

A Proposal for Treating Comparatives in Montague Grammar

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A PROPOSAL FOR TREATING COMPARATIVES IN MONTAGUE GRAMMAR  
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Linguists who have investigated the approach to natural language semantics that is appropriately, if not revealingly, known as Montague Grammar, have characteristically been captivated by the fact that someone has at last shown them a way to do rigorous semantic analysis for a significant, albeit quite limited, fragment of a natural language. But the initial bloom of romance fades and they typically grow nostalgic for the far richer variety of constructions about which transformational grammar had something interesting to say. This nostalgia, as often as not, leads to musing about how nice it would be if the ad hoc syntax of the categorial grammar upon which Montague semantics is founded were supplanted by a more elaborate system: say the syntax of a transformational grammar. Cooper and Parsons (in Partee, to appear) have demonstrated that the deep structure of a transformational grammar can be interpreted in such a way that it is precisely equivalent to the categorial base of PTQ, and their work suggests that it will generally be possible to prove the equivalence of suitably constrained transformational grammar bases and the bases of lambda categorial languages. This opens up the possibility of linking transformational grammar and model-theoretic semantics in an almost mechanical way, by the maneuver of using a transformational base in place of a categorial base in an otherwise standard Montague treatment.

The question arises as to whether such a maneuver results in significant gains. In this paper I look at a fragment of English for which the maneuver has been attempted, and try to access the gains and losses with respect to an attempt to account for the same data in a less adventurous Montague extension. Davis and Hellan, in their long paper "The Syntax and Semantics of Comparatives," endeavor to use Bresnan's transformational treatment of comparatives as the basis of a Montague-inspired semantics for English comparative constructions. Their strategy is to invoke special rules for converting the structurally ambiguous base rules of the Bresnan analysis into derived structures that are free of syntactic (in particular, scope) ambiguities. To accomplish this goal, they find it necessary to have rules that 1) introduce nouns, converting predicative adjective phrases into attributive adjective phrases, 2) raise nouns, establishing syntactically just what the relative scopes of noun phrases are, and 3) bind degree variables, introducing a 'flag' element into base trees in order to simplify the statement of constraints on quantifying in to fill or find those variables.

It should be emphasized that Davis and Hellan do not take the steps just mentioned merely to facilitate their semantics for comparatives. The steps are essential if the analysis is to work at all, and must be considered as the price they have to pay for using Bresnan's syntactic rules. It should also be borne in mind

that the syntax Davis and Hellan are appropriating involves a minimum of four transformational rules: three comparative extra-position rules and a comparative deletion rule.

The semantic analysis for which all this is preparatory turns out to be quite complicated. This is so partially, as Davis and Hellan point out, because the Bresnan syntax which they are interested in providing with a direct interpretation is characterized by a high degree of embedding and the repetition of many nodes (a condition which is exacerbated by Davis and Hellan's disambiguating rules). It is therefore possible, and frequently turns out to be the case, that the translations of elements far down in the tree turn out to be the function of many arguments. Thus their translation of much (actually, one of two much's that they posit) is given in (1).

$$1 \quad \underline{\text{much}}_{1,j}^1 \rightarrow \lambda \mathfrak{D} \lambda Q^A \lambda A \lambda N \lambda Z (\mathfrak{D} \{ \hat{v} (\eta^+(N)(A)(z) = v) \} \& \\ N \{ z \} \& \lambda \varphi_1 [\lambda \mu_1 [\lambda K_1 ((^v Q^A)(A)(N)(z))(\pi_j)](\mu_j)](\varphi_j) \& \\ ((\delta_j > 0 \& \pi_j \neq 0) \rightarrow \delta_j = \pi_j) \& (\delta_j = 0 \rightarrow \pi_j = \varepsilon_j))$$

In addition to the variables represented by lower case, upper case, and script Roman characters, Davis and Hellan also posit nine variables that take degrees or extents as values, representing the contribution of various lexical and syntactic elements to the comparison that expresses the completed translation. These are supplemented by two constants of intentional logic, interpreted as functions which respectively

...associate with an individual a measure of the extent to which that individual has a characteristic with respect to other individuals in a group

and

denote the number of individuals in the set (to which it is applied)

In other respects Davis and Hellan's semantics involves a direct translation of English into intensional logic, exactly as in other Montague grammars.

I will now attempt to show that a more conventional Montague account of comparatives will automatically produce an explanation for some of the data that led David and Hellan to want to incorporate Bresnan's syntax in their account. In this short paper I cannot hope to explore the range of constructions Bresnan's analysis covers, but I will outline what to expect of a more comprehensive account along the lines I initiate. English comparative constructions are notorious for resisting a uniform treatment of their syntactic and semantic properties. In this paper I undertake to show how several of their more difficult features can be handled, or at least gracefully sidestepped, in a Montague grammar. To avoid lengthy preliminaries, I assume familiarity with the conventions used by Thomason (1972, 1975) to

present syntactic and semantic analyses in a Montague approach. Rather than try to state an explicit set of translation rules, I will rely on type-annotated translation trees to represent my syntactic and semantic analysis.

The following data have been stumbling-blocks to linguists who have wanted to show syntactic and semantic relationships to parallel the morphological relationship exhibited by positive and comparative adjectives in English.

- 2 a. Steve is taller than Jeff.
- b. Steve (Jeff) is tall.
- 3 a. Steve is a taller man than Jeff.
- b. Steve (Jeff) is tall.
- c. Steve (Jeff) is a man.

Intuitively, (2a) does not entail (2b) and (3a) does not entail (2b), but (3a) does entail (3c). These facts seem to mitigate against an analysis in which (2a) is derived by deletion from a source along the lines of (4).

- 4 Steve is taller than Jeff is tall.

Bennett (1974) notices that the attributive use of adjectives exhibits similar properties. He observes that there are adjectives such as mortal which intuitively yield entailments like (5b) and (5c) from (5a).

- 5 a. Max is a mortal man.
- b. Max is a man.
- c. Max is a mortal entity.

Bennett labels adjectives like mortal intersective, referring to the fact that mortal man seems to designate the intersection of the set of men with the set of mortal entities. This is in contrast to adjectives like large (paradigmatic for adjectives which undergo comparative formation). When used in an adjective phrase, large permits entailments like (5b) from (5a), but does not allow the entailment from (5a) to (5c).

- 6 a. Formica is a large ant.
- b. Formica is an ant.
- c. Formica is a large entity.

Bennett calls adjectives like large non-intersective, for the obvious reason. Both types are subsective - that is, the set denoted by the noun with the attributive adjective is a subset of the set denoted by the naked noun. There are also non-subsective adjectives, although they are non-comparable. For instance, alleged and putative, when used in sentences like (7a) do not permit either (7b) or (7c) as entailments.

- 7 a. Percy is an alleged panderer.  
 b. Percy is a panderer.  
 c. Percy is an alleged entity.

These adjectives will not concern us here, although I will assume the result that Bennet obtains from their consideration, namely that if  $\alpha$  is a nonintersective adjectival phrase,  $\beta$  is a common noun phrase, and  $\gamma$  is their appropriate concatenation, then the extension of  $\gamma$  depends on the intension of  $\beta$ .

In order to guarantee the intersective and subjective properties of the appropriate adjectival phrases, Bennett requires that all models satisfy the following meaning postulates.

- 8  $\square [\forall (P)(x) \rightarrow P\{x\}]$  where  $\forall$  translates big or famous in  $B_{AJ}$ , or rapidly, slowly, or voluntarily in  $B_{IAV}$ .  
 This is identical to Bennett's MP 5 (Bennett 1974, p. 45) and guarantees the subjective property.

It is a simple matter to assure the correct entailments for comparative adjectives, and in (2) and (3), by amending (8) to allow  $\forall$  to translate derived adjective phrases such as taller than Jeff and a taller man than Jeff. This step receives support in view of the reasons advanced by various philosophers in favor of considering the attributive use of adjectives as prior to their predicative use. (see Cresswell (in Partee, to be pub.))

The majority of linguists who have treated the comparative have opted for an analysis which can be represented (in an extremely oversimplified manner) by (9).

- 9 Steve is (er - than Jeff is tall) tall.

Such an approach makes for problems in the semantics in exactly the same way (4) does. If the embedded clause is interpreted by the same set of rules that interpret non-embedded sentences (2b) is incorrectly produced as an entailment of (9). And if embedded clauses are not interpreted in the same way as surface clauses, machinery must be provided to defeat the entailment in some cases while allowing it in others (in relative clauses, for instance). But other arguments favor underlying structures on the order of (9) for syntactic reasons: (9) observes Emonds' structure preserving constraint, it provides syntactic structure to support intonational phrases, it provides the appropriate structures for supplying controllers in comparative deletion transformations, etc. In addition, many linguists have supported (9) on the grounds that it derives comparatives from simple (positive) adjectives, and that the converse is unthinkable. Ginet (1973) expresses the general dismay of linguists at the idea that the comparative is the more basic form. The arguments boil down to the notion that such an analysis would provide no way of accounting for sentences like (10).

10 Joyce thinks that Jeff is taller than he is.

Logicians have not been so reluctant to entertain the notion that the comparative, or relational form, is more basic than the positive, or predicative form. Thus Wheeler (1972) reasons (with Boas before him - see Ginet's discussion) that the act of comparing is conceptually and psychologically anterior to the act of establishing a ranking of things compared. Rather than considering tall to be a function that assigns degrees of tallness to its arguments, he looks on it as a relation between an individual and a set of which the individual is a member. Thus Wheeler gets (11a) from (11b).

- 11 a. John is a tall man.  
 b. tall(John, x (x is a man)) & John x (x is a man)

Temporarily ignoring the difficulty posed by (10), this formulation seems to have linguistic as well as philosophical merit, in that it is extendible in obvious ways to account for (12) and (13).

- 12 Ben is tall for a four-year-old.  
 13 Rich is taller for a jockey than Steve is for a basketball player.

The use of tall must be pragmatically conditioned at least in so far as it is our pragmatic knowledge of four-year-olds, jockeys, and basketball players that allows us to pick the relation between individual and set correctly for (12) and (13). I do not have any contribution to make concerning how to relate pragmatic contributions to meaning to semantic contributions, but I do find Wheeler's notion that the degrees of height picked out in (12) and (13) are a matter of physics, rather than semantics, to be seductive.

It also happens to be the case that the problem linguists see in (10) for an account like Wheeler's can be eliminated in a Montague grammar. To give a Montague account of (10) I will need to introduce some theoretical notions: abstracts, as introduced in Thomason (1972) and provided with a semantic interpretation in Thomason (1975), and VP pro-forms as used in Klein's (1975) paper on doing sloppy identity in a Montague grammar. The treatment will depend on the principle of lambda-abstraction, and on treating pro-forms as evidence for variable binding rather than for deletion. In analyzing sentences like (14) we first construct a formula with two free variables, as in (15).

- 14 Tim kisses Aisha and Ben bites her.  
 15 Tim kisses him and Ben bites him.

We take the semantic analysis of (15) to be (16), and then produce an abstract of (16) relative to  $x_1$  (17).

$$\begin{array}{l} 16 \quad \underline{\text{kiss}}'(x_1)(t) \ \& \ \underline{\text{bite}}'(x_1)(b) \\ 17 \quad x_1 \ [\underline{\text{kiss}}'(x_1)(t) \ \& \ \underline{\text{bite}}'(x_1)(b)] \end{array}$$

(17) is considered to be a function from individuals to truth values and can take the individual constant *a* (the translation of *Aisha*) as an argument to get (18).

$$18 \quad x_1 \ [\underline{\text{kiss}}'(x_1)(t) \ \& \ \underline{\text{bite}}'(x_1)(b)] \ (a)$$

(18) is interpreted as "the property of being kissed by Tim and bitten by Ben is true of *Aisha*." (17) the abstract of (16) will be represented in the derivation of English sentences by expressions like (19).

$$19 \quad \text{that}_1 \ [\text{Tim kisses him}_1 \ \text{and Ben bites him}_1]$$

so that combining (19) with *Aisha* will yield (14). Expressed more generally, if *d* is an expression of type  $\tau$  and  $v_1$  is a variable of type  $\sigma$ , then  $\lambda v_1[d]$  denotes a function of type  $\langle \sigma, \tau \rangle$  - a function from entities of type  $\sigma$  to entities of type  $\tau$ .

Klein (1975) uses abstraction operators,  $\text{that}_0, \text{that}_1, \text{that}_2, \dots$ , subscripted variables  $he_0, he_1, he_2, \dots$ , superscripted variables  $it_0^0, it_0^1, \dots, it_1^0, it_1^1, \dots$ , and superscripted abstraction operators,  $\text{that}_0^0, \text{that}_0^1, \dots$ , to account for the ambiguity of (20).

$$\begin{array}{l} 20 \quad \text{John kisses his wife and Bill does it too.} \\ \quad \quad (1) \text{ in Klein (1975)} \end{array}$$

Using Klein's methodology, it can be shown that scope ambiguities account for the different readings of (10) in a way consistent with the hypothesis that comparative adjectives underline positive ones, so that the hypothesis cannot be dismissed in a Montague treatment. To account for (20), Klein uses VP pro-forms. He looks on  $\underline{\text{do}} \ \underline{\text{it}}_0^1$  as an IV variable, and cites the sentences in (21), which he credits to Ross and Bouton, in deciding to treat the  $\underline{\text{do}}$  in  $\underline{\text{do}} \ \underline{\text{it}}_0^1$  as an independent lexical item, which combines with expressions that denote properties.

$$\begin{array}{l} 21 \quad \text{What you should do is blow up some buildings.} \\ \quad \quad \text{What I did then was call the grocer.} \\ \quad \quad \text{You do one thing right now: apologize.} \\ \quad \quad \text{Pay my price he has consistently refused to do.} \end{array}$$

Syntactically,  $\underline{\text{do}}$  combines with expressions of category index AB, (19) for example. Since  $\underline{\text{do}} \ \underline{\text{it}}_0^1$  behaves like an IV,  $\underline{\text{do}}$  gets the index IV/AB. In order to get  $\text{that}_0^1$ (20), you construct a higher order abstract, ABL, relative to the IV variable  $\underline{\text{it}}_0^1$ , and have it take an ordinary abstract as its argument. Klein breaks down the rule, which I give here as (22) in three parts in order to illustrate the duplication of functions, which I retain for ease of exposition.

22  $F_{24}$

If  $\beta$  is a variable, then  $F_{24}(\text{that}_i^1[\alpha], \beta) = F$ , where  $\alpha'$  is the result of replacing each occurrence of  $\text{it}_i^1$  in  $\alpha$  by  $\beta$ .

If  $\beta$  is of the form  $\text{that}_j[\gamma]$ , then  $F_{24}(\text{that}_i^1[\alpha], \beta) = F_{24_2}(F_{24_1}(F_{24_0}(\text{that}_i^1[\alpha], \beta) = \alpha'$  and  $\alpha'$  is the result of replacing the first occurrence of  $\text{it}_i^1$  in  $\alpha$  by  $\beta$  and all other occurrences of  $\text{it}_i^1$  by  $\text{it}$ ;  
 if  $\alpha'$  is of the form  $\delta \text{ do that}_k[\gamma] \epsilon$ , then  $F_{24_1}(\alpha') = \delta F_{30}(\text{do that}_k[\gamma]) = \alpha''$ ; if  $\alpha''$  is of the form  $\exists \text{ that}_j[\gamma] \epsilon$  and  $\delta$  is a T, then  $F_{24_2}(\alpha'') = \exists F_2(\delta, \text{that}_j[\gamma]) \epsilon$ .

n.b. Except for  $F_{24}$  and  $F_{25}$ , which follow Klein (1975) all rule numbers refer to the formulation in Thomason (1972).

To get (20) we construct John does  $\text{it}_3^1$  and Bill does  $\text{it}_3^1$ , t in the usual way, use  $\text{that}_3$  and rule  $F_{25}$  to turn it into a higher order abstract. We then quantify in the ordinary abstract  $\text{that}_4$ , [he<sub>1</sub> kisses his<sub>1</sub>'s wife]. The details of the construction of analysis and translation trees for these phrases are parallel to the steps shown for parallel constructions in (22). This produces the reading in which each man kisses his own wife. To get the reading in which only John's wife is kissed, we construct  $\text{that}_3^1$  he<sub>4</sub> does  $\text{it}_3^1$  and Bill does  $\text{it}_1^1$  and quantify into it with an abstract that has non-coreferential variables:  $\text{that}_0$  [he<sub>0</sub> loves his<sub>1</sub> wife]. Applying  $F_{24}$  to the result yields an analysis tree with a translation tree that gives the desired reading.

Now consider (23), which gives the trees involved in using this approach get (2a). As before, the strategy has been to combine a higher level abstract with a simple abstract. I have fudged the rule adjustment that will be necessary to make the final step, indicated by the squiggly line in the analysis tree. The manner in which I have treated more than is not intended as a serious proposal. While there is linguistic and philological evidence that suggests that more than resembles a conjunction with a negative second conjunct, and some linguists have suggested analyses that incorporate these suggestions explicitly (see Ginet, 1973, chapters 1 and 2 for a survey), my use here is designed only to simplify the trees and emphasize that I am making no claims about this aspect of the analysis. It would have been easy to adjust my view on more than to get taller than Jeff is tall to be an IV, a linguistically sounder step, but that would have led to a more elaborate tree, and it is my purpose here to demonstrate that whatever the details of a Montague analysis, the data that require deletion transformations for comparatives in transformational grammar can be handled in terms of quantification and variable binding.

23 Steve is taller than Jeff (is)

Steve is tall more than Jeff does it too, t, 24<sub>2</sub>

Steve that<sub>4</sub>[ he<sub>4</sub> is tall] more than Jeff does it too, 24<sub>1</sub>

Steve does that<sub>4</sub>[ he<sub>4</sub> is tall] more than Jeff does it too, 24<sub>0</sub>

that<sub>3</sub><sup>1</sup> [Steve does it<sub>3</sub><sup>1</sup> more than Jeff does it<sub>3</sub><sup>1</sup> too], AB1, 25

that<sub>3</sub><sup>1</sup>, AB1/t Steve does it<sub>3</sub><sup>1</sup> more than Jeff does it<sub>3</sub><sup>1</sup> too, t

Steve does it<sub>3</sub><sup>1</sup>, t, 3 more than Jeff does it<sub>3</sub><sup>1</sup>, t, 3

do it<sub>3</sub><sup>1</sup>, IV, 30 Steve, T do it<sub>3</sub><sup>1</sup>, IV, 30 Jeff, T

do, IV/AB it<sub>3</sub><sup>1</sup>, AB do, IV/AB it<sub>3</sub><sup>1</sup>, AB

that<sub>4</sub>[he<sub>4</sub> is tall], AB, 1

that<sub>4</sub>, AB/t he<sub>4</sub> is tall, t

be tall, IV he<sub>4</sub>, T

tall, CN/CN

more than' (do' (tall' (s)), do' (tall' (j)))

$\lambda Q_3^1$  [more than' (do' Q<sub>3</sub><sup>1</sup>(s), do' Q<sub>3</sub><sup>1</sup>(j))] ( $\lambda x_4$  [tall' (x<sub>4</sub>)]), t

$\lambda Q_3^1$  [more than' (do' Q<sub>3</sub><sup>1</sup>(s), do' Q<sub>3</sub><sup>1</sup>(j))], <<e, t>, t>

more than' (do' Q<sub>3</sub><sup>1</sup>(s), do' Q<sub>3</sub><sup>1</sup>(j)), t

do' Q<sub>3</sub><sup>1</sup>(s), t

do' Q<sub>3</sub><sup>1</sup>, <e, t> s, e

do', <<e, t>, (e, t)>> Q<sub>3</sub><sup>1</sup>, <e, t>

$\lambda x_4$  [tall' (x<sub>4</sub>)], <e, t>

tall' (x<sub>4</sub>), t

tall', <e, t> x<sub>4</sub>, e

do' Q<sub>3</sub><sup>1</sup> (j), t

do' Q<sub>3</sub><sup>1</sup>, <e, t> j, e

do', <<e, t>, (e, t)>> Q<sub>3</sub><sup>1</sup>, <e, t>

Exactly parallel to (20) we have sentences with comparatives, such as (24).

- 24 Steve is taller than his girlfriend, and so is Jeff.

The ambiguity is the same, and it is to be accounted for in just the same way. The same thing goes for sentences like (25), in which there are compared adverbs.

- 25 Ali pummeled Foreman more viciously than Frazier.

The analysis which provides an account of this sort of ambiguity in terms of quantification and binding can be extended to account for the deleted adverb by the simple expedient of postulating a variable to cover the adverb, whatever the details of the analysis. Klein has justified treating do it to as a TV in order to construct an abstract to treat sentences like

- 26 Jeff kisses Joyce more often than she tries to do it to him.

and the devices he posits, a new 'variable', it to<sup>2</sup> which combines with terms in the same manner as a TV, and a new abstraction operator, that<sup>TV</sup>, which takes ordinary abstracts into abstracts of category ABTV<sup>1</sup>, are perfectly suited for analyzing the deletions in sentences like those in (27) as instances of variable binding.

- 27 a. Megs plays chess more thoughtfully than checkers.  
b. Megs plays chess more thoughtfully than Steve.  
c. Megs plays chess more thoughtfully than well.

And given sentential pro-forms, which Klein motivates to handle sentences like (28) even such monstrosities as (29) present no special terrors.

- 28 It disturbs John that Mary hates him and it disturbs Bill too.  
29 Jeff is as much better a socker player than me as I am a better squash player than Steve.

None of the foregoing has touched on the semantics of comparative constructions. The thrust of the discussion has simply been to illustrate that the syntactic facts which justify Bresnan's transformational account are open to explanation within an ordinary Montague grammar account. To my mind, this shows that while there may be constructions in natural languages which will force workers in Montague grammar to substitute a transformational base for a categorial one, English comparatives aren't the one.

The semantics of comparison which Davis and Hellan attach to their account can be transferred, mutatis mutandis, to the sort of

account supported here. I suspect it could even be simplified a bit, considering that the depth of embedding would be greatly reduced. A comparative, each time it occurs in a sentence, is viewed on their account as contributing an ordering relation between a pair of degrees, and possibly a quantitative measure of the difference between the related degrees. This is certainly part of the story, but it is far from evident that such elements should be directly provided by the translation rules. Cresswell (to appear) offers an analysis which makes essentially the same assumptions in a simpler, more elegant formulation. He takes for granted that "when we make comparisons we have in mind points on a scale" and proposes an analysis in which adjectives, for instance, are supplied with scales by their semantic translation, and er than contributes the information that the degree of a property possessed by one of its terms is higher than that of a (possibly different) property possessed by its other term on the scale common to the properties attributed to the respective terms. Since Cresswell does not utilize an intermediate level corresponding to the translation into intensional logic characteristic of Montague grammar, it is by no means a simple task to give an equivalent Montague analysis. Such a statement is far beyond the range of this paper. The only other serious suggestion on how to handle comparative semantics that I know of is Ginet's (1973) proposal, based on a suggestion made by David Lewis in "Universal Grammar." Ginet's suggestion amounts to the notion that comparatives are used to denote the proposition that, in at least one sense, the property asserted of the favored term of the comparison is denied of the unfavored term. All of these accounts have something to recommend them, and all present problems. I will have to leave discussion of their relative advantages and detriments, and my suggestions on integrating their good features into a single account, for another paper.

\* \* \* \* \*

#### Notes

1. The careful reader will notice that the rule will not apply here in that one of Thomason's conditions on the rule of quantification is violated, since  $\mathbf{d}$  contains a  $j$ -variable. Klein notices this fact, and solves it by amending the condition preventing from containing any  $j$ -variable that was exposed to obligatory reflexivization by an  $i$ -variable.
2. In the main point I make in this paper I come down very hard on Davis and Hellan's analysis. This is misleading, because in fact I regard their paper as a very interesting, and possibly correct, approach to the problem, at least in so far as their semantics goes. The version I have seen is obviously quite preliminary, and a bit difficult going, but it rewards the persistent reader with a system that appears to get the proper results, in spite of being rough in spots.

References

- Bennett, Michael R. (1974) Some Extentions of a Montague Fragment of English, unpublished Doctoral dissertation, Univ. of California, Los Angeles.
- Cooper, Robin and Terence Parsons (to appear) "Montague Grammar, Generative Semantics, and Interpretative Semantics" in Partee, 3d., Montague Grammar, Academic Press, New York, New York.
- Cresswell, M.J. "The Semantics of Degree" in Partee (to appear).
- Davis, Charles and Lars Hellan "The Syntax and Semantics of Comparatives" (unpub. mss.)
- Ginet, Sally McConnell (1973) Comparative Constructions in English: A Syntactic and Semantic Analysis, The University of Rochester.
- Klein, Ewan (1975) "VP and Sentence pro-forms in Montague grammar" xerox. Philosophy Dept., Bedford College, London.
- Thomason, R.H. (1972) "Some extentions of Montague grammar" ditto, University of Pittsburgh.
- Thomason, R.H. (1975) "On the semantic interpretation of the Thomason 1972 fragment". ditto, University of Pittsburgh.
- Wheeler, S.C. (1972) "Attributives and their modifiers" Nous 6, 310-334.