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*edited by*

*Jeroen Groenendijk*

*and*

*Martin Stokhof*

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# MISUNDERSTANDING UNDERSTOOD SUBJECTS: THE MINIMAL DISTANCE PRINCIPLE IN MONTAGUE GRAMMAR

Frans Plank (University of Edinburgh)

## 1. Introduction

The aim of this contribution is to review two attempts at solving the 'control problem' (term from Postal 1970) that have recently been made within the framework of Montague grammar, Partee (1975a) and Thomason (1974a). As its intention is essentially a critical one, it might incur blame for criticising without proposing something better. Undeservedly, it seems to me; for not only do I find such largely negative criticism quite worth while in general and especially at the present stage of the development of Montague grammar, I also hope that something better than the 'solutions' under review is indeed being offered here, viz. some clarification of the nature of the control problem.

In conformity with the fragment-constructing and expanding methodology familiar from Montague grammar, the following pair of English sentences ought to suffice as an empirical point of departure.

(1) The Queen promised the dean to eat sardines.

(2) The Queen permitted the dean to eat sardines.

Despite the apparent surface-structural parallelism, (1)-(2) constitutes a minimal pair, which is brought out clearly by such superficially more explicit paraphrases as (1') and (2').

(1') The Queen said to/promised the dean something, viz. that she, the Queen, would eat sardines.

(2') The Queen said to/permitted the dean something, viz. that he, the dean, could eat sardines.

In (1) it is the matrix subject, and in (2) the matrix object, that is interpreted as 'coreferential' with the understood (underlying, according to a deletion approach) subject of the infinitival complement. A minimal criterion for any alleged solution of the control problem, therefore, is whether it can provide a description and an explanation of the different identity relations in (1)-(2) and similar constructions. (1') and (2')

also expose different modal interpretations of the infinitives in (1)-(2), which distinctive feature has lead Postal (1970) to suggest that the identification of understood complement subjects is contingent upon modal constraints imposed by certain matrix verbs. The overall explanatory value of such a correlation would merit closer scrutiny, but here it is more appropriate to begin with delineating a more comprehensive frame of reference for the ensuing discussion. In my opinion, these are fundamental parameters of understood-subject identification:

- a) What is the rôle of (the meaning of) matrix verbs?
- b) Does the restructuring of matrix and complement clauses (e.g. by means of passivisation) exert any influence?
- c) What is language-specific and what universally invariant about solving the control problem?

Other questions, which can only be touched upon more or less in passing, if at all, concern the contribution of semantic features of the complement clause, the relation between infinitival and gerundial complements, between complement and non-complement constructions (such as adverbial infinitives or participial clauses), and the contingency of understood-subject identification upon pronominalisation. All these questions serve to reveal the contours of the control problem; and all of them have to be answered by a genuine solution, either explicitly or by implication. Limitations of the scope of the present paper should not be taken to reflect the relative significance of individual concomitants of the control problem; it should become clear, however, that a 'solution' that merely 'works' as far as the description of a fragment of English consisting of (1)-(2) is concerned, may yet fall short of justifiably more exacting expectations.

In trying to find out how the two Montague-grammar solutions available fare on these criteria, some attention will be focused upon three issues: firstly, the internal soundness of their argumentation; secondly, the actual relationship to the one particular ready-made transformational solution they wish to model themselves after, Rosenbaum's (1967; 1970) Minimal Distance Principle (henceforth: MDP); and thirdly, the empirical status of some basic premises of both the MDP and its purported Montague-grammar analogues.

## 2. The Starred-Variable Convention

According to Partee (1975a), who closely follows the lead of Montague (1974a), subjectless infinitival verb phrase complements are of the same syntactic category (viz. IV = t/e) and semantic type as ordinary intransitive verb phrases. They are governed by such matrix verbs of category IV//IV as try to and wish to. It was not without reason, however, that most transformational accounts had sought to associate infinitival complements with the category of sentences. If the former are derived from the latter, the agreement of reflexive pronouns, for instance, naturally follows from the purported generalisation that reflexivisation (in English) operates within clause boundaries, upon the further condition, of course, that complement subject deletion does not precede reflexivisation:

- (3)a. Mr Heath tries (to) [Mr Heath pleases himself/\*herself/\*themselves]  
 b. Mr Heath tries to please himself/\*herself/\*themselves.

For similar reasons Partee wants to improve upon Montague's (1974a) original grammar fragment, which does not generate such complements as in (3b), by also deriving IV-phrases from t-phrases (sentences or formulae). (4) exemplifies Partee's (1975a:265) syntactic rule of subject-variable deletion and antecedentless-pronoun starring and the concomitant addition of an abstraction operator to the formula in the translation into intensional logic.<sup>1</sup>

- (4)  $F_{21,0}(\text{he}_0 \text{ pleases him}_0 \text{ self}) = \text{please him}^* \text{self}$   
 translation (simplified):  $\lambda x_0 \text{ please}'(x_0, x_0)$

A 'syntactic metarule' (Partee 1975a:266) then guarantees the appropriate surface gender form of pronouns previously represented by starred variables:

- (5) Whenever any syntactic rule applies to two (or more) arguments such that one is a T-phrase and one contains a starred variable, replace all occurrences of the starred variable by pronouns of the appropriate gender.

To return to (3b), after try to has been combined with the derived IV please him\*self, the subject term Mr Heath (category t/IV) combines with the complex IV-phrase try to please him\*self, at which stage convention (5) ensures the desired gender agreement of the reflexive pronoun.

One apparent drawback of Partee's analysis could be disregarded at least by those who do not mind the availability of constructional ambiguities without semantic consequences, viz. the indeterminacy as to which IV-phrases are directly generated in categorial syntax and which ones are t-

derived. What is more important is that (5) lacks any semantic consequences; if there is no starred variable, as in (6), nothing at all happens.

(6) Mr Heath wishes to stay/please Mrs Keith.

Semantically all IV-phrases alike are said to designate properties, and matrix IV//IV-verbs, roughly, relations between individuals and these properties. Even without overt clues due to the operation of (5), there *prima facie* is not much of a choice, then, as to who is to be the bearer of the properties of staying or pleasing Mrs Keith if Mr Heath's wishes should come true; of course Mr Heath himself. Partee's analysis seems to suggest that this is so by default: the matrix subject is after all the only T-phrase present in the matrix clause. This reliance upon manifest T-phrases, however, presents difficulties as soon as such IV//IV-matrix verbs as advise, advocate, recommend, propose and say are taken into account. Convention (5) certainly yields wrong results, whereas the right ones are sometimes more delicate to determine:

- (7)a. I don't advocate/advise pleasing \*myself/oneself/yourselves/ourselves.
- b. The Queen said to stay here until 9 pm and to enjoy \*herself/?oneself/?yourselves/?ourselves.
- c. The Queen proposed to please herself/?themselves/?oneself/?ourselves.

Although it could conceivably be argued, on the surface analogy with try to and wish to in (3b) and (6), that advise, say etc. are also to be interpreted as relations between individuals, denoted by the matrix subjects, and properties, these advising, commanding, proposing individuals are not (necessarily, cf. 7c) identical with the understood complement subjects.

Secondly, the default option would also seem to be precluded in a configuration with two matrix T-phrases, as in the minimal pair (1)-(2), where in the presence of a starred variable convention (5) could potentially get more than one chance to apply. But upon a suggestion of Thomason's, details of which will be discussed in §3, Partee assigns basic verbs like permit to to the category TV/IV, and verbs like promise to to (IV//IV)/T, which guarantees the appropriate agreement of reflexives by exploiting the differently ordered combinatory steps, as construction trees (8) and (9) illustrate.

- (8) the Queen permits the dean to please himself, t  
 the Queen, T      permit the dean to please himself, IV      (5 applies here)  
                          permit to please him\*self, TV      the dean, T  
                          permit to, TV/IV      please him\*self, IV

(9) the Queen promises the dean to please herself, t  
 the Queen, T      promise the dean to please him\*self, IV (5 applies here)  
                     promise the dean to, IV//IV      please him\*self, IV  
                     promise to, (IV//IV)/T      the dean, T

What is less obvious is whether the different orders of T introduction induced by different matrix-verb categories do have any semantic repercussions, irrespective of the lexical meaning of these matrix verbs. Is there a way to infer from (8) that the dean is going to be the bearer of the property of pleasing himself if the Queen's permit is taken advantage of, and from (9), that the property of pleasing herself will have to be ascribed to the Queen if her promise is kept? According to Partee (1975a: 266) apparently not, since no further semantic need is recognised to keep track of the free variables of the underlying complement clause (or formula) after the abstraction operator has bound them (cf. 4). In the intensional-logic translation of (8) and (9), this abstraction operator cannot possibly be eliminated by means of lambda conversion as there are no arguments belonging to the lambda expressions. Constructional syntactic disparities notwithstanding, the property designated by the complement can not be linked with the appropriate individual, because apart from the surface phenomenon of reflexive-agreement there is no semantically relevant interrelation or interaction (e.g. lambda convertibility or variable identity) between the complement and the expression that contains it as a constituent part, according to Partee's analysis. For this reason it presumably has to be due to the lexical content of the matrix verbs promise to and permit to, rather than due to their syntactic categories, that the identity of understood complement subjects can be recovered. That the crucial point is indeed the conceptual understanding of what a promise or a permit is, seems to be confirmed by the corresponding nominalisations:

(10) Mr Heath's permit to please \*himself/herself surprised Mrs Keith.

(11) Mr Heath's promise to please himself/\*herself surprised Mrs Keith.

Here permit and promise are no longer verbs, and the order of independent T-phrase introduction certainly fails to associate the understood subject with Mrs Keith in (10); nevertheless, (10)-(11) is entirely parallel to (8)-(9) with respect to understood-subject identity and also reflexive-agreement.

In conclusion of this section, I would like to draw attention to a distinction that Partee (1975a:213 Fn.14) has emphasised in another con-

text, but that is highly pertinent also to the control problem:

It is necessary, though extremely difficult, to make a careful distinction between semantic properties of constructions and semantic properties of individual lexical items. For instance, in order to argue that the different semantic properties of persuade and expect in NP+infinitive constructions involve two different syntactic constructions, it is necessary to show that the differences cannot be attributed simply to the difference in meaning of persuade and expect.

If it should turn out that the control problem can be successfully approached on the basis of the meaning of individual, or groups of, lexical items, stronger and independent evidence is required to support the categorial-syntactic distinction advocated by Partee (and also Thomason), if, that is to say, such a distinction is at all necessary any longer. Within Partee's own framework, it at least does not evidently contribute to a solution of the semantic aspect of the control problem.

### 3. The Principle of Immediate Variable Binding

A brief sketch of G. Bech's (1955) early treatment of the control problem forms a convenient transition to the assessment of Thomason's (1974a) proposal. Like Partee, Bech (1955:31-42) observes that there may be overt distributional reflexes of an otherwise covert, though intuitively recognised, difference, reflexivisation in the complement thus being a kind of operational test to help expose it. Certain co-occurrence restrictions between (understood) subjects and predicates can be utilised similarly:

(12) The Queen \*promised/permited the deans to meet.

But unlike Partee, who exclusively deals with these superficial regularities (by means of convention (5)), Bech (1955:82-5) recognises them as epiphenomena and introduces the genuinely semantically motivated concept of 'orientation' of the infinitive or participle as a conditioning factor. This orientation, i.e. the anaphoric linking of understood subjects to matrix or other term phrases, is to be determined by a separate set of general identification or sort of coreference-assignment rules that mainly hinge upon a characteristic feature of matrix verbs; viz. the dative or accusative case specification of the object governed by them.<sup>2</sup> What is important to realise is that the necessity of such semantically relevant rules is acknowledged by Bech; as they stand, the rules themselves clearly

are empirically deficient, or have 'exceptions'. Contrary to Bech's orientation rule no. 4, for instance, dative matrix objects need not necessarily be the term phrase understood complement subjects are referentially orientated towards:

(13)(=2) Die Königin versprach dem Dekan (DAT), Sardinien zu essen.

Moreover, as morphological case frames of verbs in German are to a considerable extent idiosyncratic and unpredictable, such rules may still fail to reveal a deeper semantic generalisation that would probably also be better suited for purposes of inter-language comparison.

In order to achieve a similar effect as Bech's orientation rules, Thomason (1974a) employs the same device that was semantically redundant in Partee's analysis, viz. distinct syntactic categorisations of matrix verbs. Unlike Montague and Partee, Thomason does not recognise IV-type complements but introduces instead a syntactic category of abstract phrases ( $AB = t/e$ ), which is involved in the construction of finite and infinite complements alike and, optionally, also of non-complex sentences. As a side-effect, this move resolves the indeterminacy as to whether infinitival complements are  $t$ -derived or not. There is a further entirely parallel, though syntactically distinct, category of infinitival complements  $INF (=t//e)$ , which, as  $AB$ , is without basic elements.<sup>3</sup> The following two kinds of complementisers are required to form in turn abstract-phrases from  $t$ -phrases, and  $INF$ -phrases from abstracts:

- (14)a.  $AB/t = (t/e)/t$  basic elements:  $\{that_0, that_1, \dots\}$   
 b.  $INF/AB = (t//e)/(t/e)$  basic element:  $\{to\}$

Consequently, instead of the IV-taking matrix verbs of Partee (1975a), Thomason has  $INF$ -taking but otherwise analogous ones:

- (15)a.  $IV/INF$   $\{try, want, wish, expect, promise, ask, \dots\}$   
 b.  $TV/INF = (IV/T)/INF$   $\{permit, ask, force, expect, \dots\}$   
 c.  $(IV/INF)/T$   $\{promise, ask\}$

I have to refrain from asking with what justification Thomason is lumping together under one category label verbs (such as expect and permit in 15b) whose syntactic characteristics are similar only in a very superficial sense, or how such homophonous verbs as ask in (15a,b,c) are to be related to each other; of more immediate relevance is, firstly, the semantic characterisation of sentences with infinitives. As usual, infinitival complements are taken to denote properties; promise to eat sardines, for instance, translates into intensional logic, relative to construction tree (16b), roughly as (16a), with a constant promise'.

- (16)a.  $\text{promise}'(^{\wedge}\lambda x_1 \text{ eat-sardines}'(x_1))$   
 b.  $\text{promise to}_1 [\text{eat sardines}], \text{IV}$   
 $\text{promise, IV/INF}$   $\text{to}_1 [\text{eat sardines}], \text{INF}$   
 $\text{to, INF/AB}$   $\text{that}_1 [x_1 \text{ eats sardines}], \text{AB}$   
 $\text{that}_1, \text{AB/t}$   $x_1 \text{ eats sardines, t}$

Secondly, the pertinent syntactic rules. The subject-predicate rule  $F_3$  handles reflexivisation (clause 2) but may also involve variable-binding of a particular kind (clause 3):

- (17)  $F_3(e, a) = ay$ , where  $y$  is the result of ...
- 2) if  $a$  has the form  $\underline{x}_j$ , replacing each occurrence of  $\underline{x}_j$  not preceded by any occurrence of to by occurrences of  $\underline{x}_j$ self;
  - 3) if  $e$  contains a part having the form  $\underline{\text{to}}_k[\theta]$ , replacing this by  $\underline{\text{to}} \delta$ , where  $\delta$  is the result of replacing each occurrence of  $\underline{x}_k$  in  $\theta$  by him if  $a$  is John or Bill, or by her if  $a$  is Mary or Jane, or by  $\underline{x}_j$  if  $a$  is  $\underline{x}_j$ , provided there are no occurrences of  $\underline{x}_j$  in  $\theta$  (if there are, the function is undefined).

F<sub>4</sub> combines transitive verbs with their objects and accomplishes pronominalisation in an analogous manner:<sup>4</sup>

- (18)  $F_4(\varepsilon, a) = \varepsilon_1 a \varepsilon_2$ , where  $\varepsilon_1$  is the leftmost word in  $\varepsilon$  and  $\varepsilon_2$  is the result of replacing each occurrence of  $\text{to}_k[\theta]$  in the remainder of  $\varepsilon$  by  $\text{to}\delta$ , where  $\delta$  is ... (as in clause 3 of  $F_3$ )

Notice the potentially transformational nature of  $F_4$ : if the TV is complex, the direct object is inserted between the main verb, which happens to be the leftmost constituent, and the rest of the phrase. Observe, furthermore, that Thomason's rules of infinitive formation need to be constrained syntactically. As they stand, and even if they are supplemented by a mechanism that allows to identify such syntactic functions as subject and object in the first place,<sup>5</sup> there is no way to prevent the deletion (and abstraction) of complement objects (with results like 19a) and to ensure that exclusive reference is made to derived complement subjects (or nominatives, in German), as in (19b).

- (19)a.\*Mr Heath expects to Mrs Keith please.  
b. Mr Heath expects to be pleased by Mrs Keith.

To be sure, there has to be some rule that similarly affects complement objects (cf. Lagnik & Flengo 1974):

- (20) Some sardines are delicious/ready/a pain in the ass to eat.  
but this is governed by a limited number of matrix predicates and also seems  
to be contingent upon the prior removal of complement subjects.

In logical analysis of natural language, (some) anaphoric personal pronouns are conceived as essentially playing the rôle of bound variables; on the condition of variable-identity, the rules of quantification and substitution are to introduce the appropriate surface pronominal forms. Now, Thomason also wants to posit a relation of genuine coreference between matrix T-phrases and understood complement subjects.<sup>6</sup> However, when  $F_3$  combines a matrix subject T, or  $F_4$  a matrix object T, with a derived IV or TV containing an INF complement, there no longer occurs a suitable free variable within that IV or TV after infinitive formation has syntactically deleted the complement subject variable, which was already bound, in intensional logic, by the abstraction operator. Although the deleted variable can, therefore, not surface as a pronoun, T-introduction by means of  $F_3$  or  $F_4$  nevertheless is, according to Thomason (1974a:722), of semantic significance. In contradistinction to Partee's (1975a:266) denial of the semantic need of superficial variable-identifiability, principle (21) is intended to determine the identity, i.e. coreferential linkage, of superficially missing complement subjects and, I take it, of anaphoric pronouns in general:

- (21) Whenever a rule combines an independent T-phrase with a phrase containing an abstracted variable, this variable must immediately be bound by this T.

Taking (21) at its face value, the syntactic categorisation of such verbs as promise and permit that was given in (15) obviously guarantees the intended 'binding'. However, the concept of variable-binding that Thomason is appealing to in (21) is by no means self-evident. As was already pointed out,  $F_3$  and  $F_4$  no longer encounter free variables, syntactically as well as semantically. Consider another case of understood-subject identification, IV-conjunction as in (22a), with an intensional-logic translation of the IV as in (22b):

- (22)a. Fawkes walks and talks.      b.  $\lambda x_1 [\text{walk}'(x_1) \ \& \ \text{talk}'(x_1)]$

The two occurrences of the free variable are bound by one abstraction operator; and upon T-introduction, lambda-conversion is applicable with respect to both occurrences of the abstracted variable. The subject variable of t-phrases underlying INF-complements, however, is immediately bound by an abstraction operator, according to Thomason's rules, and the matrix verb is not within the scope of this same variable-binding operator (cf. 16a).

There is thus no representation like (23), with two occurrences of a free variable within the same scope:

- (23)  $\lambda x_1 \text{ promise}'(x_1, \text{'eat-sardines'}(x_1))$

The claim that (21) seems to make is that no matter how deeply embedded in whatever context an abstract expression is, as soon as an independent T-phrase, which may itself be a free variable to be bound later by some quantifier, combines with the AB-containing phrase, this T serves as antecedent of the respective abstracted (i.e. already  $\lambda$ -bound) variable. Uncertainties of how to bind bound variables may be responsible for the fact that it remains doubtful, in semantic terms of rules of inference, how exactly Thomason's account can establish, let alone explicate, the informally postulated "semantic connection" between sentences like (24a) and (24b);

(24)a. The Queen promises to eat sardines.

b. The Queen eats sardines.

at least the proposition that the Queen eats sardines is not analysable as a proper constituent part of the assertion (24a).

Be the technicalities of coreference assignment as they may, the anaphoric linking of personal pronouns certainly cannot in general be determined along the lines of (21). We need only consider finite complements instead of infinitives of the verbs in (15): The matrix subject, the first T to be combined (by  $F_3$ ) with an AB-containing IV-phrase, does not have to be coreferential with the complement subject, if the latter is overtly present as a pronoun (cf. 25a), although sometimes it actually has to, on account of conceptual-semantic characteristics of such verbs as try (cf. 25b).

(25)a. The Queen promised/expected/wanted that he eats sardines.

b. The Queen tried how far she/\*he could jump.

(21) thus does not sufficiently differentiate between pronominal and referentially less versatile null anaphors (as in 24a). Secondly, like Partee's Starred-Variable Convention, it is also relying on T-phrases with overt syntactic manifestation, as is evidenced by the dual syntactic categorisation of such verbs as promise; hence it becomes liable to analogous criticism: In complex sentences like (7) above, the matrix subject does not 'bind' the understood complement subject although it is the first and only T overtly available. Furthermore, in subjective infinitives as in (26),

(26) To please Mr Heath is easy (for someone/for Mrs Keith).

there may be no manifest T-phrases outside the infinitive at all; nevertheless, the understood infinitival subject has to be interpreted as coreferential with an overt or understood (as a kind of generic term) matrix 'dative'.<sup>7</sup>

Such technical and empirical considerations of the relationship be-

tween variable-binding and coreference are far from being only minor quibbles; and yet there are more fundamental questions to be raised, and these concern the status of the two assumptions at the very heart of Thomason's 'solution' of the control problem: the principle of immediate variable binding (21), on the one hand, and the matrix-verb categorisations (15), on the other. Firstly, what are the arguments in support of the category assignments (15), especially (15b,c)? Thomason offers three, two of which supposedly constitute favourable evidence independent of principle (21).

In addition to the categories in (15b,c) one could imagine a third, non-binary but simultaneous mode of combining T and INF with a matrix verb, which would then have to be of category IV/T,INF. Such different verb categories make different claims about the syntactic connection or coherence of the constituent subexpressions of derived IV-phrases. Thomason now invokes "semantic intuitions" demanding categorisations of promise and permit as in (15), upon which category assignments the grammar automatically decides that promise the dean is a coherent phrase of the same category as try, and that permit the dean, unlike permit to eat sardines, is no coherent phrase, etc. But what, one must ask, is the empirical basis of such intuitions compatible with precisely these judgments about phrase-coherence? I suspect that there is none and that, therefore, Thomason's first argument rests entirely upon convenient fictions. Despite much formal work on categorial grammar, the objective empirical correlates of the central notion of syntactic-semantic coherence are anything but well understood, as is the relationship between coherence and the notion of syntactic constituency. The criteria or operational tests commonly utilised in determining (immediate) constituent structures certainly are not indicative of a structural difference between permit- and promise-type constructions. Surface linear order, for instance, suggests a perfect parallelism; there is no evidence for an obligatory reordering of the 'object' of permit to eat sardines, for a discontinuity of only this but not the promise-construction. And in case languages (such as German), it is the basic matrix verbs alone, rather than complex 'transitive verbs' consisting of a matrix verb and INF, that govern the case-selection of their objects. If, on the other hand, definitions of phrasehood in terms of coherence are to be based on the axiom of syntactic-semantic parallelism, irrespective of syntactic constituency indicators, it has yet to be shown that in the complement constructions under discussion distinct categorial structures are necessitated by semantic

facts one could have "semantic intuitions" about. As far as I can see, or intuit, however, it is not at all implausible to interpret the relations of permitting and promising with respect to their arguments in a parallel manner.

On the assumption that only sentences with transitive verbs are passivisable, the ungrammaticality of (27) and the grammaticality of (28) allow the inference, Thomason maintains, that the category TV only figures in the active counterpart of (27), which is exactly what (15) is claiming.

(27)\*The dean was promised (by the Queen) to eat sardines.

(28) The dean was permitted (by the Queen) to eat sardines.

Even if we pretend that the definition of transitivity and the statement of passivisation are essentially trivial matters, this argument surely does not carry much weight either. For not only do some bona fide transitive verbs not passivise (cf. 29a), there also are non-TV-phrases that nevertheless do have passives:<sup>8</sup> IV/AB-verbs (29b); verbs with gerundive complements (29c); occasionally IV/INF-verbs (29d,e), which could suggest that infinite complements are more term-like than Thomason would have it; and, in languages like Latin or German, even basic IV-phrases (29f, 'impersonal' passive).

(29)a.\*The Queen was resembled/married by the dean.

b. That the Queen eats beans has been denied by the dean.

c. Eating beans had been recommended/advocated by the dean.

d. To be able to come was hoped by everybody wishing to please Heath.

e. How to eat beans in Sardinia was also explained by the handbook.

f. Wurde getanzt/gekämpft? 'Was there dancing/fighting?'

Furthermore, consider the verb promise that co-occurs with two nominal objects (cf. 30). According to Thomason (1976), promise two sardines is con-nex and of category IV/T, with an indirect-object rule inserting a further T between verb and direct object.

(30)a. The Queen promised the dean two sardines.

b. The dean was promised two sardines (by the Queen).

c. Two sardines were promised the dean (by the Queen).

There are two ways to passivise (30a); but it at any rate appears reasonable, pace Thomason (1974a; 1976), to regard the syntactic relationship between promise and the indirect object the dean as entirely parallel, irrespective of whether the other constituent part of the IV is an INF-complement or a direct object T. But if all this conclusively demonstrates, as I think it does, that the ungrammaticality of (27) cannot be blamed on the lack of an active TV, and that, therefore, passivisation provides no rationale for distinguishing permit and promise categorially as in (15), then

why is (27) ungrammatical or at least, according to some speakers, worse than (28)? This question will be taken up again briefly in §4 and, in more detail, in Plank (1976).

Thomason's third argument for the categorisations (15b,c), which simultaneously is his first argument for the principle (21), is of the 'it-works' type: Given (15b,c) and (21), the control problem as exemplified in (1)-(2) can be solved, at least as far as observational adequacy is concerned. If there are no independent arguments to support the empirically clearly independent hypotheses about categorial structure (15) and about variable-binding (21) individually, these hypotheses at least support each other. Obviously, this line of reasoning is as circular as the 'solution' is arbitrary. With equally good justification one could immediately propose an alternative 'solution', by replacing (21) by an equally general principle (21') and adjusting the matrix-verb categorisations accordingly.

(21') Abstracted variables are bound by the last independent T AB-phrases are combined with.

However, there is no need to throw up the sponge yet; according to Thomason, there actually is independent evidence favouring (21) over (21') or some altogether different mechanism: (21) effectively is an analogue of Rosenbaum's MDP. This correspondence could count as an argument for the categorisations (15) only if two preconditions are met: Thomason's principle is a genuine analogue of Rosenbaum's; and secondly, the central common notion of closeness is the true determiner of control or coreference in complement subject deletion. On both counts, this last argument for Thomason's 'solution' fails.

In Rosenbaum's framework, there is a single general transformation of complement subject deletion that does not mention any specific matrix NP; the allegedly rule-independent MDP then determines precisely which matrix NP of two or more potential candidates is in a position to control the identity deletion: the one that is closest to the complement subject, distance being defined in terms of the number of branches connecting the two nodes of the constituent structure tree. In order to qualify as a genuine analogue of the MDP, with respect to the crucial notion of closeness, the particular distance metric utilised will have to mirror, or be reducible to, constituent structures defined in terms of the relations of dominance and precedence. Consider, for a moment, Stockwell et al's (1968:557-60,579) alternative to the MDP that does not draw on closeness but maintains that if the

matrix clause contains a (Fillmorean) dative and an agent, the dative is the controller (or antecedent). Ascribing erasure priority to datives, however, turns out to be equivalent to the MDP: Unless the matrix clause is passivised, datives always end up as objects and hence are closer to the complement subject than the agentive matrix subject, in terms of constituency.<sup>9</sup> Thomason, on the other hand, explicitly draws on a concept of closeness in the first place, but defines it in terms of construction (or analysis) trees. Syntactic construction trees in Montague grammar do not represent constituent structures but are designed to display, for example, the relative scopes of quantifier phrases and, which apparently is a rather flexible requirement, to allow for parallel syntactic and semantic processing. As Partee (1975a:258-60) suggests, syntactic constituency structure can be superimposed at least on some strings constructed by means of context-free rules; which, however, is not tantamount to postulating that successive steps of constructing complex expressions inherently correspond to or model traditional syntactic constituency relations. Since constituent-structural closeness, therefore, need not necessarily be incompatible with constructional lateness, it is difficult to see why (21), rather than some late- or intermediate-variable-binding principle, could lay exclusive claim to the status of being an analogue of the transformational MDP. Neither of them is; if either (21) or (21') happen to produce, no matter how, the same net results as the MDP, it is by accident and not by necessity. Which entails that arguments *pro* and *con* the MDP need not at the same time be arguments *pro* and *con* Thomason's proposals. I skip the extremely few and unconvincing arguments for the MDP,<sup>10</sup> and briefly explore what bearing the counterevidence against the MDP has upon a solution of the control problem that is founded upon the order of introduction of variable-binding T-phrases.

As a matter of fact, promise and that ask that shows up in sentences like (31) are exceptions to the MDP: At the point deletion is to apply, the matrix object is the NP closest to the complement subject.

(31) Fawkes asked Hawks when to talk.

There is no evidence whatever for adopting different constituent structures for sentences like (1) and (2), which would enable the MDP to work properly for (1) as well as (2); which again emphasises the non-equivalence of Rosenbaum's and Thomason's solutions. The conclusion that Thomason's approach is superior on this count, is, however, fallacious. The descriptive and explanatory task at hand apparently is to determine the membership of lexical i-

tems of matrix verbs in one of two complementary classes. Assigning them individually to different syntactic categories is just as arbitrary as individually marking some of them as 'exceptions', as long as we fail to recognise any generalisation that would allow us to predict which items belong to which class. The lexical semantics of complement-taking verbs would seem to be an obvious candidate on which to base such a generalisation. Meaning features consistently distinguishing permit- and promise-type verbs could, obviously, serve to define two semantically natural classes, one presumably larger (permit) and one smaller (promise), but none syntactically or lexically exceptional with respect to the control problem.<sup>11</sup> Aijmer's (1972:100) hypothesis to make deletion control contingent upon which matrix T-phrase designates the individual under an obligation to do something (the subject with promise, the object with force etc.), is a step, albeit, in my opinion, not a fully successful one, in this explanatory direction.<sup>12</sup>

The MDP implies that missing complement subjects are always understood as having one and only one controller (antecedent), unless two or more potential controller NPs in a superordinate clause are equidistant. This uniqueness assumption has already been challenged by Postal (1970:470), whose counterexamples are claimed to be three ways ambiguous (cf. the variants of 32) although there clearly is only one matrix NP that is closest to the deleted complement subject.

- (32) The Queen talked to the dean about  $\emptyset$  eating sardines.  
 $\emptyset$ =(a) his, (b) her, (c) their

While (33) is not ambiguous, there is, as in (32c), no single controlling T.

- (33) Hawks agreed with Fawkes to meet on Monday morning.

On the plausible assumption that in Thomason's fragment or an extension thereof, subjectless infinitival and gerundial complements are not handled entirely differently with respect to abstraction, such coreferential ambiguities and cases of dual control, on the other hand, do not apriori violate the uniqueness assumption that is likewise implicit in (21), or, for that matter, in (21'). A seemingly arbitrary, though technically feasible way out would be to assign talk (about) to three different categories, viz. to (15b), (15c), and, to get the reading (32c), to one that allows the simultaneous combination of matrix subject and object with the AB-containing verb phrase talk about eating sardines. Examples like (32) and (33) can, thus, never falsify Thomason's principle (21), or the alternative (21'), as long as there is no way to prevent ad hoc category assignments and to curtail the proliferation of synonymous and homophonous lexical items only

differing from each other with respect to category membership. Even if the range of construction types is extended so as to include potential controller T-phrases that are not in the one clause immediately containing the complement, such ambiguities as in (34) can in principle be accommodated by such an excessively powerful framework, albeit at the expense of having to countenance two matrix verbs disturb in two different syntactic categories.

- (34) The Queen said that making a fool of (a) herself/(b) himself in public disturbed the King.

Further categorial machinery appears to be required in order to exclude one of the readings of (34) in case the INF-complement is extraposed:<sup>13</sup>

- (35) The Queen said that it disturbed the King to make a fool of  
\*herself/himself in public.

I suspect that even the additional readings of (32) and (34), viz.

- (32)d.  $\emptyset$ =someone's

- (34)c. oneself

which involve nonspecific or generic complement subjects without any overt controller (antecedent), could eventually be accommodated as follows: This time, matrix-verb categories determine that no independent T can bind the abstracted variable; it either remains unbound, which is taken to induce a nonspecific interpretation, or it is bound by an appropriately defined generic quantifier, itself without overt manifestation.

What is wrong with such a 'solution' of the control problem is that it is always right, or at least infinitely adjustable to whatever new identity-relation is discovered; in other words, it is no empirical hypothesis about the grammar of English complementation.<sup>14</sup> The argument that leads to this conclusion might look like a travesty of Thomason's (1974a) and also Partee's (1975a) own intentions; yet it only exploits their own circular, arbitrary and non-empirical basic assumptions: Principle (21) cannot be tested against empirical data or its purported model, the MDP, independently of the syntactic categorisations of matrix verbs; these, in turn, are not independently justifiable or falsifiable. However, if one wants to adopt the view that the relevant parts of the categorial structure of complex sentences have to mirror syntactic constituency relations, the option of arbitrarily multiplying lexical entries and syntactic categories is precluded. Simultaneously, (21) collapses, due to the uniqueness assumption behind it, in the light of the above data, just as the MDP did. I do not pursue the issues of how to amend the Montague-grammar framework by introducing the host of other identity and non-identity deletions that are thought to be necessary in transformational grammar to account for all subjectless complements; instead I

want to adduce some evidence from structurally less involved English and German INF-complements corroborating the fundamental invalidity of a solution that is based on structural distance and takes for granted discrete matrix-verb classes (promise- vs. permit-type).

#### 4. Misunderstandings, Ambiguities, and How to Avoid Them

ask is an inconsistent exception to the MDP; according to Thomason (1974a), there are three verbs ask in three different syntactic categories (cf. 15a-c). This is to account for the different identity relations in (36a,b), but in fact brings about a curious paradox.

(36)a. Hawks asked Fawkes when to talk.

b. Hawks asked Fawkes to talk.

For how does one understand, i.e. identify the different understood subjects of, (36a) and (36b)? By choosing the appropriate lexical entry in the appropriate category (or with the appropriate exception feature). But which is the appropriate one? Syntactically, both ask's fit into the environments of both (36a) and (36b); and from the superficial linear arrangement of INF-complement and T-object alone, the different orders of their categorial combination cannot be ascertained. To choose the right ask, a prior understanding of the identity relations holding between matrix and complement terms is required. But this means that we already have to have understood (36a,b) in order to find out the factors that are supposed to determine our understanding. However, this argument could seem to be faulty; the two ask's of (36a,b) apparently mean something different: (36a) reports a question, (36b) a request. Knowledge of the lexical meaning of the respective matrix verbs would then have to help us understand (36a,b) by way of determining the selection of the appropriate verbal category. In the absence of such a meaning difference, multiple category membership of matrix verbs, as advocated by Thomason, obviously entails that, from a surface-interpretative point of view, there is no non-circular way of properly disambiguating such complex sentences in order to arrive at their intended interpretations.

The matrix verb beg is a case in point. It combines with an object and an INF, and, in (37), clearly patterns like permit and unlike promise.

(37)a. Hawks begged Fawkes to invite Mr Heath.

b. Fawkes was begged (by Hawks) to invite Mr Heath.

However, given an underlying representation like (38a), upon passivisation

of the complement, the derived complement subject is no longer coreferential with the matrix object, which does not preclude its deletion.

- (38)a. Hawks begged Fawkes [Fawkes invite Hawks]  
 b. Hawks begged Fawkes to be invited.

In (38b), and in similar constructions in English as well as in German (cf. 39), beg now behaves like a member of the promise-class although there is no difference observable between the lexical meanings of the two beg's.

- (39)a. Hawks begged Fawkes to be allowed to talk.  
 b. Hawks bat/bettelte Fawkes, eingeladen zu werden. (=38b)  
 c. Hawks bat Fawkes, reden zu dürfen. (=39a, with modal verb instead of passive)

Interestingly, passivisation of the matrix clause yields results as deviant as with promise:

- (40)a. \*Fawkes was begged (by Hawks) to be invited/to be allowed to talk.  
 b. Fawkes wurde (von Hawks) gebeten, eingeladen zu werden/reden zu dürfen.

If two different verbs beg are postulated, in accordance with Thomason's general strategy, we find ourselves in the paradoxical situation described above. That the identity of the missing subjects of (37)-(39) is, nevertheless, not misunderstood suggests that it is not the matrix verb alone (certainly not its syntactic category), but its interplay with the structure of the complement that determines the solution of the control problem. With a single verb beg in a single syntactic category, we, on the other hand, commit ourselves to accept the existence of verbs that are inherently neutral with respect to control, and, consequently, face the empirical problem to determine which verbs under which conditions group with the complementary promise- and permit-classes, in case they are not inherently members of either of these classes. Such verbs as pray, ask, urge, force, for instance, also seem to switch control obligatorily relative to the voice of the complement:

- (41) The dean asked/prayed/urged/forced the Queen to be allowed (by her) to please himself/\*herself.

It is not altogether clear whether such verbs as require, persuade, tell and even permit are also inherently neutral, since passivising their INF-complements often yields semantically odd results in the first place. However, there is a crucial difference in so far as the factors involved in determining deletion control (i.e. understood-subject identification) do not seem to achieve complete avoidance of referential ambiguity in the case of such verbs as permit or persuade in (42), whereas they clearly do so with beg etc. in (38)-(41).

- (42) The Queen permitted/persuaded the dean to be invited (by her/him).  
 That missing subjects are indeed misunderstandable, i.e. not uniquely iden-

tifiable, would seem to contradict the spirit, if not the letter, of the 'solutions' of the control problem discussed in this paper; after all, their avowed aim was to develop a special mechanism assuring unique, and uniquely recoverable, control relations no matter what is the syntactic and semantic environment of the deletions. This overall uniqueness assumption having been shown to be counterfactual, it might not be altogether ill-advised to take an opposite view and adopt, as a point of departure, a general ambiguity assumption (cf. also Postal 1970:470) claiming that within the limits of language-specific structural deletion constraints (cf. fn.1) any coreferential T is a potential controller, and that independently available factors (such as general pronominalisation constraints; cf. again Postal 1970) under certain conditions single out one of the candidates as unique controller.

This attitude may have an additional advantage. Although both Thomason and Rosenbaum were only concerned with English, the nature of their principles is such as to suggest universal rather than language-particular validity. Now suppose in comparing corresponding complex sentences of two different languages, we are able to ascertain that these sentence pairs do not differ as to categorial structure and structural difference between the relevant matrix and complement T-phrases. Both the MDP and Immediate Variable Binding no doubt entail that in this situation identical control relations hold in the two languages. Let me give you only one case in point. German does not differ from English at all as far as the neutral but unambiguous beg-type verbs and the ambiguous permit-type verbs are concerned; and the German equivalents of (1)-(2) also constitute a minimal pair. There emerges a difference, however, as soon as the complements of versprechen 'promise' are passivised or supplemented by certain modal verbs.

- (43) Die Königin versprach dem Dekan, (a) eingeladen zu werden/(b) (vom König) finanziell unterstützt zu werden/(c) Bohnen essen zu dürfen.

All these sentences are ambiguous as to deletion control whereas in their English counterparts (44), even if these are not judged perfectly well-formed, the matrix subject is unambiguously identified as controller, just as in (1).

- (44) The Queen promised the dean (a) to be invited/(b) to be financially supported (by the King)/(c) to be allowed to eat beans.

Here a universal unique-control principle is, evidently, at a loss while the ambiguity and ambiguity-reduction assumption does not a priori preclude the possibility that different semantic and syntactic factors avoid potential

referential ambiguities to a different degree in different languages. Without being able to enlarge on this topic here, I suggest that in German, there does not even exist a class of strict promise-type matrix verbs; such items as versprechen, anbieten 'offer', versichern 'assure', geloben 'vow' all seem to be inherently neutral. Mostly it is the context of use, rather than the structure of the INF-complement, that occasionally succeeds in disambiguating the identity relations of understood complement subjects.

So far the syntactic structure of the matrix clause has not seemed to play a rôle in determining or disambiguating control relations. In suggesting that it, nevertheless, is a relevant parameter, I sketch a speculative explanation of the deviance of (27) and (40).

(27) \*The dean was promised (by the Queen) to eat sardines.

(40)a.\*Fawkes was begged (by Hawks) to be invited/to be allowed to talk.

Thomason's (1974a) account in terms of transitivity has already been shown to be highly implausible. In fact, I do not think (27) and (40) are syntactically deviant at all, but rather involve a T-phrase configuration incompatible with a resolution of the control problem in English. In (27) and (40), after passivisation of the matrix clause, the original controller ends up as an agentive by-phrase; and one could hypothesise that such non-obligatory phrases no longer qualify as potential controllers in English. Attempts to link anaphorically the missing complement subject with the derived matrix subject instead, fail for conceptual-semantic reasons. As more explicit representations indicate, matrix verbs like beg and promise do not impose an obligatory coreference requirement upon the underlined matrix and complement terms:

(45)a. The dean was promised (by the Queen)[the Queen/Jones/..eat sardines]

b. Fawkes was begged (by Hawks)[Hawks/Jones/Fawkes be invited]

If, therefore, the matrix by-phrase is not overtly manifest, no clue remains to the identity of the complement subject. At least as far as INF-complements are concerned, English apparently tends to avoid such indeterminacies, which can be demonstrated, again in comparison with the less restrictive state of affairs in German (where the counterparts of (27) and (40) are fully grammatical), to be an even more general phenomenon. Notice, for example, that, perhaps with the exception of say (cf. 7b), English permit-type verbs do not allow the deletion or non-specification of matrix objects whereas German does so quite freely:

(46)a.\*The Queen permitted/allowed/urged/advised to eat beans.

b. Die Königin erlaubte/ließ zu/drängte/riet, Bohnen zu essen.

Perhaps the constraint against passivising matrix verbs governing only an INF-complement but no nominal object, is another exemplification of this generalisation:

(47)a.\*To eat beans was begun/promised (by the Queen).

b. Von der Königin wurde angefangen/versprochen, Bohnen zu essen.

In (46a) and in (47a), the matrix object alone and, respectively, the matrix agent alone could help recover the identity of the missing complement subjects. It goes without saying that this can only be a highly tentative account of some phenomena that hitherto apparently have defied all explanatory attempts, especially those that purport to have solved the control problem.

### Footnotes

<sup>1</sup> Basically, this analysis of infinitive and gerund phrases as natural language manifestations of abstract expressions can already be found in Montague (1974b:161). Since, following Montague, infinitives and gerunds are commonly treated in a uniform manner, at least with respect to their semantics, I feel justified in occasionally using gerundial examples in my evaluation of Partee's and Thomason's proposals. Nevertheless, Tavakolian (1973) has pointed out important syntactic differences that will eventually have to be incorporated into Montague grammar: In English, infinitival complement subjects are only deletable if they are both commanded and preceded by an antecedent in an immediately dominating clause, whereas gerundial subjects are already deletable if an antecedent either precedes or commands them.

<sup>2</sup> The identity of the complement verb (cf. §4) and its infinitival or participial form ('Status') may also play a minor rôle.

<sup>3</sup> The categorial structure of infinitive complements is discussed in some detail in Plank (1975).

<sup>4</sup> The subscript indices of complementisers in (16)-(18) are, I think, superfluous; they themselves can certainly not provide a means of tracing the identity of deleted variables.

<sup>5</sup> The imposition of constituent structures upon construction trees, along the lines of Partee (1975a), could serve this purpose.

<sup>6</sup> Partee (1975b) has shown that complement subject deletion is based on variable identity and is no case of deletion of laziness.

<sup>7</sup> In fact, such a controlling matrix dative may not even be syntactically reconstructible, as in Partee's (1975b:30) example It's against the law to eat beans with a spoon. There nevertheless is a necessary relationship of coreference between law-offenders and bean-with-a-spoon-eaters.

<sup>8</sup> Thomason's fragment in fact does not contain all the relevant verbs; but the categorisations assumed here do not, I think, contradict the spirit of his categorial set-up. -- Note also that according to Thomason's surface-oriented categorisations, such ('Raising') verbs as want, wish, let, con-

template would also belong to category (15b); but they do not passivise:  
 \*The dean was wanted/wished/let to eat beans, \*He can't be contemplated eating beans.

<sup>9</sup> Grosu (1971:14) claims that the MDP and Stockwell et al's principle of erasure priority are notational variants. This characterisation, however, does not seem to be altogether appropriate, since there at least is a possibility of them making different empirical claims; for instance, if the matrix clause is passivised.

<sup>10</sup> As Jackendoff (1972) has observed, only switches of control relative to the presence or absence of a matrix object could be interpreted as demanding something like the MDP: Hawks wanted Fawkes to talk vs. Hawks wanted to talk, Hawks kept Fawkes talking vs. Hawks kept talking. For all other verb types, intuitively simpler solutions are available; e.g. verb-specifications requiring obligatory subject-control (promise) or object-control (permit). (But confer §4.)

<sup>11</sup> Some dialects of English, nevertheless, tend to regard promise as exceptional, in so far as an INF-complement is only acceptable if promise is not accompanied by an additional nominal object; otherwise, the INF has to be replaced by a finite that-complement. Other verbs patterning like promise with respect to control require prepositional objects (offer to, vow to, agree with), but with them, there are no such dialectal constraints upon the use of INF-complements.

<sup>12</sup> Jackendoff's (1972:178-228) solution also is, in a way, semantically based; but when it comes to distinguishing promise and permit, it turns out that these verbs are identical with respect to their thematic relations. Consequently, control has to be assigned as arbitrarily as in Thomason's and Rosenbaum's frameworks.

<sup>13</sup> For contrasting explanations, cf. Grinder (1970) and Tavakolian (1973).

<sup>14</sup> Notice, however, that this solution cannot be adjusted so as to adequately accommodate certain subjectless non-complement constructions, whatever categorial structure one might have in mind. Consider the phenomenon of 'dangling' adverbial infinitives and participles: To play golf well, your feet must be in the proper position, Looking out for a theme, several crossed Ot-to's mind. Even if the abstracted variables of the infinitival and participial phrases are picked up by the main clause subject or object, this does not yield the appropriate readings, since the understood subjects are unambiguously identified with constituent parts of these T-phrases, viz. the possessive pronoun or genitive.

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