

More on Locative-Inversion Sentences and the Structure-Preserving Hypothesis

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Received March 23, 1979; revised April 16, 1979

1. HISTORY OF THE CONTROVERSY

In Langendoen [18], I argue that the structure-preserving hypothesis of Emonds [9,10,11] is false, because the best analysis of sentences like (1) (henceforth called 'locative-inversion sentences') that is consistent with that hypothesis can be shown to be less than optimal.¹

(1) In the Italian garden stands an elegant fountain. [18: 28]

In reply, Bowers [2] contends that my argument fails, and that there exists an analysis (which he presents in some detail) that is not only consistent with the structure-preserving hypothesis, but is also optimal. Most recently, Iwakura [15] demonstrated that Bowers' analysis is not optimal, but that nevertheless my argument still fails, because the optimal analysis, which I consider to be inconsistent with the structure-preserving hypothesis, can be made consistent with it, upon reformulation of the definition of 'root transformation.'² With this reformulation, the relevant transformations that apply in the derivations of locative-inversion sentences are classified as root transformations, and consistency of the optimal analysis of those sentences with the structure-preserving hypothesis is achieved.

¹ The analysis that I show to be less than optimal is the one that Bresnan apparently accepts, when she remarks that the subject, in locative-inversion sentences, "merely exchange[s] places with the PP" [4: 186]. For discussion of the contrast in grammaticality between (i) and (ii) that particularly interests Bresnan, see fn. 23.

(i) It's in these villages that we all believe can be found the best examples of this cuisine. [4: 186]

(ii) *It's in these villages that we all believe that can be found the best examples of this cuisine. [4: 186]

² Iwakura does not dispute the formulation of my rules of 'Locative Inversion' and 'Verb Second,' except to correct a minor flaw in the formulation of the latter rule [15: 333-334]. I gladly accept his reformulation as a "friendly amendment" and also his renaming of the latter rule 'Subject Postposing.' In section 3 below, however, I contend that there is no Locative-Inversion transformation.

In short, the controversy among Bowers, Iwakura, and me concerns whether the structure-preserving hypothesis should be saved, and if so, in what form. I argue that it should be rejected; Bowers and Iwakura that it should be saved. Bowers and Iwakura disagree on the form that the hypothesis should take; according to Bowers, the definitions of the various types of transformations do not change, but certain transformations, including Locative Inversion, should be interpreted as structure-preserving rather than as root transformations.³ According to Iwakura, the definition of 'root transformation' should be changed, but the transformations that Emonds classifies as root transformations remain root transformations. In order to further clarify the nature of the controversy, I propose now to examine more closely the basis on which one could (if one wanted to) dispassionately decide the fate of the structure-preserving hypothesis.

2. THE EXPLANATORY POWER OF THE STRUCTURE-PRESERVING HYPOTHESIS.

The interest of the structure-preserving hypothesis lies not in its ability to restrict the class of transformational grammars, but rather in its claim to be able to explain the correlations between what seem to be formally independent properties of transformational rules. The explanatory power of the structure-preserving hypothesis can be evaluated on the basis of three parameters: first, the plausibility and independent motivation of the base structures to which transformations conforming to the hypothesis apply; second, the simplicity and generality of the definitions of the various classes of transformations that are postulated by the hypothesis; and third, the simplicity and apparent independence of the correlated properties of transformations. All of these parameters must be evaluated, of course, only for grammars that correctly and, ultimately, optimally account for the grammatical properties and relations of sentences.

In my discussion of locative-inversion sentences, I assumed rather uncontroversial base structures and very simple definitions of the classes of structure-preserving, root, and local transformations, namely those of Emonds [9, 10, 11]. What I showed was that those base structures and those definitions mandated that Locative Inversion take on a particular form, and that that form was not descriptively adequate

³ Toward the end of his paper, Bowers makes the radical proposal that all transformations are structure preserving. The implications of this proposal for the structure-preserving hypothesis are considered in section 2.

for English. Accordingly, at least one of the three conclusions in (2) follows.

- (2) a. The structure-preserving hypothesis is false.
 b. The base structures for locative-inversion sentences postulated in [18] are incorrect.
 c. The definition of at least one of the classes of transformations countenanced by the structure-preserving hypothesis as formulated in [9,10,11] is incorrect.

Of these three conclusions, I drew the first, Bowers the second, and Iwakura the third.

The change in the base structures for locative-inversion sentences that Bowers proposes is the addition of a complementizer constituent adjoined as a left-sister to the constituent S, the whole being dominated by S'.⁴ One of the expansions of this complementizer constituent is PP, which according to Bowers "*must always be empty in deep structure*" [2: 239, emphasis his]. As Bowers immediately goes on to observe, the postulation of such base-structure configurations drastically weakens the explanatory power of the structure-preserving hypothesis. He writes:

Now it is crucial, if the notion 'structure-preserving rule' is to have any empirical content at all, to prohibit the use of obligatory empty nodes in deep structure, since otherwise any conceivable movement rule can be made structure-preserving simply by allowing the base rules to generate an empty node to the right category in just the position to which constituents of that category are moved by the rule in question. [2: 239]

To restore explanatory power to the structure-preserving hypothesis, Bowers proposes, in effect, that all transformations are structure preserving. He continues:

In particular, I argue that there can be no level of deep structure in the sense of the classical theory. Instead, all surface forms must be generated directly by the phrase structure rules. Furthermore, the notion 'transformational rule' must be redefined in such a way that transformations simply state cooccurrence relations between phrases that belong to the same category but which have different grammatical functions in surface structure. . . . This proposal immediately eliminates the problem of "motivating" the empty PP-node in the topic position, since obviously in a theory of this kind the only

⁴ S' is equivalent to \bar{S} in Chomsky's version of the X-bar theory of phrase structure.

motivation necessary for generating some node in a given position is that there may be some class of surface structures in which phrases of the category in question actually appear in that position. [2: 239]

However, Bowers has not restored explanatory power to the structure-preserving hypothesis; rather, he has abandoned that hypothesis altogether, in favor of a theory of grammar in which the distinctions that are central to that hypothesis (namely, among structure-preserving, root, and local transformations) are obliterated.⁵ I conclude that Bowers has in fact taken the position that both (2a) and (2b) are correct, despite his avowed intention of insulating the structure-preserving hypothesis against the objections I raised.

Regardless of the position that Bowers has taken, however, it is certainly possible to affirm (2b) while denying (2a). One can, for example, simply adopt the essentials of Bowers' analysis without adopting the particular theory of transformational grammar that he espouses. In reply to Bowers' charge of circularity in positing empty nodes in deep structure, one can say that while the circularity involved is problematic, it is not vicious, and does not eliminate the explanatory power of the structure-preserving hypothesis completely. For example, it could be maintained, without vicious circularity, that empty nodes can be associated with a particular configuration if there is independent motivation for postulating them.

This discussion of Bowers' position has been included essentially just to clarify the exact nature of the controversy in question. Given Iwakura's [15: 324-333] detailed critique of Bowers' analysis of locative-inversion sentences, I am extremely skeptical that his version of (2b) can be maintained. We turn now to (2c), the position that Iwakura himself maintains.

As I have already indicated above, Iwakura proposes a change in the definition of root transformation from that proposed by Emonds [9, 10, 11]. He points out, first, that Emonds' simple and straightforward definition of that class, given in (3), is inconsistent with the data presented by Hooper and Thompson [14], on the assumption that the transformations that Emonds classifies as root transformations are correctly classified.

- (3) A transformation that moves, copies, or inserts a node C into a position in which C is immediately dominated by a root S in derived structure is a "root transformation," [15: 353]

⁵ In other words, according to Bowers, to say that a transformation is structure preserving is simply to say that it is a transformation.

According to Iwakura, the definition of root transformation that is required is not (3), but (4).⁶

- (4) A transformation that can move, copy, or insert a node C *only* into a position in which C is immediately dominated by a tensed S or the highest \bar{S} , or is a sister constituent to a tensed S in derived structure is a "root transformation." [15: 355]

From our discussion above of how to evaluate the explanatory power of the structure-preserving hypothesis, it is evident that the replacement of (3) by (4) results in a marked reduction of that power. A very simple and formally easy-to-distinguish property of the domain of root transformations is now replaced by a rather complex and formally difficult-to-distinguish property of that domain.⁷ However, Iwakura supplements his definition of root transformation with the statement of a correlation of formal properties of grammar that, if correct, would provide the structure-preserving hypothesis with considerable new explanatory power. That correlation is given in (5).

- (5) When complement sentences disallow extraction of their internal constituents, they also disallow application of root transformations. [15: 357]

Iwakura cites numerous examples that are consistent with (5); however, it takes only one counterexample to falsify it, and such counterexamples are easy to find. Consider the sentences in (6) (ϕ indicates extraction sites).

- (6) a. i. The fact is that in the Italian garden stands an elegant fountain.
 ii. *In which garden is the fact that an elegant fountain stands ϕ ?

⁶ Green [13: 391] contends that the root transformation of Directional Adverb Preposing can apply in a tenseless, gerundive clause, as in (i).

(i) The idea of up popping your boyfriend just then is too much for words. [13: 391]

Sentences of this type do not strike me as grammatical; however, even if they are, they constitute the only class of counterexamples in English to (4).

⁷ To determine the domain of root transformations under definition (3), one need only make use of the unique boundary symbols (# . . #) that flank the roots of phrase-markers. To determine the domain of root transformations under definition (4), however, one has to refer not only to those symbols, but also to the category symbols S and \bar{S} , and to be able to determine whether the category Tns is immediately dominated by a particular instance of S.

- b. i. The possibility remains that in the provinces live millions of followers of the Gang of Four.
- ii. *In which provinces does the possibility remain that millions of followers of the Gang of Four live ϕ ?
- c. i. I know that I could not persuade you, since indeed in your breast is a heart of iron. [*Iliad* 22.356-357, Lattimore translation]
- ii. *What did you know that you could not persuade him, since he worships ϕ ?

As the ungrammaticality of (6aii) and (6bii) shows, predicate complements of subject noun phrases of the type *the fact* and *the possibility* disallow extraction; nevertheless, as the grammaticality of (6ai) and (6bi) show, root transformations (in particular, Locative Inversion) can apply within them. Similarly, the contrast in grammaticality between (6ci) and (6cii) shows that while extraction is disallowed from adverbial complements, application of root transformations need not be disallowed within them.⁸ Thus the correlation between applicability of root transformations (in the sense of (4)) and that of extraction transformations in complements that is expressed in (5), is not exact. It is possible to make the correlation exact, by explicitly exempting all counterexamples, such as those in (6), but the resulting statement would be so cumbersome that all explanatory power would be lost. Accordingly, we conclude that although Iwakura's revision of the definition of root transformation goes a long way toward making grammars that are consistent with the structure-preserving hypothesis adequate for English, the resulting hypothesis is considerably weaker in explanatory power than the unrevised hypothesis, were the latter able to supply grammars that are adequate for natural languages.

Is, then, the structure-preserving hypothesis worth saving? I do not think that the review of the controversy regarding the analysis of locative-inversion sentences that we have just conducted is decisive, but I think that it does show that the hypothesis does not have much going for it. One way, perhaps, of seeing how much explanatory power remains is to try to determine whether the properties of locative-

⁸ Iwakura [15: 357] gives several examples, including two cited from Emonds [11: 29,31], that show that some root transformations do not apply in adverbial complements, but, significantly, he gives no examples like (6ci) that involve that application of Locative Inversion. As Iwakura also observes, however, the status of some adverbial clauses as subordinate (i.e., as complements) is sometimes difficult to assess [15: 361-362]. Thus he may be able to argue that the adverbial clauses in (6c) are not complements, and hence that the grammaticality contrast in (6c) does not falsify (5).

inversion sentences and other structures in which so-called root transformations have applied can be explained independently of the structure-preserving hypothesis. It is to this question that we now turn.⁹

3. ON EXPLAINING THE PROPERTIES OF LOCATIVE-INVERSION SENTENCES.

There are three important properties of locative-inversion sentences that the structure-preserving hypothesis, as formulated by Iwakura, purports to explain. First, such sentences must be tensed.¹⁰ Second, they occur only in a restricted set of syntactic environments.¹¹ Third, they act as islands with respect to extraction operations.¹² In order to account for these properties, I propose an analysis of locative-inversion sentences along the following lines.

First, I agree with Bowers [2] that some change in the underlying representations of locative-inversion sentences from those given in Langendoen [18] is called for; in particular, that the locative phrase that initiates a locative-inversion sentence is a topic constituent. Second, following a number of recent investigators, notably Chomsky [6: 91-94], I assume that a topic constituent is base-generated in place as a left-sister of a sentential constituent of some sort; and that the whole is dominated by another sentential constituent of some sort, called a 'topicalized sentence.' Third, I assume that the topic constituent binds

⁹ We do not consider here the purported explanatory power that results from the positing of structure-preserving transformations. This subject has been carefully examined by a number of investigators, including Brame [3], Bresnan [5], and Wasow [20], who have all concluded that the structures that are putatively related by structure-preserving transformations should be independently generated in the base. Jayaseelan [16] provides a useful survey and discussion of this research.

¹⁰ This does not mean that the inverted locative phrase cannot be tied to a position in a nontensed clause. It can, as (i) illustrates (see also Iwakura [15: 354, n. 23]).

(i) In the Metropolitan Museum continues to hang my favorite worthless painting.

Rather, the main verb of the clause in construction with the inverted locative phrase must be tensed.

¹¹ That is, the distribution of locative-inversion sentences that function as clauses within larger sentences is restricted by an appropriately modified version of principle (5).

¹² Iwakura accounts for this property by subsuming it under a general condition he calls the Leftmost Constituent Constraint [15: 336], which he presents as an alternative to Emonds' condition that no more than one fronting operation can apply in any given sentential domain. Although Iwakura does not indicate the specific role that the Leftmost Constituent Constraint plays within his version of the structure-preserving hypothesis, I will assume for purposes of discussion that it is an integral part of that hypothesis. See also fn. 19.

a lexically empty occurrence of the same category within the immediately following sentential constituent.¹³ The sentential constituent that is in construction with the topic constituent must be of one of the types that can function independently, namely declarative (D), imperative (I), or interrogative (Q). These observations are describable by the phrase-structure rules in (7).¹⁴

- (7) a. $\bar{S} \rightarrow PP \bar{S}$
 b. $\bar{S} \rightarrow T S$
 c. $T \rightarrow \{D, I, Q\}$
 d. $S \rightarrow NP Tns VP$

Since all sentence types, including topicalized ones, can function as complements in at least some construction types, we require rules to introduce both \bar{S} and \bar{S} as complements. To express these rules, I introduce a new category \bar{C} (read 'complement'), which may have as its immediate constituents C (read 'complementizer') and either \bar{S} or \bar{S} . Those additional rules are given in (8).¹⁵

¹³ Thus the binding relation is understood here as holding at the level of deep structure. This assumption is not uncontroversial, since many linguists today would prefer to maintain that such relations hold at the level of surface structure or at a level of logical form, which is reached directly from surface structure (cf. [7]). However, the assumption made here is not crucial to the development of an explanation for the phenomena allegedly explained by the structure-preserving hypothesis, since the deep-structure representations I posit can rather straightforwardly be altered into the kinds of 'enriched' surface-structure representations with which those linguists work. In proposing that binding relations hold at least in part at the level of deep structure, I follow Akmajian and Kitegawa [1].

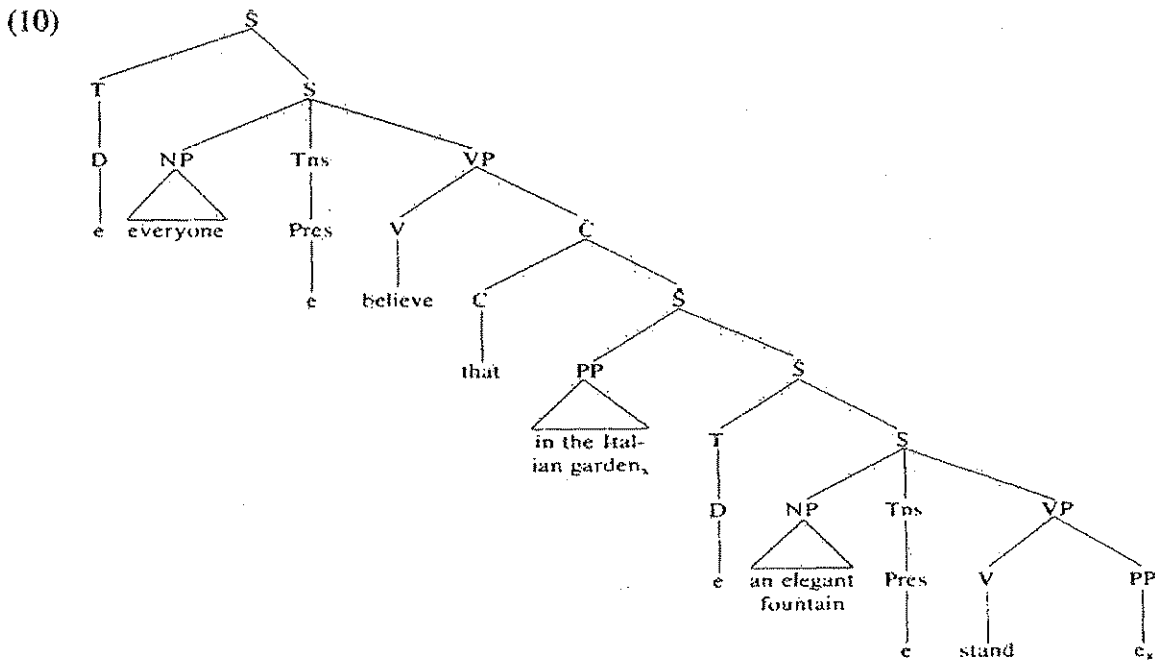
¹⁴ For \bar{S} , read 'topicalized sentence'; for \bar{S} , read 'typed sentence' (i.e., 'sentence of a particular type'); for S , read 'nuclear sentence'; and for T , read 'type.' The rules in (7) presuppose that a grammar has at least the two axioms, $\#\bar{S}\#$ (used in the derivation of topicalized sentences, including locative-inversion sentences) and $\#S\#$.

¹⁵ Rules (7a,b) and (8b) correspond to Chomsky's rules R1 and R2 [6: 91]. However, a grammar containing rules (7a,b) and (8b) makes two important categorial distinctions that a grammar containing R1 and R2 does not make: namely, between complementizer and sentence type, and between complement and sentence. In Chomsky's system, the complementizer category has to perform two distinct functions, that of indicating sentence type (and in particular of acting as the locus of *Wh*-Movement), and of indicating syntactic subordination. In my judgment, a greater degree of simplicity and intuitive appeal is achieved if these functions are performed by distinct categories. For example, in Chomsky's system, the \bar{S} in TOP \bar{S} structures must be thought of as a kind of free relative clause, in which *Wh*-Movement must apply. But there is no evidence that the \bar{S} in a topicalized sentence is anything like a free relative clause, despite Chomsky's claim [6: 91-92] that topicalized sentences are syntactically and semantically "analogous" to cleft and pseudocleft sentences. To see this, we need only ask in what sense the \bar{S} 's that occur in the topicalized sentences in (i) and (ii) can be thought of as kinds of free relative clauses.

- (8) a. $VP \rightarrow V \bar{C}$
- b. $\bar{C} \rightarrow C \{\bar{S}, \bar{S}'\}$

Together with other phrase-structure and lexical-insertion rules, (7) and (8) assign to the sentence (9) the underlying structure (10) (binding of the null PP by the topic PP is indicated by coindexing).

- (9) Everyone believes that in the Italian garden an elegant fountain stands.



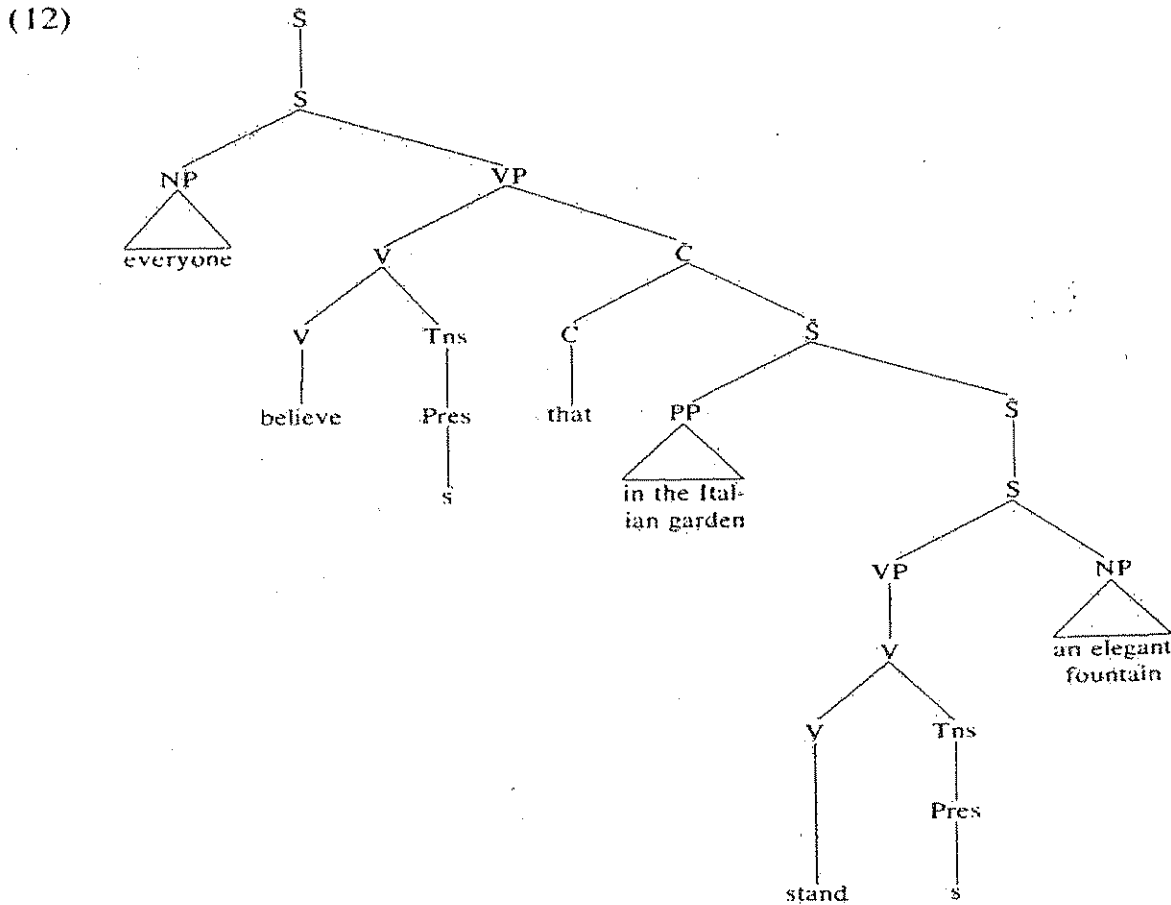
Corresponding to (9) is (11), which contains an embedded locative-inversion sentence.

- (11) Everyone believes that in the Italian garden stands an elegant fountain.

- (i) a. These shirts, do you really want to have starched?
- b. These shirts, please don't starch.
- (ii) These prices, what can anyone do about?

In fairness to Chomsky's position, it should be noted that he judges some sentences of type (ii) (with overt application of *Wh*-Movement) to be ungrammatical [6: 94]. However, such sentences (along with the less controversial sentences of type (i)) are considered grammatical by many people. Hence it is necessary to develop a theory of grammar that permits the setting up of grammars that can generate the full range of sentences of both type (i) and type (ii). Restrictions on the grammaticality of sentences of type (ii) can then be built into the grammars that are countenanced by the theory.

Sentence (11) has the same underlying structure as (9), namely (10), and has the surface structure indicated in (12).¹⁶



We are now in a position to account for the first two of the three properties of locative-inversion sentences listed at the beginning of this section: namely, that they must be tensed and that they can occur only in a limited range of syntactic domains, without any recourse to the structure-preserving hypothesis whatever. First, since locative-

¹⁶ We assume that lexically null categories that appear in deep structures must be deleted or substituted for in the derivations of grammatical sentences. If a lexically null category remains after application of all transformations, then the derivation blocks, and no sentence is generated. In other words, we assume that a sentence is grammatical if and only if it has a terminated derivation with respect to the grammar. As a consequence, there can be no rules (filters) that mark the strings associated with certain terminated derivations as ungrammatical.

Among the lexically unfilled categories that freely delete are the type markers and properly bound constituents (see below for further discussion of the notion of 'proper binding'). On the deletion of the complementizer constituent, see fn. 23.

inversion sentences contain topic constituents, that constituent must be followed by an occurrence of \bar{S} that belongs to one of the independent sentence types. Then since (in English, at least) all of the independent sentence types contain Tns as an immediate constituent, it follows that all locative-inversion sentences must be tensed. Second, since locative-inversion sentences are exhaustively dominated by \bar{S} , we can restrict the occurrence of such sentences in embedded contexts simply by restricting the introduction of the category \bar{S} in those contexts. Thus, for example, if we agree that the grammaticality judgments expressed in (13) are correct, we can simply require that while \bar{S} can be introduced in predicate complements, they cannot be introduced in noun complements.¹⁷

- (13) a. (= (6ai)) The fact is that in the Italian garden stands an elegant fountain.
 b. *The fact that in the Italian garden stands an elegant fountain should surprise nobody.

Hence we do not need the structure-preserving hypothesis to explain the first two of the three properties of locative-inversion sentences for which that hypothesis was formulated to provide an explanation. We need consider only rather elementary properties of the phrase-structure component of English grammar to obtain such an explanation. We turn, finally, to the third property listed at the beginning of this section: the imperviousness of locative-inversion sentences to extraction operations.

Most of the observed restrictions on extraction from locative-inversion sentences also turn out to be direct consequences of the phrase-structure rules in (7) and (8), together with the assumption that \bar{S} is not a cyclic node. For example, consider the restriction, noted by both Emonds and Iwakura, that Negated Constituent Preposing cannot be applied so as to extract a negated constituent from a locative-inversion sentence, which is illustrated by the ungrammaticality of (14).

- (14) *Not a single woman could in the crowd be found. [11: 42; 15: 346]

In (14), the phrase *in the crowd* is intended as a topic constituent. Assuming that \bar{S} is not a cyclic node, then Negated Constituent Front-

¹⁷ While examples of the type (13b) are considered ungrammatical by Emonds [9, 10, 11], Hooper and Thompson [14], and Iwakura [15], they are considered grammatical by Green [13: 391] and McCawley [19: 387]. My judgment concurs with that of Green and McCawley, but I am certainly willing to grant the possibility that a dialect in which (13b) is ungrammatical exists.

ing must be \bar{S} -cyclic, and all it can do in the presumed structure underlying (14) is to front the constituent *not a single woman* within \bar{S} .¹⁸ Since that phrase is already the subject of \bar{S} at the point of application of the rule, no movement takes place, and (14) is not generated. On the other hand, fronting of negated constituents within \bar{S} inside of \bar{S} is permitted, as the grammaticality of (15) indicates.¹⁹

(15) In the crowd, not a single woman could I find.

By similar arguments, all of the restrictions on the double application of so-called root transformations can be accounted for.

The ungrammaticality of many sentences in which a *wh*-phrase has been extracted from \bar{S} within \bar{S} by *Wh*-Movement can also be accounted for by the phrase-structure rules in (7) and (8). Consider (16).²⁰

- (16) a. *What does in the Italian garden stand? [15: 322; 18: 31]
 b. *The elegant fountain which in the Italian garden stands is my favorite. [15: 322; 18: 31]

In order for (16a) to be generated, the *wh*-phrase *what* would have to be attracted to an occurrence of *Q* to the left of the topic constituent *in the Italian garden*. But by the phrase-structure rules in (7) and (8), *Q* cannot occur to the left of the topic constituent in a simple sentence.²¹ In order for (16b) to be generated, \bar{S} would have to occur as a relative clause, but since it cannot, that sentence cannot be generated either.

However, there are ungrammatical sentences involving extraction

¹⁸ Recall that at this point in the discussion we are not maintaining the structure-preserving hypothesis. Thus the postulation of cyclic, non-structure-preserving transformations is not problematic.

¹⁹ As far as I can determine, the grammaticality of (15) is incompatible with Iwakura's Leftmost Constituent Constraint [15: 336]. If so, then the explanatory power of his version of the structure-preserving hypothesis is even weaker than I show it to be in section 2 above.

²⁰ In Langendoen [18], I argue that the ungrammaticality of (16) follows from Keenan and Comrie's [17] theory of accessibility of noun phrases to relativization and question formation, on the assumption that the postposed subject of locative-inversion sentences are below the cut-off point for those processes in English. However, Subject Postposing need not have applied in the derivations of (16), and if it has not applied, then the *wh*-phrases in (16) are subjects, which normally can be questioned and relativized in English. Hence my original explanation for the ungrammaticality of (16) cannot be correct. For another argument against that explanation, see Bowers [2: 232-234].

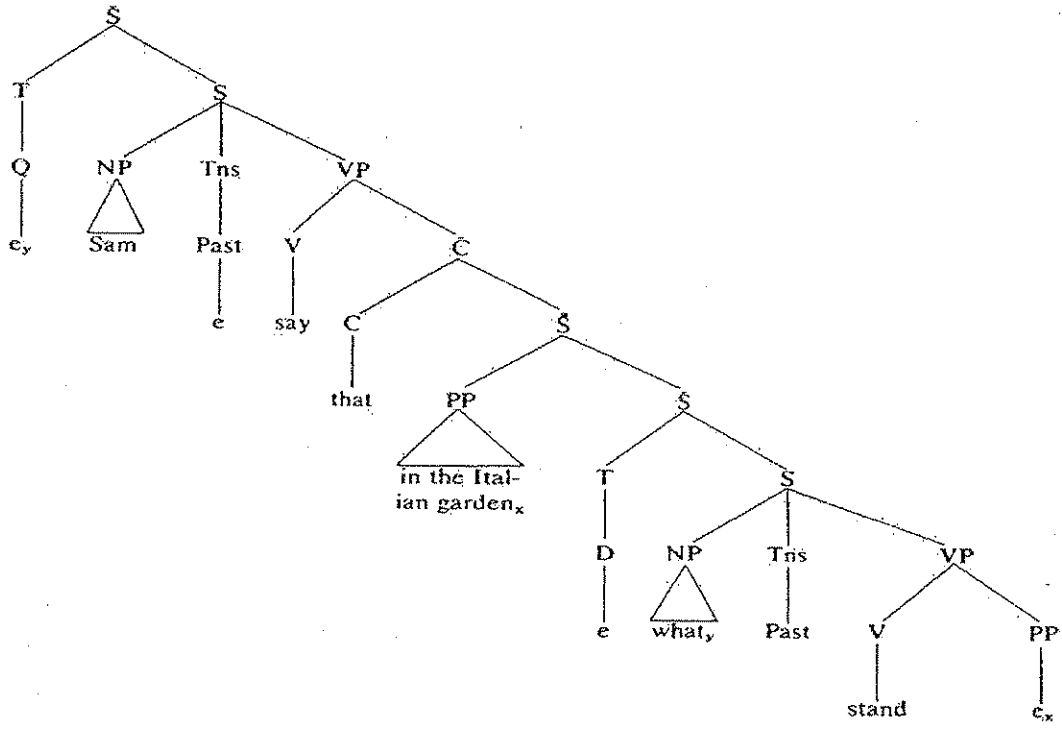
²¹ By virtue of this restriction, the phrase *in which garden* in (i) must be considered to have undergone *Wh*-Movement, rather than to have been base-generated as a topic constituent, since as a topic constituent it would not be in construction with *Q*, and hence not bound by it.

of a *wh*-phrase from an \bar{S} inside \bar{S} whose ungrammaticality is not simply a consequence of phrase structure. Consider (17).

(17) *What did Sam say that in the Italian garden stood?

The presumed underlying structure for (17) is (18).

(18)



Unlike (16a), (17) has a presumed underlying structure in which *Q* appears in a position in which it can bind the *wh*-phrase *what*. Nevertheless, (17) is ungrammatical. Why?

To answer this question, we must look more closely at the conditions under which a topic constituent can bind an element in the \bar{S} following it. The condition that the bound element must be lexically empty and of the same category as the topic constituent, while necessary for the well-formedness of topic constructions, is not sufficient. The bound constituent must also appear in a bindable position within that \bar{S} (for example, it cannot occur in a sentential subject), and there can be only one such constituent bound to any given topic constituent. Moreover, there can be no other element within that \bar{S} , such as a *wh*-phrase or

- (i) a. In which garden does an elegant fountain stand?
- b. In which garden stands an elegant fountain? [2: 231; 18: 32]

Example (ib) is obtained by application of Subject Postposing in the usual way, following application of *Wh*-Movement.

a lexically null element, that is also bound by a constituent outside of that \bar{S} . The totality of necessary and sufficient conditions relating to the binding of an element by a topic constituent may be called the 'proper binding conditions' for topicalization.²²

Now consider once again the structure given in (18). It will be observed that within the \bar{S} in construction with the topic constituent *in the Italian garden* occur two bound elements: *what_v* and *e_x*, both of whose binders lie outside of that \bar{S} , in violation of the proper binding conditions for topicalization. Careful examination of the cases of ungrammaticality resulting from the application of *Wh*-Movement to an element within \bar{S} inside \bar{S} that are not accounted for by phrase structure, are accounted for by the proper binding conditions for topicalization.²³

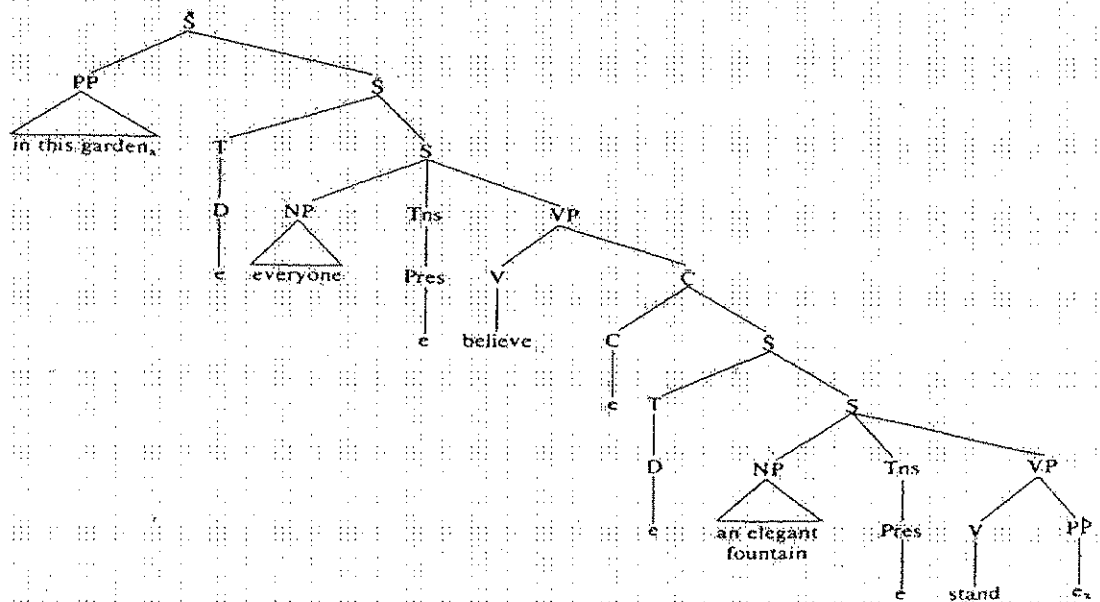
²² The statement of the proper binding conditions for topicalization is to be understood as part of a general theory of proper binding, which deals not only with topicalization, but also with relativization, question formation, comparative formation, and the binding of such obligatorily anaphoric expressions as reflexive and reciprocal pronouns. As indicated above (see fn. 13), my assumption that these conditions hold at the level of deep structure is not crucial to the argument of this section.

²³ The analysis of topicalization presented here, however, does not enable us to account for the contrast in grammaticality between Bresnan's examples cited in fn. 1, either in terms of the Complementizer Constraint on Variables of Bresnan [4: 173] or the *That*-Trace Filter of Chomsky and Lasnik [8: 451]. To see this, consider examples (i) and (ii) below, which are of the same type as Bresnan's examples, but which are somewhat less complex structurally.

- (i) In this garden everyone believes stands an elegant fountain.
 (ii) *In this garden everyone believes that stands an elegant fountain.

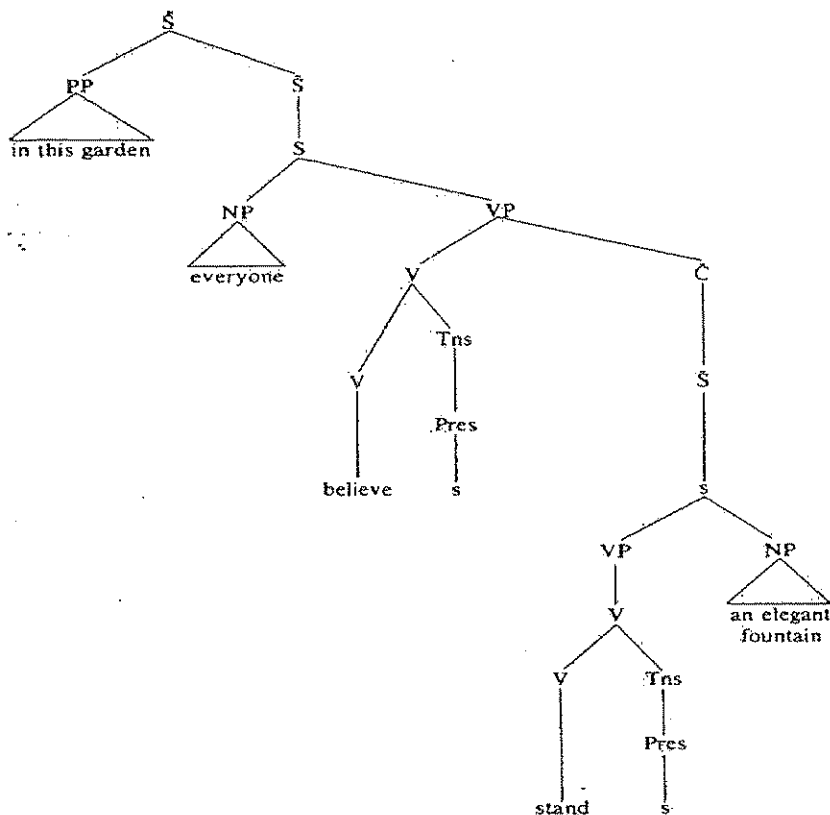
According to the analysis presented here, (i) has the deep structure given in (iii) and the surface structure given in (iv):

(iii)



This completes our construction of an explanation for the fact that locative-inversion sentences act as islands with respect to extraction operations. If this explanation is correct, then there is absolutely nothing left for the structure-preserving hypothesis to explain about

(iv)



If (ii) were grammatical, it would have the same deep structure as (i), except that C would be lexicalized as *that*. Since the only transformation of interest that applies to (iii) in the derivation of (i) is Subject Postposing, the Complementizer Constraint on Variables cannot account for the contrast in grammaticality between (i) and (ii). Subject Postposing has no variables that are affected by the constraint. And since there are no lexically unfilled elements (traces) in (iv), the *That-Trace* Filter cannot account for the contrast in grammaticality between (i) and (ii) either.

To account for the ungrammaticality of (ii) within the framework assumed here, we adopt Evers' [12] theory of cyclic lexical insertion. (This assumption has far-reaching consequences, including the elimination of deep structure as a linguistic level, but we must leave the discussion of these matters for another occasion.) Now, consider the point of application of the rule that lexicalizes the category C. Since \bar{S} is a cyclic category, Subject Postposing will have applied in the \bar{S} in construction with C in (iii) prior to the application of the lexicalization rule in question. Suppose we stipulate that C cannot be lexicalized if nothing intervenes between it and the finite verb of \bar{S} . Then, if by a later rule C deletes (i.e., when it dominates no lexical item), the contrast in grammaticality between (i) and (ii) follows.

This restriction on the lexicalization of C can be naturally extended to cover the entire domain of the *That-Trace* filter. However, the demonstration of this fact, and an analysis of the other phenomena accounted for by the Complementizer Constraint on Variables, must also be left for another occasion.

locative-inversion sentences. Since the sole function of that hypothesis is to provide an explanation for phenomena for which there is an explanation on independent grounds, I conclude that it can be gotten rid of with no loss of explanatory power to the transformational theory of syntax.

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