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ABSTRACT

This paper presents a class of sentences that certain syntactic rules of English would be expected to produce, but that are not grammatical. The sentences all involve the raising of a sentential Noun Phrase (NP) and the subsequent application of some syntactic rule to that senential NP. A constraint, referred to as the Antigone Constraint, is proposed to explain the ungrammaticality of these sentences that prohibits two-storey rules from applying to clauses that have been raised. Evidence is given that the English rules of Subject-to-Subject-Raising, Subject-to-Object-Raising, Equi-NP Deletion, Extraposition, and Non-Subject Raising should be prohibited from applying to certain structures that meet their structural descriptions. (VWL)

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The Antigone Constraint

David Tuggy

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0. Introduction

In this paper I will present a class of sentences that certain syntactic rules of English would be expected to produce, but which are ungrammatical. These sentences all involve the raising of a sentential NP and the subsequent application of some syntactic rule to that sentential NP. To explain the ungrammaticality of these sentences, I propose a constraint called the Antigone Constraint,[1] which prohibits two-storey rules from applying to clauses which have been raised.[2]

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1. Arguments for Constraint A

1.1 The argument from SSR

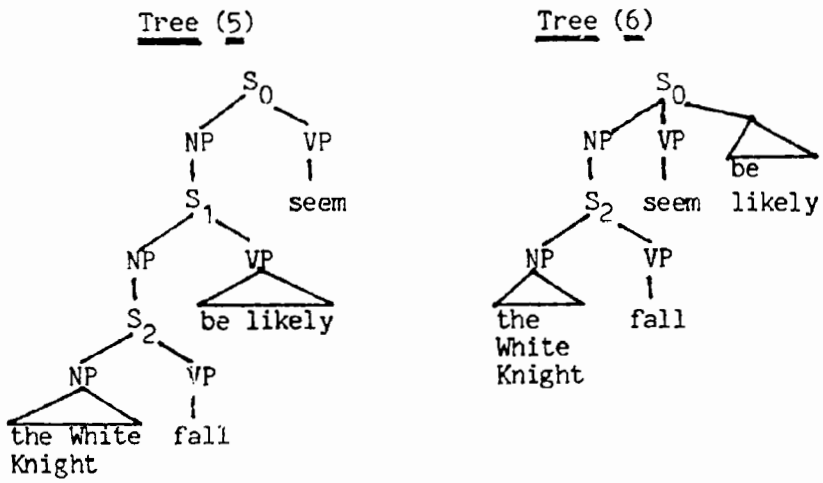
A familiar rule has been proposed for English known as Subject-to-Subject Raising (SSR) (Rosenbaum 1967, Postal 1974). The structural description of SSR requires that, if it is to apply, the sentence to which it is to apply have a sentential subject, and the main verb of that sentence be one that governs SSR. If these conditions are met, SSR can apply to raise the subject of the embedded clause to become the subject of the matrix clause. SSR applies, as governed by the verbs **be likely** and **seem**, in the derivation of sentence (2) from the structure underlying sentence (1), and in the derivation of (4) from the structure underlying (3).[3]

(1) **That the White Knight will fall is likely.**
(2) **The White Knight is likely to fall.**
(3) **(*)That poor Bill always gets into trouble seems.**[4]
(4) **Poor Bill seems to always get into trouble.**

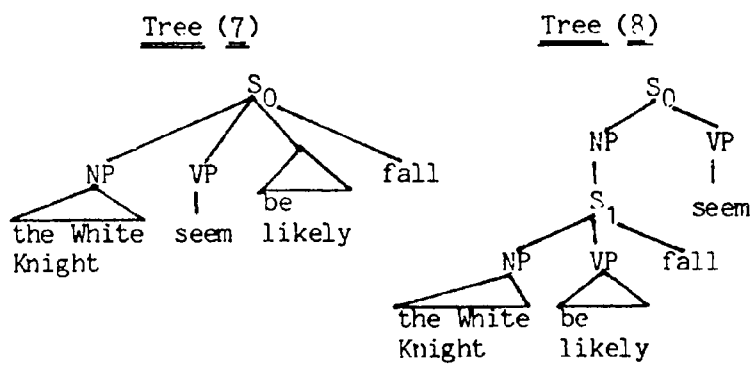
1.1.1 Two derivations

SSR-governing verbs like **seem** and **be likely** can have as their subjects sentences that themselves have sentential subjects. When SSR applies in such cases, the sentential subject of the lower verb is raised to become the subject of the higher verb. Thus SSR can apply on the S_0 cycle of tree (5), producing tree (6) and sentence (6).[5]

(6) **That the White Knight will fall seems to be likely.**
(7) **The White Knight seems to be likely to fall.**



Tree (6) apparently fulfills the structural description for SSR. The question arises as to whether SSR can indeed apply to it. If SSR is applied, tree (7) results, and the corresponding sentence (7) is certainly grammatical. However, there is another possible derivation for (7), which involves SSR applying on the S_1 cycle of tree (5), governed by **be likely**, producing tree (8). This tree will then be changed by SSR on the S_0 cycle into a tree essentially like tree (7).[6]



Thus (7) could be produced in either of two ways: either by SSR applying twice on the S_0 cycle, converting tree (5) to tree (6) and thence to (7) (Derivation I), or by SSR applying on two cycles, converting (5) to (8) and thence to (7) (Derivation II).

1.1.2 Derivation I should be prohibited

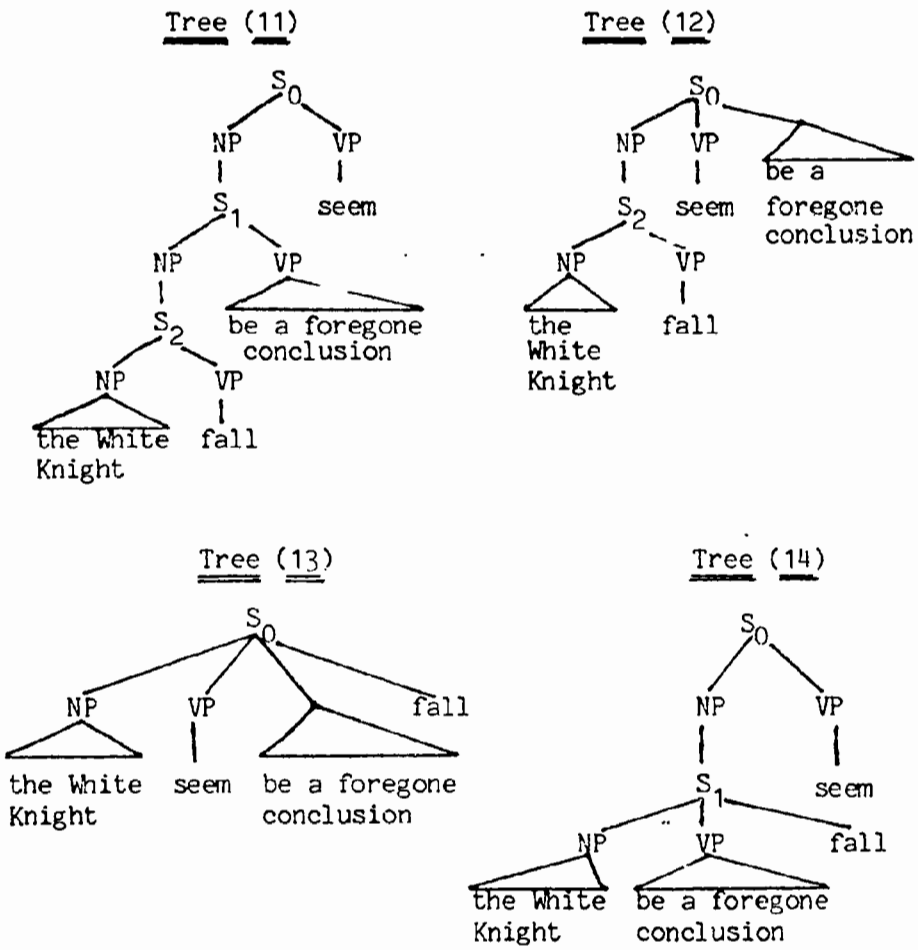
As far as I know, there is no argument against permitting Derivation II. However, I would like to argue that derivations like Derivation I, deriving (7) via (6), should be proscribed because they produce wrong sentences in certain cases and are never, to my knowledge, necessary to produce grammatical sentences. The argument is as follows:[7]

When, in a structure like tree (5), the S_1 verb is one that does not permit SSR, a derivation like Derivation II above is, of course, not possible. However, if derivations like Derivation I are permissible, one would expect that a structure corresponding to (7) would still be derivable. In fact, such structures are ungrammatical.

Be a foregone conclusion is, as (9) and (10) indicate, one of the class of verbs which do not permit SSR even though they may have a sentential subject.

(9) **That the White Knight will fall is a foregone conclusion.**
(10) ***The White Knight is a foregone conclusion to fall.**

Consider trees (11) to (13) (sentences (12) and (13)).



(12) **That the White Knight will fall seems to be a foregone conclusion.**
(13) ***The White Knight seems to be a foregone conclusion to fall.**

These structures are directly parallel to (5)-(7), but with the SSR-prohibiting verb **be a foregone conclusion** substituted for the SSR-governing verb **be likely.** (14), the parallel to (8), is underivable because in order to derive it, SSR would have to apply on the S_1 cycle of tree (11), which would violate the prohibition against SSR with **be a foregone conclusion.** Thus (13) cannot be derived by a derivation parallel to Derivation II. However, if a derivation parallel to Derivation I is available to it, we should expect (13) to be grammatical. The crucial fact is that it is not grammatical. What is more, this same pattern of behavior apparently holds for all other sentences like these: no matter what SSR-governing verbs are substituted for **be a foregone conclusion,** the sentences parallel with (6), (7) and (12) are grammatical, but those which parallel (13) are always ungrammatical.

1.1.3 Constraint A will do it

These facts must be accounted for. It seems clear that the point where things go wrong in the derivation is in the change from a structure like (12) to one like (13). So we need to block that step. One possible way to do this is to change the structural description of SSR to preclude its application to structures like tree (12), perhaps by specifying that the SSR-governing verb not be followed by an infinitive phrase.[8] However, as we will show later, similar changes would have to be made in the structural descriptions of other rules such as SOR, Equi, and Extr. This would constitute an unnecessary duplication of mechanisms, and Occam's razor[9] would force us to look for a general constraint that would accomplish the same purpose. Several such constraints seem possible; I recommend two for your consideration at this point:

Two Versions of Constraint A

The One Shot Constraint

Rules may not apply more than once per cycle.

The Antigone Constraint

Rules may not affect clauses which have been raised.

(The formulations given above are preliminary and need some adjustments and clarifications.) The choice between these two versions of the constraint will be discussed in section 3. Either version will give the right results; I know of no case in which either (as correctly defined) must be violated.[10] Meanwhile let us assume that such a constraint exists and refer to it as Constraint A.

Constraint A will star sentences like (13), claiming that the only possible derivation for them would involve SSR on the S_1 cycle, in despite of the fact that the S_1 verbs do not permit SSR. This makes the intuitively right claim that (10) and (13) are ungrammatical in the same way, and that (2) and (7) are grammatical for the same reason, namely that **be likely**, in contrast to **be a foregone conclusion**, governs SSR.

1.2 An argument from obligatoriness

Certain SSR-governing verbs require that SSR apply. **Tend** is such a verb, as (15) and (16) indicate.

(15) (*) **That beating Time angers him tends.**
(16) **Beating Time tends to anger him.**

1.2.1 Obligatoriness requirements for SSR are sometimes suspended

Consider sentences (17) and (18), which parallel (6) and (7), and (19) and (20), which parallel (12) and (13).

(17) **That the Unicorn will win tends to be likely.**
(18) **The Unicorn tends to be likely to win.**
(19) **That the Unicorn will win tends to be a foregone conclusion.**
(20) ***The Unicorn tends to be a foregone conclusion to win.**

The structure corresponding to (17) and (19) fulfill the structural description for SSR governed by **tend**. Every model that I know of for administering obligatoriness constraints like that on **tend** says in effect that an obligatory rule must apply to any tree available to it that meets its structural description.[11] This means that, if SSR is in principle allowed to apply to (17) and (19), it should be required to apply to them, just as it is required to apply to (15). We have, in other words, to explain not only the fact that (20) is ungrammatical (that was our task in the last section), but also the fact that (17) and (19) are grammatical when we would have expected them to be starred by the obligatoriness requirement on **tend**-governed SSR. And, once again, the same pattern holds when other SSR-requiring verbs are used instead of **tend**.

1.2.2 Constraint A predicts this

To account for these facts we could, of course, complicate the mechanism for administering obligatoriness requirements by introducing a constraint (unconstraint?) which would state that if an obligatory rule has applied at least once as governed by the verb in question the obligatoriness requirement is satisfied even if the structural description is still met. You might call it the One-shot-is-all-you-need Condition. However, the independently needed Constraint A, by guaranteeing that you cannot apply SSR to structures like those of (17) and (19), renders it unnecessary to state that you need not. Thus Constraint A predicts the suspension of the obligatoriness requirement in just the necessary cases.

Thus, positing Constraint A saves us from having to complicate our statement of obligatoriness. This provides another argument for the existence of Constraint A.

1.3 The argument from SOR

Another well-known syntactic rule of English is Subject-to-Object Raising (SOR) (Postal 1974)[12] whose structural description requires that the sentence to which it is to apply have a sentential object and that the main verb of the sentence be one that governs SOR. If these conditions are met, SOR can apply to raise the subject of the embedded clause to become the object of the matrix clause. SOR applies, as governed by the verb **believe**, in the derivation of (22) from (21).

(21) **Alice didn't believe that the Queen was 101.**
(22) **Alice didn't believe the Queen to be 101.**

1.3.1 SOR data like the SSR data

Be likely and **be doubtful** contrast in that **be likely** permits SSR, whereas **be doubtful** prohibits it. Sentences (23) to (26) illustrate this fact.

(23) **That the Queen was 101 was likely.**
(24) **The Queen was likely to be 101.**
(25) **That the Queen was 101 was doubtful.**
(26) ***The Queen was doubtful to be 101.**

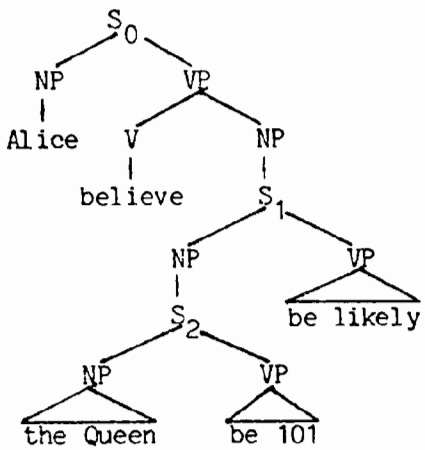
SOR-governing verbs like **believe** can have as their objects sentences that have sentential subjects. When SOR applies in such cases, the sentential subject of the lower verb is raised to become the object of the higher clause. Thus SOR can apply on the S_0 cycle of trees (27) and (31), producing trees (28) and (32) respectively.

(27) **Alice believed that that the Queen was 101 was likely.**
(28) **Alice believed that the Queen was 101 to be likely.**[13]
(29) **Alice believed the Queen to be likely to be 101.**
(30) **Alice believed that the Queen was likely to be 101.**

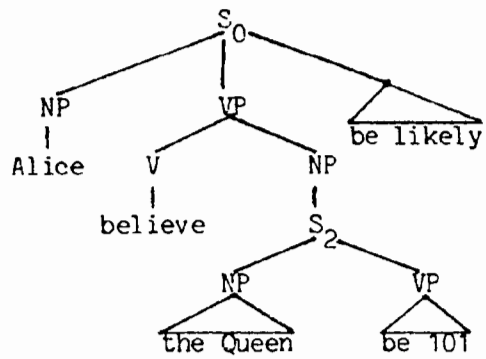
(31) **Alice believed that that the Queen was 101 was doubtful.**
(32) **Alice believed that the Queen was 101 to be doubtful.**
(33) ***Alice believed the Queen to be doubtful to be 101.**
(34) ***Alice believed that the Queen was doubtful to be 101.**

Trees (27) and (31) and their derivatives differ only in that the first group have the SSR-governing **be likely** as the S_1 verb, whereas the second group have **be doubtful,** which does not permit SSR to apply. Trees (28) and (32) fulfill the structural description for SOR. If SOR is allowed to apply, (29) and (33) result. Sentence (29) is grammatical, but it can be derived by another route, without applying SOR to tree (28). If SSR is applied on the S_1 cycle to tree (27), a tree corresponding to (30) can be derived, and application of SOR on the S_0 cycle to that tree will produce sentence (29). Thus application of SOR to structures like trees (28) and (32) is not necessary for the derivation of (29). Sentence (33), however, is ungrammatical. It has no alternate derivation available to it; (34), which parallels (30), is underivable because in order to derive it one would have to apply SSR on the S_1 cycle, as governed by **be doubtful,** which does not permit SSR. Thus, if we can block SOR from applying to structures like (28) and (32), we will permit the good sentence (29) and star the bad sentence (33).

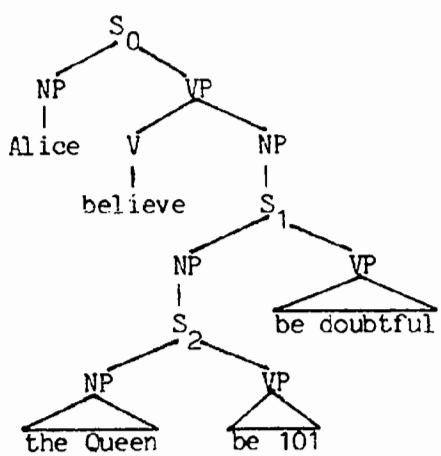
Tree (27)



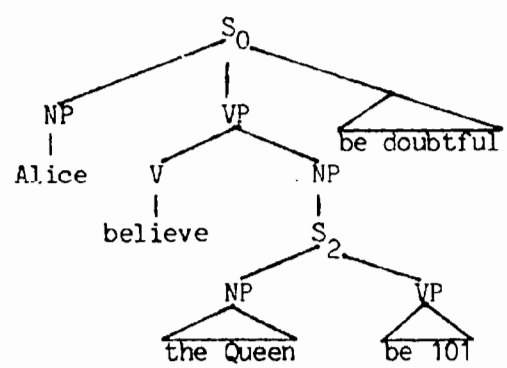
Tree (28)



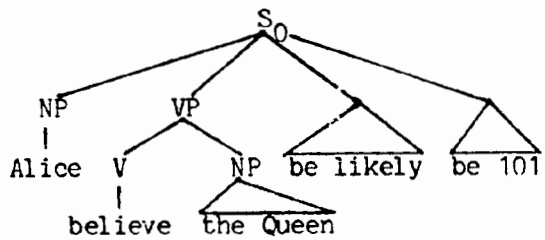
Tree (31)



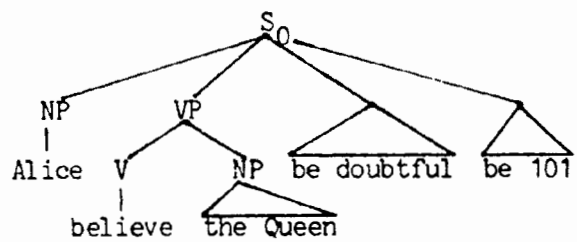
Tree (32)



Tree (29)



Tree (33)



As was the case with SSR examples, these examples do not stand alone. No matter what SOR-governing verb is substituted for **believe**, or what SSR-prohibiting verb is substituted for **be doubtful**, although sentences parallel with (28), (29) and (32) are grammatical, those which parallel (33) are ungrammatical.

1.3.2 Constraint A accounts for this

These facts must be accounted for. Again, we could change the structural description of SOR so that it would not apply to structures like tree (32), but to do so would be duplicating the mechanism needed to account for the SSR case. However, Constraint A, in either version, will do the job, without entailing any further complication of the syntactic mechanism. The One Shot version would star (33) because SOR must apply twice on the S_0 cycle in order to derive it, and the Antigone version would star it because SOR would have to apply to the raised clause S_2 in order to derive it. Either way, (33) will be starred. These data, then, constitute further evidence for the existence of Constraint A.

Constraint A will star sentences like (33), claiming that the only possible derivation for them would involve SSR on the S_1 cycle, in spite of the fact that the S_1 verbs do not permit SSR. This makes the intuitively right claim that (33) and (26) are ungrammatical in the same way, and that (29) and (24) are grammatical for the same reason, namely that **be likely**, in contrast to **be doubtful**, governs SSR.

1.4 The argument from NSR and Equi

The syntactic rule of Equi-NP Deletion (Equi) deletes an NP in an embedded clause coreferential to an NP in its mother clause (Rosenbaum 1967). It applies, as governed by the verb **be pleasant** and triggered by the nominal **the Walrus** in the upper clause, in deriving (36) from (35).

(35) (*) For him$_i$ to eat the Oysters was pleasant for the Walrus$_i$.
(36) To eat the Oysters was pleasant for the Walrus.

(35) is ungrammatical because Equi is required to apply with **be (un)pleasant.**

Be (un)pleasant governs another rule which has been called Tough Movement, Object Raising, or Non-Subject Raising (NSR) (Rosenbaum 1967:107; Postal 1971:27-28; Perlmutter and Soames 1979:240-250). NSR applies to derive (37) from (36).

(37) The Oysters were pleasant for the Walrus to eat.

The structural description of NSR demands that the sentence to which it is to apply have a sentential subject. Berman (1974:271-273) claims that NSR is not a governed rule, but that any verb with the appropriate structural schema will do. In addition it has been claimed that NSR cannot apply unless the subject clause is itself subjectless, usually (if not always) because of the action of Equi, as was the case with (36) (Chomsky 1973:240: Berman 1974:264-271; Perlmutter and Soames 1979:502-511). This constraint explains why (39) cannot be derived from (38), and why in (40) the unspecified person(s) who ate and who experienced the unpleasantness must be the same.

(38) For the Walrus to eat the Oysters was unpleasant for them.
(39) *The Oysters were unpleasant for them for the Walrus to eat.
(40) The Oysters were unpleasant to eat.

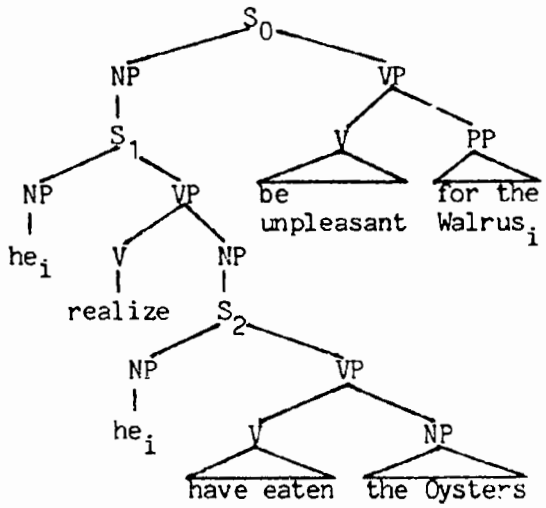
When these conditions are met, NSR raises a non-subject NP (usually an object) from within the sentential subject to become the subject of the matrix clause.

1.4.1 Equi cannot apply to some sentences derived by NSR

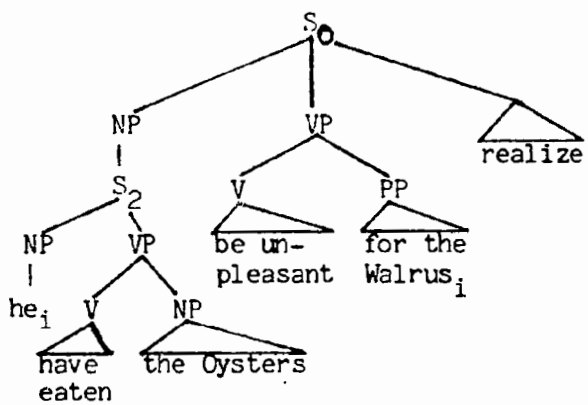
Consider the derivationally related sentences (41) to (44).

(41) *For him$_i$ to realize that he$_i$ had eaten the Oysters was unpleasant for the Walrus$_i$.
(42) To realize that he$_i$ had eaten the Oysters was unpleasant for the Walrus$_i$.
(43) That he$_i$ had eaten the Oysters was unpleasant for the Walrus$_i$ to realize.
(44) *To have eaten the Oysters was unpleasant for the Walrus to realize.

Tree (41)



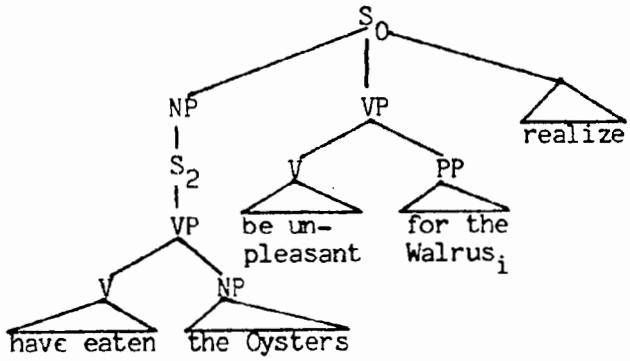
Tree (43)



Equi must apply to (41) on the S_0 cycle, converting it into (42). NSR can then apply to (42) since S_1 no longer has a subject. NSR raises S_2 from its object position to be subject of S_0, producing (43).

Tree (43) fulfills the structural description for Equi, and since Equi is obligatory with **be unpleasant** we would expect it to have to apply. However, if it does apply, the starred sentence (44) is produced.

Tree (44)



As was the case in the previous two sections, this pattern holds no matter what Equi-and-NSR-governing verb we substitute for **be unpleasant**, and what Equi-prohibiting verb we substitute for **want**.

1.4.2 Constraint A will account for this

In order to account for these facts we will want to prohibit Equi from applying to structures like tree (43). One way would be to change Equi's structural description to keep it from working when the governing verb is followed by an infinitival phrase. Since this would be duplicating the mechanisms needed by the SSR and SOR cases, we rule it out. Another possibility is that we have an ordering constraint: Under a strictly ordered model, Equi must be ordered before NSR (feeding) in order to change tree (41) into (42) so NSR can apply. This would mean that Equi could not apply again after NSR (counterfeeding). (All these applications are, of course, on the same cycle.) This would explain why Equi cannot apply to tree (43). However, unless a strictly ordered model can be independently justified, it itself is a complication to the theory which would exist only to explain this one data pattern.

In any case, it is not necessary to posit rule ordering here, because these data can be explained by Constraint A. The One Shot version of this constraint would prohibit Equi from applying to structures like tree (43) because this would be Equi's second shot on cycle S_0, and the Antigone version would do it because Equi would be applying to a clause that had been raised. Either way, (44) will be starred. Thus, unless independent motivation can be found for positing a strictly ordered model, these data provide additional evidence for Constraint A.

1.4.3 Further support for the argument from obligatoriness

These data also reinforce the argument of section 1.2. Here, too, if it were not for Constraint A, we would need a One-shot-is-all-you-need Condition on obligatoriness to explain the fact that (43) is grammatical in spite of the fact that it fulfills the structural description for Equi, and that Equi is required by **be unpleasant.**

2. A counter proposal considered—the CH

2.1 The CH can account for the data so far

There is a plausible alternative hypothesis to Constraint A which will explain the data thus far presented. We will call it the Complementizer Hypothesis (CH).[14] It has two main tenets: (a) Complementizers are chosen early in the derivation[15] on the basis of which verb commands their clauses in underlying structure, and complement clauses keep their original complementizer when raised. (b) Rules such as SSR, SOR and Equi make crucial reference to complementizers. None of these rules will apply if the downstairs clause they affect is complementized by **that**; they can only affect NP's in **for-to** clauses.

If this Hypothesis could be maintained, the following claims would be made with respect to SSR: Pairs of sentences like (1) and (2), (3) and (4), (9) and (10), and (15) and (16) would come from different underlying structures. In each case the first (unraised) one would have a **that** as complementizer on the lower clause and the other would have **for-to.** The ungrammatiality of sentences like (10) and (15) might be due not so much to obligatoriness constraints on the verbs involved[16] as to co-occurrence restrictions holding between them and the complementizers at the underlying level: **be** a **foregone conclusion** would not take a **for-to** complementizer, nor would **tend** take a **that** complementizer. These co-occurrence restrictions would not hold for derived structures; even though the structures corresponding to (17) and (19) would have **tend** commanding a **that** complementizer, they are not starred. But the fact that the lower clause would be complementized by **that** (and would have to be complementized by **that,** since it was originally commanded by **be a foregone conclusion**) would be enough to prevent SSR from applying to these structures. It would not be necessary to invoke Constraint A to prevent the derivation of (20) and explain the grammaticality of (17) and (19).

The case of SOR is similar. (28) and (29) would come from different trees; (28) with a **that** and (29) with a **for-to** complementizer. (33) could not be derived from (32) because the clause "**the Queen be 101**" would be complementized by **that,** as would be all clauses originally commanded by **be doubtful.** To derive (33), part (b) of the CH would have to be violated. Again, Constraint A would not be needed to block the derivation.

And, finally, Equi would not be able to apply to (43) to produce (44) because "**he have eaten the Oysters**" would have a **that** as complementizer and not a **for-to.** To apply Equi would again violate part (b) of the CH.

In sum, then, the crucially bad sentences (13), (20), (33), and (44) could be starred because their derivations would involve violations of part (b) of the

CH, which prevent SSR, SOR and Equi from applying to **that**-clauses. The CH would also predict the suspension of obligatoriness in the cases of (17), (19), and (43), thus accounting for their grammaticality. Constraint A would be unnecessary in each of these cases.

2.2 The CH duplicates mechanisms

One argument against the CH is this: the CH requires us to posit duplicate mechanisms for SSR, SOR, and Equi: all three rules must contain statements guaranteeing that they will apply only with **for-to** clauses, and not with **that** clauses. I have not been able to formulate a general principle to combine these statements into one. One cannot say that all rules, or all cyclic rules, or all two-storey rules require a **for-to** complementizer, because Extraposition does not, as the following sentences show.

(45) For the Panther to eat the Owl was cruel.
It was cruel for the Panther to eat the Owl.
(46) That the Panther would eat the Owl was obvious.
It was obvious that the Panther would eat the Owl.

Thus it will be hard if not impossible to find a general way to state the constraint making SSR, SOR, and Equi apply only to **that**-complementized clauses. And unless such a general statement can be made, independent statements will have to be made for each rule. Unless there is independent reason to justify this the theory with Constraint A, which has only one statement to accomplish the same things, is preferable.

2.3 Even for-to clauses obey Constraint A

Various other arguments against the CH are possible. Several of the assumptions embodied in part (a) of the CH can be severely questioned, if not falsified. For instance, as sentence (47) shows, a complement originally embedded under **be a foregone conclusion** may have a **for-to** complementizer after raising, although part (a) of the CH would demand a **that** complementizer.[17]

(47) For the Unicorn to win would tend to be a foregone conclusion.

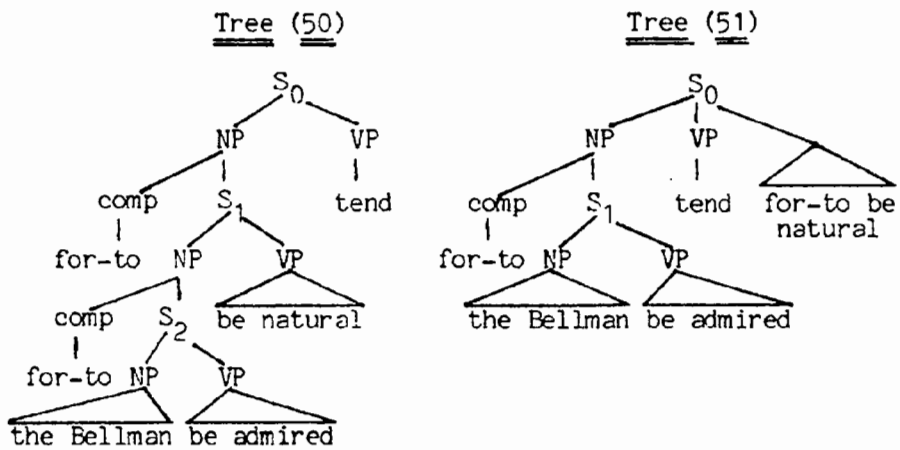
But the strongest argument for our purposes is to point out that the CH is inadequate: there exist sentences with **for-to** complementizers on all the embedded clauses which exhibit the same behavior as those we examined in section 1. The CH incorrectly predicts that SSR, SOR, and Equi should have unrestricted application in such cases, whereas Constraint A correctly predicts that they are prohibited from applying to certain sentences.

For instance, the verb **be natural** takes a **for-to** complement in such sentences as (48). **Be natural** does not permit SSR: (49) may not be derived from (48).

(48) For the Bellman to be admired is natural.
(49) *The Bellman is natural to be admired.

When the tree underlying (48), with its **for-to** complementizer, is embedded under a verb like **tend**, the same pattern emerges as in the case of (9), with its **that** complementizer.

(51) For the Bellman to be admired tends to be natural.
(52) *The Bellman tends to be natural to be admired.



SSR applies on the S_0 cycle of tree (50), producing tree (51). S_2 in both tree (50) and tree (51) is complementized by **for-to.** If the reason SSR cannot apply to tree (12) were that to do so would involve applying to a clause complementized by **that,** as the CH claims, we should expect SSR to be able to apply to tree (51), as its embedded clause is complementized by **for-to.** However, if SSR does apply, the ungrammatical (52) is produced. Constraint A, however, correctly predicts that SSR cannot apply to tree (51), either because it would be applying for the second time on the cycle of **tend,** or because it would be applying to a raised clause. Thus Constraint A is to be preferred over the CH because it makes the correct prediction.

The same pattern holds true no matter what SSR prohibiting and **for-to** using verb is substituted for **be natural,** or what SSR governing verb is substituted for **tend.** Thus the same argument can be made from SSR with **for-to** clauses as with **that** clauses.

As will be obvious, the argument from obligatory SSR can also be duplicated; Constraint A is necessary to explain why (51) is grammatical as well as why (52) is not.

Similarly the arguments from SOR and from NSR and Equi can be duplicated with sentences using only **for-to** clauses. To save space I will simply list representative sentences and leave it to the reader to verify that they will indeed support arguments parallel to those in sections 1.3 and 1.4.

For SOR:

(53) **The guests expected for for Alice to be introduced to the Pudding to be pleasant for the Queen.**
(54) **The guests expected for Alice to be introduced to the Pudding to be pleasant for the Queen.**
(55) ***The guests expected Alice to be pleasant for the Queen to be introduced to the Pudding.**

For NSR and Equi:

(56) (*) **For him_i to suggest for him_i to eat the Oysters was pleasant for the $Carpenter_i$.**
(57) **To suggest for himself to eat the Oysters was pleasant for the Carpenter.**
(58) **For himself to eat the Oysters was pleasant for the Carpenter to suggest.**
(59) ***To eat the Oysters was pleasant for the Carpenter to suggest.** (=(58))

In each case the same patterns hold true no matter what other verbs similar in rule governance and **for-to** usage are substituted for **expect, be pleasant,** and **suggest.**

I conclude that Constraint A is to be preferred over the CH to account for the data so far presented, both because the CH involves unnecessary duplication and because it cannot account for the ungrammaticality of sentences like (52), (55), and (59), nor for the grammaticality of sentences like (51) and (58). Constraint A accounts for the same data and more, and does it more simply.

3. Constraint A is the Antigone Constraint

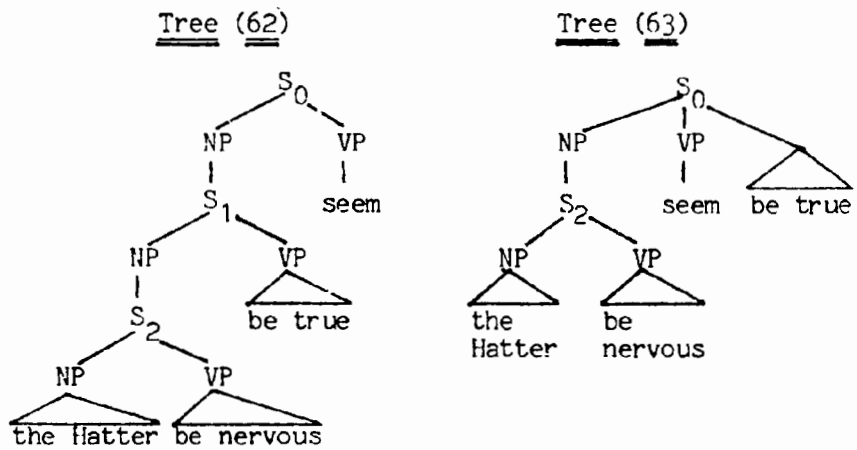
3.1 The argument from SSR and Extr

Another well-known rule of English is Extraposition (Extr) (Rosenbaum 1967). The structural description of Extr requires that the sentence to which it is to apply have a sentential subject; it has been claimed that Extr is not a governed verb (Ross 1973:549,560),[18] but it may be the case that it also requires that the main verb of the sentence be one that governs Extr. If this is so, the vast majority of verbs that permit sentential subjects do govern it. When its structural description is met, Extr can move the sentential subject to a position at the end of the main clause, leaving behind the pronoun **it.** Extr applies in the derivation of (61) from (60).

(60) (*) **That the Hatter is nervous seems.**
(61) **It seems that the Hatter is nervous.**

3.1.1 Extr can not apply to certain sentences

Many predicates, including **seem**, govern both SSR and Extr. In a structure like tree (62) involving such a predicate, SSR can apply to raise the sentential subject of the lower clause to be subject of the higher clause. Doing so produces tree (63). As we saw in section 1.1, SSR may not apply again to this tree. To do so would produce the ungrammatical sentence (64).

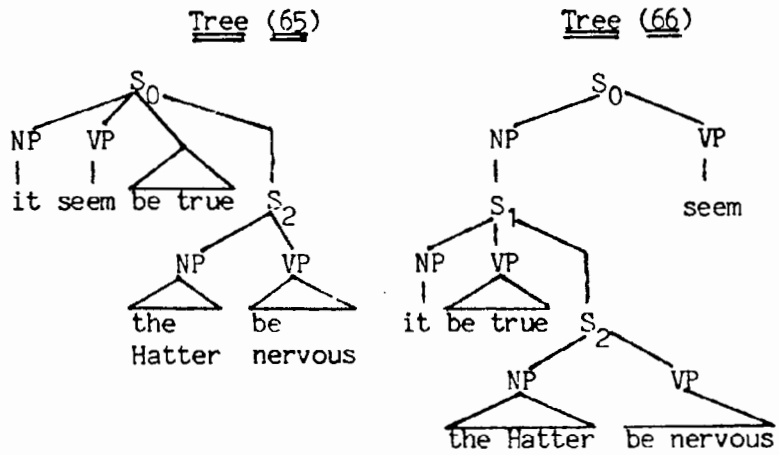


(62) (*) That that the Hatter is nervous is true seems.
(63) That the Hatter is nervous seems to be true.
(64) *The Hatter seems to be true to be nervous.

But the question arises as to whether Extr can apply to structures like tree (63). If we apply Extr to tree (63), the grammatical sentence (65) is produced.

(65) It seems to be true that the Hatter is nervous.

But this is not the only possible derivation for (65). (65) can also be derived by Extr applying to tree (62) on the S_1 cycle, producing tree (66). SSR can then apply to tree (66) on the S_0 cycle, producing a tree essentially like tree (65) and, eventually, sentence (65). We need to find a case where this second kind of derivation is blocked, and then we can see if Extr can apply to a structure like tree (63) in such a case.

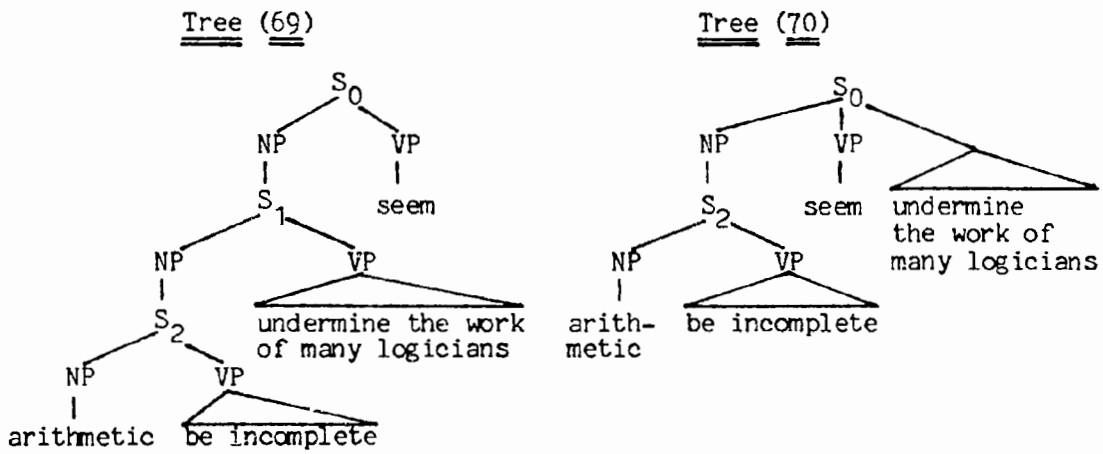


Unfortunately, such cases are hard to find. The desideratum is a predicate that has a sentential subject but that does not govern Extr, and that, unlike **tend**, does not require SSR instead. Perlmutter and Soames (1979:452 ff.) give three different sentences which for many speakers do not permit Extr. We will examine the first one: parallel arguments can be made from the others.[19]

(67) That arithmetic is incomplete undermines the work of many logicians.
(68) *It undermines the work of many logicians that arithmetic is incomplete.

Sentence (68) shows that the basic sentence, sentence (67), cannot extrapose. (Remember that this argument refers only to those dialects for which this is true.)

In tree (69), the structure underlying sentence (67) has been embedded under the predicate **seem**. We know by the ungrammaticality of sentence (68) that Extr cannot apply on the S_1 cycle. On the S_0 cycle, SSR can apply. Its application produces tree (70).



Tree (70), then, is the crucial tree, like tree (63) except that here Extr cannot apply on the lower cycle to feed SSR. Now, if Extr is applied to tree (70), (71) results. (71) is ungrammatical.

(70) That arithmetic is incomplete seems to undermine the work of many logicians.
(71) *It seems to undermine the work of many logicians that arithmetic is incomplete.

3.1.2 The One Shot Constraint can not account for this; Antigone can

The derivation of sentence (71) cannot be blocked by the One Shot version of Constraint A; no rule has applied twice on the same cycle. It can, however, be accounted for by the Antigone version of Constraint A. The Antigone Constraint says that Extr cannot apply to tree (70) because it would be applying to a raised clause, namely S_2. This then gives us some grounds for preferring the Antigone Constraint over the One Shot Constraint, because it allows us to predict the ungrammaticality of sentences like (71).

(71) could also be blocked by an ordering constraint (counterfeeding) between SSR and Extr. By ordering Extr before SSR we would guarantee that Extr could not apply to the output of SSR. Thus, on the S_0 cycle of tree (69), Extr would be tested for application before SSR could apply. After SSR applied, producing tree (70), Extr could not apply any more. Thus the derivation of tree (71) and sentence (71) would be blocked. However, there is no independent evidence that I know of for positing this ordering, so to use it would be ad hoc. Thus the Antigone Constraint, which can be motivated by the data in sections 1 and 2, is preferable to the One Shot Constraint plus an ordering constraint.

3.2 Another argument from obligatoriness?

Under certain assumptions an argument can be drawn from obligatoriness that the Antigone Constraint is superior to the One Shot Constraint. The argument depends on assumptions about the obligatoriness requirements of verbs like **seem**. **Seem** governs both SSR (as in (3) and (4)) and Extr (as in (60) and (61)), but at least one of the two rules must apply: (3) and (60) must not surface. Under different models these facts can be explained in different ways. Two possible models would involve the following assumptions: (a) Extr is obligatory with **seem**; (b) Both SSR and Extr are obligatory with **seem**. Under either of these models (6), (12), and (70) ought to be obliged to undergo Extr, and should not be permitted to surface. We need some constraint to predict for us that the obligatoriness requirements are suspended in these cases. The One Shot Constraint cannot help us; Extr has not applied on this cycle. We need the Antigone Constraint (or an ad hoc ordering constraint) to suspend the otherwise obligatory application of Extr and permit (6), (12), and (70) to surface. Thus, under either assumption (a) or assumption (b), the Antigone Constraint is superior to the One Shot Constraint because it predicts the grammaticality of (6), (12) and (70).[20]

3.3 The argument from SOR and Extr

Extr can also apply to sentential objects, moving them to the end of the sentence and leaving the pronoun it in their place.[21] Extr applies to the sentential object of **expect** in (72), producing (73).

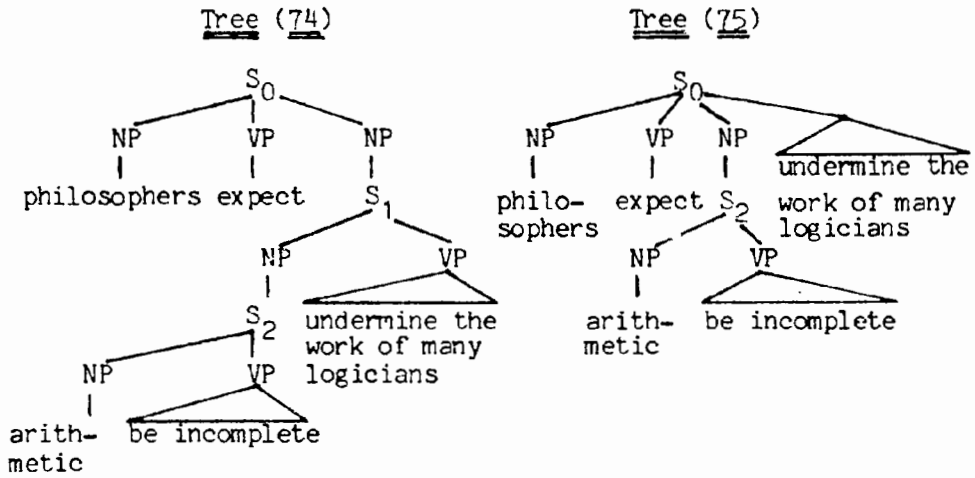
(72) **The Duchess expected that the baby would sneeze.**
(73) **The Duchess expected it that the baby would sneeze.**

3.3.1 Extr can not apply to certain sentences

When a structure that does not permit Extr, like (67), is embedded under an SOR and Extr governing verb like **expect**, the same sort of pattern emerges as in the last section. Tree (74) is such a tree.

(74) **Philosophers expect that that arithmetic is incomplete will undermine the work of many logicians.**
(75) **Philosophers expect that arithmetic is incomplete to undermine the work of many logicians.**
(76) ***Philosophers expect it to undermine the work of many logicians that arithmetic is incomplete.**

SOR can apply to tree (74), producing tree (75). This tree fulfills the structural description for Extr, so we would expect Extr to be able to apply. However, if it applies, the ungrammatical (76) is produced.



The same pattern emerges when the other Extr-prohibiting sentences mentioned in the last section are embedded under a verb like **expect**.

3.3.2 The One Shot Constraint can not account for this; Antigone can

The derivation of (76) cannot be blocked by the One Shot Constraint, because no rule has applied twice on the same cycle. However, it can be blocked by the Antigone Constraint. The Antigone Constraint says that Extr cannot apply to tree (75) because it would be applying to a raised clause, namely S_2. The Antigone Constraint is thus to be preferred over the One Shot Constraint, because it will account for the ungrammaticality of (76).

Once more we could block the derivation by an ordering constraint. We would order Extr to precede SOR (counterfeeding, again). On the S_0 cycle of tree (74), Extr would be tested for application before SOR. If it elected to apply, the grammatical (77) would result.

(77) Philosophers expect it that that arithmetic is incomplete will undermine the work of many logicians.

If it elected not to apply, SOR would be given a chance. Its application would produce (75). But at that point the ordering constraint would prohibit Extr from being tested again for application, and (76) would be blocked, But we would again be positing an otherwise unjustified ordering constraint. A model with the Antigone Constraint and no such ordering constraints is preferable to one with the One Shot Constraint and ordering constraints.

3.4 Further arguments involving Extr

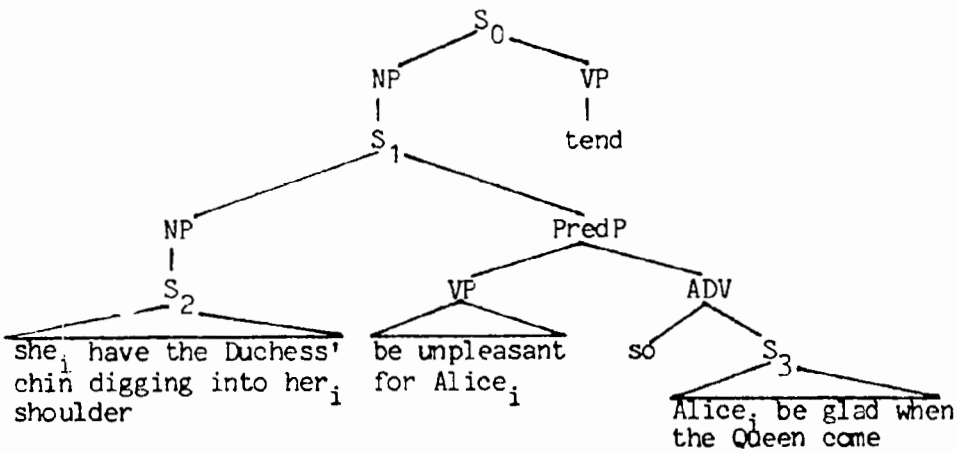
3.4.1 Tail clauses

There is a class of arguments for the Antigone Constraint over the One Shot Constraint which involve the non-application of Extr to sentences containing complement clauses which embed clauses of a class (mostly adverbial) which I will call Tail clauses. Tail clauses more or less strongly tend to appear in the last (Tail) position in their clauses. They include **(simply) because**-clauses, **so**-clauses, **until**-clauses, **even though** and **although**-clauses, **that**-clauses in **so**-(Modifier)-**that**-clause constructions,[22] and others. Sentences (78) and (80) show Tail clauses in Tail position, following clauses extraposed by Extr. Sentences (79) and (81) show that the extraposed clause may not follow the Tail clause.

(78) It was unpleasant to have the Duchess' chin digging into her shoulder, so Alice was glad when the Queen came.
(79) *It was unpleasant, so Alice was glad when the Queen came, to have the Duchess' chin digging into her shoulder.
(80) It didn't occur to Humpty Dumpty that Alice might want to go simply because he was eager to recite his poem.
(81) *It didn't occur to Humpty Dumpty simply because he was eager to recite his poem that Alice might want to go.

I will assume (following Rosenbaum 1967 and Langacker 1969) that S_1 in tree (82) is a good approximation of the structure underlying (78).[23]

Tree (82)



To maintain these arguments from Tail clauses, it must be assumed that (a) Tail clauses underlyingly are (or at least may be) in the clause over which they have semantic scope, and not in that clause's mother clause, and (b) Tail clauses are not moved out of the clause when they are moved to the Tail position.[24]

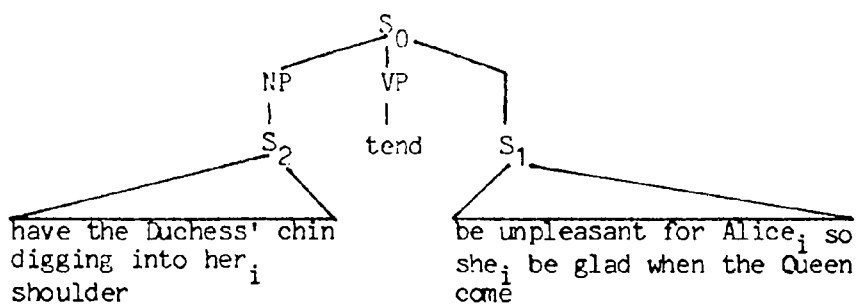
3.4.2 SSR and Extr

Consider, then, the following data:

(83) It tended to be unpleasant to have the Duchess' chin digging into her shoulder, so Alice was glad when the Queen came.
(84) To have the Duchess' chin digging into her shoulder tended to be unpleasant, so Alice was glad when the Queen came.
(85) *It tended to be unpleasant, so Alice was glad when the Queen came, to have the Duchess' chin digging into her shoulder.

Tree (82) consists of (78) embedded under **tend**. It can, by undergoing Extr on the S_1 cycle and (obligatorily) SSR on the S_0 cycle, result in (83). Or, by not undergoing Extr on the S_1 cycle and undergoing SSR (obligatorily) on the S_0 cycle, it can produce (84). The structural description for Extr is satisfied in tree (84).

Tree (84)



However, if it applies, the ungrammatical (85) is produced. The application of Extr to (84) could not produce (83) unless (i) Extr were complicated in some ad hoc manner to allow it to move the extraposed clause to within an embedded clause, or (ii) the rule moving the Tail clause to Tail position moves it out of its clause, in violation of assumption (b) above (3.4.1).

Thus we need some constraint to block this application of Extr. The One Shot Constraint cannot block it, as this is the first time Extr has applied on this cycle (or in this derivation, for that matter). However, the Antigone Constraint can block the derivation, because Extr would be applying to a raised clause, namely S_2.

As was the case with the argument in section 3.1, the data can also be accounted for by a constraint ordering Extr before SSR. However, the Antigone Constraint is independently needed, whereas the ordering constraint is not. Thus the Antigone Constraint is to be preferred.

A parallel argument can be made from sentences (86) to (89). Here the argument is that the ungrammaticality of (88) is predicted by a model with the Antigone Constraint, for its only possible source is tree (89), which is ungrammatical in exactly the same way. This ungrammaticality would not be predicted by a model which allowed (88) to be derived by Extr from the grammatical tree (87).

(86) It seems not to have occurred to Humpty Dumpty that Alice might want to go simply because he was eager to recite his poem.
(87) That Alice might not want to go seems not to have occurred to Humpty Dumpty simply because he was eager to recite his poem.
(88) *It seems not to have occurred to Humpty Dumpty simply because he was eager to recite his poem that Alice might want to go.
(89) (*)*That it didn't occur to Humpty Dumpty simply because he was eager to recite his poem that Alice might want to go seems.

Exactly parallel arguments can be made from other sentences with parallel structures and with differing SSR governing verbs and Tail clauses in place of those in the examples.

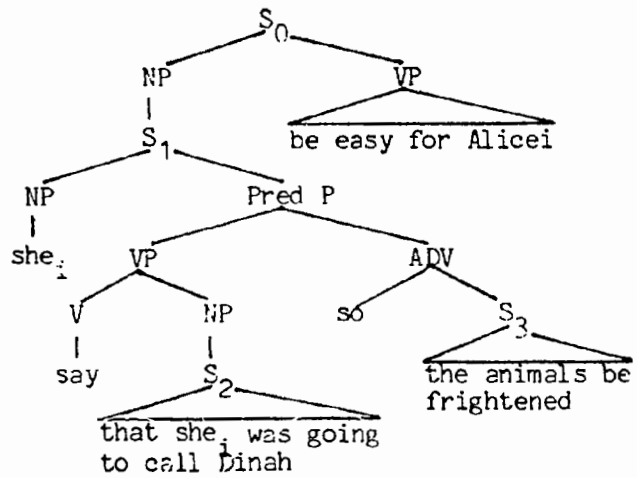
3.4.3 NSR and Extr

A parallel argument can be made from data involving NSR and Extr. (90) and (91) show Tail clause behavior. (We will be concerned with (90) only on the reading where the **so**-clause expresses the purpose of the verb **say** rather than of the verb **call**.)

(90) Alice said that she was going to call Dinah so that the animals would be frightened.
(91) *Alice said so that the animals would be frightened that she was going to call Dinah.

Tree (92) is formed by embedding (90) under the NSR governing predicate **be easy**.

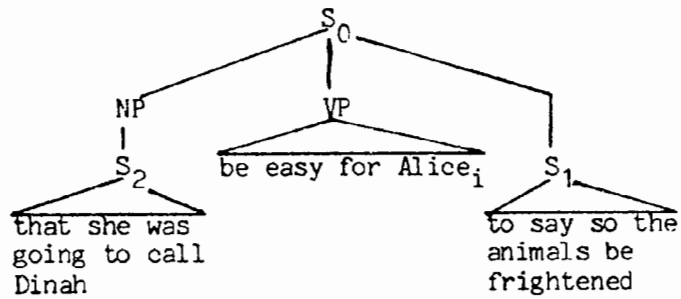
Tree (92)



(93) To say that she was going to call Dinah so that the animals would be frightened was easy for Alice.
(94) It was easy for Alice to say that she was going to call Dianh so that the animals would be frightened.
(95) That she was going to call Dinah was easy for Alice to say so that the animals would be frightened.
(96) *It was easy for Alice to say so that the animals would be frightened that she was going to call Dinah.

Application of Equi to tree (92) (on the S_0 cycle) produces (93). The structure underlying (93) fulfills the structural description for Extr, which, if it applies, produces (94). It also fulfills the structural description for NSR, which, if it applies, produces (95). Tree (95) fulfills the structural description for Extr. However, if Extr applies, the ungrammatical (96) is produced. Application of Extr to tree (95) cannot produce the grammatical (94) unless (i) Extr is complicated in some ad hoc manner to allow it to move the extraposed clause to within an embedded clause, or (ii) the rule moving the Tail clause moves it out of its clause, in violation of asssumption (b) in the previous section.

Tree (95)



Thus we need to block the application of Extr to tree (95). The One Shot Constraint cannot block it, because it is the first time Extr has applied on this cycle (or in this derivation). The Antigone Constraint can block the derivation, because Extr would be applying to a raised clause, namely S_2.

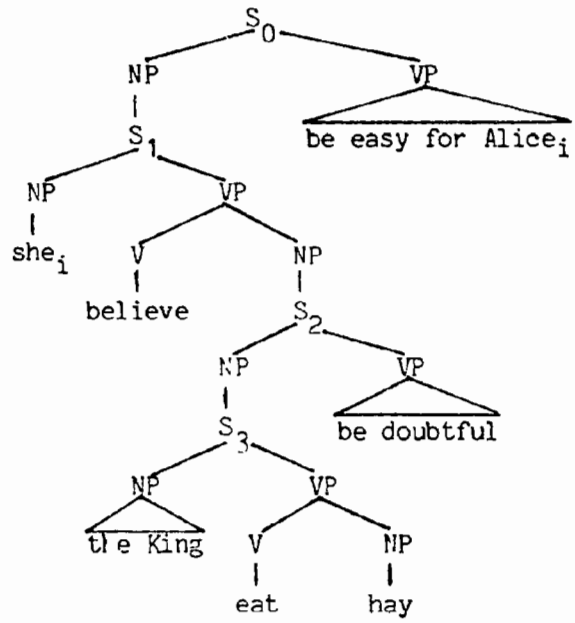
As usual, an ordering constraint could also be posited to block this derivation. Extr would have to precede NSR (counterfeeding). However, unless this ordering can be independently motivated, its usage here is ad hoc. The independently motivated Antigone Constraint is preferable.

Parallel arguments can be made with similar structures using other NSR governing verbs and other Tail clauses in place of those used above.

3.4.4 NSR and Extr again

A very similar argument can be made which is relatively free from dependence on assumptions (a) and (b) of section 3.4.1.

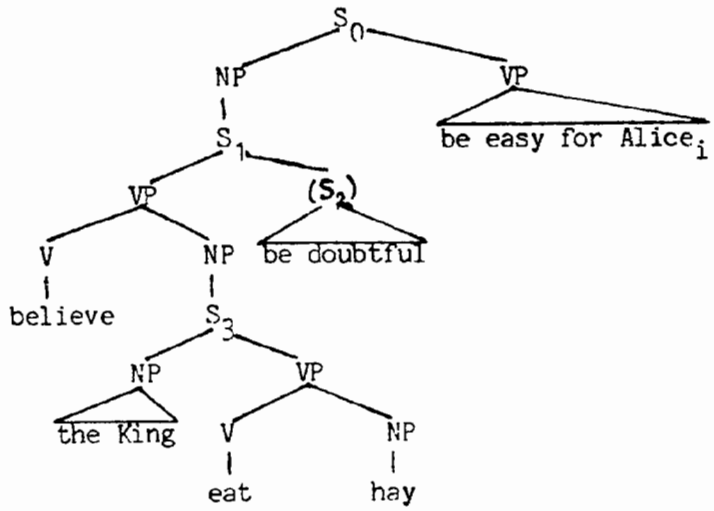
Tree (97)



In tree (97), the NSR governing verb **be easy** commands a structure like that associated with (31), in which an SOR governing verb (**believe**) has as its object a sentence with a sentential subject. On the S_1 cycle of tree (97) SOR can apply to produce (98). On the S_0 cycle of (98) Equi must apply to give tree (99).

(97) (*)For her$_i$ to believe that that the King eats hay is doubtful was easy for Alice$_i$.
(98) (*)For her$_i$ to believe that the King eats hay to be doubtful was easy for Alice$_i$.
(99) To believe that the King eats hay to be doubtful was easy for Alice.

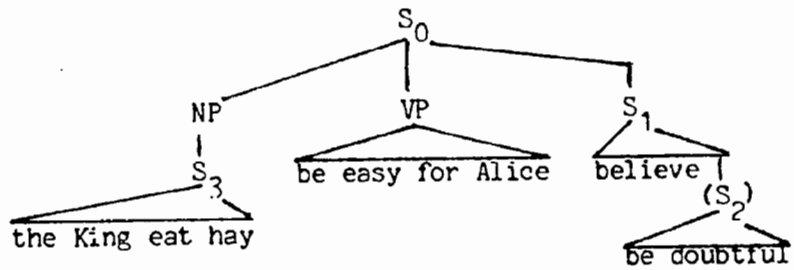
Tree (99)



Tree (99) fills the structural description for NSR to apply. NSR can apply, raising the object of **believe** to become subject of **be easy**, producing (100).[25]

(100) **That the King eats hay was easy for Alice to believe to be doubtful.**
(101) ***It was easy for Alice to believe to be doubtful that the King eats hay.**
(102) **It was easy for Alice to believe that the King eats hay to be doubtful.**

Tree (100)



Tree (100) fulfills the structural description for Extr. However, if Extr applies, the ungrammatical (101) is produced. The application of Extr to tree

(100) cannot produce the grammatical (102) unless (i) Extr is complicated in some ad hoc manner to allow it to move the extraposed clause to within an embedded clause, or (ii) we posit some otherwise unnecessary rule to move the already once moved remains of S_2. Neither approach is desirable. In any case (102) need not be derived from (100); it can be derived by the application of Extr to tree (99).

Thus we need to block the application of Extr to tree (100).[26] The One Shot Constraint cannot block it, because this is the first time Extr has applied on its cycle. The Antigone Constraint can block the derivation, because Extr would be applying to a raised clause, namely S_3.

Once again, ordering Extr before NSR would block the derivation. But such an ordering would be ad hoc, whereas the Antigone Constraint is independently motivated.

3.5 The argument from SOR and Equi

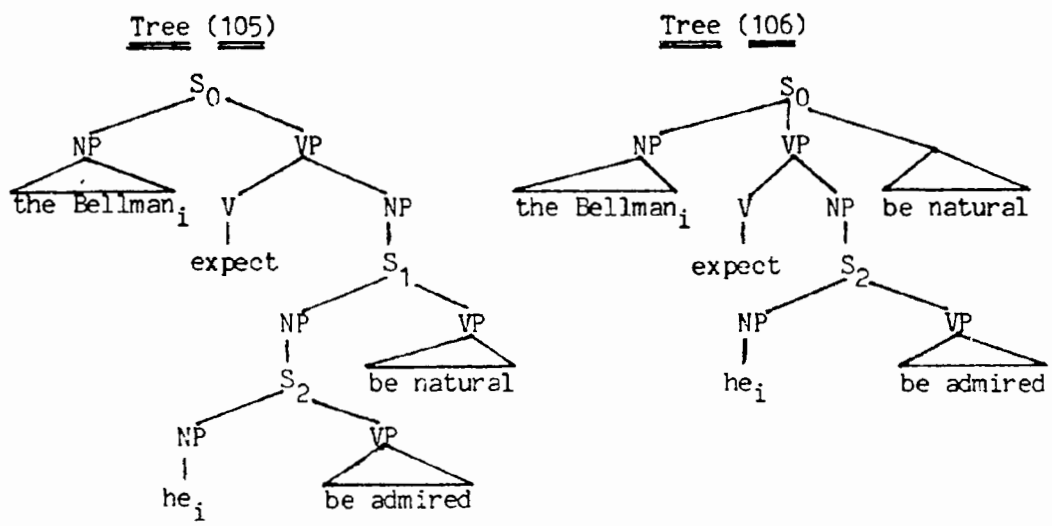
3.5.1 Equi cannot apply to certain sentences

Certain predicates, such as **expect**, govern both SOR and Equi, as the following sentences indicate.

(103) ?***The Bellman expects for himself to be admired.**
The Bellman expects to be admired.
(104) **The Bellman expects for people to admire him.**
The Bellman expects people to admire him

In a structure like tree (105) which involves such a predicate, SOR can apply, raising the sentential subject of the lower S to become the object of the higher clause. This produces tree (106).

(105) **The Bellman$_i$ expected for for him$_i$ to be admired to be natural.**
(106) **The Bellman expected for himself to be admired to be natural.**[27]



Tree (106) fulfills the structural description for Equi to apply. If Equi is applied, the ungrammatical (107) results.

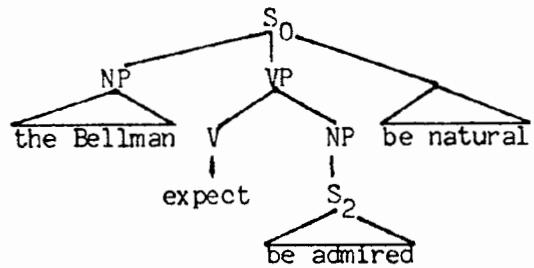
(107) ***The Bellman expected to be admired to be natural.**

Apparently all sentences like (106) with different SOR and Equi governing verbs instead of **expect** exhibit the same behavior. These facts should be explained.

3.5.2 The One Shot Constraint can not account for this; Antigone can

The derivation of sentence (107) cannot be blocked by the One Shot Constraint: no rule has applied twice on the same cycle. The derivation can, however, be blocked by the Antigone Constraint, because it requires Equi to apply to a clause that has been raised, namely S_2. Thus we have another case where the Antigone Constraint is to be preferred over the One Shot Constraint, because it will account for the grammaticality of (107).

Tree (107)



Once again, the derivation could be blocked by an ordering constraint (counterfeeding) between SOR and Equi. By ordering Equi before SOR, we would guarantee that Equi could not apply to the output of SOR. Thus, on the S_0 cycle of tree (105), Equi would be tested for application before SOR could apply. After SOR applied, producing tree (106), Equi could not apply again. Thus the derivation of (107) would be blocked. Once again, however, we would be positing an otherwise unnecessary ordering constraint. A model with the Antigone Constraint and no such ordering constraints is preferable to one with the One Shot Constraint and ordering constraints.

3.6 The argument from SOR and NSR

3.6.1 NSR can apply to raise multiply embedded objects

Apparently NSR can raise not only simple objects, but embedded objects, even deeply embedded objects, as long as the subject NP from which they are raised is itself subjectless (Berman 1974:263; contrast Postal 1971:113; Perlmutter and Soames 1979:510-511). For instance, Equi can apply to tree (41), removing the subject of S_1. This produces the tree underlying (42). NSR can apply in at least two ways to this tree. In one way it raises the object of S_1, namely S_2. This produces (43). The other way NSR can apply to (42) is to raise the embedded object **the Oysters**. This produces (108).

(108) The Oysters were unpleasant for the Walrus$_i$ to realize that he$_i$ had eaten.

(108) is grammatical for many speakers.[28] It cannot have been derived from tree (43) because to do so would violate the constraint against NSR raising a consitutent of a clause which has a subject. Yet that constraint must hold; if NSR could raise constituents of a clause with a subject, we would be permitting sentences like (109).

(109) *The Oysters were unpleasant for the Walrus for the Carpenter to have eaten.

This gives us an example where NSR applies to raise an embedded object from a subjectless clause. Examples can easily be constructed which show NSR extracting objects that are embedded several layers down. For instance:

(110) **The Oysters were pleasant for the Walrus to expect that the Carpenter would tell him to eat.**

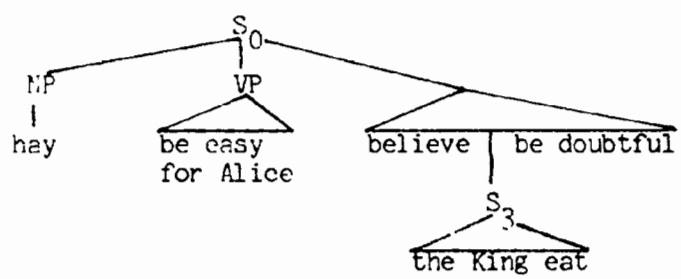
3.6.2 NSR cannot apply to certain sentences

Tree (99) fills the structural description for NSR to apply. As we have just seen, NSR can apply to raise an embedded object to make it subject of the matrix sentence. Thus we should expect NSR to be able to raise the embedded object **hay** from S_3 and make it the subject of **be easy**. However, if it does, the ungrammatical (111) is produced.[29]

(111) ***Hay was easy for Alice to believe that the King eats to be doubtful.**

Apparently all structures like (99), with different SOR and NSR governing verbs in place of **believe** and **be easy** exhibit the same behavior. These facts should be explained.

Tree (111)



3.6.2 The One Shot Constraint can not account for this; Antigone can

The derivation of sentence (111) cannot be blocked by the One Shot Constraint, because no rule has applied twice on the same cycle. The derivation can, however, be blocked by the Antigone Constraint, because to derive (111) from (99) NSR must apply to a clause which has been raised, namely S_3. Again, then, we have a case where the Antigone Constraint will account for a class of ungrammatical sentences which the One Shot Constraint cannot. Therefore the Antigone Constraint is to be preferred.

Notice that in this case there can be no question of ordering NSR to precede SOR in order to block the derivation. SOR applies on the S_1 cycle, and NSR on the S_0 cycle. Any constraint that would prevent a given rule from

applying on a given cycle if another certain rule has applied on the previous cycle would certainly be undesirable. And, in fact, it is easy to find instances where NSR does apply to raise an object created by SOR on the next cycle down. For instance, SOR raises **the Hare** in (112) to become object of **believe** in (113). Then, after the application of Equi on the next higher cycle, NSR can apply, raising **the Hare** to become the subject of **be easy** in (114).

(112) (*) For him$_i$ to believe that the Hare was mad was easy for the Hatter$_i$.
(113) (*) For him$_i$ to believe the Hare to be mad was easy for the Hatter$_i$.
(114) The Hare was easy for the Hatter to believe to be mad.

Thus it is clear that NSR can, in general, apply to the output of SOR's application on a lower cycle.[30] Thus we cannot use an ordering-like constraint prohibiting NSR's application to SOR's output to block the derivation of (111) from (99). This means, of course, that some other constraint will be necessary. The Antigone Constraint fills the bill.

3.7 Conclusion

In sections 3.1 to 3.5 we have seen several cases of classes of ungrammatical sentences which were automatically starred by the Antigone version of Constraint A, but which could not be explained by the One Shot Constraint. It was shown that the data could be explained by four separate constraints ordering Extr before SSR, SOR, and NSR, and Equi before SOR. But positing such constraints would be an ad hoc device, and its necessity would count against the model without the Antigone Cosatraint.[31] Perhaps another way to make the same point is to say that if there really were ordering constraints that were accounting for the data in sections 1.4 and 3.1 to 3.5, it would be a rather marvellous fact that those orderings should be predictable from the independently motivated Antigone Constraint.

Finally, in section 3.6 a class of ungrammatical sentences was presented which can be accounted for by the Antigone Constraint, but which cannot be accounted for by either the One Shot Constraint or ordering constraints.

I conclude that the Antigone Constraint is to be preferred over the One Shot Constraint as the proper version of Constraint A.

4. The definition of the Antigone Constraint

In the argumentation so far I have claimed that some constraint is necessary to account for the ungrammaticality of such sentences as (13), (20), (33), (44), (71), (76), (85), (88), (96), (101), (107), and (111), as well as for the grammaticality of sentences like (6), (12), (17), (19), (43), and (70). I have claimed that the Antigone Constraint is the proper form of that constraint. In this section I would like to define more closely exactly how the Antigone Constraint is to be formulated.

4.1 Antigonal configurations and Antigonal clauses

In every case we have examined there has been a raising rule involved, which has raised a sentential complement to be dominated directly by the S that previously dominated its mother S.[32] There is, in the last grammatical tree in the derivation of every one of the crucially bad sentences, an S directly dominating an S that used to be its granddaughter. I propose to call such a configuration an Antigonal configuration. The lower S in such a configuration I will term the Antigonal clause, and the upper S I will call the Electral clause.[1] Thus, in sentences (12), (19), (32), (43), (70), (75), (84), (87), (95), and (106) we have Antigonal configurations where the Electral clause S_0 directly dominates the Antigonal clause S_2, and in (99), (100), and (113) we have an Antigonal configuration where the Electral clause S_0 or S_1 directly dominates the Antigonal clause S_3. Similarly, the crucially grammatical (6) and (17) (as well as (12), (19), (43), and (70)) have Antigonal configurations in which the Electral S_0 directly dominates the Antigonal S_2. Prohibiting rules from applying to Antigonal configurations will block the bad sentences and explain the fact that crucially good sentences surface grammatically. Thus the first version of the Antigone Constraint might be simply:

"Rules may not apply to Antigonal configurations."

4.2. Cases of rules affecting Antigonal configurations: the Antigone Constraint refined

4.2.1 Verb Agreement and other such rules

One might question whether the formulation of the Antigone Constraint given above holds for all rules. For instance, Verb Agreement must apply after SSR in order to correctly derive (116) and not (117) from (115).

(115) **That the courtiers will be beheaded is likely.**
(116) **The courtiers are likely to be beheaded.**
(117) ***The courtiers is likely to be beheaded.**

Thus Verb Agreement will be applying to such structures as (12) and (17), which are produced by SSR and contain Antigonal configurations. We do not want the Antigone Constraint to block this. Notice that this application of Verb Agreement affects only the upper clause in the Antigonal configuration (the Electral clause); it does not affect the Antigonal clause. We might try another formulation of the Antigone Constraint which would say:

"Rules may not affect Antigonal clauses."

This is still too strong. Later rules like postcyclic rules (including perhaps Verb Agreement) and phonological rules will certainly apply to Antigonal clauses. All the rules which we have shown to be constrained by the Antigone Constraint (SSR, SOR, NSR, Equi, and Extr) are cyclic. Perhaps we should formulate:

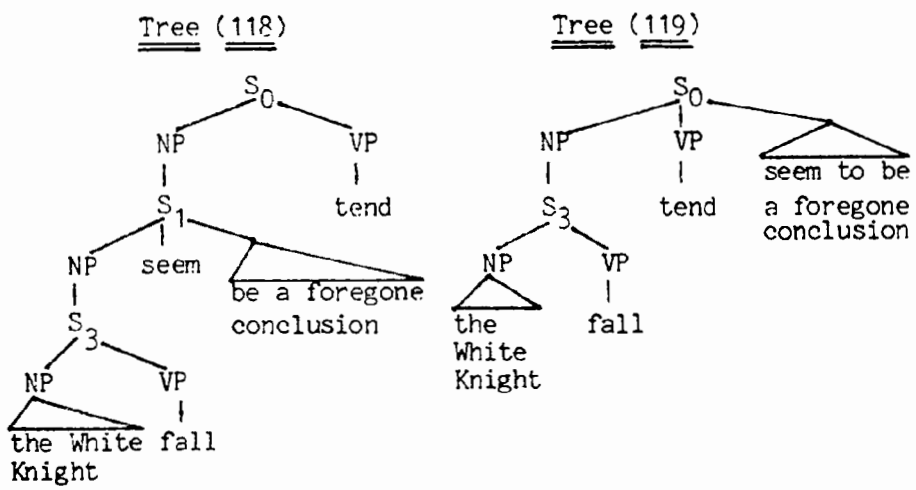
"Cyclic rules may not affect Antigonal clauses."

4.2.2 SSR and NSR

However, this formulation still goes a little bit too far. As we have seen in the derivation of (100), Antigonal clauses may be raised by NSR. S_3 in tree (99) is an Antigonal clause. The formulation of the Antigone Constraint as not permitting rules to affect Antigonal clauses would predict that NSR could not apply to raise S_3. But NSR can apply, producing (100).

(118) and (119) show that SSR also raises Antigonal clauses.

(119) That the White Knight will fall tends to seem to be a foregone conclusion.



Tree (118) is formed by embedding tree (12) under the SSR governing verb **tend.** In tree (118) the configuration of S_1 dominating S_3 is an Antigonal configuration, and S_3 is an Antigonal clause. The formulation of the Antigone Constraint as not permitting rules to affect Antigonal clauses would predict that SSR could not apply to tree (118) to raise the Antigonal clause S_3. But SSR can so apply, deriving (119).

Examples can also be constructed showing SOR raising an Antigonal clause.

So the formulation should be adjusted. We might note that in the case of SSR's application to tree (118) to produce (119) and NSR's application to tree (99) to produce (100), nothing was removed from the Antigonal clause, but rather the clause itself was moved. Perhaps the constraint declares that Antigonal clauses are a kind of Antigonal island which can be moved as a whole but which does not allow tampering with its contents.[33] We might formulate:

"Cyclic rules may not extract or delete constituents from Antigonal clauses."

The objection to this formulation is that it would not block the application of Extr to trees like (70) and (75) and the rest. For Extr does not extract or delete constituents of Antigonal clauses; it moves the whole clause, just as SSR does in the derivation of (119) and NSR does in the derivation of (100). Thus the constraint needs to distinguish between the two cases: Antigonal clauses may be raised on their grandmother or great-grandmother cycle, but may not be moved (or otherwise changed) on their mother cycle (the Electral cycle). We might, then, formulate as follows:

"Rules may not apply on the cycle of an Electral clause in such a way as to affect the Antigonal clause."

Or, if we added to our definitions the following:

"Application to an Antigonal configuration means applying on the Electral cycle in such a way as to affect the Antigonal clause."

we could keep our first formulation of the Antigone Constraint:

"Rules may not apply to Antigonal configurations."

4.2.3 Passive

There is an apparent application of a rule to Antigonal configurations which produces grammatical sentences but which the formulation given above would block. Passive,[34] if it is applied to structures like (32) which have SOR-created Antigonal configurations, will produce grammatical sentences. The application of Passive to tree (32) produces (120).

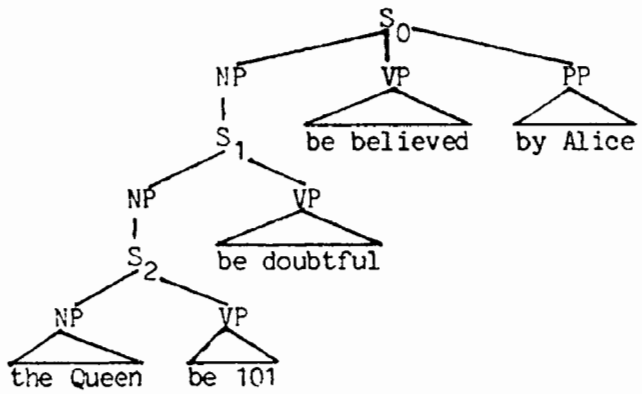
(120) That the Queen was 101 was believed by Alice to be doubtful.
That the Queen was 101 was believed to be doubtful by Alice.

If we claim that (120) is derived by the application of Passive to tree (32), we are claiming that Passive is applying on the cycle of the upper S of an Antigonal configuration and affecting its lower S. This violates the Antigone Constraint as given above. Two ways out of this problem seem possible. One is to derive sentences like (120) in another way. The other is to adjust the Antigone Constraint again.

There is another possible derivation for (120). One could claim that Passive applies, in its derivation, not to tree (32) but to tree (31), yielding (121).

(121) That that the Queen was 101 was doubtful was believed by Alice.

Tree (121)



SSR could then apply to (121) to derive (120). The Antigonal configuration of S_0 dominating S_1 would not be formed until after the application of Passive, and the formulation of the Antigone Constraint given above could stand. This solution would apparently require us to claim that all SOR-governing verbs also govern SSR—at least, every sentence like (31)-(32) that I can think of has an acceptable, and even preferable, version like (120). Yet, if SOR and SSR are really a single rule of Raising, as some claim, that would not be too surprising (but see Perlmutter and Soames 1979:204-210 and Szamosi 1973).

The other possibility is that Passive does in fact apply to (32) to derive (120), and our formulation of the Antigone Constraint should reflect that. We want to avoid any kind of listing that would say, in effect, "SSR, SOR, NSR, Equi and Extr obey the Antigone Constraint, but Passive doesn't." Under different models it might be possible to characterize the class of rules that obeys the Antigone Constraint in different ways. One likely way to do this under a traditional model would be by the concept of two-storey rules. A two-storey rule can be defined as one whose structural description makes crucial reference to a configuration in which one S dominates another (usually a mother-daughter pair). The structural descriptions of SSR, SOR, NSR, and Equi all make crucial reference to such a pair of S's: the mother S in which their governing verb is, and the embedded S from which they extract or delete an element. Extr also must make reference to such a configuration; it applies on the cycle of the mother S and moves an NP within it, but it also crucially refers to the fact that the NP which it moves is an S. Other types of nominals cannot be extraposed, as (122) and (123) indicate:

(122) **That she would get no jam today surprised Alice.**
It surprised Alice that she would get no jam today.
(123) **That fact surprised Alice.**
***It surprised Alice that fact.**

Passive, on the other hand, moves NP's, without specifying whether they are S's or not: its structural description does not require an embedded S.[35] We

might, then, want to formulate:

"Two-storey rules may not apply to Antigonal configurations."

Choosing this method of accounting for the grammaticality of (120) would not necessarily claim that (120) could not be derived by SSR from (121); it would simply claim that it could be derived by Passive from (32).

Thus there seem to be two ways of handling data like (120). Either we can claim that they are derived from sentences like (31) via sentences like (121), by Passive feeding SSR, or we can claim that they are derived via sentences like (32) by the action of Passive, which is not constrained by the Antigone Constraint because it is not a two-storey rule.

4.2.4 Another possible argument against the One Shot Constraint

Whichever way sentence (120) is derived, it is clear that the clause **the Queen be 101** in that sentence is an Antigonal clause. SSR cannot be allowed to apply to (120) to produce (124).

(124) ***The Queen was believed by Alice to be doubtful to be 101.**

If the only derivation possible for (120) is application of SSR to (121), either the One Shot Constraint or the Antigone Constraint would star (124) for us. The One Shot Constraint would do so because for SSR to apply to (120) would be its second application on cycle S_0, and the Antigone Constraint would do so because it would be applying to an Antigonal configuration. However, if (120) can be derived by either SSR of (121) or Passive of (32), we can construct another argument for the Antigone Constraint against the One Shot Constraint. The One Shot Constraint cannot keep SSR from applying to instances of (120) which have been derived via SOR and Passive, because this would be SSR's first application on this cycle. Under the One Shot Constraint we would have to posit another counterfeeding ordering constraint: Passive (or SOR) would have to be ordered after SSR. The Antigone Constraint, however, would successfully prevent SSR from applying to raise **the Queen** from S_2, because S_2 is an Antigonal clause. Thus, under such a model, the Antigone Constraint is to be preferred over the One Shot Constraint.

4.2.5 NSR again

We are still left with an unresolved problem: the formulation of the Antigone Constraint so far assumes that the rule which is constrained applies on the Electral cycle. However, in tree (99) the Electral clause is S_1. Yet NSR's application on the S_0 cycle should be constrained by the Antigone Constraint to prevent the derivation of (111). Notice the contrast: NSR, operating on the cycle of the S dominating an Antigonal configuration in tree (99), can apply to raise the whole Antigonal clause, producing (99), but it cannot apply to raise the object of the Antigonal clause, because that would produce (111). Apparently the Antigone Constraint constrains rule application not only on the Electral cycle, but also on at least the next higher cycle, and in these cases the distinction between moving the Antigonal clause as a whole and tampering

with its contents is relevant. Our formulation of the Antigone Constraint must reflect these facts.

I think that the concept introduced in the last section in the discussion of two-storey rules, of a rule affecting NP's without reference to whether they are S's or not, can be helpful here. We would want to make the Antigone Constraint prohibit rules from affecting Antigonal clauses in any way that depends on the fact that they are S's.[36] Thus SSR could raise the whole Antigonal clause in the derivation of (122), and NSR could raise it in the derivation of (100), and the Antigone Constraint would not stop them, because they would be raising an NP without reference to the fact that it is an S. Similarly, Passive could make the Antigonal clause into the subject, and the Antigone Constraint would not stop it, because it would be applying to it as an NP, without reference to the fact that it is an S. (This, of course, would not preclude the possibility of sentences like (120) also being derived by SSR of trees like (121)). However, NSR would not be able to raise the embedded object **hay** in tree (99) to derive (111), because to do so would be to raise a constituent of an Antigonal clause, and the ability to do that would depend crucially on the fact that that clause is an S.

So let us formulate what is its object as follows:

"Application to an Antigonal clause means applying in a way that crucially depends on the fact that it is a clause rather than a non-sentential NP."

"Two-storey rules may not apply to Antigonal clauses."[37]

4.3 The definition of Antigonal configurations refined

We have defined Antigonal configurations as those configurations in which an S directly dominates an S that used to be its granddaughter. The adequacy of this definition can be questioned. Notice that SSR cannot apply again on the S_0 cycle of tree (119), because to do so would produce the ungrammatical (125).

(125) *The White Knight tends to seem to be a foregone conclusion to fall.

We will want the Antigone Constraint to block this derivation. Notice that S_3 was not the grandddaughter of S_0 in the initial tree, but its great-granddaughter. The same is true of S_0 and S_3 in tree (100). Either cases where a great-granddaughter comes to be dominated by its (initial) great-grandmother clause are also to be included in the class of Antigonal configurations, or membership in that class is determined not with reference to the initial structure, but with reference to some later structure like tree (118) in which the great-granddaughter has become a granddaughter. Evidence that the first possibility is in fact necessary is provided by the following sentences.

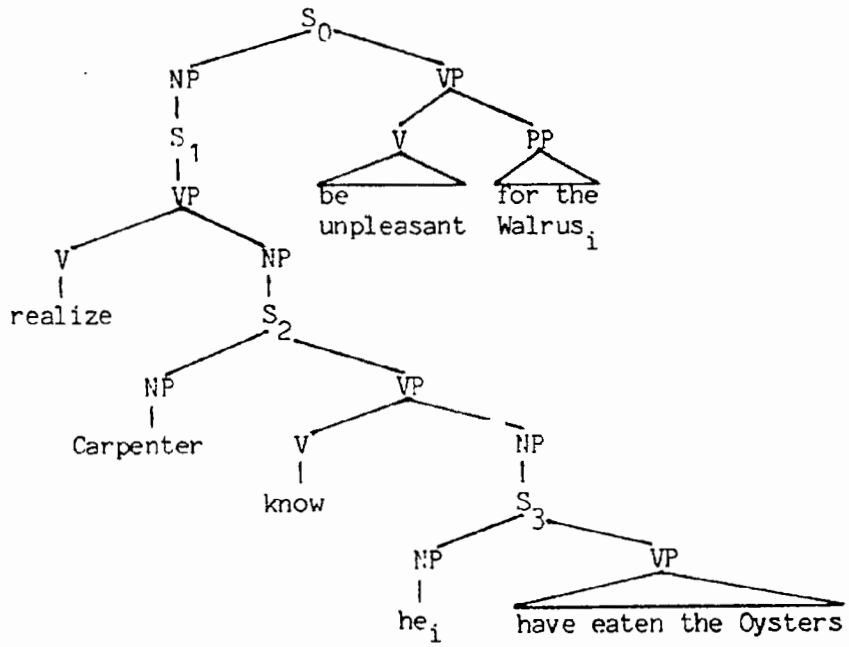
(126) (*)For him_i to realize that the Carpenter knew that he_i had eaten the Oysters was unpleasant for the Walrus.

(127) To realize that the Carpenter knew that he_i had eaten the Oysters was unpleasant for the Walrus_i.

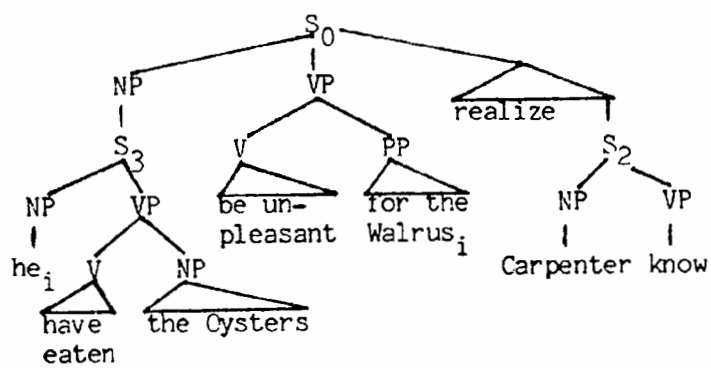
(128) That he_i had eaten the Oysters was unpleasant for the $Walrus_i$ to realize that the Carpenter knew.

(129) *To have eaten the Oysters was unpleasant for the Walrus to realize that the Carpenter knew.

Tree (127)



Tree (128)



After Equi has applied to the structure underlying (126) to make it possible for NSR to apply in tree (127), NSR raises S_3 from being the great-

granddaughter of S_0 to become its daughter in tree (128). There is no point in the derivation at which S_3 is granddaughter of S_0. Yet the Antigone Constraint must prevent Equi from applying to tree (128), because to do so would produce the ungrammatical (129). Thus Antigone configurations must include cases where great-granddaughters (and, presumably, great-greats) have become daughters of an S. Let us then define Antigonal configurations as follows:

"An Antigonal configuration is one in which a clause directly dominates a clause which it indirectly dominated at an earlier stage of the derivation."

5. Conclusion

In sum, I have argued that it is necessary in English to block the derivation of (13), (20), (33), (44), (71), (76), (85), (88), (96), (101), (107), (111), (124) and (129), and of other sentences like them, and to account for the unexpected grammaticality of (6), (12), (17), (19), (43), 70), and other sentences like them. All of this can be done by the Antigone Constraint, which involves the following statements:

A. Definitions

(a) Two-storey rules are those rules whose structural descriptions refer to a configuration in which one clause dominates another clause.

(b) A clause directly dominates another clause if it dominates it with no intervening clause nodes. It indirectly dominates it if it dominates it with at least one intervening clause node.

(c) Antigonal configurations are those in which a clause directly dominates a clause which it indirectly dominated at an earlier stage in the derivation. The lower clause in such a configuration is an Antigonal clause.

(d) Application to an Antigonal clause means applying in a way that crucially depends on the fact that it is a clause and not a non-sentential NP.

B. The Antigone Constraint

(e) Two-storey rules may not apply to Antigonal clauses.

FOOTNOTES

I would like to give special thanks to the following people: Don Frantz, who first introduced me to generative syntax; Sandra Chung, who saw some worth in the incoherent beginnings of some of the ideas in this paper and greatly helped in improving their formulation and presentation; Ed Klima and David Perlmutter, who read early drafts of the paper and commented on them; and my wife Joy, who put up cheerfully with my repeated jumping out of bed at 1 a.m. and turning on the light to write down a new piece of an argument. The usual mea culpas apply.

[1]Named after Antigone, who was the daughter of her grandmother (Electra) and presumably was raised by her.

[2]Although this paper is presented within the general framework of traditional transformational syntax, with its notions of derivation and the cycle, the proposed constraint is relatively independent of that framework, and can be usefully stated in other frameworks currently in use.

[3]I am making the important assumption that SSR (as well as SOR and Equi in later arguments) does not make reference to complementizers. (For discussion and some slight support for this assumption the case of SOR, see Perlmutter and Soames 1979:545-551.) It is for this reason that I have not included complementizers in syntactic trees, except in section 2.2. (I have also often left out such features as tense, etc., as being irrelevant.) Assuming that these rules do make reference to complementizers might seem to be the proper explanation for the data presented in the first sections of this paper. In section 2.2. I will argue that even if that is true, a separate constraint is needed to explain parallel data.

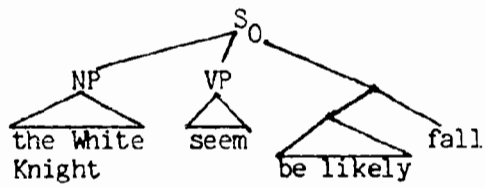
[4](3) is ungrammatical because of an obligatoriness constraint on SSR as governed by **seem**. The nature of this constraint will be discussed in section 3.2.

Sentences like (3) which represent structures posited as actually occurring in derivations and whose ungrammaticality is due to an obligatory rule's not having applied yet will be marked with a (*) instead of the customary *.

[5]Syntactic trees and the sentences most directly derived from them are numbered to correspond with each other. Thus tree (6) is that tree which, if none of the rules relevant to the discussion applies further, will produce sentence (6).

Often, especially when no tree is given in the text, I will use the common locution of referring to the structure underlying a sentence as the sentence, speaking e.g. of deriving sentence (x) from sentence (y), or applying some rule to sentence (z), meaning, in each case, the structure underlying sentence (x), (y), or (z).

[6]The tree would be tree (7') below.



It might be possible to argue directly from the differing constituent structures for either tree (7) or tree (7') over the other as the proper tree for sentence (7). Similar arguments might be given in other places, particularly in sections 1.3 and 3.1. I do not have sufficiently strong intuitions or sufficiently refined techniques for doing so.

[7]This argument, as well as that in section 3.1, was noticed independently by Perlmutter and Soames (1979:425-456). Their explanation of these phenomena as being results of a prohibition against the undefined concept of "delayed application" guided my thinking in formulating the Antigone Constraint.

[8]Although somewhat similar, this is not the same proposal as the Complementizer Hypothesis (section 2.). The argument given against it here is parallel to that given in 3.2. against the CH.

[9]The Law of Parsimony: "**Non sunt multiplicanda entia praeter necessitatem.**" I.e. "Entities (here, theoretical constructs) should not be multiplied unnecessarily."

[10]Lakoff confirms this for the One Shot Constraint: "It has been assumed that no rule can re-apply to its output on a given cycle....Historically, the reason [this important assumption] was made is that there were no clear cases where reapplication was needed. Wherever a rule had to apply more than once to a single part of the tree in the course of a derivation, the principle of applying rules once-per-cycle seemed to do the job." (Lakoff 1966:I-51-a) Lakoff evidently intended to question this position; I have not been able to find where he does so.

[11]Cf. Perlmutter and Soames' excellent discussion (1979:132-134, 174). Koutsoudas, Sanders, and Noll (1974:3) say that an obligatory rule must apply wherever its structural description is met, unless its application is precluded by some general principle. I am claiming that we have here such a case, where some general principle is needed to preclude the application of SSR to (17) and (19).

[12]Many analysts (following Rosenbaum 1967) treat SSR and SOR as being the same rule; others do not (e.g. Szamosi 1973). Whether or not they are the same rule does not affect the argument except in that it could make it into a special case of the argument in section 1.1.

[13]Sentences like (28) and (32) are not fully grammatical for some people, for

reasons which I believe irrelevant to the purpose of this paper. For almost all speakers they are improved by Passive:

(i) **That the Queen was 101 was believed (by Alice) to be** $\left\{\begin{matrix}\textbf{likely}\\ \textbf{doubtful}\end{matrix}\right\}$.

This, if Passivized SOR verbs do not govern SSR (see Perlmutter and Soames 1979:204-210), provides evidence that trees (28) and (32) are acceptable as intermediate, if not final, structures. In any case the argument holds for those speakers who accept (28) and (32).

[14]Parallels to such analyses as those of Rosenbaum (1967) and Bresnan (1970) and the many who have followed them will be immediately obvious.

[15]For our purposes here it does not matter whether complementizers are inserted in the underying structure (as in e.g. Bresnan's model) or by an early rule of Complementizer Insertion (as e.g. Rosenbaum). The important thing is that they be present before the application of SSR, SOR, and Equi.

[16]This is not to say that such obligatoriness constraints would not exist. **Tend** must obligatorily govern SSR even under the CH, because sentences like (i) are ungrammatical.

(i) (*) **For poor Bill to get into trouble tends.**

[17]Even if the CH posited a Complementizer Adjustment rule (which would be ad hoc and would duplicate the mechanism inserting complementizers in the first place) to change an original **that** to **for-to** in the derivation of (47), it would have to order that rule after SSR (counterfeeding) in order to block the derivation of (i).

(i) ***The unicorn would tend to be a foregone conclusion to win.**

Similar points can be made for the cases of SOR and of NSR and Equi.

[18]This would explain why virtually all verbs that take sentential subjects permit those subjects to extrapose. Yet Extr seems to be governed at least to the extent that some predicates obligatorily require its application. **Flash through one's mind** and **come to one's attention** are examples that **come to mind:**

(i) ***That Alice was a human child flashed through the Fawn's mind.**
It flashed through the Fawn's mind that Alice was a human child.
(ii) ***That Alice's head was still on came to the Queen's attention.**
It came to the Queen's attention that Alice's head was still on.

[19]The other two sentences were:

(i) **That light is a wave contradicts all of the professor's assumptions.**
(ii) **That there is no largest natural number shows that the set of natural numbers is infinite.**

This second sentence may be subject to explanation under Ross's "Same Side

Filter" (Ross 1973). (Actually, the first sentence and the sentence used in the text might be explainable by a somewhat similar constraint, which might destroy the arguments given here and in section 3.3, and possibly 3.4.)

Similar arguments can be constructed using sentences such as the following:

(iii) **That he should say such a thing really made me wonder.**
(iv) **Why she wants avocado seeds resists explanation.**

But fewer people find the extraposed versions of (iii) and (iv) ungrammatical.

[20]Other models would assume that only SSR is obligatory with **seem**, or that there is a sort of disjunctive obligatoriness in which either SSR or Extr is chosen to be obligatory for any given instance of **seem**. In all these models sentences (6), (12), and (70) are further instances in support of the argument of section 1.2; Constraint A (in either version) is necessary to suspend the obligatory application of SSR to those trees.

[21]It makes no difference to this argument whether Extr-from-Object is assumed to be the same rule as Extr-from-Subject, or whether they are assumed to be different rules.

[22]Sentences of this last type are discussed in Baltin (1975). Baltin argues that Extr must be cyclical, applying on the lower cycle before SSR, in order to correctly derive (i) rather than (ii).

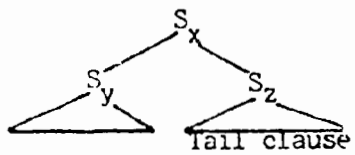
(i) **It seems to be so obvious that John is a fool that everyone agrees.**
(ii) **?*It seems to be so obvious that everyone agrees that John is a fool.**
(iii) **That John is a fool seems to be so obvious that everyone agrees.**

What Baltin does not explicitly account for is the fact that (ii) cannot be derived by extraposition on the upper cycle of the grammatical tree underlying (iii) (Baltin's Tree (81)). Any occurrences of (ii) should come from (iv), which is dubious in exactly the same way.

(iv) (*)?* **That it is so obvious that everyone agrees that John is a fool seems.**

My argument consists in showing that this fact, as well as parallel facts with other Tail clauses, can be accounted for by the Antigone Constraint.

[23]Ross (1968:158,197-198) proposes that Tail clauses occur rather in a structure such as this:



where S_y would be the clause "modified" by S_z. Ross argues for this proposal on the basis of his intuitions as to constituent structure, and the fact that it can simplify the statements of Extr (for structures like (82) and (87)) and Extr-from-NP. I reject it for various reasons, among them my intuitions as to constituent structure, and the fact that two-storey rules such as Equi and the raising rules treat clauses with Tail clauses just as they do any other clauses. Ross's formulation would require that their structural descriptions be complicated.

If Ross's formulation is adopted, the argument presented in the text is actually strengthened; there is no need to posit any rightward movement rules for Tail clauses, and thus assumption (b) is unnecessary. (Assumption (a) must also be adjusted slightly.)

[24]This, as Baltin notes, is predicted by Ross's (1968) Right Roof Constraint, and can be argued for on independent grounds in the particular cases. I will not do so here.

I am assuming that these clauses are moved to Tail position; this will avoid having to change the structural description of Extr and of Extr-from-NP, and can help explain the near grammaticality of some sentences in which an extraposed clause follows a Tail clause. If these clauses are not moved, the argument in the text is strengthened; assumption (b) is unnecessary.

[25]Notice that NSR is raising a clause that has already been raised, in apparent violation of the Antigone Constraint. This will be discussed in section 4.2.2.

[26]Actually, blocking Extr in this way is not enough to block all possible derivations of (101). (101) could also come from NSR of the **it** produced by Extr and raised by SOR in (i).

(i) **To believe it to be doubtful that the King eats hay was easy for Alice.**

That derivation is apparently blocked by another constraint which prohibits NSR of non-referential **it**: cf. the ungrammaticality of (ii).

(ii) ***It was easy for Alice to believe to be raining.**

[27]Both (105) and (106) are judged ungrammatical, or at least questionable, by many speakers, for different reasons. However, for those speakers who judge them grammatical, (107) is starred. That is the important datum for the argument.

Note that even though the object of the preposition **for** is reflexivized, it has not been raised by SOR out of the lower clause. Application of SOR to (106) produces the ungrammatical sentence (i).

(i) ***The Bellman expected himself to be natural to be admired.**

This ungrammaticality is predicted by either version of Constraint A.

[28]Berman (1974:304) and Chomsky (1973:263) talk about another dialect here. Berman states: "no noun phrase may be moved [by NSR] out of a tensed clause." Note that they have not argued that NSR is really reaching into an embedded

clause rather than applying to its own output on the higher cycle. (Apparently they were unconsciously assuming the One Shot Constraint.) Berman's sentence (iii) (p. 304, due to Postal) might be able to be used for such an argument:

(iii) Max will be hard to arrange for you to meet.

[29]Constrast (111) with (i), which, though marginal, is definitely better.

(i) ?Hay was easy for Alice to believe that it is doubtful that the King eats.

[30]Berman (1974:296) reports that for many speakers "Tough-movement may not apply to any noun phrase that has been Raised into object position" or indeed moved by any rule from its underlying position. Such speakers would presumably star (114). Berman makes it clear (pp. 292, 297) that this is a dialect-dependent generalization. Note that almost everyone would accept (100), which violates her constraint, or at least prefer it over (99).

[31]All the same, it is worth noting that all these arguments for the Antigone Constraint against the One Shot Constraint hold only under one of the following assumptions:

(a) Rules are unordered.
(b) Rules are only partially ordered, and each ordering constraint posited is counted against the model.

Under assumption (c), the One Shot Constraint would still be a live option.

(c) All rules are ordered.

If all rules are ordered, the facts presented in sections 3.1 to 3.5 could be interpreted as simply informing us what the orderings are. To argue against the One Shot Constraint with facts like these under such a model, it would be necessary to find cases where the ordering constraints necessary would be contradictory. I have not been able to find any such cases.

Even under assumptions (a) and (b), it is worth noting that all the arguments (including the one in 3.6) consist in showing that the One Shot Constraint doesn't do enough, not in showing that it must be violated. We never prove it to be wrong, but only to be inadequate and unnecessary to handle the data considered in this paper. In other words, the One Shot Constraint may well exist, but these data do not argue for it.

And, in some models at least, the One Shot Constraint could prove useful in explaining other facts. For instance, under some transformational models the One Shot Constraint could explain why passive sentences like (i) and (ii) cannot be passivized.

(i) The King was given some hay by Haigha.
***Some hay was been given by Haigha by the King.**
(ii) The Lobster's garden was passed by by Alice.
***Alice was been passed by by by the Lobster's garden.**

It could also explain why person markings are only done once per verb, and not repeated ad infinitum, and perform various other odd jobs which might otherwise require some ad hoc constraint or complication of a rule.

[32]By "dominated directly" I do not mean "dominated immediately", i.e. dominated with no intervening nodes at all, but rather "dominated with no intervening S-nodes." "Dominated indirectly" means "dominated with at least one intervening S-node." To say the same thing in a different way, given two S's S_x and S_y, S_x directly dominates S_y iff (a) S_x dominates S_y, and (b) S_y commands material in S_x. S_x indirectly dominates S_y iff (a) S_x dominates S_y, and (b) S_y does not command material in S_x.

For any S, the S that directly dominates it is its mother S, and the S that directly dominates its mother S is its grandmother S. Any S that it immediately dominates is its daughter S, and any S directly dominated by its daughter S is its granddaughter S.

[33]This would be different from Ross's (1967) Island constraints in that a different class of rules would be subject to it, and in that it would be defined not just structurally but derivationally; the global concept of Antigonal configurations is crucial to its definition.

Incidentally, Antigonal clauses apparently are Ross Islands. Those created by SSR and NSR are automatically subject to his Sentential Subject Constraint. Those created by SOR also exhibit islandish behavior. For instance, WH-Movement cannot extract constituents from them, nor can Topicalization, Exclamation Movement, etc.

(i) **Alice believed that the Queen was 101 to be doubtful.**
***Who did Alice believe (that) was 101 to be doubtful?**
***The Queen Alice believed (that) was 101 to be doubtful.**
(ii) **Humpty Dumpty thought that his cravat was beautiful to be obvious.**
***How beautiful Humpty Dumpty thought that his cravat was to be obvious.**

[34]The rule of Passive is well-enough known to forbear discussing its nature here (see Chomsky 1956, etc.). How it works is not important here; the important thing is that it is at work in the derivation of sentences like (120).

[35]It must, under some formulations, check to make sure that its subject NP is not an S. At least, (ii) must not be allowed to be derived from (122a).

(ii) ***Alice was surprised by that she would get no jam today.**

However, it might be a moot question whether that is a restriction on Passive or a restriction on by-Agent phrases.

[36]It is probably not the case that we can formulate:

> "Application to an Antigonal clause is application in which a rule's structural description makes reference to the $[_S\ \ _S]$ boundaries of the Antigonal clause."

The reason this is not possible is that NSR has to be able to reach down an indefinite distance to raise embedded objects. Presumably its structural description will have to include an essential variable X (Berman 1974:263), and will not be able to specify the $[_S$ boundaries of all the clauses it reaches into.

[37]Since phonological and post-cyclic syntactic rules will apply to constituents

of Antigonal clauses, and since some such applications depend on the Antigonal clause's being an S, we must make sure that such rules are not constrained by the Antigone Constraint. Specifying "two-storey rules" accomplishes this.

An alternative formulation would specify "cyclic rules." The two proposals make empirically different predictions. I do not have data affording a choice, however, and am opting for the stronger of the two formulations, and the one which is relatively independent of assumptions about cyclicity.

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