EMMON W. BACH

IN DEFENSE OF PASSIVE

0. INTRODUCTION

Consider the following three sentences:

1. John was persuaded to go (by Mary).
2. John is resembled by no one so much as by Mary.
3. John was promised to go (by Mary).

The first is unequivocally acceptable, the third is just as unequivocally unacceptable, while the second falls somewhere in between.

In Bach (forthcoming) I argue that the difference between (1) and (3) is quite systematic and follows from these assumptions:

(i) *persuade to go* is a transitive verb phrase;
(ii) *promise to go* isn't;
(iii) Passive is a formation rule defined only for transitive verb phrases.

On this view, sentences (4) and (5) have a different derivational structure:

4. Mary persuaded John to go.
5. Mary promised John to go.

This analysis of *persuade to go* as a transitive verb phrase (i.e. a phrasal counterpart to a transitive verb like *see*) and *promise John* as a phrasal counterpart to verbs like *try* was suggested by Partee (1976) and Thomason (1976), but in a larger perspective it is just one instance of a traditional distinction between transitive verbs and other types (cf. e.g. Visser, Jesperson). Since the analysis pursued here is based on the view that there exists in English a significant syntactic/semantic category of transitive verb phrases, it is important to give independent evidence for this assumption. Such evidence is given in Section 1, where I will also give a sketch of the framework of the analysis and a preliminary statement of the rules of Passive. A final version is presented in Section 3.

The analysis pursued in this paper is based primarily on cases where there are very clear data on the acceptability of passives, as in (1) and (3) above. Unclear cases, such as (2), I will argue to be unacceptable on

Linguistics and Philosophy 3 (1980) 297–341. 0165–0157/80/0033–0297$04.50.

other grounds. For example, I will suggest that *resemble* is a true transitive verb, hence (2) is grammatical and interpretable, but that the relative unacceptability of many passive sentences with *resemble* is due to a general fact about symmetric predicates. The distinction between transitive and non-transitive verb phrases is not a natural one in post-*Aspects* transformational theory, although it was reflected in early transformational analyses (Chomsky, 1957; Lees, 1960). (4) and (5) seem to exhibit exactly the same phrase structure. Thus, if *persuade* and *promise* occur in the same structures, (I) is falsified as it stands:

I. Passive is a transformation defined for structures of the form $X - \text{NP} - \text{Aux} - \text{V (Prep)} - \text{NP} - Y$

Various moves have been taken as the result of such facts. One was to introduce exception features (Lakoff, 1965). This is not an acceptable solution in the long run, since it doesn't lead us to seek an explanation for the differences between (1), (2), and (3) but simply catalogues them. The same can be said for solutions which reject (I), base-generate passives and list them in the lexicon. (Robson, 1972, appears to be the first extended treatment along these lines; more recent variants are Freidin, 1975; Brame, 1976; Bresnan, 1978.[1]) A third family of solutions consists in a more or less radical rejection of basic assumption of transformational theory and a recasting of such rules as Passive in terms of different primitives (for example, the "terms" of relational grammar or its descendents, Perlmutter, 1978). This is the course followed here: we will explore an extension of the analysis of Thomason, 1976, within a Montague framework.

The essential difference between the view developed here and a transformational treatment like (I) is that the passive rule or rules are not defined on full sentence structures, so that there isn't any stage in the derivation in which the active counterpart of a passive sentence appears as such. Evidence against the transformational theory (I) will be presented in Section 2. This evidence counts indirectly as evidence for either a lexical treatment or the analysis given here. The essential difference between the analysis pursued here and lexical treatments is that here Passive is a syntactic rule defined on a phrasal category. Evidence for this view will be given in Section 4. Naturally, there are remaining problems; these are reviewed in Section 5. Along the way, I will have occasion to suggest a fairly extensive classification of verbs in a categorial framework; this is summarized in a compact form in the Appendix. I hope that this list will prove of use to other researchers, providing as it does a catalogue of facts that need to be dealt with in any

attempt to provide an explicit syntax and semantics for passive structures in English.[2]

1. Transitivity in Montague Grammar

In the adaptation of Montague grammar followed here, it is assumed that English syntax is to be analysed primarily in terms of binary constructions which are interpreted as applications of functions to arguments. The kernel rules (corresponding to the rules of functional application in Montague, 1974: Paper 8, henceforth PTQ) depend on a system of syntactic categories of the general form a/b, which are mapped into types in the semantics. If a certain expression is in the category a/b then it can be put together with an expression of category b and the resultant expression will be in the category a. Further, for every lexical category, there will be a corresponding phrasal category. Thus, alongside basic intransitive verbs like *walk* (for which I will use Montague's label IV), there are intransitive verb phrases (IVP) like *see Bill*, *walk slowly*, and indeed *walk* itself. *IVP*'s are interpreted as denoting sets (of individual concepts, or other higher order entities in extensions of *PTQ*). *NP*'s are interpreted as functions from properties (i.e. intensions of sets) to truth values. Transitive verbs (*TV*) are assigned to the category *IVP/NP* and interpreted as functions from intensions of *NP*'s to sets (i.e. *IV* type things), and once again there are transitive verb phrases (*TVP*'s). Note that this means a phrase which works syntactically and semantically like a transitive verb, and not a verb phrase that contains a transitive verb. I will follow PTQ in assuming a two-stage interpretation which first translates English expressions into expressions of an intensional logic, which then receives an interpretation (for which I refer the reader to PTQ; for expositions of Montague's theory see Thomason's introduction to Montague, 1974; Partee, 1975; Cooper, 1977; Halvorsen and Ladusaw, 1979.

To illustrate, the meaning of (6) is represented by the formula of the intensional logic given below:[3]

6. Mary loves John
$[\lambda P^{\vee} P(\hat{} m)](\hat{} love'(\hat{} \lambda Q^{\vee} Q(\hat{} j)))$

It is not assumed in this theory that rules of grammar are sharply separated into phrase structure rules and transformations. Surface structures are built up directly and interpreted as they are built up bottom-to-top. Some transformation-like syntactic operations can enter into the construction of various sorts of phrases besides sentences. For

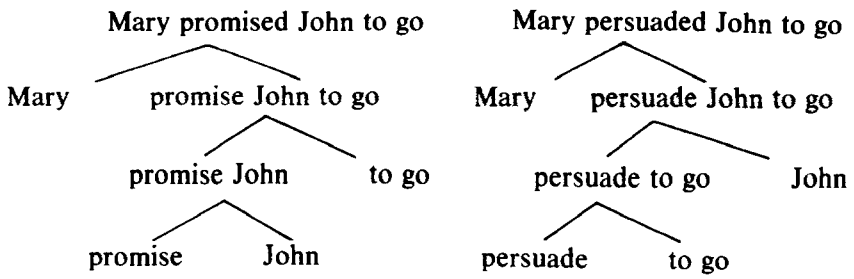
example, an obligatory transformational rule was posited in early treatments of constructions like *persuade to go* (Lees, 1960) to derive (7b) from an underlying structure (7a):

7a. Mary-persuade-to go-John.
b. Mary-persuade-John-to go.

Here, we can simply build this step into the statement of the rule for putting together a transitive verb and its object:[4]

8. persuade to go + John > persuade John to go

In this view, then, *persuade* is of the category *TVP/IVP*: it takes an intransitive verb phrase and makes a transitive verb phrase. In contrast, *promise* (in the use exemplified in sentence (3)) is assigned to a category which takes an *NP* and makes a verb phrase (like *try*) that takes an *IVP* to make an *IVP*: *(IVP/IVP)/NP*. We may schematically represent the difference in the derivation of two sentences with *promise* and *persuade* as follows:



In this analysis, then, we can have two phrases that look alike syntactically, but exhibit different function/argument structures.

9. persuade John to go [persuade′(ˆgo′)](ˆ*j**)
10. promise John to go[promise′(ˆ*j**)](ˆgo′)

(where "*j**" abbreviates "$\lambda P \check{} P(\hat{} j)$".)

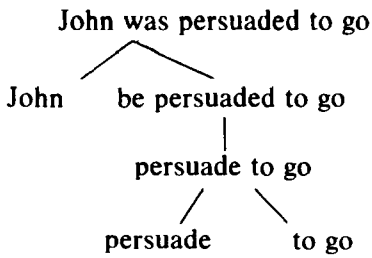
In Thomason's treatment (1976, omitting details) Passive is a rule which allows the formation of IVP's (with *be*) from transitive verb phrases. For agentless passives, the rule might be stated thus (to be modified in Section 3 below):

II. If $\gamma \in TVP$, then $be\ EN(\gamma) \in IVP$ and if γ translates as γ', the resultant expression translates as $\lambda x \exists y[\gamma'(\hat{} \lambda P \check{} P(x))](y)$, where EN is the syntactic function which changes the main verb (or verbs) of γ into past participle form.

(I assume that EN can be precisely defined as a subfunction to be called in various rules; cf. Williams, 1978, for some of the formal difficulties involved in across-the-board-applications of such rules.)

This rule, together with the categorial assignments given to *persuade* and *promise* above predicts that (1) will be grammatical and (3) incoherent. We can't apply the rule to *promise*, since its's of the wrong category, nor to *promise to go* since it isn't of any category.[5]

A schematic analysis tree for sentence (1) is this:



The interpretation assigned to the phrase *be persuaded to go* is this: $\lambda x \exists y[[\text{persuade}'(\hat{}\text{go}')](\hat{}(P \check{} P(x))](y)$. If we say *John was persuaded to go*, this analysis says that it means that John had the property of being such that someone persuaded him to go. Note that substituting *promise'* for *persuade'* in the expression of the intensional logic just given yields an illformed expression.

In a critique of the Partee/Thomason analysis, Plank (1976) has pointed out that there needs to be independent justification for the assignments to categories that yield the above result. Stated succinctly, what is there that tells us that we should assign the function/argument structure just given to *persuade* and *promise* the way we did rather than the other way about? A large part of the present paper is devoted to showing that there are independent reasons for thinking that direct counterexamples to the transformational treatment (I) aren't transitive verbs. Before getting to this, however, I would like to review some different kinds of support for the distinction between transitive and non-transitive verbs (some of the following points are repeated from Bach, forthcoming).

In the view espoused here there are a large number of complex transitive verb types in English. We may classify them according to their initial argument categories. Besides verbs like *persuade* that take *to-VP* phrases to make transitive verb phrases, there are verbs that take *as*-phrases (*regard*), Adjective phrases (*consider, paint*), Nominals (*elect*), Directionals (*put*), Locatives (*keep*), and so on. (For lists of all

the types I have found, see the Appendix.) Here are some example sentences:

11. I regard him as crazy/my friend.
12. I consider him weird/my friend.
13. Mary put the box into the closet.
14. We took the boys to Park Street.
15. They kept the box in the closet.

A number of these types have counterparts that are not transitive (like *promise*):

16. He strikes me as crazy.
17. We took the MTA to Park Street. (*gratia* David Dowty)
18. She made us a good chairperson.

As with *promise*, these are analysed here as having a different categorial structure: each of the verbs in (16)–(18) (again see the Appendix for more examples) take an *NP* as its argument to make something that requires an argument of the appropriate sort. It should be noted that no claim is being made here as to the coherency of the class of non-transitives (cf. Lees, 1960, for a similar comment on his so-called 'middle' verbs).

Besides the straightforward types of transitives mentioned above, I follow another traditional analysis in claiming that some transitive verbs consist of verbs plus prepositions (*rely on, look at*; for some discussion, see below, Sections 2.3.5–6).

All of the above transitive verb phrases, and none of the non-transitives have good passives, as you can check. The categorization given and the formulation of Passive in II jointly account for this fact. But of course, if we just let the passive facts determine our classification, the analysis is circular (as Plank notes for control questions). However, a number of other facts fall in with this classification, suggesting that the distinction is a fruitful one.

A. Obligatory Control. In cases where the second element in a sequence of verbal complements is a predicative of some sort, it is interpreted as associated with the direct object for transitives but with the subject in non-transitive verbs (this connection between passivizability and control was noted by Visser (p. 2118 in Part III.2), and has figured in recent discussion under the label of "Visser's generalization" (Bresnan, 1978; Wasow, 1977, 1978). This fact can be seen most

perspicuously in sentences where we can contrive to have a reciprocal or reflexive in the complement:

19. I persuaded John to love himself/*myself.
20. I promised John to love myself/*himself.
21. I regard those men as proud of each other/*myself.
22. I strike those men as proud of myself/*each other.

Without a much better understanding of the exact nature of the phenomena of free and obligatory control, these facts must remain as suggestive evidence only (for some discussion, see Bach, forthcoming). But at the very least we can say that the descriptive generalization stated above separates verbs into the same classes given by the passive facts.

B. Conjunction. On the assumption that a necessary condition for conjunction is membership in the same syntactic category we can use sentences like the following to support the idea that *persuade to go* and the like are transitive verb phrases:

23. I visited and persuaded to vote for me a man that I met in the grocery store.
24. I love and retard as my dear friend a woman who lives in Seattle.

(Indefinite NP's are used in these examples to show that right node raising is not a reasonable source.)

C. Coherency. The analysis followed here claims that a sequence like *promise Mary* is syntactically coherent (Ajdukiewicz, 1935), while *persuade Mary* is not; conversely, that *promise to go* is not coherent (except under the conditions in which a noun phrase has been suppressed) while *persuade to go* is. Suggestive evidence that this is correct comes from an examination of sentence types where one or another constituent is "removed" or "moved".

25. I persuaded to leave the house all the little boys in the basement.
26. ?I promised to leave the house all the little boys in the basement.
27. ?What I persuaded John was to do the dishes.
28. What I promised John was to do the dishes.
29. Who did you persuade to do the dishes. (*gratia* Jane Grimshaw)
30. ?Who did you promise to do the dishes.

D. Deletability of NP's. It seems to be a quite robust fact that verbs belonging to the complex transitive classes require objects;

31. *I persuaded to go.
32. *I regard as crazy.
33. *I put into the closet.
34. (*)I kept in the closet.

("(*)" means here and throughout: "on the intended interpretation")
On the other hand, some non-transitives can appear without nominal arguments:

35. I promised to go.
36. He appears to be crazy.

Moreover, ambiguous verbs like *beg* or *ask* are unambiguous without NP's:

37. I begged to go to the store.
38. I asked to be admitted.

For the moment these facts are only weakly suggestive of the difference between transitive and non-transitive verbs. I will return to these facts and a variety of others having to do with lexical processes in Section 4, where I argue for the phrasal version of a passive rule.

2. Evidence Against a Transformational Passive

In this section I will discuss a number of direct counterexamples to (I), the transformational version of passive, and show that the nonexistence of passives in these cases follows from the analysis outlined in Section 1 above, together with plausible assumptions about the constructions in question. At the head of each subsection, I will list one or more counterexamples or problems for the transformational account. The discussion is organized into several subgroupings.

2.1 *Objects That Are Already "There"*

In the transformational treatment there is no reason to expect that special object NP's that are required for various constructions and idioms shouldn't be possible subjects in passive sentences; in fact, a number of arguments for the transformation depend on such elements (see Section 5.1). Just the opposite prediction is made by the analysis proposed here. A number of constructions fall into this class.

2.1.1

1. John saw himself in the mirror.
2. *Himself was seen by John in the mirror.
3. Mary and Bill love each other.
4. *Each other are loved by Mary and Bill.

(I) predicts that (2) and (4) are possible sentences of English, and some additional explanation is required to rule them out. Sentences like (5) and (6) show that this can't simply be a matter of the distribution of reflexives and reciprocals (e.g. that they can't be subjects of tensed sentences):

5. *We believe himself to have been seen by John in the mirror.
6. *I expect each other to be loved by Bill and Mary.

2.1.2

7. This argument eats it.
8 (*)It's eaten by this argument.
9. John will really catch it.
10. (*)It'll really be caught by John.

If we assume, as is reasonable, that idioms with *it* in object position are listed as such in the lexicon, then (II) predicts that (8) and (10) will be ungrammatical. (I) makes the opposite prediction (in Section 5.1, I'll deal with other idioms involving objects). It's for the same reason that lexical reflexive verbs can't have passives:

11. *Himself was betaken by John to the party.
12. *John was betaken by himself to the party.

2.2 *Subjects That Are Already "There"*

In similar fashion we expect that close combinations of subjects and verbs won't passivize, against the prediction of the transformational version of passives.

2.2.1

13. It stormed up a flood last night.
14. *A flood was stormed up by it last night.
15. There arose a storm in the night.
16. *A storm was arisen by there in the night.

In general, constructions that require special subjects (weather *it*, *there*) will be expected not to have good passives according to (II), but not (I).

2.2.2

17. 1943 found Pound in Italy.
18. (*)Pound was found by 1943 in Italy.
19. The 1948 election saw Truman paired off against Dewey.
20. (*)Truman was seen paired off against Dewey by the 1948 election.

Examples like these have been used by proponents of relational grammar to support a "law" excluding demotion of terms that have been advanced to 1-hood (Perlmutter, 1978; Perlmutter & Postal, forthcoming). As they stand, they are counterexamples to the structurally defined sentence transformation (I). I don't have a good analysis to propose for these constructions. But the analysis given above, extended to include agent phrases (cf. Section 3), predicts that the interpretation of the passive verb phrases will retain the literal interpretation of the ordinary transitive verbs *find* and *see*. They would thus be interpreted exactly as these sentences:

21. Pound was found by the U.S. Army in Italy.
22. Truman was seen paired off against Dewey by the spectators.

This is the only possible derivation. (18) and (20) are thus excluded on semantic grounds. (The argument of this section doesn't apply to analyses like that of Wasow, 1977.)

2.3 *NP's That "Accidentally" Fit The Structural Analysis Of A Passive Transformation*

By far the largest variety of systematic counterexamples to the passive transformation arise by virtue of the fact that NP's and PP's can occur as representatives of a wide variety of syntactic categories. A transformational rule is, in principle, incapable of distinguishing these from true object NP's. Many of the following examples have been widely noted in the literature.

2.3.1

23. That event occurred at dawn.
24. *Dawn was occurred at by that event.

25. John remained under the table.
26. *The table was remained under by John.
27. The puppy crawled out of the box.
28. *The box was crawled out of by the puppy.

These facts follow from (II) and the assumption that the PP's in the sentences are just examples of a general class of expressions (locative and time adverbials) that are governed by certain verbs or just free adverbials. Compare these sentences:

29. That event occurred yesterday.
30. John remained there.
31. The puppy crawled away.

Here belong examples like this one from Chomsky (1965):

32. They decided on the boat (ambiguous)
33. The boat was decided on by them. (unambiguous)

In examples like the following, then, the combination V + Prep is being used as a transitive verb:

34. This bed has never been slept in.

Many writers have commented that in such examples the combination is felt to be a semantic unit (i.e. a transitive verb). Compare examples like these:

35. They got into his files.
36. His files have been gotten into.

2.3.2

37. John turned into a toadstool.
38. *A toadstool was turned into by John.
39. Mary became my friend.
40. *My friend was become by Mary.
41. John is an idiot.
42. *An idiot is been by John.

Traditionally, verbs like these are considered predicative or copulative verbs, that is, not transitive at all. There are a lot of other differences besides non-passivizability that distinguish such verbs from transitives like *kiss* or *love.*

(i) If we use a transitive verb in a sentence like *Mary kissed Sally* we

have to understand it to be about two distinct individuals. Quite the opposite holds for sentences like (37), (39), and (41).

(ii) Sentences like (41) require agreement between subject and nominal adjunct:

43. *John is idiots.
44. *Those people are a physicist.

(iii) Some singular noun phrases can occur without an article in such sentences, but not generally:

45. Mary became director of the institute.
46. *I gave director of the institute an apple.

(iv) The lexical rule that forms intransitives from transitives (Bresnan, 1978; Dowty, 1978) never applies to verbs like those above:

47. John read, ate, etc.
48. *Mary became, is.

(*Mary is* comes from VP deletion, not this rule.)

This will follow if these verbs are not transitive. The lexical rule yields predicates with an interpretation $\lambda x \exists y[[V'(y)](x)]$, and if *become* is not of the category that takes an NP to form an intransitive verb phrase $\lambda x \exists y[[become'(y)](x)]$ will be incoherent.

(v) Jespersen (MEG III: 389f.) observes that in a sentence like the following the nominal in the predicate need not have its usual definite sense:

49. Sally is my friend.

More generally, we can detect in many sentences an ambiguity between a predicational and identifying interpretation (cf. Higgins, 1974, for a good discussion of the difference):

50. Mary is a physicist (I know).

and there is a corresponding distinction in questions:

51. Who's Mary?
52. What's Mary?

So what are such verbs? Many take other kinds of complements besides nominal expressions: adjective phrases, location phrases, and so on. This suggests that they are of a category that takes predicative expressions as complements (i.e. categories of expressions $t/^{n}e$). Among

the predicative expressions are some that are formed directly from common noun phrases—*a fish, director,* or *physicists*—and others from NP's. *Mary is a physicist* would on one reading (*contra* Montague, *PTQ*) be interpreted directly as saying that Mary's property set includes the property of being a physicist. *Mary is Sally* would say that Mary has the property of being identical with Sally. This view helps explain why we understand a sentence like this in a special way

John is himself again.

Of course he's himself (that's trivially true). So we understand the sentence as meaning more than it says (in a Gricean sense; it must be about the properties that we associate most intimately or essentially with John.

2.3.3

53. The box weighs three pounds.
54. *Three pounds are weighed by the box.

Again, it's easy to establish that in the uses we're concerned with these can't be transitive verbs:

55. John weighed 150 pounds.

This sentence is ambiguous: on one reading *weigh* is transitive and there's a good passive. In the other case *150 pounds* is a measure phrase (even though it may also be an NP).

There are verbs that require measure phrases: *add up to* (cf. *look up to*). As expected the former have no passives at all:

56. *Quite a lot is added up to by that.
57. Mary is looked up to by everyone.

2.3.4

58. *That way was behaved by Bill.
59. *A fool was acted by Arnold.

Behave takes adverbials of manner. *Act* takes a variety of arguments (*as*-phrases, adverbials, *like*-phrases). Some of these may be represented by *NP*'s, but there'll be no passive under (II).

2.3.5

60. The river is teeming with fish.

61. *Fish are being teemed with (by the river).
62. Alaska abounds in natural resources.
63. *Natural resources are abounded in by Alaska.
64. The garden swarmed with bees.
65. *Bees were swarmed with by the garden.

I am following the traditional idea here that expressions like *rely on, laugh at, look at, look for* are prepositional transitive verbs (and the prepositional phrase is formed when they get their objects). In this and the next section we consider some verbs that appear to strongly select their prepositions but have no good passives. Here, our heuristic leads us to expect reasons to treat them in a different way. Examples like (60), (62), and (64) form an interesting class (or pair of classes).

Jespersen (MEG III: 214 f.) singles out such verbs for special comment: they "take as their subject what in another, and seemingly more proper application is joined to a verb with a preposition: the garden *swarms* with bees = bees swarm in that place ... This stream abounds in fish = fish abound in this stream..." The prepositional phrases here occur in semantically similar adjectival constructions: *rich in natural resources, replete with errors.* It is noteworthy that the noun phrases are restricted, as far as I can tell, to bare plurals and other expressions denoting kinds (Carlson, 1977) and mass nouns.

To approach an understanding of these sentences, let's consider some related ones:

66. John filled the freezer with fish.
67. The freezer filled with fish.
68. John loaded the truck with hay.
69. John loaded hay onto the truck.

Passives are also no good with examples like (67):

70. *Fish were filled with by the freezer.

If we want to get a parallel sentence with *fish* as subject it has to be one of the sort cited by Jespersen:

71. Fish filled the freezer.

And (66), (68), and (69) have good passives:

72. The freezer was filled with fish (by John).
73. The truck was loaded with hay (by John).
74. Hay was loaded onto the truck (by John).

(Without the agent phrase, these all have a straightforward adjectival interpretation.) Interrelationships like those exhibited here are fertile ground for case theories (Anderson, 1971; Hall, 1965; Fillmore, 1968) or relational grammar. In a Montague framework we have to ask about the various possible function/argument relationships that might obtain.

According to our general approach, we would not expect that the structure of (62) or (67) for example would be as represented here:

75. Alaska*(^abound-in'(^natural resources'))
76. the freezer'(^fill-with'(^fish')).

A consequence of such an analysis would be that passives like (63) and (70) would be grammatical and they aren't. On the other hand we don't want to posit a transformational relationship between these sentences and ones like (71) or Jespersen's examples (*bees swarm in that place*), because we would then wrongly predict relationships like these:

77. Carter resides in Washington – Washington resides in Carter.
78. Fish rot in the cellar – the cellar rots in fish.
79. Fish love water – water loves with fish.

From what's come out so far we'd expect that the *with* and *in* phrases have some independent status and that a verb like *teem* requires as an argument a phrase in *with* and *abound* a phrase in *in*. Although *teem* is apparently only used this way in present-day English, there is a productive but lexical rule (in the sense of Dowty, 1978) which creates new members of this category:

80. The garden buzzed with bees.
81. The tree was dripping with honey.
82. The ground oozed with crude oil.
83. The garden danced with light and shadow.

The fact that there is such a productive rule supports the idea that we don't just have arbitrary collocations of verbs and prepositions here. So let's consider the semantics of such phrases.

The OED discusses two senses of *with* (*s.v.*) that are relevant here: "after verbs of furnishing, fitting, covering, adorning and the like" (38); "after an intr... indicating a substance which is the logical subject of the vb." (39c). It's worth noting that the OED makes an implicit distinction between the *with* cases under discussion and transitive verb + preposition cases. Under *on*, for example, there is simply a section saying that *on* is used in combination with many verbs, e.g. *rely*, *depend*, etc., with no attempt to characterize either the meaning of the

on-phrase or the meaning of the group of verbs illustrated. I believe that a good account of the semantics and syntax of the *with* constructions noted here would go by way of establishing a special kind of adverbial phrase (which is not the same as an instrumental adverb, but roughly the same kind of animal) which is represented solely by *with* + *NP* in modern English (or perhaps also represented by *of*-phrases as in *full of*).

I don't want to get into an extended analysis of these constructions here, so I'll just posit a special type of adverbial phrase, say *ContP* for "content phrase", which will be either an intransitive verb phrase or transitive verb phrase adverbial (or both) in its primary uses and for which verbs can be categorized so as to take such phrases as arguments. The connections among the various sentences above will be left to lexical rules and lexical semantics (in Montague's framework this means by meaning postulates or semantic rules associated with the lexical rules, in other frameworks by decompositions of the meanings of the lexical items, as, for example, in Jackendoff, 1976). The only representatives of this type of adverbial considered here are *with*-phrases. I believe a similar tack can be taken with *in* above, which I'll call *ScalP* (Scalar phrase). The most that I can hope to do here is to make it plausible that the phrases have an independent status and the combinations aren't parallel to prepositional transitives like *confide in* or *deal with*.

2.3.6

84. Water consists of hydrogen and oxygen.
85. *Hydrogen and oxygen are consisted of by water.

Once again, I think a case can be made for saying that the complement has independent status in such constructions and that *consist of* isn't a transitive verb like *think of*. Let's call them *PartP* (partitive phrases). They have the form *of NP* (with restrictions on the NP as in the last section). They can occur in other constructions:

86. The table is of wood.
87. A house of glass . . .
88. Mary made the table (out) of teak.

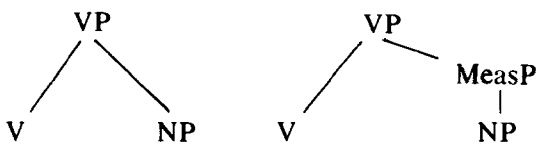
Again, I can't hope to give an exact account of their syntax and semantics here.

Another way of looking at the question of the status of all three types in this and the last sections is the following. It is possible once and for all to give the meaning of a phrase like *of NP*: "indicating the material

of which something is made or composed" or the like. Thus it is unnecessary even if it were feasible, to list *of* beside every noun or verb of the appropriate meaning and this would misrepresent the competence of speakers of English. The simplest description of English (in this respect) is one in which such phrases are syntactic/semantic units. With transitive Verb + Prep combinations, on the other hand, we have to list them individually. This fact is reflected positively in dictionary entries like *look for, look after, look at* (but not *look under*) and negatively in the fact that there is no attempt to characterize a single meaning for *on*, say, in *depend on, rely on,* (cf. *trust in*), *play on.* Whatever commonality there is is to be attributed to etymology

2.4. *The Results So Far Can Be Summarized Like This*

The transformational hypothesis (I) predicts that any instance of a structure that can be analyzed as a sequence *NP Aux V (Prep) NP* can undergo the passive. I've presented a variety of systematic exceptions to this view. They fall into a number of cases: (1) constructions which have to be listed or understood as consisting of a verb and a noun phrase (idioms in *it*, reflexives). The alternative hypothesis makes the correct predictions here as it does for cases where it is the *subject* NP that is crucial, e.g. "weather" *it, there* constructions, idioms involving the subject, if there are any. (2) cases where it is, so to speak, accidental that they fit the structure, where some independently describable constituent either appears as a free adjunct or as an argument to a verb. Even if we distinguish the phrase structure for these instances by assigning some higher structure, the transformational hypothesis is inappropriate since a transformation is in principle incapable of distinguishing two structures like these:



I've suggested a large number of categories that can act as arguments to some verbs, some quite clear, some very tentative, but most characterizable as independently needed. Among them are predicate nominals, measure phrases, locative and temporal phrases, which are relatively clear, but others like content, partitive, and scalar phrases which stand

in need of much more analysis. (The Appendix lists a number of others.) It's worth noting that many transitive verb phrases involve these latter categories and that we can find the same contrast with intransitives that we find with verbs like *persuade* and *promise*. For example, *cost* and *charge* both involve measure phrases but exhibit a difference in logical structure:

88. They cost me five dollars.
89. They charged me five dollars.

Along with verbs that take durational arguments like *last* we have pairs like *last* (again) and *extend*:

90. The provisions lasted us three weeks.
91. They extended the meeting three weeks.

In each pair only the second, transitive verb phrase permits a passive. In Section 5, I will deal with the residue of problematic cases that remain.

3. An Analysis of Passives

In this section I will propose a set of rules for deriving Passive constructions, based primarily on Thomason's (1976) analysis. The analysis differs from Thomason's in supposing that there is a syntactic category of Passive verb phrases (*PVP*) which can be combined with *be* to form an *IVP*, but can occur independently as well. Semantically, *PVP*'s are taken to be predicatives, that is, expressions of some category $t/^{n}e$, denoting sets of entities (e.g. individual concepts). The rules are these:

III. Agentless Passive Verb Phrases (PVP):
If $\gamma \in$ TVP, then EN(γ) $\in$ PVP, where EN(γ) is the result of making (or choosing) the past participle form of the main verb(s) in γ.

Translation rule: if γ translates as γ', then EN(γ) translates as

$$\lambda x \exists y[\gamma'(\hat{}\lambda P\ P(x))](y)$$

IV. Agentive PVP:
If $\alpha \in$ NP and $\gamma \in$ TVP, then EN(γ) *by* $\alpha \in PVP$

Translation rule: if α translates as α' & γ as γ', then EN(γ) *by* α translates as

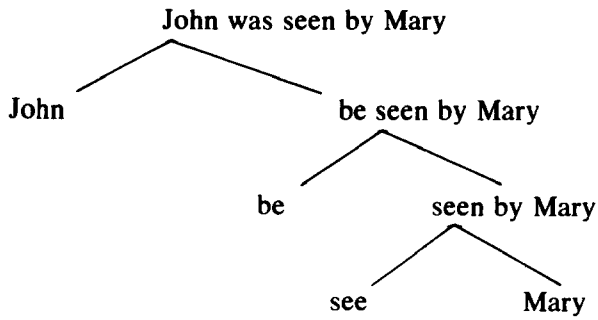
$$\lambda x \alpha'(\hat{y}(\gamma'(\hat{}\lambda P\, P(x)))(y))$$

Simplified translations for two examples would be these:

(John was) *injured*: $\lambda x \exists y[\text{injure}'(y, x)]$
(John was) *seen by Mary*: $\lambda x[see'(m, x)]$

Thus *John was injured* is interpreted as meaning that John was such that someone injured him; *John was seen by Mary* is interpreted as saying that John was such that Mary saw him.

In order to derive sentences with PVP's, then, I assume that *be* and *get*, at least, are assigned to a category IVP/PVP. The derivation of a passive sentence then would look like this:



In the following subsections, I'll justify some of the details of this analysis.

3.1. *Why A Syntactic Category Of PVP's?*

There are a number of reasons for supposing that there is a syntactic category of passive verb phrases, distinct from any other category in English. Some of the arguments are theory-internal, but the facts at their basis must be accomodated in any framework.

To begin with, we may recall all the reasons given by Wasow (1977) to contravene Freidin's analysis of all passive verb phrases as adjectives. If PVP's are adjective phrases then they must be singled out as a special type because of differences in their distribution. As noted in fn. 1, I agree with Wasow that some participial forms are adjectives, but they differ both distributionally and semantically from the syntactic passives discussed here. Compare, for example, the participial adjective and the syntactic passive in these two sentences:

3. The closed window has never been closed.
4. ?The window closed has never been closed.

(4) is contradictory and illustrates the fundamental semantic contrast between the two. A window can be built into a house closed (adjectival) already. But a window can't get closed unless something or someone closes it. (This justifies the existential quantifier in our rule III.) Other differences are that the *be* of the passive can occur in the progressive, and tense-logical differences in the truth conditions for sentences with time adverbials:

5. The door was being closed. (syntactic)
6. The door was closed, when I arrived.

I take it that these are sufficient reasons for saying the PVP's aren't adjective phrases.

PVP's occur in other constructions besides passive sentences. I won't try to provide an analysis of them but simply list some examples as support for the idea that there is an intermediate category *PVP* (as opposed to the treatment in rule (II) above which introduced *be* directly).

(a) as modifiers of common nouns:

I met the man arrested by the police.

(b) as "free" predicatives:

Sent off on Tuesday, the package didn't arrive until Saturday.
John, annoyed by the request, spat.

(c) in tenseless "nexus" constructions:

His children finally sent off to college, Alfred returned to his work.

(d) *there* and *have* sentences:

There were three people arrested by the police.
I had my car washed yesterday afternoon.

(e) As an argument to certain verbs:

I got those packages sent off yesterday.

Finally, there appear to be adverbs that are restricted to occurrence with passive verb phrases:

7. John is widely considered to be a genius.
8. ?*People widely consider John to be a genius.

There are a number of problems about the semantics given above, but I will defer discussion of them to Section 5.

4. Is Passive a Lexical Rule?

There are several respects in which the analysis pursued here makes the same predictions as a treatment in which passive sentences arise by some kind of lexical operations. In this section I will give evidence that the phrasal account provided here is to be preferred over such accounts.

4.1. *Lexical Treatments Of Passive*

To begin with, as noted above, some participial forms are clearly adjectival in nature and should be derived by a lexical word formation rule (cf. Wasow, 1977, for an extended discussion). Thus, we will be concerned here only with the question whether the remaining cases should be treated by a different but still lexical rule.

The most extensive work on lexical processes in Montague grammar has been done by Dowty (1976, 1977, 1978). Dowty treats a number of constructions as resulting from the operation of rules that extend a grammar by forming new members of various categories from existing categories (thus his rules are analogous to the word formation rules of writers like Aronoff (1976). For example, Dowty formulates a rule that allows transitive verbs to appear as intransitives. Just as in the syntax, it is necessary to provide an explicit account of the meaning of the result. This constitutes the regular and predictable meaning of a nonce-formation. Once added to the lexicon, such a form is subject to the vagaries of semantic drift. The rule in question might be formulated thus (cf. Bresnan 1978):

Intransitivization

(a) If $\gamma \in \text{TV}$, $\gamma \in \text{IV}$

(b) If γ translates as γ', then the result (the corresponding intransitive) translates as $\lambda x \exists y[\gamma'(\hat{}\lambda P \check{} P(y))](x)$

This rule replaces the old transformation of object-deletion. Thus, the transitive verb *drink* can undergo the rule. The regular meaning of *John drank* is this: "John was such that there was something that he drank". This particular example has undergone semantic drift so that along with its regular meaning it also means something like this: "to habitaually or regularly drink alcoholic beverages."

By its very nature, such a rule applies to elements in a certain lexical category and yields elements that belong to an already existing lexical category.

It is a consequence of this view of lexical rules that they will never be

applicable to syntactically derived (i.e. phrasal) members of the category for which they are defined. I noted above that complex transitive verbs obligatorily require objects. This result follow directly from Dowty's analysis of lexically derived intransitive rules and the assumption followed here that such verbs as *persuade* are not themselves transitive verbs but only verbs which take various arguments to form transitive verb phrases. More precisely, what follows is that when complex transitive verbs appear without an object, they do not do so by virtue of a lexical rule like Dowty's but by some other process or rule. To the extent that this prediction is borne out, we may take it as supporting the analysis of phrases like *persuade to go* as transitive verb phrases.

The residue of cases which do not conform to this prediction is quite small. From the tentative classification of complex TV's in the Appendix, I find only the following acceptable without an object:

1. They charged five dollars.

I have no explanation for the exception. However, I don't take this too seriously yet, since I have not done any detailed analyses of the various subclasses of complex transitive and non-transitive verbs. There are other unexplained differences among the various classes. For example, *charge* acts like a simple transitive verb in allowing prefixation by *over*:

2. They overcharged us five dollars.

This process is not available for most of the other verbs I've classified as complex transitives (**They overpersuaded me to go*).

Dowty (1978) raises but does not settle the question of the status of passive as a lexical word formation rule in his framework. Note that if passive is treated in this way, then it is necessary that the resultant category also be a lexical category. We have seen reasons to believe that the resultant category cannot be that of adjectives (as Freidin assumes; cf. Wasow, 1977, for cogent criticisms of this assumption). The main argument against the assignment of participial forms to the category of adjectives is that they would have a unique distribution among adjectives. A similar argument can be given against the assumption that they are (say, intransitive) verbs. No other intransitive verbs appear with *be*. Thus, in the framework followed here we must posit a special category, say, *PV*, for passive participles. Before considering the consequences of such a lexical treatment, let's note that there is an asymmetry between lexical and syntactic categories in the version of Montague grammar being explored here: for every lexical category there is a corresponding syntactic (phrasal) category but the converse need not

hold, in general. For example, there are no lexical categories corresponding to the phrasal category of sentences (P_t or S). Thus it is perfectly possible for there to be a phrasal category of Passive Verb Phrases without there being a corresponding lexical one.

I now want to show that it isn't possible to provide a simple lexical passive rule in a Montague framework of the sort pursued here, if we want to retain the categorization of verbs outlined so far. The reason can be seen by considering two verbs from different categories: *persuade* and *consider*. They are assigned to these categories:

persuade: TVP/to VP i.e. (IVP/NP)/to VP
consider: TVP/AdjP i.e. (IVP/NP)/AdjP
TVP/PredN i.e. (IVP/NP)/PredN.

First of all, the statement of a single rule of passive would require a theory of word formation rules that would allow use of variables over internal parts of the categorial structures associated with lexical items. Suppose we do this, then the rule might be stated thus:

If $\gamma \in (\text{IVP/NP})/X$ then $\text{EN}(\gamma) \in \text{PVP}/X$

But how are we to provide a uniform translation for the resultant category? We cannot simply write this: $\lambda x \exists y[\gamma'(\hat{}\lambda P\check{}\, P(x))](y)$, since we need to provide for a way of combining the resultant expression with a phrase of category X. What we need is something like this: Let $P^{f(x)}$ designate a variable of type $\langle s, f(X)\rangle$, where $f(X)$ is the type assigned to expressions of category X. Now the translation can be given:

$$\lambda P^{f(X)} \lambda x \exists y[[\gamma'(P^{f(X)})](\hat{}\lambda P\check{}\, P(x))](y)$$

At best, this represents an unnecessary complication of the rule; at worst, an unwanted extension of the power of lexical rules. Note that this complication or extension is needed solely to ensure that we get the same result as we would get by allowing Passive to be a phrasally defined rule (cf. Dowty, 1978).

I now turn to the consideration of lexical treatments of passives within other frameworks, principally the "realistic transformational grammar" of Bresnan (1978), taking into account also further discussion by Wasow (1978), and the closely related theory of "base-generated syntax" of Brame (1979), cf. also 1976)).[6]

One basic difference between the frameworks of Bresnan and Wasow and the one taken here is that they are based on phrase structure grammars, while the primary framework used here is categorial. In the tradition of *Aspects*, lexical elements are provided with sub-

categorization frames indicating the environments within which a given lexical item can appear. For example, *promise* and *persuade* would presumably be assigned these frame (among others):

persuade: [____ NP to VP]
promise: [____(NP) to VP]

In addition, verbs are assigned some other features indicating their functional structure (Bresnan) or an assignment of thematic relations to NP arguments (Wasow). Passive would be represented by a rule which would simultaneously change the subcategorization frame and say something about the assignment of functional or thematic relations to the resultant argument. (For details, see the relevant papers.)

It would take us too far afield to undertake a comparison of these frameworks with the one followed here. Moreover, neither Bresnan or Wasow say very much about the details of passive structures, nor about the semantics of the constructions. Thus the arguments given here must be considered very tentative. Since the primary argument given so far against a lexical passive within a Montague framework relies crucially on semantic problems (or more precisely problems that arise from providing a good syntax for the semantics), it's hard to assess its force in theories which embody quite different views of the relationship between syntax and semantics. Nevertheless, I believe that the evidence given in the next section can be taken as evidence against a lexical treatment even in the frameworks of Bresnan and Wasow.

In spite of the diffidence just expressed, I would like to mention one crucial point of difference between the categorial framework of my analysis and the theories of Bresnan and Wasow. My analysis relies heavily on the idea that there is a category of transitive verb phrases. This category is not easily accommodated in a phrase-structure grammar of the sort presupposed in current transformational grammar. If the analysis proposed here is correct, then it follows that the general framework of categorial grammar is to be preferred over other frameworks which leave no room for such a category.[7]

Brame's theory (Brame, 1978) differs from those of Bresnan and Wasow in dispensing entirely with syntactic subcategorization frames. Again, very little is said about passive or about semantics, so it is very difficult to make comparisons. I believe that the spirit of Brame's proposal is very close to that of Montague grammar. However, since Brame seems to follow transformational grammar in the assumption of a phrase-structure "base" the remarks of the last paragraph carry over.

4.2. *Evidence For A Phrasally Defined Passive Rule*

If we could find clear cases of syntactically defined transitive verb phrases and show that the passive rule should apply to them, then we would have evidence against a lexical passive rule. I believe there is such evidence.

In Section 1 I used conjunction to argue for the analysis of phrases like *persuade to go, consider a fool,* etc. as transitive verb phrases. I am assuming that conjunction is defined for all major categories. On the view of passive as a phrasal rule we should thus expect to find passives for conjoined transitive verbs, as in this sentence.

3. John was attacked and bitten by a vicious dog.

It's clear that this sentence can't arise by conjunction reduction (if there is such a thing). There are two possible derivations of this sentence: one is by conjunction of two PVP's. This corresponds to the reading in which the dog did the biting but not the attacking. The other arises by performing the agentive passive rule on the TVP *attack and bite.* (Bresnan and Wasow both hold to the view that the agent-phrase is independently generated, but I see no way to make this work, see Section 5.9 for further discussion.) The analysis given so far further predicts that sentence (4) is ambiguous:

4. John was attacked and bitten.

The reason is that the agentless passive rule could apply to each TV independently, or to the conjoined TVP. The ambiguity would then be between a reading in which there are two existential quantifiers and one in which there is a single one (cf. Keenan and Faltz (1978) for the discussion of the semantics of conjoined TV's).

The preceeding argument is admittedly weak, depending as it does on a judgment of ambiguity that some might find questionable. We could make a stronger argument if we could find an optional modifier of TVP's that would yield TVP's as its output. There are such modifiers.

Purposes clauses with "gaps" (Faraci, 1974) are illustrated in sentences (5), (6), and (7). They are to be distinguished from in-order-to clauses as in (8):

5. Mary bought the truck (for Bill) to deliver groceries with.
6. John hired it to take him to Alaska.
7. Max brought in the dean for us to talk to.
8. I bought a Cadillac (in order) to annoy my brother.

Such clauses can occur as arguments for certain verbs (principally *be* and *have* but also verbs like *choose, use*). But as optional modifiers they can occur only with transitive verbs, as above, or in the corresponding passives. Thus we have (9), (10), and (11) as contrasting with (12) and (13):

9. It was bought to deliver groceries with.
10. It was hired (by John) to take him to Alaska.
11. The dean was brought in for us to talk to.
12. *It arrived to deliver groceries with.
13. *The dean came in (for us) to talk to.

We can explain this distribution if we think of the purpose clause as an element of category TVP/TVP and of passive as a phrasally defined rule.[8] It would be possible to accomodate these facts in a lexical analysis but only at the cost of having the purpose clauses doubly categorized for transitive and passive verb phrases.

5. Problems and Prospects

Naturally there are a number of remaining problems with my analysis. In this section I will deal with them to the extent that I can, but in the interest of honesty and to stimulate further research, I will also mention problems for which I have no solution.

5.1 *Idioms*

Some idioms can and some can't passivize. I mentioned ones with *it* above. Some other examples:

1. (*) The ceiling was hit by him.
2. (*) The bucket was kicked by John.
3. (*) The cake was taken by Sally.

We can't characterize idioms in a yes/no fashion with respect to all rules, since some parts of idioms are more mobile than others. For example, we can't isolate *the bag* from the *cat*-idiom:

4. (*) What he let the cat out of was the bag.

I'm unwilling to ignore the strong evidence, in favor of the non-transformational treatment of passive given so far, so I'll assume that all passives based on idioms are ungrammatical but acceptable (for a precedent see Langendoen and Bever, 1973). Two factors seem to favor

the acceptability of passives based on idioms. The first is the extent to which we can parse the structure in such a way as to assign a meaning to the parts. Thus we can parse *let the cat out of the bag* as consisting of one part (*the cat*) corresponding to 'secret' and *let out of the bag* as corresponding to 'reveal'. Hence it is easy to understand the passive on the analogy of a phrase *reveal the secret.* With (1) and (2) we can't draw on such a part-by-part analysis (*get angry, die*) and the passives are unacceptable. (Cf. the similar role of morphological transparency in the case discussed in Langendoen and Bever, 1973: *not unusual* vs. *not impotent.*) The second factor is the extent to which we are able to interpret the literal meaning metaphorically. For example, I find (3) better than (1) or (2) and I believe it is because I can imagine a literal taking of the cake as a concrete instance of receiving a prize. Note that it's much harder to interpret (3) on the basis of the much more common ironic usage of the phrase (*you really take the cake*). The fact that there is considerable fluctuation across speakers in judgments about such cases seems to me to indicate that we are dealing with factors affecting acceptability rather than out and out grammaticality. It also seems implausible to me that speakers' grammars might be distinguished by having a passive transformation in a strict or loose form, as suggested by Partee (1976), since we would then expect more uniformity. Each speaker would either accept all idioms or none, and that's not the case. (Partee also suggests that there should be a correlation with scope interpretations: loose-form speakers should also allow narrow scope interpretations for sentences like *A unicorn is believed to be approaching*, which I find implausible.)

5.2 *Double Passives*

We can usually get two passives with phrases like *take advantage, keep tabs on.*

5. No notice was taken of him.
6. He was taken notice of.
7. Unfair advantage was taken of him.
8. He was taken advantage of.
9. He was kept tabs on.
10. Close tabs were kept on him.

According to our previous decisions, we would have to postulate two sources. On the one hand, *keep tabs on, take notice of* would be transitive verbs (note: not transitive verb phrases fince we don't get **we*

took of him notice) to account for those cases where the independent NP is the subject of the passive (6), (8), (9). For the second passive we would have to say that *keep-on NP*, *take-of NP* are transitive verb phrases taking objects like *notice*, *tabs*, etc. Jespersen (MEG III: 316f.) and Visser ((Part III, 2): 2163)) both note that there is an interaction in the choice between the two constructions and the presence and nature of the modifiers on the "funny" nominal. On the other hand, the first type admits only a few possible modifiers such as *no*, *any*, etc., and the second sounds best when there is some modifier on the nominal. Here are some examples (drawn in part from Jespersen and Visser, who gives a good list of examples, 2164–76):

11. No enough attention is paid to this problem.
12. *This problem isn't paid enough attention to.
13. He was taken no notice of.
14. No notice was taken of him.
15. ?Notice was taken of him.
16. Nor shall any violent hands be laid upon anybody in my house. (Tom Jones, cited by Visser).

17. *Somebody was laid violent hands upon.
18. The proprietor's attention was called to the dangerous state of the staircase. (F. T. Wood, 1964, cited by Visser).
19. *This matter was called the proprietor's attention to.

There is a regular parallel in English to the second type of construction (i.e. where we analyse *call-to NP* as a transitive verb phrase taking a nominal with *attention* as object, for example):

20. They kept a record of the proceedings.
21. I took a picture of Bill.
22. A record was kept of the proceedings.
23. A picture was taken of Bill.
24. *Bill was taken a picture of.
25. *The proceedings were kept a record of.

(Cf. G. Horn, 1974). What I'm suggesting then is that *keeps tabs on* and the like may have a double analysis. It seems that when we use passives like *Great umbrage was taken at his remarks* or *Close tabs were kept on him* we understand or manufacture a meaning for the noun phrase in question and understand the sentences on the analogy of similar expressions with fairly clear meanings like *notice*, *attention*, *offence*, etc.

5.3 *Double-Object Verbs*

I am assuming, along with many linguists (Baker, (1977); Oehrle, (1975); Dowty, (1978), that sentences like (26) and (27) are not transformationally related.

26. I gave the book to Mary.
27. I gave Mary the book.

Rather, there are two lexical categories to which *give* may belong. The two are not co-extensive as shown by many well-known examples:

28. I envy you your poise.
29. *I envy your poise you.
30. She donated money to the hospital.
31. *She donated the hospital money.

In my framework, the two categories are these: TVP/NP; TV/to-NP or the like. This accounts for the two passives:

32. A book was given to Mary.
33. Mary was given a book.

Assuming this is correct, the grammar will predict that a passive like the following is ungrammatical, for dialects like mine:

34. *A book was given Mary.

For those dialects that allow (34), it would be necessary to analyze *give Mary* as a transitive verb phrase and provide some principle of explanation for blocking the syntactic operation called right-wrap. (Cf. fn. 4 above), to block (35):

35. *I gave a book Mary.

A so far unexplained fact is that "heavy NP shift" which can yield structures like that of (35) is impossible for the first NP with double-object verbs (Cf. Culicover and Wexler (1977), Baker (1977) for a discussion of an explanation in terms of a freezing principle).

36. *I gave the book one of the little kids that was staying after school.

This is true even for verbs that have no correspondent that can occur with a *to*-phrase.

37. *I envy his stature the guy who just made this basket.

5.4 *Propositional Verbs*

What are we to say about passives with *that*-clauses as subjects?

38. That the earth was round was believed by the Greeks.

There is an old argument that says that such sentences show that *that*-clauses are NP's (Rosenbaum, 1967). I believe that this conclusion is correct for the cases at hand but I will forego here a defense of this view. Thus I assign *believe, assert* to the category TV, *inform (of), tell* to the category TV/NP; *point out* also to the category TV/NP but with a different categorial structure:

[tell (that S)](NP) [point out (to NP)] that S

The following facts, as well as (38), follow without further comment.

39. That was asserted by Bill.
40. Bill was told that the earth is flat.
41. That the earth is flat was pointed out to Bill.
42. *That the earth is flat was told Bill.
43. *Bill was pointed out to that the earth is flat.
44. *The earth is believed (that) was flat by the Greeks.

5.5 *For-to Verbs*

I assume that there is a category of *for-to* phrases in the grammar and that some verbs, such as *want*, are categorized for them: IVP/For S. On this assumption, we will predict these facts.

45. *John is wanted (for) to go to the store.
46. *For John to go to the store is wanted by everyone.

To make this work, we need to assume that the rule for combining such verbs with their complements includes a subfunction for deleting *for*.

5.6 *Perception Verbs*

Verbs that occur with NP's and bare infinitives (Akmajian, 1977; Gee, 1977) don't have good passives.

47. *John was seen run to the store.

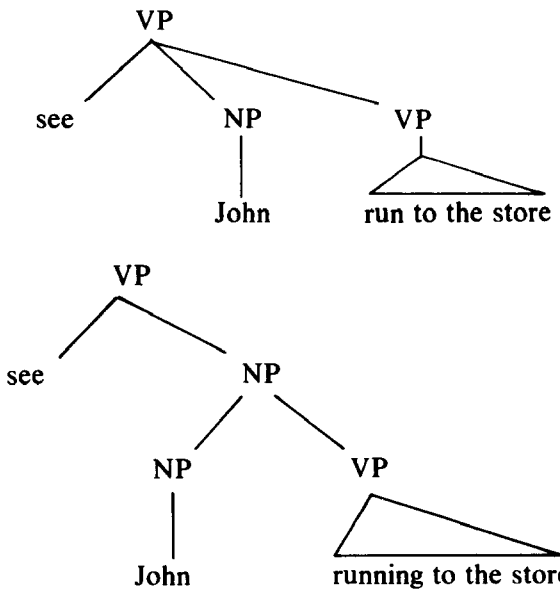
On the other hand, some verbs (partly the same) which occur with NP and Ing VP's can have two passives:

48. John was seen running to the store.
49. John running to the store was witnessed by everyone.

Finally, there are perception verbs that occur in passive structures with to-VP's that have no corresponding actives with *to*:

50. John was seen to go to the store.
51. *They saw John to go to the store.

(I'll return to these below, Section 5.7.)
Akmajian (1977) proposed these structures:



To account for passives like (48), he assumes the operation of an Extraposition rule which will give (optionally) a structure like (a) also for deep structures like (b). There are, however, verbs that take Ing VP's to make transitives:

52. We kept John running back and forth to the store.
53. John was kept running back and forth to the store.
54. *John running back and forth to the store was kept.

Rather than assuming a single source for such sentences, I prefer to assume a lexical relationship. Verbs which allow passives of the whole NP + Ing VP simply take NP's (if we follow Akmajian's analysis), while those which allow passives of the NP object alone are assigned to the category of *keep* (TVP/Ing VP). I have nothing to say here about the bare VP cases. If the complement isn't an NP (as Akmajian argues) then there'll be no passives. Alternatively, if we relax our requirement that there always be a strict binary function/argument structure to the

grammar, (i.e. if *see* is of the category IVP/NP, VP, then we will also expect no passives.

5.7 *Raising Verbs*

One of the principal arguments for a passive transformation has been based on sentences like these:

55. There was believed to have been a riot in the kitchen.
56. Someone believed there to have been a riot in the kitchen.

There is no way to account for these sentences in our analysis so far, unless we want to claim that *there* is a lexical NP and *believe to have been a riot* is a transitive verb like *persuade to go.* (Thomason (1976) does just this.)

Within the framework I'm exploring, which eschews ungrammatical sources for grammatical sentences, there are facts which show that we have to generate sentences like (55) directly without going through a step like (56):

56. John was said to be in Rome.
58. *They said John to be in Rome.
59. Mary is reputed to be a genius.
60. *People repute Mary to be a genius.
61. There was said to have been a riot in the kitchen.

Quite a few linguists have also argued that there is no transformational rule of *there*-insertion (e.g. Jenkins, 1975). Again, in our framework we are forced to say that at least some *there* sentences are directly generated, since they have no well-formed sources:

62. There's a problem with this solution.
63. *A problem is with this solution.
64. There's a knack to it. (Bresnan, 1978)
65. *A knack is to it/*a knack to it is.

A number of non-transformational accounts of there-sentences have been proposed. My preference is to generate *there*-sentences directly by a special rule or pair of rules and not assign any separate interpretation to *there* at all:[9] existential constructions are notoriously weird cross-linguistically and it seeems mistaken to try to assimilate them to regular patterns (cf. French *il y a*, German *es gibt*, Thai *mii*).

The examples in (57)–(61) show that we need to have items like *reputed, rumored, said* listed in the lexicon. What are they? None can stand alone:

66. *John was reputed/rumored/said.

The phrases in which they occur are PVP's:

67. ... The man reputed to have stolen the money...

So we might take them to be functions that make PVP's out of *to-VP's*; hence, they are interpreted as functions to sets (of e.g. individual concepts).

Further members of this class can be created by a lexical rule of the sort proposed by Dowty. The anomaly of perception verbs mentioned above is now explicable in terms of an idiosyncratic lexical relationship:

68. John was seen to have left.
69. *We saw John to have left/to leave.
70. We watched John leave.
71. *John was watched to have left/to leave.

In support of this idea is the fact that there is a meaning difference between sentences like (68) and the parallel sentences with bare infinitives. The cases that occur in PVP/to VP have a more "cognitive" or "epistemic" meaning; moreover, they have different restrictions on the auxiliary elements:

72. *I saw John have left.

Now we need to say something about "raising" verbs like *believe*. As with perception verbs, there are two possibilities: we could assume that such verbs take two arguments (IVP/NP, to VP) or if there is justification for it we could assume that there is a constituent of the form *NP to VP* (say, *to*-S) and let *believe* and other verbs appear in a category IVP/to-S.[10]

Finally, the rules for *there* must be formulated in such a way as to allow it to appear before *be* with the right kind of following constituents. I'll return to the problem of *there* after discussion of a further kind of verb.

5.7.1 *Subject-raising verbs*

Semantically, it would seem that we should treat verbs like *seem* as sentential operators (Wotschke, 1972, proposes just this). That is, the function/argument structure of (73) ought to be something like that given below (on the opaque reading):

73. A unicorn seems to be approaching $seem'(\phi)$

where ϕ is the proposition expressed by *a unicorn is approaching*. It is

difficult to capture this idea in the framework of PTQ. The problem is that if *seem to be approaching* is given the usual IVP interpretation, then the translation assigned to the sentence can be shown to be logically equivalent to this:

74. $\exists x[unicorn'(x) \,\&\, seem\text{-}to\text{-}be\ approaching'(x)]$

This difficulty is not unconnected to another one. In PTQ, Montague follows most tense-logicians in treating tenses (and aspects) as sentence level operators, as have other writers who have extended Montague's work to include the progressive (e.g. Dowty, 1977). This runs counter to the syntactic evidence, for it seems that at least the aspects (Perfect and Progressive), if not the tenses and modals are modifiers or specifiers on IVP's.

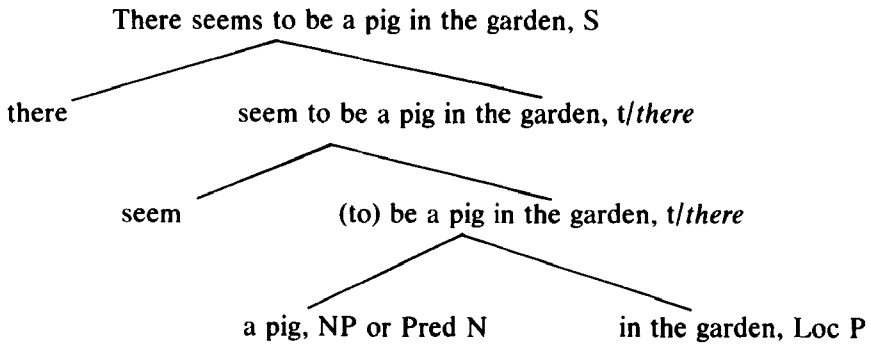
So far, I have followed PTQ in the assumption that subject NP's are functions taking IVP's as arguments. There is an alternative, which is followed by Montague himself in his paper "Universal Grammar" (1974: Paper 7), and argued for recently at some length in Keenan and Faltz (1978). That is to take IVP denotions not as lowest level predicate expressions (category: t/e; type $\langle\langle s, e\rangle t\rangle$) but as functions taking intensions of NP types as arguments to yield truth values (category: t/T, i.e. t/NP; type: $\langle\langle s, f(\text{NP})\rangle, \text{t}\rangle$). Keenan and Faltz also propose a quite general and elegant method for "getting down" to the extensional equivalents of such higher order functions. (Montague accomplishes somewhat the same result by meaning postulates, i.e. restrictions on the set of interpretations in "standard" models.) It seems that if we follow this approach, we can solve a number of problems at once. This move requires a wholesale reformulation of the categories of PTQ, but one which is quite straightforward.

Now, if IVP's are functions that take NP's as arguments, we are free to extend this sort of categorization to things that require various kinds of "funny" subjects to make sentences. The following suggestion does just that. (This is a first stab only – obviously, a real analysis would have to say something about the semantics of the constructions.) Let's allow our rules to create "funny" IVP's to match the "funny" subjects. Among them will be IVP's of these categories:

t/there: *be a pig, be a pig running down the street, be some beer available* . . .
t/it: *rain, snow*, . . .
t/the shit: *hit the fan*

Now we can distinquish between equi-verbs like *try* ((*t*/NP)/(*t*/NP)) and *seem* ((*t*/*X*)/(*t*/*X*) where *X* = NP, *it, there, the shit,...*).

The derivation of a *there* sentence with *seem* would proceed like this:



It is apparent that this opens the way to reanalysing *persuade* and *believe* in a parallel way: ((*t*/NP)/NP)/*to* (*t*/NP); ((*t*/NP)/*X*/to(*t*/*X*)), but I won't pursue this idea here.[11]

5.8 *Residue*

There remain a number of problematic cases, verbs that appear to take NP's and nothing else, yet seem to have unacceptable passives.

5.8.1 *Have*

75. Mary has a big house.
76. *A big house is had by Mary.

If *have* is in *Vt*, then it should have a passive and *a passive isn't had by it. *Have*-constructions show a lot of peculiarities in English and cross-linguistically (Bach, 1967). Although I would no longer maintain that *have* is inserted transformationally, it is still possible that it should be introduced by rule (syncategorematically). Our formulation of passive could never apply because *have* wouldn't be anything, so to speak, and hence not a *Vt*. My Roget (777) lists under "possession" these verbs: *possess, have, hold, occupy, enjoy, own, command*; (and with reversal of relationships) *belong to, appertain to, pertain to*. My judgments are these.

77. ?Two cars are possessed by the Jones's.
78. *Two cars are had by the Jones's.
79. Stock in this company is held by employees only.
80. The building is occupied by three companies.
81. Among Shakespeare's work, a peculiar place is occupied by *Hamlet*.

82. Good health is enjoyed by few coal miners.
83. This building is owned by Crime, Inc.
84. *John is belonged to by this dog.
85. ?This club is belonged to by the very best families.
86. ?(You are (ap)pertained to by this question.

(I leave out *command*, because I don't really use it in any relevant sense. Possibly, it's supposed to be as in *Mary commands great respect* where I can have a passive.) Example (77)–(83) seems to show that it's nothing about the meaning of *have* (if it has an independent meaning) that makes (76) so bad. Some people have claimed that *possess* and *own* don't passivize. I believe that that impression arises from sentences like these:

87. The Jones's possess a fine house – A fine house is possessed by the Jones's.
88. I own a Cadillac – A Cadillac is owned by me.

It seems as if the passive here requires a shift in the specificity of the indefinite NP (which can be explained by the fact that subject position here is extensional). Examples (84)–(86) might be treated in a way parallel to the suggested analysis of *teem*, that is *belong* etc. take *to-NP* phrases (or Datives). On the other hand, there's more to be said about the synonyms of *(ap)pertain (to)*: *bear(on)*, *touch*, *relate (to)*, *apply (to)*, etc., but I'll not try to say anything about this here.

5.8.2 *Resemble*

89. ?Bill is resembled by John.

The status of that sentence is unclear. It seems to me that it isn't like the crashingly bad examples we've looked at so far. (Lakoff and Peters (1969) handled such verbs by positing a rule of conjunct movement and using rule ordering.) One possibility is that such verbs are all genuine transitive verbs, and that the unacceptability of the passive is not part of the grammar but arises for other reasons. We can say generally about such symmetric verbs that they obey a meaning postulate like this:

$$\forall x \forall y [V'(x, y) \leftrightarrow V'(y, x)]$$

Because of this one might expect that there would never be any reason to use the passive when both NP's are equal in definiteness, etc. It's already well-known that passives are uncomfortable when the subject is indefinite (vaguely = non-referring). Hence, *An elephant is resembled by John* would be funny on two counts, but the following sentence cited by Jespersen (MEG III: 300) isn't so bad:

In the result of this peculiarity Othello is resembled only by Anthony and Cleopatra.

What's emerged in the last section and this one is a distinction between two sorts of cases. First, there are absolutely out passives as with *promise, strike, weigh, teem with, become, have.* These have been handled by saying that those verbs simply are not transitive verbs, and we've been pretty successful in finding independent support for this view. Second, there are verbs like *resemble, possess, marry, own* where the passives seem questionable but where we can often choose a proper (i.e. specific) subject and get better results. I've suggested that these really are transitive verbs and that the unacceptability or oddity of these passives is to be explained on other grounds, specificity of subject, the role of the meaning postulate for reciprocal verbs, or the like. No doubt there are other factors, for example, the "empathy" phenomena discussed by Kuno and Kaburaki (1977). The treatment here thus makes a distinction between ungrammatical passives (the first sort) and unacceptable passives. Perhaps, some will object to calling the first sort ungrammatical rather than semantically anomalous, since the classes we've set up have a semantic basis, in many cases at least.

5.8.3 *The kids were promised to be allowed to go to Disneyland*

Plank (1976) and others have noted the difficulty raised by sentences like the above. I have no non-ad-hoc solution to this problem.

5.9 *Semantic Problems*

So far I've followed common assumptions about the semantics of passives. Agentless passives have been given interpretations that boil down to this: $\lambda x \exists y[\mathrm{TVP}'(x)(y)]$; Agentive passives have this kind of interpretation: $\lambda x[\mathrm{TVP}'(x)(c)]$ where c is some constant agent phrase (with a fancier interpretation for quantified NP's as agents).[12] There are problems about these assumptions which I want to mention before concluding.

To take the agentless passive first, sometimes it seems as if the interpretation is claiming too much, sometimes too little. A case of the first sort is this:

90. John was killed instantly in the crash.

In our interpretation, this means that there exists some entity (individual concept) that killed John. Even though we can cast our net very widely

when we set up our domain of individuals, I have lingering doubts about the metaphysical assumptions of this analysis.

The second worry can be illustrated by the following sentences. According to our analysis (91) entails (92):

91. Mary admires John.
92. John is admired.

This seems not to be making strong enough claims about (92).

Finally, it would be nice if we could formulate passives in such a way that agentive phrases could be added to PVP's. One way to do this would be to use a distinguished variable in the passive rule and then "catch it" with an agent rule that would add a *by*-phrase.[13] One thing is sure, however, and that is that Bresnan's interpretation of agentive *by*-phrases can't be correct; it is essentially this:

$$\lambda x \exists y[V'(y)(x) \;\&\; x = \mathrm{NP}']$$

This fails for cases involving agent-phrases like *by everyone, by no one.* It is possible that a good analysis of the natural language notion of direct agentivity would make it possible to capture the facts about agentive passives in a better way.

Appendix: Summary of Suggested Analyses

I repeat here, with some amplification, the suggested classification of verbs from this paper. The analysis presupposes a PTQ-like syntax, in which every category is either a function or an argument but I include a number of categories where I am not at all sure about the correct syntactic/semantic classification. In *A* I summarize the categories that enter into the classification, in *B* I give lists of basic verbal categories. A common thread that runs through the analyses is this: a number of categories have a basic use as the function of a function/argument structure, but can themselves act as arguments for verbs (this would correspond to strict subcategorization). Indeed, NP's are just like this in PTQ: they are interpreted as sets of properties and act as functions from properties to truth values in subject position; but transitive verbs take noun-phrases as arguments to form intransitive verb phrases. I do not follow the UG-Keenan-Faltz reanalysis of Section 5.7.1 here.

A. Basic Categories

The following categories are adopted from PTQ:

Category used here	Montague's category	basic example
S	t	(none)
IVP	t/e	*walk, run, exist*
CNP	t/e	*woman, fish*
TVP	$(t/e)/(t/(t/e))$	*hit, kiss, love*
NP	$t/(t/e)\,(T)$	*Mary, Chicago, he*$_i$
AvS	t/t	*necessarily*
AvV	$(t/e)/(t/e)$ IAV	*slowly, cleverly, well*
Vthat	$(t/e)/t$	*believe, say*
Vto	$(t/e)//(t/e)$	*wish, try*

PTQ has one other category (Prep) but includes only prepositions that make AvV's from NP's. I'll distinguish a number of different types below.

New Categories	Possible analysis	
PredA	$t///e$	*big, intelligent, open, ajar, present,* (M. Siegel, 1976)
PredN	$t////e$	*fun*

I assume that most examples of predicate nominals are derived from NP's (or CNP's).

PredL	$t/////e$	*here, there*
PredS	$t//////e$	(none)

There are phrases of the form *for John to read.* (I believe their primary category is that of purpose clauses and that they are ad-transitive verb adverbials, a category not used in PTQ but in another paper of Montague's (EFL: Paper 6 in 1974).

PredVing $t/^{\prime}e$ *running* (participial forms)

(these are derived forms of the form *Ving X*).

A surprising number of categories can occur in predicative constructions with *be*. Yet we can't lump them together since different verbs subcategorize them differently (see below). All except PredN can occur

as modifiers of common nouns also (Siegel, 1976, argues that there must be two distinct categories of adjectives, $t///e$ and CN/CN).

PredVto	$t/^{\$}e$	phrases of the form to VP′ where VP′ comes from VP′ by deletion of an NP variable

LocP is identical as far as I can see to PredL above, but in adverbial use. Here and throughout the task of further research would be to figure out which use is primary and which secondary. LocP function at least as AvV's and possible also as transitive adverbials (i.e. TV/TV).

DirP	$(t/e)///(t/e)$?	*away, off*
DurP	$(t/e)////(t/e)$?	*long*, (*three days*, etc.)
ScalP	AdjP/AdjP?	(*in* NP)
MeasP	?	*much, a lot,...*
PartP	CN//CN?	(*of wood*)
ContP	AdjP/AdjP?	(*with* NP)

Prepositions are subdivided according to the resultant phrase they form (e.g. LocPrep: *in, on, at,...*). Prepositional phrases can also arise by being attached to an NP but forming part of a transitive (or other) verb, as in *rely on*. Further, I believe that there is a third type of prepositional phrase, which is semantically simply an NP, but syntactically distinct. These correspond to the things like indirect objects, and involve the most case-like uses of prepositions. Among these last I would include these at least:

NPto	$t//(t/e)$	(to NP)
NPfor	$t///(t/e)$	(for NP)

It is possible that some of the phrase types set up above should be handled in this way instead (e.g. ScalP, PartP, etc.).

B. Some Verb Lists

Simple intransitives:

> *walk, run, fly, exist,...* (also lexically derived verbs like *eat, read,...*)

Simple transitives:

IVP/NP (TV)	*love, date, kiss, resemble, weigh* (*weigh the meat*); *rely on* (possible more basically *rely on to VP*), *laugh at, look at, look over,...*

Lexically complex:

> *put to the test*, etc., *take advantage of, keep tabs on*

Complex intransitives (i.e. verbs of category NP/X, where $X \neq$ NP):

IVP/PredA	*be, become, grow, get, turn, . . .*	(*turn hot*)
IVP/PredN	*be, become, turn into, make*	(*become director*)
IVP/LocP	*be, remain, stay, . . .*	(*stay in town*)
IVP/PredS	*be, remain*	(*remain for you to do*)
IVP/PredVing	*fall into*	(*fall into sleeping late*)
IVP/PredVto	*serve, (will do)*	(*serve to send to China*)
IVP/DirP	*go, come, . . .*	(*go to the store*)
IVP/DurP	*last*	(*last three hours*)
IVP/ScalP	*abound*	(*abound in natural resources*)
IVP/MeasP	*weigh, measure, add up to, . . .*	(*weigh three pounds*)
IVP/PartP	*consist*	(*consist of water*)
IVP/ContP	*teem* (lexically derived *dance* etc.)	(*teem with fish*)
IVP/to VP	*try, wish*	(*try to go*)
IVP/AvV	*behave, act*	(*behave badly*)
IVP/NPto	*pertain*	(*pertain to explanatory adequacy*)
IVP/NPfor	*serve, do*	(*serve for a start*)

In addition, if there are phrase types of the form *for NP to VP*, *NP VP*, and *NP to VP*, then we have also:

IVP/for NP to VP	*want, hope (for), intend*	(*intend for John to go*)
IVP/NPVP	*see, hear*	(*see Mary run*)
IVP/NP to VP	*believe, claim*	(*believe John to be an idiot*)

Complex transitives (i.e. verbs of category (IVP/NP)/X; I'll just list by the X):

TVP/:

PredA	*consider, paint, regard as*	(*paint it red*)
PredN	*consider, regard as*	(*consider him my friend*)
LocP	*keep, store*	(*keep them in the basement*)
PredS	*choose, select*	(*choose it for Mary to read*)
PredVing	*keep, observe, talk into*	(*talk her into leaving*)
PredVto	*use*	(*use the knife to slice the salami with*)
DirP	*send, put, take*	(*put it away*)
DurP	*extend, rent for*	(*extend the meeting three weeks*)
ScalP	*surpass, equal*	(*surpass him in intelligence*)
MeasP	*estimate at, reckon at, charge*	(*charge him three dollars*)
PartP	*make*	(*make a chair (out) of these materials*)
ContP	*fill, supply, load*	(*supply them with stuff*)
to VP	*persuade, force, cause*	(*force him to confess*)
AvV	*word, treat*	(*treat him well*)
NP	*give, envy, teach*	(*give him a book*)
NPto	*give, explain, donate*	(*give a book to him*)
NPfor	*exchange, substitute, take*	(*exchange this for that*)

Complex intransitives (i.e. verbs of the form $(IVP/X)/Y$ where $X \neq NP$).

for Y = NP, and X =

PredA	*strike as*	(*strike me as incompetent*)
PredN	*make*	(*make us a good chairperson*)
DirP	*take, ride*	(*take the subway to Manhattan*; gratia David Dowty)
DurP	*last*	(*last us three weeks*)
ScalP	*resemble*	(*resemble Mary in the length of his hair*)
MeasP	*cost*	(*cost me three dollars*)
VP	*promise, vow to*(?)	(*promise Mary to go*)
AvV	*impress*	(*impress me favorably*)
NPto	*make (sense)*(?)	(*make sense to me*)
NPfor	*serve*	(*serve us for a diversion*)

University of Massachusetts,
Amherst

NOTES

[1] Throughout this paper I follow Wasow, 1977, in assuming that there is a lexical process for deriving adjectives from past participles of verbs; on the whole I am concerned only with non-adjectival constructions.

[2] I wish to acknowledge here my indebtedness to Visser. Many of the examples and even analyses were gleaned from a perusal of his monumental work. I am also grateful to David Dowty, Steven Lapointe, Debbie Nanni, Barbara H. Partee and two anonymous reviewers for *Linguistics and Philosophy* for suggestions and critical comment.

[3] Here m and j stand for individual level constants, "^" marks the intension of the following expression, "ˇ" the extension of the following intensional expression. *Mary* is interpreted as the set of properties that the individual concept of Mary (m) has. P and Q are property type variables, x, y individual concept type variables. The transitive verb *love* denotes a function from intensions of NP-type things (i.e., sets of properties) to sets of individual concepts. The intransitive verb phrase *love John* denotes a set of individual concepts. Thus the whole formula says that the property of loving John is in Mary's property set. Occasionally, for perspicuity I will use or add simpler indications of the interpretation of English expressions which dispense with Montague's complicated NP-interpretations and treat verbs as functions on individual concepts directly: for example, (6) would be translated thus: *love'*(m, j).

[4] In Bach, (forthcoming), I define a particular subfunction to be called for various rules ("right-wrap"):

$$\text{RWRAP}(x, y) = x_1\ y\ x_2 \text{ where } x \text{ has the form } [_{XP} x_1\ x_2]$$
$$= x\ y \text{ otherwise}$$

The rule for combining transitive verbs with their objects makes use of this subfunction.

[5] More precisely, *promise to go* does exist but only as an intransitive verb phrase, presumably via a lexical rule corresponding to NP deletion, cf. Dowty, forthcoming.

[6] Wasow, 1977, proposes a mixed theory in which along with a lexical rule for adjectival participles there is a sentence transformations of the standard sort. The arguments of Section 2 above apply to the transformational version in that paper. In Wasow, 1978, a distinction is drawn between two types of lexical relationships, those making reference to

syntactic subcategorizations and those making references to thematic relations like Agent, Goal, and the like.

[7] The reason that it is impossible to reconstruct the notion of transitive verb (phrase) in current approaches to transformational grammar in terms of syntactic subcategorizations is that the latter are fully determined by the set of phrase structure environments (which for verbs like *strike* and *regard* are identical).

[8] In a paper in progress devoted to questions of "free" control especially in purpose clauses I give arguments that the suggested analysis is to be preferred over alternatives. It should be noted that not all transitives make sense with purpose clauses. Further, iteration of purpose clauses (as opposed to iteration within purpose clauses) can be ruled out on grounds of "English metaphysics."

[9] I follow Michael Rochemont (1978) in assuming that there are two sources for *there*, one as sketched here (limited to *be*); one a "stylistic rule." I have nothing to say about the stylistic rule here. I suspect that *there* sentences in which the subject NP follows the PVP arise by the stylistic rule.

[10] Cf. Dowty, forthcoming, for suggestions about the lexical relationships that obtain among the various uses of verbs like *believe* and *seem*.

[11] It's apparent that the treatment of this section is an exact analogue within a categorial system of Bresnan's use of functional rules to assign NP's from lower clauses to subject or object position for verbs like *seem* and *believe*.

[12] The reanalysis of Section 5.7.1 requires, of course, a change in the translation of passives. Keenan and Faltz, 1978, give a direct interpretation to passives which requires that the subject always have wider scope than the existentially bound variable. If this is right, then the translation of an agentless passive, in our framework, would have to be this:

$$\lambda\mathcal{P}\mathcal{P}\{\hat{y}[\exists x[\gamma'(\hat{}\lambda P\ \ P(y))](x)]\}$$

[13] Ivan Sag (personal communication) is working on an analysis involving a so-called "discourse" variable.

REFERENCES

Ajdukiewicz, Kazimierz: 1935, 'Die syntaktische Konnexität', *Studia Philosophica* 2, 1–27. (Appears in English translation in Storrs McCall (ed.), *Polish Logic*, Oxford: University Press, 1967.

Akmajian, Adrian: 1977, 'The complement structures of perception verbs in an autonomous syntax framework', in Culicover, Wasow, and Akmajian (eds.), 1977.

Anderson, John M.: 1971, 'The grammar of case', Cambridge, Cambridge Univ. Press.

Aronoff, Mark: 1976, 'Word formation in generative grammar', *Linguistic Inquiry Monograph* 1, Cambridge, MA.

Bach, Emmon: 1967, '*Have* and *be* in English syntax', *Language* 43, 462–485.

Bach, Emmon: 1977, 'Review Article: *On Raising*: one rule of English grammar and its theoretical implications, by Paul M. Postal, Cambridge, Mass.: MIT Press, 1974', *Language* 53, 621–653.

Bach, Emmon: (forthcoming), 'Control in Mongague grammar', (to appear in *Linguistic Inquiry*).

Baker, C.L.: 1977, 'Comments on the paper by Culicover and Wexler', in Culicover, Wasow, and Akmajian (eds.), 1977.

Brame, Michael: 1976, *Conjectures and Refutations in Syntax and Semantics*, New York, Amsterdam: North-Holland.

Brame, Michael: 1978, *Base-generated Syntax*, Seattle: Noit Amrofer Press.

Bresnan, Joan: 1978, 'A realistic transformational grammar', in Morris Halle, Joan Bresnan, and George A. Miller (eds.), *Linguistic Theory and Psychological Reality*, Cambridge, Mass: MIT Press.

Carlson, Gregory N.: 1977, 'A unified analysis of the English bare plural', *Linguistics and Philosophy* **1**, 413–458.

Chomsky, Noam: (1957), *Syntactic Structures*, The Hague: Mouton.

Chomsky, Noam: 1965, *Aspects of the Theory of Syntax*, Cambridge, Mass.: MIT Press.

Cooper, Robin: (1977), 'Review article; R. Montague, *Formal Philosophy*, ed. R. Thomason, New Haven: 1974, *Language* **53**, 895–910.

Culicover, Peter W., Thomas Wasow, and Adrian Akmajian (eds.): 1977, *Formal Syntax*, Proceedings of the 1976 Conference at Irvine, New York: Academic Press.

Culicover, Peter W. and Kenneth Wexler: 1977, 'Some syntactic implications of a theory of language learnability', in P. W. Culicover, T. Wasow, and A. Akmajian (eds.), *Formal Syntax*, New York.

Dowty, David: 1976, 'Montague grammar and the lexical decomposition of verbs', in Barbara H. Partee (ed.), *Montague Grammar*, New York: Academic Press.

Dowty, David: 1979, 'Dative "movement" and Thomason's extensions of Montague Grammar', (Paper given at 1977 Albany conferences on Montague Grammar, to appear in Proceedings.)

Dowty, David: 1978) 'Governed transformations as lexical rules in a Montague grammar', *Linguistic Inquiry* **9**, 393–426.

Faraci, Robert A.: 1974, 'Aspects of the grammar of infinitives and FOR-phrases', Unpublished MIT dissertation.

Fillmore, Charles J.: 1963, 'The position of embedding transformations in a grammar', *Word* **19**, 208–231.

Fillmore, Charles J.: 1968, 'The case for case', in Emmon Bach and Robert T. Harms (eds.), *Universals in Linguistic Theory*, New York: Holt, Rinehart, Winston.

Freidin, Robert: 1975, 'The analysis of passives', *Language* **51**, 384–405.

Gee, James Paul: 1977, 'Comments on the paper by Akmajian', in Culicover, Wasow, and Akmajian (eds.), 1977.

Hall, Barbara: 1965, 'Subject and object in English', unpublished doctoral dissertation, MIT.

Halvorsen, Per Kristian and William A. Ladusaw: 1979, 'Montague's "Universal Grammar": an introduction for the linguist', *Linguistics and Philosophy* **3**: 000–000.

Higgins, F.R.: 1974, 'The pseudo-cleft construction', unpublished doctoral dissertation, MIT.

Horn, George: 1974, 'The noun phrase constraint', unpublished doctoral dissertation, University of Massachusetts, Amherst.

Jackendoff, Ray: 1976, 'Toward an explanatory semantic representation', *Linguistic Inquiry* **7**, 89–150.

Jenkins, Lyle: 1975, 'The English existential', *Linguistische Arbeiten* **12**, Tübingen: Max Niemeyer Verlag.

Jespersen, Otto: *MEG. A Modern English Grammar on Historical Principles*, London: Allen and Unwin (reprinted 1954–1961).

Keenan, Edward L. and Leonard M. Faltz: 1978, 'Logical types for natural language', *UCLA Occasional Papers in Linguistics* 3.

Kuno, Susumu and tsuko Kaburaki: 1977, 'Empathy and syntax', *Linguistic Inquiry* **8** 627–672.

Lakoff, George: 1965, 'On the nature of syntactic irregularity', The Computation Laboratory of Harvard University Mathematical Linguistics and Automatic Translation, Report No. NSF-17 (Reprinted 1970, New York).

Lakoff, George and Stanley Peters: 1969, 'Phrasal conjunction and symmetric predicates', in D. A. Reibel and S. A. Schane (eds.), *Modern Studies in English* (Englewood Cliffs).

Langendoen, D. Terence and Thomas G. Bever: 1973, 'Can a not unhappy person be called a not sad one?' in S. R. Anderson and P. Kiparsky (eds.), *A Festschrift for Morris Halle* (New York).

Lees, Robert B.: 1960, 'The grammar of English nominalizations', Bloomington, Indiana.
Montague, Richard: 1974, *Formal Philosophy*, ed. by Richard Thomason, New Haven: Yale Univ. Press.
Partee, Barbara: 1975, 'Montague grammar and transformational grammar', *Linguistic Inquiry* **6**, 203–300.
Partee, Barbara: 1976, [1973], 'Some transformational extensions of Montague grammar', in B. H. Partee (ed.), *Montague Grammar* (New York: Academic Press).
Perlmutter, David M.: 1978, 'Empirical evidence distinguishing some current approaches to syntax', Paper delivered at the Winter Meeting of the LSA (Boston).
Perlmutter, David M. and Paul M. Postal: (forthcoming), 'The 1-advancement exclusiveness law', to appear in David M. Perlmutter (ed.), *Studies in Relational Grammar.*
Plank, Frans: 1976, 'Misunderstanding understood subjects: The minimal distance principle in Montague Grammar', Amsterdam Papers in Formal Grammar **1**, 194–216.
Robson, R.A.: 1972, 'On the generation of passive constructions in English, unpublished doctoral dissertation, University of Texas, Austin.
Rochemont, Michael S.: 1978, 'A theory of stylistic rules in English', University of Massachusetts, Amherst, Ph.D. dissertation.
Siegel, Muffy: 1976, 'Capturing the adjective', unpublished doctoral dissertation, University of Massachusetts, Amherst.
Thomason, Richmond H.: 1976, 'Some extensions of Montague grammar', in Partee (ed.), 1976.
Visser, F. Th.: 1963–73, 'An historical syntax of the English language', Leiden: E. J. Brill.
Wasow, Thomas: 1977, 'Transformations and the lexicon', in P. W. Culicover, Thomas Wasow, and Adrian Akmajian (eds.), *Formal Syntax*, New York, et al.
Wasow, Thomas: 1978, 'Remarks on processing constraints and the lexicon', *TINLAP* **2**, 247–251.
Williams, Edwin: 1978, 'Across-the-board rule application', *Linguistic Inquiry* **9**, 31–43.
Wood, F.: 1964, 'English verbal idioms', London: Macmillan and Co.
Wotschke, Eva-Maria M.: 1972, Complementation in Montague Grammar, in R. Rodman (ed.), *Papers in Montague Grammar* (UCLA Occasional Papers 2).