.
c ?Here's a razor for you to announce (*the possibility) that you will shave with.
d *Here's a razor for you to chop up these nuts with this cleaver and.
- (26)a It was this hat that Tom said Al thought you wanted me to make Jack put on.
b *It is this hat that I know the boy who is wearing.
c It is this hat that I believe (*the claim) that he was wearing.
d *It is this hat that the gloves and were on the table.
e *It is this hat that that he was wearing is certain.
cf. It is this hat that it is certain that he was wearing.

- (27)a What Tom said Al thought you wanted me to make Jack put on was this hat
 b *What I know the boy who was wearing is this hat.
 c What I believe (*the claim) that he was wearing is this hat.
 d *What the gloves and were on the table was this hat.
 e *What that he was wearing is certain is this hat.
 cf. What it is certain that he was wearing is this hat.
- (28)a This hat, I know that the boy was wearing
 b *This hat, I know the boy who was wearing.
 c This hat, I believe (*the claim) that he was wearing.
 d *This hat, the gloves and were on the table.
 e *This hat, that he was wearing is certain.
 cf. This hat it is certain that he was wearing.
- (29)a They said that Tom would pay up, and pay up he did
 b They said Tom would pay up, and pay up I'm sure everybody will tell you that his lawyers expect me to believe he did.
 c *They said that Tom would pay up, and pay up that he did is well-known.
 cf. They said that Tom would pay up. and pay up it is well-known that he did.
 d *They said nobody would pay up, but pay up I know a boy who did.
 e They said that Tom would pay up, and pay up I believe (*the claim) that he did.
- (30)a Handsome though Dick is, I'm still going to marry Herman.
 b Handsome though everyone expects me to try to force Bill to make Mom agree that Dick is, I'm still going to marry Herman.
 c *Handsome though I know several boys who are, I'm still going to marry Herman.
 d Handsome though I believe (*the claim) that Dick is, I'm still going to marry Herman.
 e *Handsome though Dick is fair, Nordic, strong and, I'm still going to marry Herman.
 f *Handsome though that Dick will be is likely, I'm still going to marry Herman.
 cf. Handsome though it is likely that Dick will be, I'm still going to marry Herman.
- (31)a The more contented we pretended to be, the more we grew angry at the doctors.
 b ?The more contented the nurses began to try to persuade us to pretend to be, the more angry we grew at the doctors.
 c *The more contented I laughed at the nurse who thought that we were becoming, the more angry we grew at the doctors.
 d ??The more contented the nurses began to believe (*the claim) that we were going to pretend to be, the more angry we grew at the doctors
 e *The more contented we pretended to be better fed and, the more angry we grew at the doctors.
 f *The more contented for us to pretend to be became possible, the more angry we grew at the doctors.
 cf. ?The more contented it became possible for us to pretend to be, the more angry we grew at the doctors.

- (32)a Wilt is taller than I imagine anybody would ever guess that people had begun expecting Red to announce that he was.
 b *Wilt is taller than I know a boy who is.
 c Wilt is taller than I believe (*the claim) that Bill is.
 d *Wilt is taller than Bill is strong and.
 e *Dean drank more booze than Frank ate Wheaties and Sammy drank.
 f *Wilt is taller than that Bill is is generally believed.
 cf. Wilt is taller than it is generally believed that Bill is.
- (33) "At the outset of my research on variables,... I concluded that the way to explain the similarity of the constraints on these rules was to assume that one rule was basic, and was a component of the operations of the other three rules. But Noam Chomsky pointed out to me an alternative possibility: this similarity of constraints might be derivable from some formal property shared by the four rules, rather than from some assumed common function or component. My further research proved Chomsky correct: there are a large number of transformations which obey the same constraints as the four rules that I had originally noticed, rules whose operations are far too dissimilar for it to be possible that there is one rule which is basic to each of these." pp. 383-384
- (34) Chomsky (1977) in effect withdrew his suggested alternative, proposing instead that the relevant processes (most of them anyway) are indeed instantiations of one transformation, a very general one: Move *wh*-phrase.
- (35) In this theory, there are two fundamental transformations, Move *wh*-phrase and Move NP (A and A' - movement, respectively, in later development of the theory).
- (36) In a certain sense, this is a (very well motivated) retreat from the framework of Chomsky (1973), where the core idea is that all (movement) transformations obey exactly the same conditions.
- (37) For 'island' type constraints, argued to be subsumed under Subjacency, this was relatively unproblematic. But for another class of locality conditions (those that evolved into Governing Category in Chomsky (1981)), it caused serious difficulties.
- (38) No rule can involve X, Y in the structure
 ... X ... [_{α} ... Z ... Y ...] ...
 where (a) Z is the specified subject of α
 or (b) α is a tensed S
- (39)a John is believed [___ to be clever]
 b *John is believed [___ is clever]
 c *John is believed [Mary to like ___] (It is believed that Mary likes John)

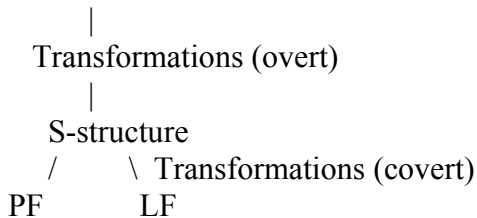
BUT

- (40)a Who do you believe [Mary to like ___]
 b Who do you believe [___ likes Mary]

- (41) No rule can involve X, Y in the structure
 ... X ... [_{α} ... Z ... Y ...] ...
 where (a) Z is the specified subject of α
 or (b) Y is in COMP and X is not in COMP (permits an exemption for movement
 from COMP, but only to another
 COMP, i.e., successive cyclic wh-
 movement)
 or (c) Y is not in COMP and α is a tensed S (permits movement out of a tensed S,
 but only from COMP)
- (42) Initial movement **to** COMP is allowed, as α is defined as S', rather than S (a definition
 that becomes problematic in other respects) [It might appear, paradoxically, as if
 Chomsky is requiring that α be S, in which case the initial step of wh-movement would
 never be possible at all. But he actually meant S', since his PS rule $S \rightarrow COMP S'$
 reversed the standard convention.]
- (43) The extra complications in the statement are the direct consequence of the attempt to
 make the constraints completely general: "No rule can involve ..." Recognizing a
 distinction between (what came to be called) A-relations and A'-relations can eliminate
 the complication: These particular constraints are just for A-relations.
- (44) I return now to the question of why many different A' constructions obey the same
 locality constraints. Could it be that these constraints aren't part of grammar at all?
- (45) "A driving question behind much of linguistic research is what is the typology of possible
 constructions and what constrains it? ... Constraints on long-distance dependency
 constructions (traditional 'island constraints') appear to yield to processing explanations
 that take into account the function of the constructions involved." Goldberg (2003, p.
 222)
- (46) "It is possible, though hardly necessary, that general properties of grammar might be
 explained, at least in part, in terms of the exigencies of performance." Chomsky and
 Lasnik (1977)
- (47) (48)a and b "are difficult to process because the grammatical-functional relations in the
 deeply embedded clause are hard to reconstruct, given the deletion, the lack of
 morphological indicators, and the fact that there is a large gap between the head noun the
 man (object of bit) and the verb of which it is the object." Givón (1979)
- (48)a *The man who I saw the dog that bit ___ fell down
 b *Who did you see the dog that bit ___
- (49)a The man who you think that Mary said that the dog bit ___
 b Who do you think that Mary said that the dog bit ___
- (50) 'Covert' movement of WH in situ. An argument for a processing account? Pritchett
 (1991)
 "While there seems no natural way to capture this in grammatical theory, a processing

account offers a clear explanation. It is, as we have seen, the actual overt dislocation of the Wh-word and the necessity of locating its D-structure position online that is the source of the difficulty. LF movement involves the movement of an unambiguous in situ Wh-word to an unambiguous adjoined position. In other words the parser need not fill a gap and consequently, no 'Subjacency' effect results." [p.334]

(51) D-structure



(52) ?*What did she wonder [where [John put ___]]

(53) Who wondered [where [John put what ___]]

(54) *What did you meet the woman that wrote

(55) Who met the woman that wrote what

(56) Ni xiangxin Lisi mai-le sheme de shuofa?

"You believe the claim that Lisi bought what?"

(57) John-wa Mary-ga nani-o katta kadooka siritagatte iru no?

"John wants to know whether Mary bought what?"

(58) BUT...there are island effects with adjuncts in situ Huang (1982), Lasnik and Saito (1984), Lasnik and Saito (1992)

(59) *Ni xiangxin Lisi weisheme lai de shuofa?

"You believe [the claim [that [Lisi came why]]]?"

(60) *John-wa Mary-ga naze sore-o katta kadooka siritagatte iru no?

"John wants to know [whether [Mary bought it why]]?"

(61) The Empty Category Principle (ECP) - another locality constraint defined in terms very similar to those of Subjacency. It particularly constrains the movement of non-arguments.

(62) "I do not attempt to argue that all deviant Wh-movements are attributable to a processing-based explanation but restrict my attention to those...which have necessitated the introduction of some notion of bounding at surface structure...Consequently, ungrammaticality attributable to the ECP at LF will be assumed to be handled within the grammar as usual." [Pritchett (1991) pp.334-335]

(63) ?*What do you wonder [whether [John read ___]]

(64) *Why do you wonder [whether [John read the book ___]]

(65) Why do you think John read the book

(66) ?*What do you believe [the claim [that John read ___]]

(67) *Why do you believe [the claim [that John read the book ___]]

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