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Peter Sells

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RESUMPTIVE PRONOUNS

IN GENERALIZED PHRASE STRUCTURE GRAMMAR

Peter Sells

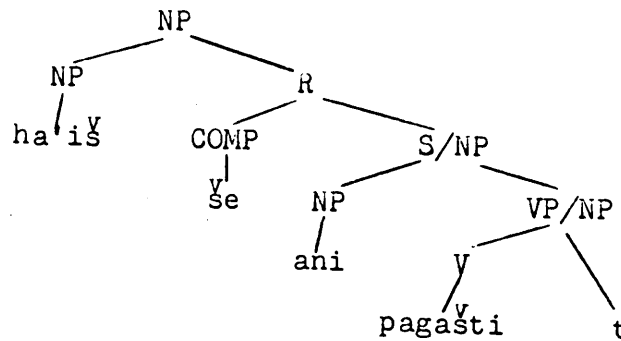
Within the theory of Generalized Phrase Structure Grammar (GPSG), the central part of the analysis of unbounded dependencies is the FOOT feature SLASH (Gazdar, Klein, Pullum & Sag (1982))(hereafter "GKPS"). While this seems a promising approach for unbounded dependency constructions which terminate in gaps (as do all such constructions in English), the extension of such an approach to unbounded dependencies that terminate in resumptive pronouns appears to be somewhat more problematic. In this paper I will review what I see as the pertinent data that bears on this issue, and suggest that the slashed-category mechanism itself does not suffice to account for unbounded dependencies involving resumptive pronouns. Moreover, I will argue that the current GPSG theory precludes the adoption of some other FOOT feature --say [RP] (for 'resumptive pronoun')--and discuss some of the implications this has for the theory.¹

To begin with a simple case, the Hebrew examples in (1) allow either a gap or a resumptive pronoun at the site of relativization:

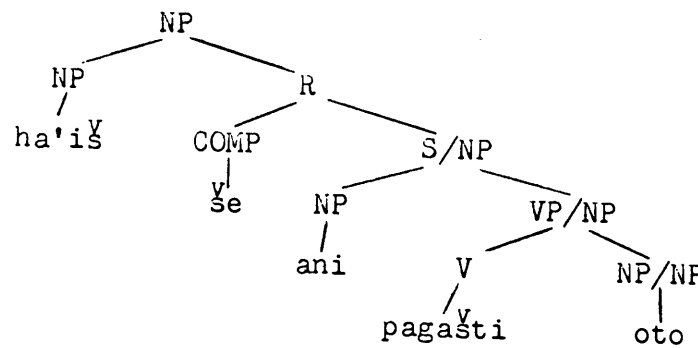
- (1)a. ha'iš še ani pagašti ___
 the man who I met ___
- b. ha'iš še ani pagašti oto
 the man who I met him
- 'the man who I met'

Current GPSG accounts would assign (1a) a structure as in (2a); the question is: does (1b) receive the analysis shown in (2b)?

(2)a.



b.



Exactly this latter analysis is proposed by Maling & Zaenen (1982) (hereafter "MZ"), who present evidence from Scandinavian languages that resumptive pronouns should be assigned to the category NP/NP. They suggest (p263) that language which have resumptive pronouns have the rule shown here in (3):

(3) NP/NP \rightarrow pronoun

(I have modified the presentation of the rule to bring it in line with current formalism.) The underlining (NP) in (3) is a diacritic notation which allows gap-terminating

~~unbounded dependencies to be distinguished from resumptive~~
 pronoun-terminating ones; for some node X, we will have X/NP
 and X/NP respectively. This distinction is a necessary one, as
 we will see below. The main feature of the MZ analysis is that
 in either type of unbounded dependency, the slashed-category
 projection path extends all the way down to the site of
 relativization, topicalization, etc. This happens anyway
 with gaps, and assigning pronouns to the category NP/NP mimics
 the effect in the cases where resumptive pronouns appear. I
 will refer to this as the 'slashed-category analysis' of
 resumptive pronouns.

There are three kinds of argument that can be made in favor
 of the slashed-category analysis; I will review these first,
 and then review arguments against such an analysis.

The first argument in favor of the slashed-category analysis
 is somewhat theory-internal. As MZ note, if resumptive pronouns
 do not involve slashed-categories, then every linking rule
 will have to be duplicated; that is, for a rule like (4a)
 there will have to be a corresponding rule (4b) for allowing
 resumptive pronouns:

(4)a. S \rightarrow NP, S/NP

b. S \rightarrow NP, S*

The rule (4b) has no SLASH, and so will potentially allow
 a base-generated pronoun to appear. I use the * notation just
 to indicate that somehow the information that the daughter S
 must contain a resumptive pronoun must be represented. Exactly

how this is done (with some new feature?) will not concern me at this point, and the * is just an informal marker of the problem. Of course, if resumptive pronouns do involve SLASH, (4b) and its attendant problems need not concern us; another problem would be the relation between (4a) and (4b)--if listed separately, it would then be accidental that resumptive pronouns appear in the same kinds of constructions as gaps and exhibit the same constituent structure. As we would presumably be dealing with a set of linking rules, one might try to have a metarule to derive the *-rules from the /NP-rules; however, this isn't possible, as metarules only apply to rules with lexical heads (Flickinger (1983))--that is, rules which have some X^0 as a daughter--and linking rules are not of this form.

The second reason for wanting a slashed-category analysis of resumptive pronouns is that they licence parasitic gaps. In GPSG, parasitic gaps arise by the same feature SLASH appearing on two daughters in a rule. For example, free instantiation of the FOOT feature SLASH with the value NP on the rule (5a) can yield the rule (5b); the FOOT FEATURE PRINCIPLE (FFP) allows this particular instantiation. The new rule (5b) then admits an example like (6), with a parasitic gap:

- (5)a. S \rightarrow NP, VP
 b. S/NP \rightarrow NP/NP, VP/NP

(6) a man who [_{S/NP} [_{NP/NP} friends of] [_{VP/NP} admire]]

So if resumptive pronouns license parasitic gaps, they must involve the slashed-category mechanism. The following Swedish and Hebrew examples show that this is so:

(7) ett förslag som vi inte kan
a proposal that we cannot

[[avgöra om det fungerar][utan att pröva _p]]
decide if it works without trying _p

(8) ha'iša še [[ha-anašim še šixnati levaker _p]]
the woman who the people that I-convicted to-visit _p
[te'aru ota]
described her

In either case, extraction from the position of the parasitic gap alone without an attendant 'licensing' resumptive pronoun (or real gap in (8)) is ungrammatical. (9) is a variant of (8) with no dependency into the VP, for example:

(9) *ha'iša še ha-anašim še šixnati levaker
the woman who the people that I-convicted to visit
te'aru et² ha-bayit
described the house

So we must conclude that SLASH is part of the analysis of (7) and (8).

Evidence of a rather similar kind comes from coordination; this is the third reason for preferring the slashed-category analysis. A constituent containing a resumptive pronoun may

conjoin with one containing a gap; but the latter must involve SLASH, and as (roughly) only likes coordinate,³ and SLASH is relevant to like-ness, then a constituent containing a resumptive pronoun must involve SLASH too.

The only analysis that GPSG can assign to an example like (10) (Hebrew) is the one shown:

- (10) ha'iš^V se rina [[_{VP/NP} baxra ___] ve [_{VP/NP} ohevet oto]]
 the man who Rina chose ___ and loves him

To sum up so far, then, all the evidence presented supports the idea that resumptive pronouns are just a species of gaps, which the slashed-category analysis of resumptive pronouns predicts. Under this analysis, none of the potential problems just noted will arise.

Now I turn to data that supports exactly the opposite conclusion: that resumptive pronouns do not involve SLASH. Again, coordination provides relevant evidence. In the Hebrew (11), a resumptive pronoun coordinates with a regular NP--and so by the reasoning above, the pronoun itself must be of the category NP, not NP/NP:

- (11) ha'iš^V se rina ohevet [[_{NP} oto] ve [_{NP} et dani]]
 the man who Rina loves him and Dani

The Irish example in (12) shows the same thing, this time with the pronoun inside the coordinated NP:

- (12) an bhean a ndeachaigh [[_{NP} a mac] agus
 the woman who went her son and
 [_{NP} Caoimhin]] 'un na scoile le cheile
 Kevin to school together

In (12), the preverbal particle a (glossed who) covaries in its form with the kind of binding in the relative clause, namely to a gap or to a pronoun. Irish (see e.g. McCloskey (1979)) has two strategies for unbounded dependencies, and this fact can be used to form a second argument against the slashed-category analysis of resumptive pronouns.

The abstract form of the two kinds of relative clauses available in Irish is shown in (13):

(13)a. Direct relative

NP [_S dir.ptc. ... [_S dir.ptc. ...gap...]]

b. Indirect relative

NP [_S ind.ptc. ... [_S comppro...]]

In the direct relative, the direct relative preverbal particle (represented aL) heads each embedded clause. In the indirect relative, the indirect particle (aN) appears in the top clause only, with the regular complementising particle goN appearing in all lower clauses. The examples in (14) exhibit these features:

(14)a. an fear aL mheasann sibh aL phósfaidh Síle
the man dir.ptc. think you dir.ptc. will-marry Sheila

b. an fear aN measann sibh goN bpósfaidh Síle é
the man ind.ptc. think you complem. will-marry Sheila him

One plausible analysis of the direct strategy would link the appearance of the direct particle in each clause to the fact that SLASH is present on each intermediate clause, all the

~~way down to the gap.~~ But then to be consistent, the other pattern for the indirect relative would require that SLASH not be present on each intermediate clause; consequently the regular complementising particle goN will appear. This in turn shows that the resumptive pronoun cannot be of the category NP/NP, as SLASH cannot get into the lower clauses in indirect relatives.

In addition to these two direct arguments, we can find two more theory-internal arguments against the slashed-category analysis. As is well-known, resumptive pronouns do not in general obey island constraints (for discussion and examples, see Borer (to appear), Doron (1982), Engdahl (1982), McCloskey (1979)). The following examples are taken from Borer (1981) (Hebrew):

- (15)a. *ha'iš_i^V se pagaš^Vti et ha'iš_j^V se —_j ra'a —_i
 the woman_i who I-met the man_j who —_j saw —_i
- b. ha'iš_i^V se pagaš^Vti et ha'iš_j^V se —_j ra'a ota_i
 the woman_i who I-met the man_j who —_j saw her_i

One proposal in GPSG to represent islandhood is to prevent the instantiation of SLASH on some particular node, i.e.:

- (16) *I/NP

This kind of thing is proposed in Maling & Zaenen (1982, 252ff). Now without their diacritic notation, (16) would seem to suggest that resumptive pronouns should obey islands just like gaps; but (16) does not ban I/NP, and so resumptive pronouns will not be so restricted.

The problem with this lies in the consequences of this proposal; without further elaboration of a theory of islands, nothing in the present theory leads us not to expect to find a language with exactly the opposite requirement, as in (17):

(17) *I/NP, OK I/NP

That is, a language where resumptive pronouns obey island constraints and gaps don't. This strikes me as a rather unsatisfactory state of affairs; but again, if resumptive pronouns do not involve SLASH, then island constraints can be stated simply as in (16), only applying to unbounded dependencies involving SLASH--i.e. gap ones.

Finally, we can observe that the underlining diacritic is just another way of inventing a new FOOT feature, with some but not all the properties of SLASH. On the face of it, some new feature like [RP] seems fairly sensible and plausible; but an account of resumptive pronouns in terms of any FOOT feature seems to make one important--and false--prediction. FOOT features seem to share one common property: they all correspond to 'special morphology' in some way or other. For example:

(18)	QUE	e.g. which
	REL	who
	REFL	himself
	RECP	each other
	SLASH	∅

with representative instances shown. Now probably pronouns

are distinguished from other NPs by the feature [pro]; but there is no evidence that this is a FOOT feature (e.g. no evidence that with him is a 'pro PP' parallel to with whom being a 'WH PP'). And categories which introduce FOOT features are typically limited in their distribution, and cannot appear in every NP position; but this does not appear to be true of pronouns:

- (19)a. *Bill, Sandy said that who had left, was still there.
 b. *Bill thinks that himself is handsome.
 c. *Bill, Sandy said that had left.
 d. Bill thinks that he is handsome.

I think these examples and considerations make it unlikely that we can maintain a FOOT feature PRO; but then a feature for resumptive pronouns would have to be some other feature, say [RP]. This would in turn lead us to expect resumptive pronouns to show 'special morphology', an expectation certainly not borne out by any of the examples presented above; in each language, Hebrew, Swedish, Irish, the resumptive pronouns are the regular non-emphatic, non-reflexive pronouns. From this I conclude that resumptive pronouns should not be distinguished by any FOOT feature.

We now would appear to find ourselves in something of a contradictory position--we have seen strong evidence both for and against the slashed-category analysis of resumptive pronouns. The solution I will propose to this retains the idea that SLASH

~~is involved in these constructions, while not assigning resumptive pronouns to the category NP/NP; they will simply be NPs.~~

The rule that will accomplish (the syntactic part) of this is given in (20):

(20)

$$X/NP \rightarrow X$$

This simply says that any category X bearing the feature SLASH with the value NP can be admitted by the category X alone. Essentially the effect of this rule is that the 'slash' will just 'dry up' somewhere in the admitted tree. We will see examples of this below. Now this only solves half of the problem, for we also have to insure that \underline{X} dominates (possibly at some remove) a resumptive pronoun; all (20) insures is that there won't be a gap (as there's no SLASH). To do this, I will appeal to the semantics, as outlined below.

The GPSG syntax is interpreted directly in a model-theoretic fashion,⁴ like Montague Grammar (Montague (1974)); the translation of an expression is represented in Montague's IL for expository convenience. I will assume the translation procedure is augmented by storage devices along the lines of Bach & Partee (1980); the use of stores is required at least for the treatment of wide-scope quantification ('Cooper' storage), and here it is extended to wh-quantification and abstraction.⁵

I will then require that the index of the variable in the translation of a gap ($\lambda PP\{x_i\}$) be entered in the Quantifier Store (QST) of Bach & Partee. Then it will be a general convention

that the translation of some node Y/NP must have something in its QST (i.e. the index of a gap-translation). Finally, languages that allow resumptive pronouns will allow the index of a pronoun to be entered in QST. This will yield the following result.

(20) will admit a structure like:
$$\begin{array}{c} X/NP \\ | \\ X \end{array}$$

The convention on the translation of X/NP will require that QST(X/NP) is not empty; but X can contain no gap, and so in general QST(X) will be empty, which will cause the convention to be violated on the X/NP node. However, if a pronoun within the constituent X enters its index into the QST, then QST(X) will not be empty, and the convention will be satisfied. The way that this works⁶ is shown for the Hebrew example (21) on the following page.

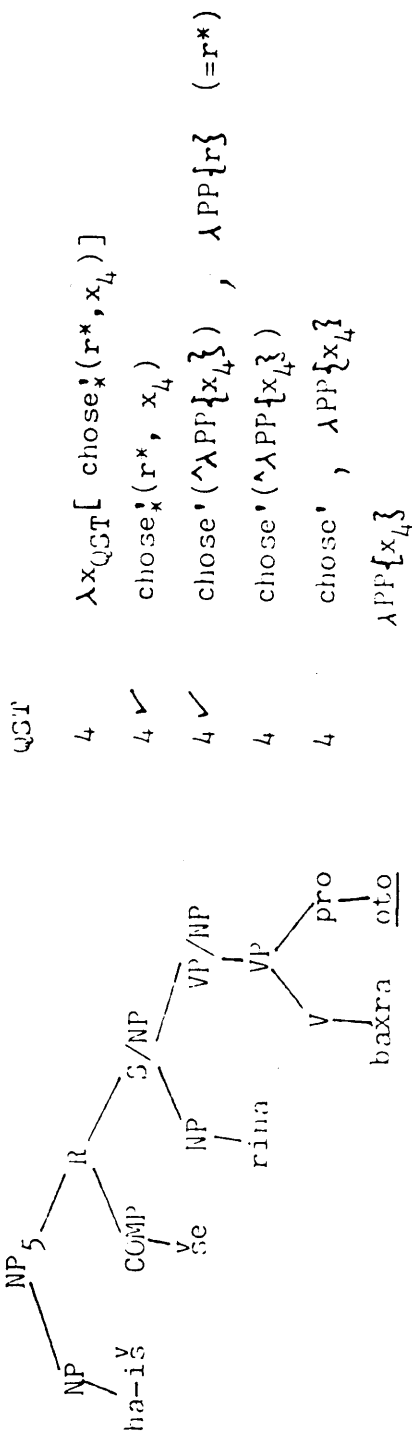
(21) ha'iš se rina baxra oto
the man who Rina chose him

So the actual mechanism for allowing resumptive pronouns⁷ is not rule (20) but rather the condition (22) on pronoun translations:

(22) For a pronoun translating as $\lambda PP\{x_i\}$, i may be entered in QST.

This will allow us to take (20) to be a universally available rule--it in itself will not be enough to allow resumptive pronouns. This possibility may be useful in the description of resumptive pronouns in English, which have been

Analysis of (21):



$$\begin{aligned}
 NP'_5 &= \lambda R [\lambda P \exists! x_7 [\text{man}'(x_7) \wedge R \{x_7\} \wedge P \{x_7\}]] (\lambda x_4 [\text{chose}'(r^*, x_4)]) \\
 &= \lambda P \exists! x_7 [\text{man}'(x_7) \wedge \lambda x_4 [\text{chose}'(r^*, x_4)]] (x_7) \wedge P \{x_7\} \\
 &= \lambda P \exists! x_7 [\text{man}'(x_7) \wedge \text{chose}'(r^*, x_7) \wedge P \{x_7\}]
 \end{aligned}$$

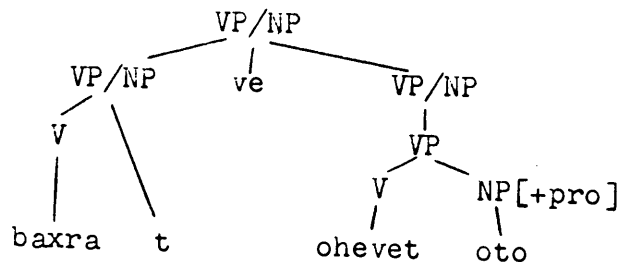
NB Checks on QST indicate the convention that the translation of the /NP has an index in store is satisfied.

argued by Chao & Sells (1983) not to show the kinds of binding relations that (22) would predict. So for English we would assume the grammar contains (20) and some translation procedure other than (22), differentiating the language from Hebrew, Swedish, and Irish, as argued by Chao & Sells.

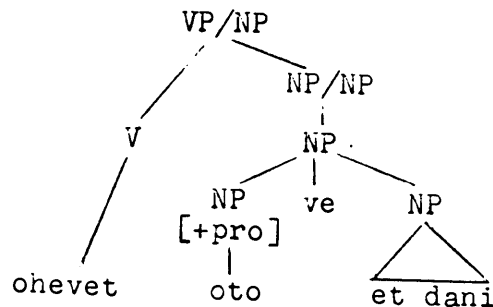
Let me finish by surveying the above discussion to see that (20)+(22) do not fall afoul of the problems noted there. First, we need not of course duplicate linking rules--the 'slash' will start off at the top of the dependency, but will 'dry up' in mid-tree in the case where a resumptive pronoun will appear.

For the conjunction examples⁸ I give in (23) the relevant parts of the structures of the conflicting examples (10) and (11):

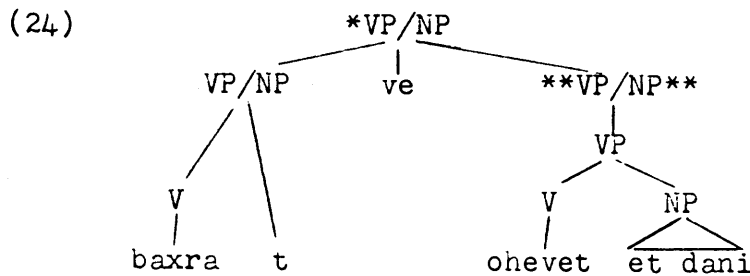
(23)a.



b.



The crucial point is simply that the 'slash' dries up within one conjunct in the examples like (10)(23a), but above the conjunction in (11)(23b). Of course the rule (20) allows multiple derivations (e.g. giving up the 'slash' at VP/NP or NP/NP in (23b)), but I assume this is not problematic. In (24) I show a real violation that will not be admitted by the proposed system:



This will not be admitted as the node ****VP/NP**** will have an empty QST, as the dominated VP node does not itself dominate something whose translation could have put something in store--i.e. a pronoun.

Parasitic gaps will be dealt with as in (23a). The following Hebrew example provides interesting confirmation of the analysis presented here:

- (25) ha'iša^V še^V ha-anašim^V še^V šixnati levaker ^p
 the woman who the people that I-convinc'd to-visit ^p
 te'aru ota ve et ha-bayit
 described her and the house

In this example the resumptive pronoun licenses a parasitic gap; but the pronoun is itself conjoined with an NP, so the 'slash' must (a) get into the VP to license the parasitic

gap and (b) not get into the object NP, in order to allow the conjunction. The proposed analysis can allow this.

Island constraints can of course be stated as in (16); resumptive pronouns will be able to appear inside islands as the contents of the QST of such an island will be inherited by the dominating nodes just as any other non-island.

It is interesting to note that Cooper (1982) in fact suggests that island constraints are not stated syntactically but rather as conditions on stores; such a move would be incompatible with the present proposals, as far as I can see.

The impact of my suggestions on the whole GPSG system is not clear; making essential use of stores in this way rather reduces the motivation for the whole slashed-category idea, as noted by, e.g., Cooper (1983). The feature SLASH determines that there must be a gap in the structure in the regular cases, but now the convention on the translation of /NP appears to do the same. Thus Cooper allows gaps to appear freely, leaving the syntax-semantics mapping to rule out the bad cases.

Does this mean that the use of SLASH is redundant in GPSG? I think not; for the presence of the slashed-categories in the admitted tree appears to be necessary for the description of parasitic gap and Across-The-Board constructions (note for example too the rather similar constructs proposed in Kayne (1983)), and there seems to be reason to believe that these uses are independently motivated (see for example the way the Coordinate Structure Constraint is derived in Gazdar (1981)). I therefore find it quite plausible to think that

while we need not rely on SLASH to guarantee the presence of a gap in an unbounded dependency construction, as the convention on the translation of SLASH will do this as well, there will still be many other areas of description where SLASH is necessary. It is then not necessary to accept Chomsky's argument (1982, fn11) that the requirement of such a convention (which is just a restatement of his 'No Vacuous Quantification')--and this is a requirement I have argued is forced on us in GPSG--in turn obviates the need for SLASH.

In addition, SLASH may be necessary for the statement of island constraints (see also Chung & McCloskey (1983)), and also for the characterization of 'binding domain' phenomena, as described by Zaenen (1983); in fact, this latter possibility is just what I suggested for the Irish examples in (14) above.

To conclude, I have argued that resumptive pronouns should not be assigned to the category NP/NP, and in fact should not be directly linked to their antecedent in the syntactic representation (either by SLASH or some other FOOT feature). I think that this is important; for ultimately we must address the question of why it is plain old pronouns that appear resumptively: that is, why don't languages choose some special form to act as resumptive pronouns (i.e. a morphologically distinct category of 'overt variable')?

It seems to me that the arguments that FOOT features cannot be involved must be strengthened to make sense of this last

~~question; here I have argued post hoc from the observation that~~
'special morphology' is not what we find. The real argument would go in the other direction, and present syntactic evidence that resumptive pronouns cannot involve a FOOT feature, which they would have to if they indeed exhibited 'special morphology'. Then the resumptive elements in a language would have to have the following properties: (a) show no special morphology, and (b) translate as variables in the logic. This reduces all possibilities to one: regular pronouns, and would explain why it is that resumptive elements are pronouns. I therefore think it not accidental that languages make use of resumptive pronouns in addition to gaps; and further I think that the right theory will explain this; I have not constructed such a theory here, but do not take a negative view of the analysis of resumptive pronouns that I have argued for here, and argued that we are forced to in GPSG. On the contrary, I think the theory has caused us to take a step in the right direction.

Footnotes

1. The present paper is an extension of that presented under the same title at the LSA Annual Meeting in Minneapolis, December 1983. The material presented here also appears as a part of Sells (forthcoming), in which a slightly different version of GPSG is adopted. However, that re-presentation does not affect the structure of the argumentation offered here.

I would like to thank Nirit Kadmon for her help with the Hebrew data presented here.

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2. et is the accusative marker that appears with non-pronominal, definite NPs.
3. For a discussion of what the requirement that only 'likes' coordinate should be, see Sag et al. (1983).
4. See e.g. Gazdar (1981, 1982).
5. It is not clear that this is avoidable in GPSG anyway, as the problem of 'collision of variables' in a system using lambda-abstraction (such as GPSG) without using stores as book-keeping devices is known to be acute. See Bach & Partee (1980) for further discussion.
6. I have no favorite analysis of relative clauses, and the translation steps offered are just one way of getting a relative clause translation. All that is relevant to the present discussion in the example translation is the use to which QST is put.
7. The account offered here makes no attempt to describe/explain the distribution of resumptive pronouns in the languages discussed here. Again, I refer the reader to Sells (forthcoming), where such questions are addressed.
8. Again, I offer a simplified analysis of conjunction, for ease of exposition. The reader is referred to Sag et al. (1983) for a full treatment of coordination.

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