ON THE STRUCTURE OF PSYCH-VERB CONSTRUCTIONS

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One of the recent challenges to the Government-Binding framework has been to explain the reversal properties of psych-verbs like "worry," "terrify," and "concern." Two GB-type explanations for the reversal properties of psych-verbs have been proposed: one claims that the reversal properties arise because psych-verbs are unaccusative verbs (Belletti and Rizzi (1988) and Kim and Larson (1989)) and the other claims that the reversals arise because psych-verbs have reversed argument structures (Stroik (1988)).

In this paper, I will provide some additional support for Stroik's analysis. I will demonstrate that although both the unaccusative analysis and the backward-S analysis can account for anaphoric reversal (a D-structure phenomenon) and scopal reversal (a Logical Form phenomenon), only Stroik's backward-S analysis can explain all the reversals at Logical Form and any of the reversals at S-structure.¹

¹. Two Analyses of Psych-Verbs Reversals

The reversal property of psych-verbs that has received the most attention from GB theorists has been anaphoric reversal (see Hermon (1985) and Pesetsky (1987)). As is illustrated in (1), psych-verbs have the property of permitting subject-contained anaphors—a property not shared by non-psych-verbs (see (2)).

(1)a Rumors about themselves embarrass the men
b Each other's health concerns those women

(2)a *Rumors about themselves forced the men to leave
b *Each other's parents invited the students to dinner

Within GB theory, an anaphor must be locally bound by some antecedent. Given that a V-object does not c-command the subject, and therefore cannot bind anything within the subject, the ungrammaticality of the sentences in (2) follows from the fact that the subject-contained anaphors in (2) are unbound. To disallow sentences like (2), while not ruling out the sentences in (1), Belletti and Rizzi make two crucial assumptions, one about anaphor binding and one about the structure of psych-verb constructions. First, they assume that anaphors can be bound at any of the three syntactic levels (D-structure, S-structure, or...
Second, they assume that psych-verbs are unaccusative verbs that take two internal arguments at D-structure but no external arguments. Under the latter assumption, the psych-verb in (1a) has D-structure (3a).

(3a) \[ s \ e \ [v_R \ \text{embarrass} \ [\text{rumors about themselves}, \ \text{the men}]] \]

Appealing to their first assumption, Belletti and Rizzi account for the binding of the subject-contained anaphor in (1b) by permitting the anaphor to be bound in D-structure (3a), where the antecedent "the men" does c-command (hence, bind) the anaphor. Since the anaphor needs to be bound only at a single syntactic level, once the internal argument "rumors about themselves" raises to subject position (for Case theoretic reasons), the subject-contained anaphor remains properly bound at S-structure (3b).

(3b) \[ s \ [\text{rumors about themselves}, \ v_R \ \text{embarrass} \ t, \ \text{the men}]] \]

Stroik (1988) argues that Belletti-Rizzi type analyses, although capable of explaining anaphor reversal, are inadequate because they cannot account for scopal reversal. According to Stroik, if we apply May's (1985) structural theory of scopal relations, which derives scopal relations from S-structure, to psych-verb constructions, we would predict that the S-structure subjects and objects in psych-verb constructions should participate in exactly the same scopal relations as do the S-structure subjects and objects in non-psych-verb constructions. However, the scopal relations in psych-verbs constructions (see (4)) reverse the relations of non-psych-verb constructions (see (5)).

(4a) What most annoys everyone here (ambiguous)
   b Who does everything annoy (unambiguous)

(5a) Who read everything (unambiguous)
   b What did everyone read (ambiguous)

Assuming that the logical relations are mapped off the S-structures for (4)-(5) in the same way (via Quantifier Raising), Stroik concludes that the scopal reversal in (4) is a consequence of the fact that psych-verbs have a reversed S-structure (i.e., the apparent subjects in (4) are internal arguments of the verbs and the apparent objects are external arguments of the verbs at S-structure). He gives psych-verb constructions such as (1) the S-structure (and D-structure) stated in (6).
In (6), NP₂ c-commands NP₁ (and anything in NP₁); consequently NP₂ can bind anaphors contained in NP₁, as in (1), and NP₂'s structural superiority over NP₁ at S-structure accounts for the scopal relations in (4).

Kim and Larson, who look at data similar to (4)-(5), come to a different conclusion than Stroik does. They contend that the scopal differences in (4)-(5) result not from different S-structures, but from different rules that map S-structure to Logical Form. According to Kim and Larson, the rule that derives the logical relations in (5) is Quantifier Raising and the rule that derives those relations in (4) is Quantifier Lowering (a rule that restricts the logical domain of a quantifier to the maximal projection that immediately dominates the D-structure position of the quantifier). So, it is the effect of Quantifier Lowering on the unaccusative D-structure of psych-verbs that explains the scopal reversal effects: for example, the quantified subject in (4b) engages in the same scopal relations as does the quantified object in (5a) because under the unaccusative analysis the subject is a raised object and Quantifier Lowering reverses the raising effects by assigning the subject the logical domain of an object.

2. Testing the Analyses at LF

In this section, I will test the two analyses described above by examining some of the other reversal properties of psych verbs at LF.

Besides scopal reversal, psych-verbs have least two additional logical reversal properties. For one, psych-verbs do not show the weak crossover effects of non-psych-verbs--compare (7) to (8).

(7)a His₂ first date generally terrifies every boy₂
    b Who₂ did stories about her₂ mother bother most

(8)a *His₂ mother generally loves every boy₂
    b *Who₂ did the man on her₂ team see

The ungrammaticality of the sentences in (8), under May's (1985) theory of Logical Form, results from raising an operator in object position at S-structure over a bound pronoun in subject position. Now, given that, under the unaccusative analysis, the S-structure for both psych-verbs and non-psych-verbs is the same, we would expect the weak crossover effects to emerge in both types of constructions. The fact that the sentences in (7) do...
not show these effects is problematic for an unaccusative analysis of psych-verbs. To explain the data in (7), a Belletti-Rizzi type analysis would have to claim either that pronouns can be bound at D-structure (an unlikely possibility in the face of the ungrammaticality of "his mother is believed by everyone, to have been elected") or that some lowering rule repositions the surface subjects in (7) so that the operators do not crossover them (also an unlikelihood because we would have to have a rule that lowers every subject that we have raised, whether a quantifier or not, and this would serious question any motivation for the original raising rule).

Notice that the backward-S analysis does not have any problem with the data in (7). The absence of weak crossover effects in (7) naturally follows from S-structure (6): the raised NP operator is structurally superior to the pronoun in NP; so it not only properly binds the pronoun, but also does not crossover it.

Another logical reversal property of psych-verbs can be seen in multiple-wh constructions. Non-psych-verbs show subject-object superiority effects, illustrated in (9).

(9)a Who read what
   b *What did who read

It is generally assumed in GB that the superiority effects in (9) arise because the S-structure subject cannot be moved into COMP (a movement required of all wh-elements) without incurring an Empty Category Principle (ECP) violation, while a wh-object, which is properly bound by the verb that subcategorizes for it, can be moved into COMP at LF without producing an ECP violation. If we assume, as does the unaccusative analysis of psych-verbs, that all S-structures have the same subject-object asymmetries, then we would expect psych-verbs to have the same superiority effects as (9). However, as (10) demonstrates, psych-verbs unexpectedly do not seem to allow any superiority effects.

(10)a *What most interests/terrifies who
   b *Who does what most interest/terrify

The data in (10), which seemingly resist an unaccusative analysis of psych-verbs, can be explained by the backward-S analysis. This analysis rules out both sentences in (10) as ECP violations. Given the argument-relations expressed in (6), an ECP violation arises in (10a) because the in-situ wh-element ("who") is an external argument (hence, one not lexically governed), so when it moves into COMP at LF, its trace must be antecedent governed by COMP to satisfy the ECP: however, COMP--already indexed by the wh-NP, argument--is prohibited from
governing the trace. Similarly, an ECP violation emerges in (10b) because the in-situ wh-element ("what"), although governed by the verb, is not canonically governed by it; therefore the trace of the in-situ element cannot be properly governed lexically and since this trace cannot, for the reasons just described in the discussion of (10a), be antecedent governed, it violates the ECP. The fact that the backward-S analysis can account for (10), while an unaccusative analysis cannot, seems to favor the former analysis.

3. Testing the Analyses at S-structure

Since the two analyses being considered here posit radically different S-structures for psych-verbs, we can test these analyses against not only the predictions that they make about LF relations but more importantly the ones they make about S-structure relations. The unaccusative analysis, which gives psych-verbs the same S-structure subject-object relations that non-psych-verbs exhibit, predicts that psych-verbs will not possess any S-structure reversal properties. On the other hand, the backward-S analysis predicts that psych-verbs, which reverse the subject-object superiority relations of non-psych-verbs, will have reversal properties at S-structure.

One grammatical relationship that is determined at S-structure is Principle C binding (to satisfy Binding Principle C, a R(eferential)-expression must be free). The two analyses make differing predictions about Principle C binding in psych-verb constructions. The backward-S analysis predicts that Principle C violations will arise in psych-verb construction that have subject-contained R-expressions coindexed with the object; the unaccusative analysis predicts that no such violation will emerge in those constructions. Evidence that tests the predictions is given in (11).³

(11a) *Each other₂'s mother's stories about those bankers₂ annoyed them₂
    cp Each other₂'s mother's stories about them₂ annoyed those bankers₂

(11b) *That each other₂'s health worries the Smiths₂ concerns the fools₂
    cp That each other₂'s health worries them₂ concerns the fools₂

In the above examples, notice that whenever an R-expression such as "those bankers" or "the Smiths" is within the apparent subject and the R-expression is coindexed with the object argument, then the construction is ungrammatical. The ungrammaticality of (11a-b), which seem unexpected in the
unaccusative analysis since the object would not bind the subject-contained R-expression under this analysis, follows naturally from the reversed argument relations stated in (6), a S-structure that allows the NP₂ argument to bind anything within the apparent subject—the NP₁ argument.

Another grammatical phenomenon determined at S-structure is the parasitic gap construction. According to Chomsky (1982), one of the principal characteristics of parasitic gap constructions is that the filler gap and the parasitic gap cannot c-command one another at S-structure. Given this characteristic, we would predict that a parasitic gap contained within a subject could be licensed by a wh-movement from an object position. The data in (12) confirm our prediction.

(12)a??Who₂ were those rumors about e₂ being told to t₂  
   b??Who₂ won’t any pictures of e₂ be shown to t₂  

Now if psych-verbs participate in the same subject-object relations at S-structure that non-psych-verbs do, then we would expect to find psych-verb constructions parallel to (12). However, as is demonstrated in (13), no such parallel constructions exist.

(13)a *Who₂ did those rumors about e₂ interest t₂  
   b *Who₂ don’t any pictures of e₂ amuse t₂  

Needless to say, the grammaticality differences between (12) and (13) are surprising for an unaccusative analysis of psych-verbs. But these differences are not unexpected for the backward-S analysis: they follow from (6)—a structure that permits the trace t₂ to ungrammatically c-command the parasitic gap e₂ in an S-structure representation of (13).

The final S-structure relations I will examine in this paper involves "each...the other" constructions. These constructions require "each" to c-command "the other" at S-structure. Again, the analyses we have been considering make very different predictions about these constructions. The unaccusative analysis predicts that "each" can lie only within the apparent subject of psych-verbs; and the backward-S analysis predicts that "each" must lie within the apparent object position. These predictions can be tested by the data in (14).

(14)a [The other’s problems] usually interest [each of the men]  
   b*[each of the men] usually interests [the other’s employer]  

The evidence in (14) demonstrates that the backward-S analysis
can explain "each...the other" constructions with psych-verbs, while the unaccusative analysis cannot.

3. Some Conclusions

I have tried to show in this paper that the reversal properties of psych-verbs are far more wide-ranging than previously thought. And I have argued that to account for the various reversal properties we must assign psych-verbs reversed argument structures. If my analysis of psch-verbs is correct, then theories of phrase structure will have to be altered. Phrase structure relations such as head-argument directionality will not be able to be set language-specifically; rather it will have to be set construction-specifically within a given language (this setting will permit constructions with psych-verbs to reverse argument relations, taking left-branching internal arguments, as in (6)). Although the construction-specific parameterization of phrase structure currently stands outside the prevailing theories of parameterization, there is one theory of parameters compatible with my analysis. Wexler and Manzini (1987) argue that Binding Theory must have its parameters set construction-specifically, rather than language-specifically. Importantly, they argue that not only Binding Theory, but all the sub-theories of GB must be lexically parameterized (their Lexical Parameterization Hypothesis); however, they do not extend their analysis, showing how lexical parameterization surfaces in sub-theories other than Binding Theory. My analysis does extend their claim for the Lexical Parameterization Hypothesis. I show that, like Binding Theory, X-bar Theory (the GB theory of phrase structure) must parameterize its argument structure lexically.

NOTES

1 This paper follows up on arguments made in Stroik (1988). Consequently, it will not address several of the concerns already discussed in Stroik (1988), such as how backward-S analysis can explain Case marking or S-V agreement in psych-verb constructions. For arguments that address such issues, see Stroik (1988).

2 The Empty Category Principle requires all empty categories to be properly governed. For all definitions relevant to the concept of proper government, see Chomsky (1986).

3 Stroik (1990) discusses the reasons why examples like "John's job annoys him" are not counterexamples to the backward-S analysis of Principle C violations in psych-verb constructions. His explanation attributes the grammaticality of the above
sentence to the fact that, unlike "true" psych-verbs—which are stative predicates, it has an eventive predicate and therefore has the argument structure of non-psych-verbs. For relevant details, see Stroik (1990).

REFERENCES


