

On Infinitives and
Infinitival Relatives

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November 1973

"The key to the meaning
of the for complementizer
lies in the meaning of the
preposition for." (Bresnan, p. 79.)

This paper started out to be on infinitival relatives.¹ The fascination of infinitival relatives, however, stems from the feeling that they are much like tensed relatives, and yet are somewhat different in comportment. Is this difference due to the fact that the sentence which is adjoined as a relative is a "for-to" complement? Most discussions of infinitival relatives have been based on at least the assumption that a for/to sentence is involved. My inadequate understanding of these complements forced me to look at them more closely, and consider their relation to base-generated infinitives -- if there are any of these sort of beings.

Coming to the conclusion that a description of our present language is better with base-generated infinitives, I was forced to consider a mechanism to explain how these infinitives could have syntactic and semantic properties which pointed to a subject -- for example, infinitives with reflexive pronouns for objects. But if one accepted these devices which would specify what noun phrase off somewhere else in the tree was acting like a subject of the infinitive -- accepting these devices, shouldn't we reconsider some of the old solutions to problems concerning Equi and Raising to Object?

I don't mean to summarize here the entire path of reasoning pursued in this paper, but rather to explain -- or apologize for -- the circuitous nature of the discussion. The problems of English syntax being so tightly interwoven, a suggestion concerning one obscure subject -- infinitival relatives -- very quickly leads to ramifications for the theory

of other constructions. To take one example: when a wh-phrase is moved out of (or to the front of) the infinitival relative clause, it is not possible to retain the subject: thus we get "a pencil with which to write", but not "*a pencil with which for you to write". In the other case where whords move to the front of infinitival clauses -- that is, in indirect questions like "I asked Bill where to put the car", and indirect answers like "He told me where to put it" -- the same condition holds. So three rather different reasons arose making it important for me to look at indirect questions: First, in connection directly with infinitival relatives. If there is a more general reason common to both the infinitival relative and the indirect infinitival question which prohibits fronted whords and apparent subjects, then an explanation of the fact that dealt only with infinitival relatives would surely be incomplete. Second, the control problem for indirect questions following ask and tell is an important one to try to solve for anyone arguing that NPs can control infinitives "from a distance". Third, given my doubts about the correctness of the standard analysis of for/to complements, I wanted to see if an alternative analysis could explain as well, or better, the characteristics of tensed S, for/to complements, and questions (direct and indirect) -- three of the important kinds of constructions that Bresnan analyses as kinds of a more general category, the \bar{S} .

Infinitival Relatives

There is a series of constructions that exploits the parallel between tensed sentences and infinitives, permitting a range of infinitivals to follow NPs, apparently forming a constituent: the whole complex can be a subject. On the surface, there are four kinds (and I make no assumptions here about their source):

- (1) Equi: A man to serve drinks
- (2) OD (Object Deletion): A pencil to write with;
A topic to investigate
- (3) For-to: A topic for me to investigate
- (4) PP-wh: A pencil with which to write --.

However, we do not find wh-NPs preposed, parallel to (4):

- (5) *a pencil which to write with

which we might expect to be good if (4) were a derivative of a (5)-like structure plus Fied Piping.

Furthermore, and equally surprising, the NP in the lower (relative) clause, as in (3), the for-to construction, cannot appear as a whord coreferential with the head, although the object NPs seem to have this possibility with the PP-wh construction: thus

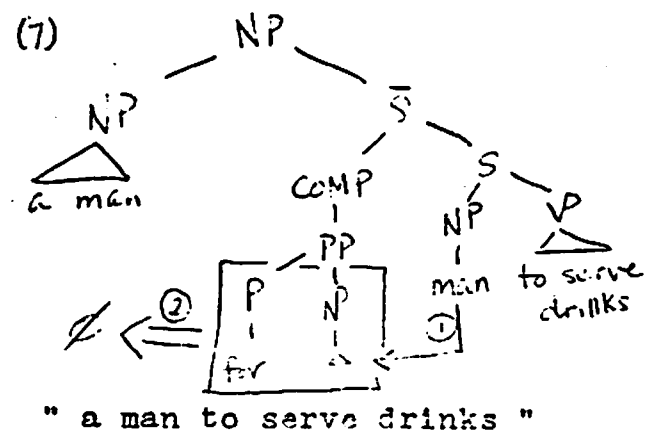
- (6) *a man_i for whom_i to serve drinks for the guests.

Putting together the possible surface forms (1)-(4), we see that they all exhibit the structure N (FP) VP, where the VP is defective just in case a wh-phrase occurs. This general form is not shared by the bad (5), which is N NP VP*. The optional FP, however, in forms (3) and (4) appears to be quite

different, and so we have the problem: we would like to relate the two PPs of type (3) and (4), since their shared form seems to be too big a feature to overlook -- and yet they arise in different ways. Emonds' solution to this difficulty was very neat, and seemed to support his general approach very directly.

His solution was an extension of the Bresnan treatment of the Presentence constituent, renamed COMP, which was posited both as the origin of the complementizer "for", and the goal of Wh-movement in the formation of relative clauses. He further suggested that the "for" in the for/to construction was still synchronically a preposition.² Emonds assumed that where a to was, a for had been also; specifically, raising the subject into COMP was responsible for the actual word to. Emonds could justify positing a PP node in the COMP position which could be filled by (and only by) a prepositional phrase which was Pled-Piped during Wh-movement, forming an infinitival relative of the PP-wh sort. The for-complementizer and the original subject of the relative clause -- neither of which appear in the Equi, OD, and PP-wh types -- were said to be deleted simultaneously during the Equi deletion operation.

no, cf. p. 102
 according to Chomsky, but how does he say this in writing?
 ↓
 200: refs to Wh-movement as 'infinitive' construction.



Transformations:

1. Subject to COMP movement: Ad-hoc but structure preserving
2. Equi deletes "for man", leaving COMP structure, which may, but need not, be filled again during the derivation

While Equi is formulated as a deletion transformation triggered by the NP in a higher cycle, the movement of the PP with the whord in it must occur on a later cycle than the actual cycle of the relative clause itself -- apparently, a violation of the principle of the cycle (I ignore the possibility of using "multiply-filled nodes").

Let us look further at this use of Equi. First, we have a choice as to whether we want to say a whord, or a full NP, is moved into COMP in the first transformation, "Subject to COMP Movement", the rule preceding Equi. If Equi were written as a transformation literally requiring identical coreferential NPs, then clearly a whord won't be deleted by Equi, and we haven't accounted for why (6) is bad. Chomsky (p.c.) suggested that Equi could be stated in such a way that coreferential NPs could delete a whord, using some notion of non-distinctness. However, I don't think we want to do that. That approach presumes that whords can be assigned referential indices, something we knew anyway from sentences like "Who hurt himself?" We also know that "know" can govern Equi, getting sentences like "Don't worry -- John knows to be back by midnight." Under no circumstances, though, could Equi delete who in "John knows who to look out for", and yet I know of no independent grounds which would prevent this if Equi had the suggested reformulation.

If Subject-to-COMP movement is an independent transformation, then it is apparently a positive absolute exception and must be marked as such. Otherwise, there would be nothing to prevent

the prepositional complementizer for from taking an object in deep structure, as in: "a man for Bill John to serve drinks." I take this is an argument against such a rule.

It has been suggested that "subject-to-CCNP" movement is Relative clause wh-movement; some means must then be found to block the otherwise generable *"some tools for which John to use." Worse yet, the subject does not leave behind the sort of traces that it has been noted that tensed relative subjects do. Morgan has pointed out that the intensive reflexive is a sign of a definite NP, and indicates that the coreferential NP in a relative clause is definite:

- (8) The } plumber himself reads Sartre.
 *A }

A plumber who himself reads Sartre said I should
take a look at it.

But infinitival relatives do not seem to be this sort of relative:

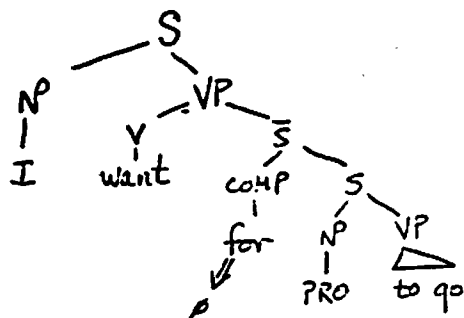
- (9) The man (*himself) to fix the drains is here!

The papers for the professor himself to grade are
being sent to him.

The conclusion of all this is that the item moved in step #1 above is not a whord. What should it be? Let us step back from the problem at hand and look at Equi from a broader perspective.

I must accept the arguments of Chomsky and others that Equi is better described as an interpretative rule than a deletion rule, operating on a form like (10).

(10)



Equi is an interpretive rule that casts an interpretation on PRO, an abstract element with no phonetic form. The arguments I know of are:

(A) The difference between (11) and (12) is a difficulty for the deletion-under-identity theory, since if we start with

(11) The men want the men to be happy

(12) The men want to be happy (12a)

an underlying form (13), the referential indices of the two occurrences of "the men" are the same, and the words are clearly identical. So apparently to derive both surface forms (11) and (12), we must either (i) set up two underlying forms (a) The men want ~~want~~ the men [the men to be happy], which is a positive absolute exception to Equi, and (b) The men want ~~want~~ [the men be happy]; or (ii) say Equi is (or can be, rather) optional, depending on the verb. Both solutions are only solutions on first glance. Solution (i) gives two underlying forms, but no principle to suggest when occurrences of the same word "men" must be, and why they must not be, treated as occurrences of the same binding variable -- so to speak. It furthermore sets up two separate deep structures -- entirely unnecessarily -- for John wants Bill to be happy. And under the standard assumption (which I myself find implausible), form (a) in (i) asserts a lexical grammatical relation between "the men", the deep structure object, and the verb want.

Solution (11) has the same fundamental problem as (1); it not only does not explain when Equi should be optional, it fails to explain how the variables should be bound.

The PRO theory doesn't have this problem: PRO is always playing the role of a variable bound to a controller, if there is a candidate for this "control" relation. The underlying structures are, on this theory, Everyone wants everyone to be happy, and Everyone wants PRO to be happy.

The second argument concerning PRO relates to Super Equi and infinitives with indeterminate subjects: If PRO is the subject of this infinitival forms, then the interpretive rule can interpret the reference of PRO by referring to higher NPs in the S -- or, more important, if no other NP is marked coreferential, the PRO form is left with an "unspecified" interpretation (e.g., "It can be disastrous to stick a quarter in that machine").

But
→ PRO should not be generated in the deep structure in other than subject position, it would seem: if it were generated as an object, we would end up with a surface form like (13) out of (14),

(13) I'm looking for a game for Bill to play with.

(14) I'm looking for a game for Bill to play with game
with PRO

or (15) out of (16).

(15) I want my son to (*resemble/#grow).

(16) I want my son to (resemble/grow) PRO

Note that a constraint on the operation of the interpretive rules which apply to PRO won't suffice, such as only operating

on the subject position, because one of the strong arguments in favor of the abstract PRO element was the fact that a PRO which never has an interpretive rule apply to it is automatically assigned its null, unspecified reading.

However, we do want to generate the PRO element in the object of a by phrase when Passive applies to the S, to get forms like I need to be assisted, or I found a room to be examined in. What happens to a PRO which is generated in subject position if Passive applies? A natural suggestion to make would be to say that PRO is the unspecified subject that can be deleted along with the by to give agentless passives. While this is attractive, under a theory with ordered rules it is inconsistent with another attractive possibility, which is to say that, since we apparently only want PRO in the subject position -- and we want whords not to show up in subject position, to block sentences like (6), why not propose that PRO originates from a whord in subject position of a for/to? Thus:

(17) Wh \rightarrow PRO / -- to

(18) by PRO $\rightarrow \emptyset$

(19) for $\rightarrow \emptyset$ / -- PRO

(19') [Δ] $\rightarrow \emptyset$ 2

But this won't work either.³ Rule (17) would have to be marked as a positive absolute exception. Not just for particular lexical items, which would be bad enough; marking rules as positive absolute exceptions is a sign that we are trying to force a construction to fit a preconceived form which for independent reasons we find isn't the way the grammar is headed. But to make an entire rule a positive absolute

exception is to point out that the proposed underlying structure is too unrestricted. And the evidence comes from forms with other whords in the subject:

(20) We are looking for a man whose wife can help us.

(21) *We are looking for a man for whose wife to help us.

Note also that apart from any of these problems in formulating Equi, the interpretive (PRO) theory of Equi removes the power of Emonds' explanation for the surface forms of infinitival relatives. If the subject PRO is not deleted along with the for (the rule (19) that deletes for is now a minor housekeeping rule rather than Equi), and PRO must be left in the structure so that it may be interpreted on later cycles, -- well, then, there is no evidence that the for which shows up in the for/to construction is a preposition residing in a prepositional phrase. Not that there is any particular evidence that for is not in a PP -- but when it is deleted, by rule (19'), an unfilled NP delta node is also deleted, and this NP node is never filled -- in any constructions. Or rather, in the for/to construction, Emonds must say that there is an unmotivated rule moving the subject NP into the COMP node, in order to meet the requirement that the delta node is filled at some point during the derivation; but it does not help the infinitival construction any. The transformation is not only not motivated by any other facts, but it also never changes the string of lexical items: and the suggestion made by Chomsky in Conditions with respect to Raising would apply here even more strongly.⁴

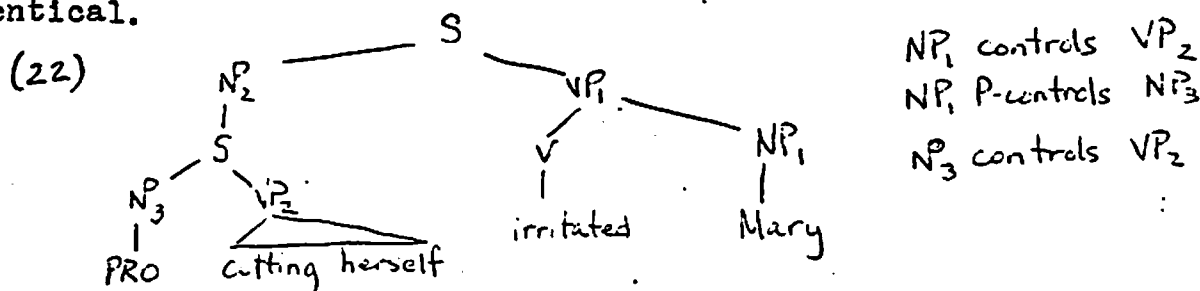
It seems to me that the arguments supporting the PRO theory over the NP-deletion theory of Equi have blinded us to bad reasoning that lies behind the postulation of the abstract element PRO. The fundamental reason for positing PRO was to take the VP which we see on the surface -- the infinitive -- and fix it up to be the S which our theory required that it be. After arguing against Equi as deletion, we create an abstract, unrealizable entity to be the subject. I'd like to argue that infinitives can be base-generated on the basis of evidence from nominals (John's promise to leave) positive absolute exceptions to Equi in verbs (try, promise), indirect questions, and possibly the absolute construction "with John to help us". If this is so, then it would be only an accident within the theory entertaining both Equi and base-generated infinitives that the input to Equi is indistinguishable on the surface from a bare infinitive.

From before all time it was recognized, first, that there exist relations between the subject-of an S and the VP (defining these terms and relations in the Aspects way) -- for example, subjects often cause reflexivization of non-embedded coreferential NPs in the VP, and subjects must agree in number and gender in constructions like to lose one's temper. Observing this, we have been tempted to note these as direct effects of the subject-of relation (the specifics of how the transformations and interpretive rules are written exactly are irrelevant here). Second, it was observed that other NPs appear to have similar properties due to their position in the S: e.g., Mary must

agree in number and gender with the reflexive in the subject:
 "Getting herself arrested is one thing that is tough for me
 to imagine Bill recommending that Mary should do."

What we have is this: for a very large class of VPs, there is a particular relation between an NP in the S and the VP (call the relation "controls"), which is evidenced by such things as obligatory gender/number harmony and so on. The epitome of the "control" relation is of course the "subject-of" relation in the Aspects sense.

Now to explain the control phenomena, we may say that the effects are always sponsored by an (apparent or unobserved) NP which is in the subject-of relation to the VP, and which is in another relation to the appearing NP (call it P-control). Control and P-control are clearly very similar, though not identical.



On the standard interpretive theory, "control" need not be theoretically defined, or at least we've seen no reason to do so so far. On the other hand, we must define the "subject-of" relation, and the P-control relation, in order to perform the interpretive rule of Equi.

An alternative explanation will eliminate the P-control relation in favor of control, and say, furthermore, that the gender/number harmony, reflexivization, and so on that the first theory took to be indications of the subject-of relation

are, in fact, reflections of the more general control relation.

The second theory eliminates the underlying abstract marker PRO, and is thus more parsimonious; it also eliminates the P-control relation in favor of the control relation which is independently required.

The control relation is independently required if and only if we generate VPs in the base which aren't immediately dominated by S. Reasons for generating VPs independently include:

We can eliminate the positive absolute exceptions, or conceivably, subject-subject identity condition, for verbs like try and promise. It has, of course, been noted that the subject-subject restriction need not be met if the complement is tensed. See Jackendoff (1972) for a discussion of this.

Evidence is offered below that infinitival indirect questions have no subject NP. Base generated nominal forms must mostly be described as positive absolute exceptions to Equi, since they rarely take full for/to complements; rather they may take infinitives (his drive to win). This "Equi" would be violating the complex noun phrase constraint (as it would if Equi deletion were operating in "Mary bought a puzzle to put together "). Yet Equi of the classical sort does not seem to operate into complex NPs when the opportunity arises.

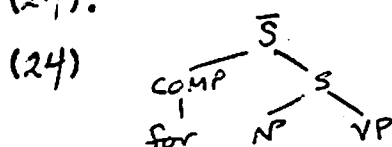
(23) Mary resented ^øthe hopes for her to win
hated John's plans

~~U~~ doesn't delete

(Compare the Equi in Mary resented being assigned to typing class.
Mary hated to lose.)

For/to Complements

My conclusion so far is to come to no conclusion at all until for/tos are investigated further. We would like to find some characterization of for/tos which would grant a coherent point of view for both their internal and external properties. By way of comparison, we might consider what kind of facts are explained, and what are merely noted in passing, by the current analysis of for/tos which sees them as structured as in (24).



The complementizer for and the to may be inserted by a transformation, as it is in Rosenbaum's analysis, or it may (perhaps in the form of a more abstract precursor) exist there already in deep structure. On either scheme, some claims are being made about for/to complements. (1) For and that are the same kind of morpheme. To the extent that they act differently, this is accidental; to the extent that they act alike, it is systematic. (2) For is not a preposition here; it must be added, though, that Emonds tried to retain the historical fact in his synchronic analysis that the for/to structure arose from a reanalysis of a dative for-phrase. Bresnan refers to this analysis more than once (e.g., p.56, p.58), suggesting that she too accepts it. I think that in this particular effort, Emonds is not successful. (3) In any event, the distribution of the for/to complement -- being dominated by an \bar{S} -- is unrelated to the distribution of a prepositional

phrase headed by for. To the extent that the for/to is related to the for/PP, this is an accident according to this theory.

(4) That there is a possibility of subject deletion -- apparently along with the complementizer for -- in the case of the for/to but not of the tensed-S is accidental. The tensed-S condition, conversely, is a property not of a certain grammatical category, but rather of a certain grammatical category containing a designated morphological item: Tense.

Let us finally look at the distribution of for/tos in sentences. Both Rosenbaum and Bresnan did this, but a closer look will be instructive. Whatever the top node in the structure of the for/to^{maybe}, I expect that it will show up in the facts about where for/tos can appear.

I know of the following spots where the for/to construction can show up:

(1) Subject of a sentence: "For you to leave now would be a drag."

(2) Complement to a verb: "I would prefer for you to do it yourself."

(3) Upper and Lower Faraci clauses: Upper: "John sold his car(in order)for his conscience to remain clear."

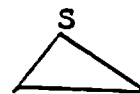
Lower: "John brought the Senator home for his children to speak to."

(4) Complements of adjectives and adverbs: "This topic is just too complicated for me to settle decisively."

(5) Relatives: "A man to serve drinks is truly a necessity."

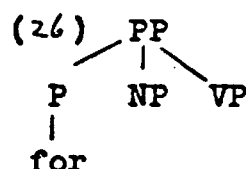
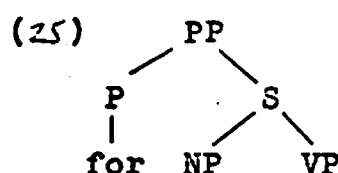
(6) Nominal complements: "Their hopes for a new leader to arise."

Now, a constituent's distribution is a reflection of the highest node that exhaustively dominates it. So, for example, a gerund might have the following structure: NP⁵. The NP node explains the gerund's consistent behavior as a noun phrase, even though it has sentential character.



In a sense, I'm asking a question like Emonds did concerning the "natural class" consisting of Poss-ing, for/to.

and tensed-S clauses. Rosenbaum and others took these three all to form a natural class -- called S -- on the basis of internal syntactic properties: passive, tough-movement, there-insertion, extraposition, and raising to subject. Emonds argued that, in fact, Poss-ing forms act like NPs -- that is, their highest node label was NP. By default, he continued to assume that for-tos were Ss along with tensed clauses. I'd like to suggest that nothing is gained particularly by this assumption, and that the Prepositional Phrase analysis is better. The PP analysis posits for/tos as having (25) as their underlying form.



It is possible that (26) would be more appropriate: I will not attempt to decide between these possibilities here. However, we may notice that there is another construction, an absolute of a sort, with a structure like this⁽²⁶⁾ possibly: e.g., "With John to help us, we don't need a stepladder." Now, it is certainly possible that this form is underlyingly different: sentences like "With the cat gone, the mice will tango" suggest that some form of be was deleted, perhaps with the same rule of being-deletion Emonds suggested in his thesis for participial phrases. Posited behind "with John to help us", then, would be [_S John [_V be [_{PP} to help us]]]; under normal conditions, this structure would have to undergo There-insertion for definites, yielding There is John to help us. This rule cannot operate

here: "*With there (being) John to help us,...". In any event, if this suggestion undermines independent support for prepositional phrases of the sort (24), it simultaneously provides evidence for prepositional phrases of the sort (25). (Note that this with also takes simple noun phrase complements: "With Johnson's impeachment, the country underwent a change of attitude toward the presidency.")

Let us examine each of the places that for/to shows up, saving the first -- subject position -- for last.

(2) Complement to a verb: The question to ask is: what can be simply explained only with recourse to a category which includes both tensed-S and for/to clauses? If we consider Bresnan's examples in Chapter 1 of her thesis -- she examines the peculiar properties of indicate, mean, show, imply, and so on -- we see that the kind of subject and object (NP, tensed-S, for/to) is dependent on the verb, the verb's modals, tense, and on what other choice is made for subject or object position; that is, what can be a subject depends on what the object is, and vice versa. These inter-relations, she says, "can be correctly described by means of subcategorization" (p.22), though she does not proceed to do so. Even if it were a matter of listing the possible subcategorization frames, this would not argue that there is a natural class containing for/to and tensed clauses but excluding NPs.

In short, I know of no linguistic generalization that is simplified if for/tos and tensed-Ss are held to form a natural class, regarding the complements to verbs. We shall see when we look at base-generated nominals that there is apparently

a generalization which treats the for/to and for/PP complements to verbs as a natural class.

(3) Lower Faraci clauses are purposive and permit object deletion.⁶ E.g.:

He brought Senator Smith home for his children to talk to --. The same function is taken by a prepositional phrase headed by for; we see this either through a nominal paraphrase or through the pseudo-cleft test.

(27) He brought Sen. Smith home for entertainment.

(28) What he brought Senator Smith home for was for his children to talk to ?(him).

Upper Faraci clauses do not permit deletion, and function to express the aim of the event described, rather than the immediate purpose of the activity.

(29) I bought the piano { (*in order) to practice on --. LOWER
(in order) to please my parents. UPPER

Upper infinitives prepose:

(30) To please his parents, } he bought a piano.
*To practice on (it), }

Again, we get:

(31) What he bought the piano for was to please his parents.

(4) Determiner of Adjective and Adverb Phrases:

As is well known, there are several determiners of APs that select for the sort of complement that can co-occur: so takes that-S, enough takes an infinitive or for/to, and for some speakers (myself included), often a that-S, too takes a for/to.

"That language is so difficult that you can spend years just learning the pronouns. Nevertheless, it's simple enough for a child to learn. ?And it's important enough that TWA has written a phrase book for visitors about it. So I suppose it's not too late for us to try to learn it. It isn't really one of those languages too difficult for us to try to learn."

Many adjectives don't normally co-occur with for/PPs.

- (32). *That's $\left\{ \begin{array}{l} \text{long} \\ \text{heavy} \\ \text{blue} \end{array} \right\}$ for me.

But these are fine when an AP determiner that takes a for/to complement appears (enough, too, *so):

- (33) That's $\left\{ \begin{array}{l} \text{long enough} \\ \text{too heavy} \\ \text{*so heavy} \end{array} \right\}$ for me.

The conclusion is stated in A in the standard approach, in B in the PP theory.

A: too takes a for-to \bar{S} complement
for/PP complement

enough takes a for/to \bar{S}
possibly a tensed-S complement
a for-PP complement

so takes a tensed-S complement

B: too takes a for/PP complement, with no restrictions

enough takes a for/PP complement, with no restrictions;
perhaps an \bar{S} complement

so takes an \bar{S} complement

It goes without saying that on theory A there are no reasons to explain why the different kinds of \bar{S} don't fall together, nor why the placement of a certain PP coincides with the placement of one sort of \bar{S} . It would be just as reasonable that for/PP could occur marginally with enough, with so, and not with too. The PP theory, on the other hand, makes the correct predictions.

(5) Nominals: Judgments on whether base-generated nominals can take for/to complements are curiously difficult. I know of no better generalization concerning their occurrence than Chomsky's (Conditions, fn.56) "It seems that derived nominals

Indirect Questions:

The difference in control manifested in two kinds of indirect questions, as they've been dubbed, has been puzzled over. We get:

- (34) John asked Mary where to hide himself
himself
her
herself
- (35) John told Mary where to hide himself
himself
her
herself

I'd like to suggest that a close look at the indirect question construction shows that these are not Ss; that they are generated without subject NPs; and that the solution to the control problem depends on the assignment of thematic functions, which relate to syntactic properties.

The first question to ask, naturally, is what sort of constituent is the indirect question. Externally, all the evidence points to an NP node: (1) it can be the object of a preposition, and for some people, when used as a complement to nouns like question, must follow a preposition like of or as to. (2) It can be clefted. (3) It can be the subject of a sentence indefinitely far down in a tree. Thus:

- (1) The question { as to } where he mislaid his keys was a
 { of }
- puzzler. I was, in fact, baffled by where he could have dropped them. (2) It was where they showed up eventually that surprised us so much. (3) And though Bill denied it vehemently, I personally could hardly doubt Moran's contention that where the Colonel found them was of great interest to the police.

2.

take for only when they also take prepositional phrases with for....(desire,wish,hopes, plans,etc.)" If this generalization is in fact the correct one, it would indicate that, for these nominals just as for specifiers like so, too, and enough, the grammar can only specify "for/PP" as an acceptable complement; whether the PP has an NP or an S as its complement is not specified.

Subjects: Subjects are, by and large, NPs. While perhaps his assertions were too strong regarding what can be a root sentence, Emonds' point remains that in root sentences non-NPs can be subjects: tensed Ss and for/tos. There need be no assumption that these are both \bar{S} s. Note, too, that complex PPs can be subjects under certain circumstances: "From Boston to New York is a long way". In its own, peculiar, totally uncomprehended way, this sort of construction ties in with the extraposition phenomenon, too (I take no stand here just what extraposition is): "It is a long way from Boston to New York", which suggests that if there is a natural class argument to be made from extraposition facts that includes both for/tos and tensed \bar{S} s, that class must also include complex PPs.

In all three respects, these indirect questions look like constituents dominated by NP rather than S. Most uses of indirect questions seem to be as complements to verbs like doubt, know, wonder, ask, tell, and so on, where they could be either NP or S, as far as the theory is concerned.

But we're still no closer to the explanation of the control shift in sentences (34) and (35). And while the difference between the two sentences is puzzling enough, the control property of ask + whord + infinitive is still different from the other bizarre control verb, promise. The subject of promise controls the complement infinitive, of course, in the active: "John promised Mary to bring her/*herself back by midnight", etc. Those speakers -- myself included -- who can passivize sentences like this find that control is shifted to the derived subject: in "Mary was promised to be brought back by midnight", Mary is being brought back. While some speakers don't get sentences like these, other speakers can even accept sentences where the complement isn't passivized -- e.g., "Mary was promised to get a chance at the prize". These facts, clear as they are, go in the opposite direction from the facts behind ask whord inf, where control is retained by the same underlying NP involved. Thus when John asked Mary where to put the vegetables points to control of the infinitive by John, so the passive leaves control to the unspecified "asker": Mary was asked where to put the vegetables. The facts for tell whord to are parallel, though converse.

The first insight into the difference between the "indirect questions" following ask and tell could come merely from thinking about the difference in meaning. In (34), a question is being

reported, and the whord+infinitive is used as a formula with a logical gap -- a free variable, so to speak. In (35), the whord+ infinitive is being used to describe some specific kind of information, which may or may not have been in response to a previous, parallel question.

The second kind, then describes some information; the first kind describes a question. I shall call the first kind an "indirect question" and the second "indirect answer".⁷ Naturally, when we look for properties to distinguish the indirect questions from the indirect answers, we find the indirect questions behaving like real questions; it would have been quite surprising if the indirect answers had wound up resembling real questions more than indirect questions.

The original observation that the indirect questions have a "free variable" suggests that these whords should take intensifiers like "in the world", "in God's name", and so forth, like true questions. Curiously, intensifiers which seem to have been derived from exclamations -- like "the hell" -- don't serve to distinguish as well between the two sorts. At least for good swearers. In any event, we get I asked/*told John who the hell in God's name borrowed my bicycle and put a flat in it.

(36) Whether as a whord is pretty bad in indirect answers.

??I told him whether to leave his boots on the porch.
 ?I told him whether he could leave his boots on the steps.
 I asked him whether to leave the lights on or not.
 I asked him whether I should turn off the lights.

The facts are parallel with if, though there is no infinitival form.

Notice that even if you can get indirect answers with whether, as above, these can be made just awful by considering the indirect form of the following question:

- (37) Do you scramble your eggs, or what?
 I don't know whether he scrambles his eggs, or what.
 *I told him whether she scrambles her eggs, or what.

There are other further properties whereby indirect questions and indirect answers differ. See fn. 7.

It is well-known that we never find a specified subject in the infinitival form of the indirect question and answer. Since we are permitting infinitives to be base-generated, there seems to be no reason not to generate these indirect questions and answers with their infinitives just as they appear on the surface, aside from the wh-movement. This analysis will be strongly supported by a thematic description which handles the control facts.

There is additional syntactic evidence that indirect infinitival questions don't have underlying subjects -- that is, we don't start out with a structure as in (38).

- (38) John asked Mrs Smith where to sleep.

John asked Mrs Smith [where (for) John to sleep]
 If we did, then (39a) would derive from (39b), or under sloppy identity, from (39c). What we find, however, is that (39a) has a reading like that of (39c), but not (39b); the full form in (39d) can have either the sloppy or the strict interpretation.

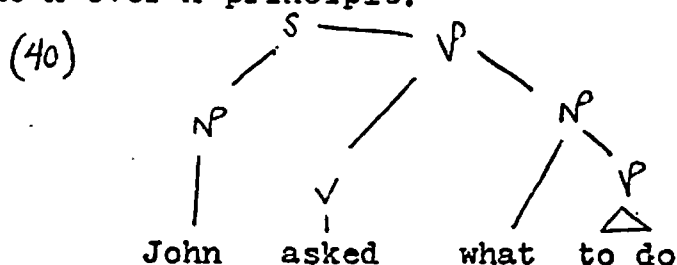
- (39) a. John asked Mrs Smith where to sleep, and so did Mary.
 b. John asked Mrs Smith where John should sleep,
 Mary asked Mrs Smith where John should sleep.

c. John asked Mrs Smith where John should sleep and Mary asked Mrs Smith where Mary should sleep.

d. John asked Mrs Smith where he should sleep, and so did Mary.

The theory that posits full underlying forms predicts that the "strict" reading of (39b) is the better reading. The theory that posits as underlying (39a) "John asked Mrs Smith where to sleep, and Mary asked Mrs Smith where to sleep" predicts correctly that the reading of (39a) is (39c), for the structure is interpreted as in (39c), and then deletion of identical lexical material yields (39a).

Note that this analysis of indirect questions also explains why what can't be passivized in John asked what to do without recourse to any facts about COMPs, but rather just on the A-over-A principle.



In addition, the peculiar fact, noted by Chomsky in Conditions, fn. 25, that such apparent violations as "What does John know how to do?" are really pretty good, can be categorized as one of the oft-noted violations of the complex noun phrase constraint. The complex noun phrase constraint is the only which would block the movement of a wh-ord in such a context. I refer to the difference between such sentences as (41) and (42).

(41) *Who did Herman furiously deny Cronin's claim that Marvin ought to hire?

(42)?Who did Herman make the suggestion that Fred should hire?

In the first case, the verb and head noun of the complex noun do not form a single semantic chunk; in the second case they do. The indirect questions out of which whords can be moved are those based on phrases like "know how to", which have the same chunkiness as "make the claim", or "make the suggestion".

My suggestion concerning these two forms (ask and tell) is to assign them different thematic constellations: that is, I take seriously the designation question and answer.

The thematic structure of a question will have, to use Jackendoff's terminology, a Source, the asker, a Goal, the one asked, and a Theme, a statement with at least one open variable in it. An answer will have a Source, the answerer, a Goal, the one to whom it is addressed, and a Theme, which could be a description of behavior, a phrase, or a sentence.

When infinitives are found as complements to a noun like question ("John's question (as to) where to sleep"), John, which is the Source here, automatically controls the infinitive. (The same fact holds, of course, for "The question by John (as to) where to sleep", which is perhaps more awkward; there is, it hardly need be pointed out, no "*the question (by John) as to where (for John) to sleep".

If we can see how the particular meanings of ask and tell required when an indirect question/answer follows are ferrated out (both ask and tell have a multitude of uses), then the problem is nearly solved. In conjunction with a principle of the sort Jackendoff suggests (p.218) concerning the coherence of thematic functions between the matrix and the

embedded NP or VP, the control facts will then be comprehensible.

Ask (-- a question)

Source: Active Subject

Goal: Active Dative Object

Theme: "question"

Tell (-- an answer)

Source: Active subject

Goal: Active Dative Object

Theme: "answer"

Bill's question to me as to

where to put the boxes

Source: Bill ; controls the infinitive

Goal: me

Theme: where to put the boxes

An example of thematic relations in the nominal "answer" is interesting. It not only reflects the kind of thematic roles described above, but can incorporate the specificational/predicational distinction discussed in Higgins' thesis.

The specificational reading corresponds, loosely speaking, to what has been thought of as an extraction: the predicate fits into the thematic constellation of the subject. The predicational reading describes what was identified in the subject. (Note the ambiguity in Higgins' "Nixon's peace plan is a bomb".) This accounts for the ambiguity of "John's answer to me was to shut up." On the specificational reading, "me" controls the infinitive (which is what we were seeking); on the predicational reading, thematic roles are built up from scratch, so to speak, on either end of the copula; the unspecified Source on the

right is made determinate by the specification on the left of the Source,

If the whord+infinitive following ask where a sentential complement, then we might wonder why it doesn't ever show the control properties of "I asked John to leave". However, since it is an NP, we can look at what kind of NPs can follow

ask: (1) I asked John a question

(2) I asked John a favor

(3) We asked \$25 of each incoming Congressman.

(4) #I asked John the facts (though "+...about the facts")
 the orders
 the answer

It is not crucial how we ultimately describe the thematic structure of these possibilities; what is clear is that of the two possible interpretation of the whord+infinitive, only one, the indirect question, can follow ask.

Bresnan's Generalizations

It is clear that a major disadvantage of the PP analysis -- if disadvantage it be -- is that it seems to undo generalizations that Bresnan tried to put together in her thesis. However, I think that some of the generalizations are spurious, and some will be eventually handled differently. Some facts remain explained on her account and not on mine.

(1) Only one complementizer can appear in \bar{S} , where complementizer means whord(reflex of the WH complementizer), that, for. On the reanalysis, indirect questions and answers are NPs, as are free relatives (it may be correct that indirect questions and answers} are free relatives formed by the Question-Wh-movement rule rather than the Wh-Relative clause movement rule; I will not pursue this here). That complements are \bar{S} , and for/tos are PPs. Nothing further needs to be said about cooccurrence except to assume that Wh-movement in \bar{S} moves the wh-phrase into the COMP position, erasing the that (or alternatively blocking the late that-insertion rule).

(2) Complementizers are meaning-bearing. Very true.

(3) All complementizers appear to the left of their complements. This is not formally explained on my account, and yet this seems to be a more general fact about, in addition, prepositions, sentential adverbs, and so on.

(4) Indirect questions, for/tos, and tensed S clauses all extrapose from subject position. I do not have an explanation of this.

(5) In non-embedded sentences, both WH and that are deleted, Bresnan notes; but she continues, pointing out that this separates tensed sentences from for/tos, which do not

appear in non-embedded positions. Tentatively she suggests that imperatives could be derived from for + Subject deletion, which would always be interpreted as a deletion of "you". One problem with this suggestion, whose importance for the issue at hand rests on whether it can show for/tos to form a natural class with tensed Ss, is that negatives in for/to complements do not trigger do-support, although negative second person commands (not first, curiously) do have do-support: "Don't eat that!" §

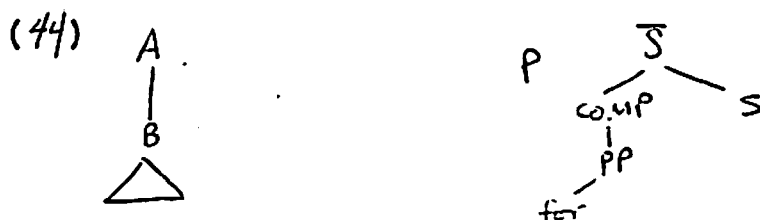
(6) In embedded positions, that and for are subject to optional deletion sometimes. There is no evidence that the same process is involved, however: for example, the that that introduces relative clauses can sometimes be deleted; the for cannot. It is also quite curious to note that Bresnan argues on p.56 that for-deletion would also delete the subject NP, which must have been moved to COMP as under Emonds' analysis; on p.39, she suggests that a rule applying on a higher cycle can delete the for without deleting the NP in order to derive "I want you to help me". We know it applies on the higher cycle because the for-deletion rule is dependent on the higher verb("want", in this case); therefore, the obligatory structure-preserving rule would already have operated on the lower cycle. It is not at all clear to me how Bresnan would resolve this difficulty.

(7) Bresnan notes that the possibility of deleting the complementizer corresponds to whether Pied Piping of prepositions is possible in relative clauses, indirect questions, and questions.

The facts are not as she suggests, I believe; Pied Piping can occur in indirect questions, though Bresnan proposes that it doesn't.

She asked me {on} which floor the men's
told { }
department was to be found { }.

(8) In Bresnan's footnote 20 to Chapter 1 (p.58), she discusses the nouniness of indirect questions and answers. She suggests that prepositions delete before other prepositions and empty nodes. In this way, she could explain why indirect questions appear with prepositions before them, but *for/tos* and tensed-'Ss don't; the prepositions are there underlyingly, but they disappear due to two independent processes just mentioned. There are two problems here, one theoretical and the other factual. The constituent that would be following the deleted preposition is in neither case an empty node nor a preposition, as far as the transformational mechanism is concerned; when two nodes are arranged as in (44), one exhaustively dominating the other, the constituent behaves externally as if it were a constituent of the higher category.



The factual problem is that I know of no evidence that prepositions do in fact delete in such circumstances. It has, in fact, been argued that the phrase-structure rule expanding $PP \rightarrow P + PP$ accounts for "He ran up to the wall"; the preposition up does not delete.

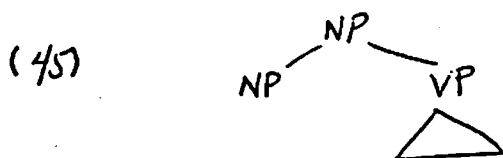
(9) The semantics of the WH complementizer are clearly different on my analysis than on Bresnan's; she suggests that "the WH complementizer may...be compared to the 'open sentence' of logic." I suggest that this holds only for questions and indirect questions, but not for indirect answers.

(10) Bresnan can also explain the ungrammaticality that results from ripping out a subject over the that complementizer and over for. On the PP account, the second fact must be explained on some other ground -- perhaps Ross' Left-Branch Constraint.

The Return of the Infinitival Relative

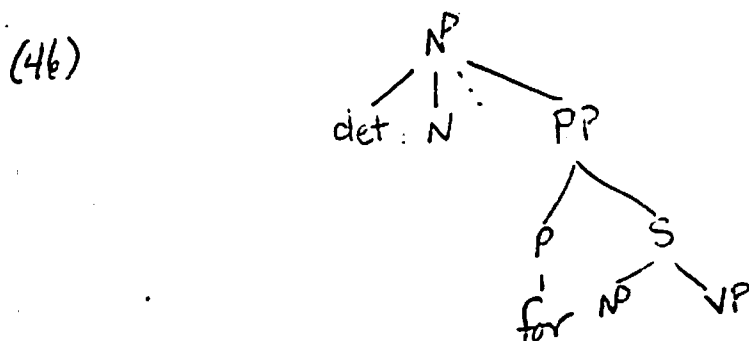
This more than lengthy excursus was dedicated to providing a new way in which to look at infinitival relatives. First, we are not committed to making infinitival relatives be generated parallel to tensed relatives; second the three types (Equi, OD, and PP-wh) without "for NP" may be generated as bare VPs.

About the Equi and OD types I can unfortunately say nothing more of interest. The (deletion or interpretive) rule of Object Deletion is discussed at some length in Lasnik and Fiengo, and Higgins; no clear conclusion has been arrived at to determine its conditions of operation. With no evidence to the contrary, I shall assume its operation can give us the OD forms of infinitival relatives from base-generated forms like (45), with the base having a rule: $NP \rightarrow NP + \begin{Bmatrix} \bar{S} \\ VP \end{Bmatrix}$



The interpretive rule of Equi, operating on a form like (45), using the same base rule as above, will give the Equi infinitival relatives.

The for/to relatives are dominated, under our present analysis, by a PP node, and, all other things remaining as they are, would be generable inside the lower NP, but not parallel to the VPs of the Equi and OD form:



The rule of Object Deletion must apply here also; this, again, is an automatic consequence, since we just assumed that it operated on the NP cycle.

The object of a prepositional phrase cannot, apparently, be in an explicit anaphoric connection with the head. Thus this sentence is bad: "The manager of his group just walked in." In general, an NP inside an NP cannot be grammatically marked as coreferential with the larger NP (logically or semantically it can: e.g., "Bill is the manager of his group"). Thus "*The sister of the man who shot her died" (due to Lasnik).

This observation -- as Chomsky suggests it, that the anaphor must be a distinct NP -- predicts that the following sentences are bad, on the assumption that the anaphoric connection between whords and NPs obeys the same principle, which would be the null hypothesis:

(47) *We're looking for a man for whom to serve drinks for the
guests.

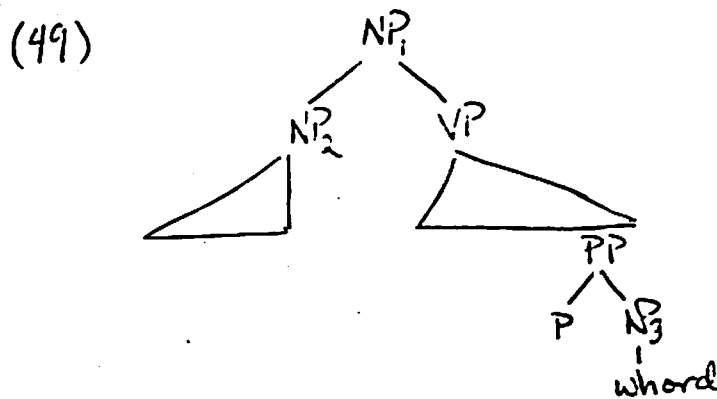
(48) *We're looking for a man for whose wife to serve drinks.

This leaves us with the PP-wh infinitival relative form to look at. The anaphoric connection between the head NP and the whord, on the one hand, and the presence of the VP without a "for NP" both suggest, given the foregoing analysis, that the infinitive arises through the same base rules that generate the OD and Equi case. Some rule of wh-preposing has moved the wh-phrase leftward. Two questions remain: (1) Why can only PPs be moved? (2) Where is the wh-phrase moved to?

To answer these related questions, we recognize a more general fact about present-day English: complements to nouns are, as a general rule, either prepositional phrases or sentences. This came up briefly in the discussion of indirect questions and

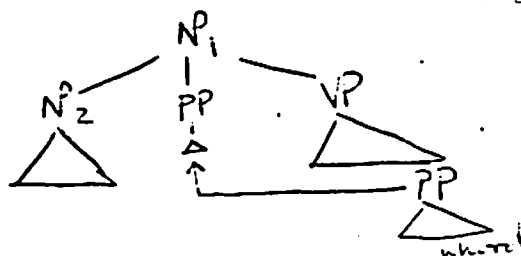
answers. The reason, then, that only PPs can move is, at the bottom the same reason that for/tos are inside the NP_i because they are both PPs: the connection between the for NP and the PP-wh is as close as this, but no closer (on Emonds' theory, as we have seen, the connection is much closer; on other theories, the connection is pure coincidence).

Given a structure like the following, where does the PP-wh move to?



I will suggest two possibilities, neither of which I am satisfied with. The first moves the PP under NP₂, into an empty PP node; the movement is structure-preserving, but it violates the insertion prohibition, by inserting material into a cyclic domain already past.

The second possibility is more interesting:



Consider the phrase-structure rules for NP as we have them: roughly,

$$NP \rightarrow N^p + \left\{ \begin{matrix} S \\ VP \end{matrix} \right\}$$

$$NP \rightarrow \text{det} + N + PP^* + \left\{ \begin{matrix} S \\ VP \end{matrix} \right\}$$

These collapse to:

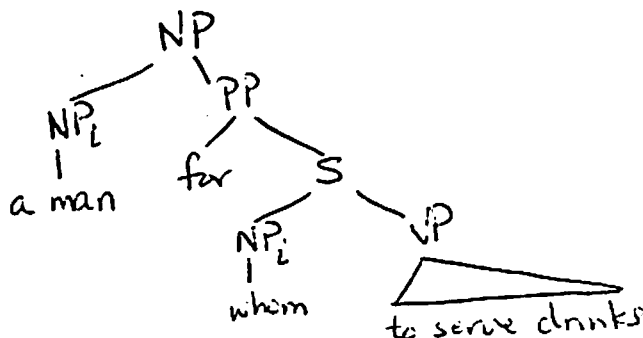
$$N^p \rightarrow \left\{ \begin{matrix} N^p \\ \text{det} + N + PP^* \end{matrix} \right\} + \left\{ \begin{matrix} S \\ VP \end{matrix} \right\}$$

But it is no more "costly" to write this:

$$NP \rightarrow \left\{ \begin{matrix} NP \\ \text{det} + N \end{matrix} \right\} + PP^* + \left\{ \begin{matrix} S \\ VP \end{matrix} \right\}$$

Thus the higher NP can have PP nodes, too. The obvious question to ask is why don't they show up in the deep structure? The natural reply would be twofold: first, normal prepositional phrases like "in the garden" don't show up because there is no way to interpret them. The possibility and the interpretation of a phrase like "of the eighth homology group" is dependent upon the head lexical item of the NP.

On the other hand, the infinitival relative of the for/to sort is, on this analysis, a PP; why doesn't it show up, making such forms as "a man for whom to serve drinks for the guests"?



The reply could be that wh-movement, which is obligatory, cannot move the whord out over for (I noted that this observation of Bresnan's is correct on p.33; I have no explanation of it), and so the construction can never be satisfactorily derived. This line of analysis, while interesting, will require a more detailed study of the process of wh-movement, whose lack this paper is unfortunately the worse for.

Conclusion

I have discussed an analysis of infinitival relatives, based on a theory with base-generated infinitives and for/to complements as prepositional phrases. The suggestions made in this paper have many ramifications which due to lack of space and time I have been simply unable to investigate; I have, however, attempted to justify the two major assumptions of the investigation, and compare this characterization with those of others working on these aspects of English syntax.

Footnotes:

- (1) I must thank many for their influences on this paper. Without these people around, I can't imagine what even more foolish things would be herein. First, Bob Faraci has influenced every part of this paper for the better. He made many apt suggestions, and without his analysis of lower Faraci clauses, the infinitival relatives would never have gotten off the ground. Roger Higgins pointed me off towards looking at the nouniness of indirect questions, and was quite generally helpful. Noam Chomsky influenced what I've said both through his critique of Emonds and Bresnan and his alternative theory, and through a helpful criticism of an earlier draft. Unable to attribute observations and helpful suggestions to all their rightful owners, I must merely thank the following people: Morris Halle, Ivonne Bordelois, Erich Wolschlaeger, Dick Oerhle, Dan Gann, Laura Knecht, and Howard Lasnik.
- (2) The history of the for/to construction is interesting and relevant; see Jespersen Modern English Grammar vol 5, pp.308ff and passim. It would be especially interesting to determine the relative chronology of the genesis of the for/to as a constituent and the infinitival relative; Jespersen's data is not sufficient.
- (3) Chomsky has suggested (p.c.) that (6) be ruled out on the grounds that relativization -- the relative clause wh-movement rule, if I am not mistaken -- has not been applied, which suffices to explain the star, if relativization is obligatory.

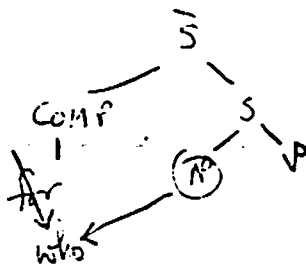
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Relativization moves the wh-phrase to COMP. I hope to show that the for/to construction is not parallel to the COMP + S analysis of tensed-Ss. But even if it were, we would have two alternatives:

(1) With Chomsky, say that the COMP is double-barreled: it has a place for the complementizer and also a "wild" position for items to be moved into. It is quite a feat, I imagine, for a language learner to conclude that two such positions exist separately, when apparently a surface structure constraint blocks any possible occasions when both nodes appear filled. In fact, the complementarity of items like that and whords was a justification for such a constituent as COMP.

In any event, even were there a COMP with two different kinds of daughters, there is precious little evidence which way they are ordered with respect to one another. Only one such ordering will explain why (6) is bad on these grounds. Yet the only bit of evidence I know of is a remark by Bresnan on pp.221,223-4. Assuming that than is in COMP, she points out: that there are dialects of English with "I hope you can walk quicker than what you eat", where "what you eat" is not a free relative; rather, the sentence means, "I hope you can walk faster than you can eat." This really inconclusive evidence is all I know of to order the parts of COMP, and it suggests the complementizer is on the left, which wouldn't explain why (6) is bad.

(2) Or else (6) would have to become:



But then there's no reason to block

A man whose wife to help us since Equi's structural description isn't met.

4) "One might then raise the question whether cyclic transformations should not be constrained so as to forbid operations that never change the terminal string of a phrase-marker, but only its structure...." (Conditions, p.26) With Raising, there might be some question as to whether in fact Raising moves the NP over the elements of the intervening COMP; but there is no such possibility with the Subject-to-COMP rule.

5) I don't actually mean to suggest positively that gerunds have this form. Perhaps they do. As things stand now, the theory does not explain the close connections between gerunds and infinitives. Transformations that move infinitives from or into subject position have the peculiar effect that gerunds are much better in the subject position, and infinitives at the end of the VP.

?To work for him } is { impossible to imagine.
Working for him } { frustrating.

It is frustrating { working with him.
to work with him.

Breaking up is hard to do.
*To break up is hard (to do).
?It is hard to break up.

The bathroom was tough { cleaning.
to clean.

The bathroom {will} be tough {?cleaning.
 {is} to clean.

6) These examples and the material ~~is~~ due to Bob Faraci, though it's possible I have misrepresented his work. Obviously, he is not responsible for the interpretations or conclusions here.

Footnotes, con't.

7) Haj Ross independently delved into the difference between these two sorts of indirect questions. He called what I called "indirect question" in the strict sense "disjunctive" and "indirect answer", "conjunctive", on the basis of the following paradigm.

| | | | | | |
|---|---------|---|---|------|-------|
| I | [asked] | John who had eaten the cauliflower: Bob, Carol, Ted | { | or | Alice |
| | | | | *and | |
| | | | | } | |
| I | [told] | John who had eaten the cauliflower: Bob, Carol, Ted | { | and | Alice |
| | | | | *or | |
| | | | | } | |

8) On the PP analysis, we just have a root rule $COMP \rightarrow \emptyset$.

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