THE COMPARATIVE REVISITED

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"La vérité n'est que rarement simple, et elle n'est jamais pure." (Marguérite Yourcenar)

Arnim von Stechow's critical appraisal of various theories of the comparative in the present issue of the *Journal of Semantics* provides a welcome opportunity for me to look at my 1973 paper again and give my comments. It is clear that that paper falls short of what it wanted to realize. Many extremely interesting observations were not made. Certain troublesome environments (such as counterfactual constructions) were not considered. The paper was definitely poor on the semantics of the comparative. And, finally, hardly any notice was taken of the various ways in which the semantic notion of comparative is expressed in the languages of the world. In the following I shall recapitulate my own position as given in 1973. I shall then give my own comments and suggestions for improvement. Finally I shall discuss von Stechow's critique. On the whole, however, I shall maintain the principles on which the 1973 analysis was based.

The analysis in my 1973 paper of the comparative proceeds in two stages. First, a comparative like "Jim is taller than Joe" is analysed as:

(1) $\exists e:extent [Jim is tall to e \land \sim [Joe is tall to e]]$

(With von Stechow, I will often use the notation "e-tall" for "tall to e"). This analysis is based on two main considerations. First, there is an intimate relationship of the comparative in English and most other European languages with negation. This appears from the etymology of *than*, which derives (Joly 1967) from Old English pon-ne ("by which not"). The French comparative particle *que*, as well as its Romance cognates, derive from Latin *quo* (via Vulgar Latin *quod*), meaning "by which". The missing element of negation crops up after comparative *que* when there is a second finite verb:

(2) Il est plus grand que je *ne* pensais. (He is taller than I thought.)

Many English dialects have nor for than, as is well known. Again it finds a non-negated counterpart in West Flemish of (Bergmans 1982) or Ancient Greek \bar{e} , both meaning "or". Then, in those English dialects that have Negation Copying, such as Cockney, one finds copies of the underlying negation after than: (3) She did a better job than what I never thought she would.

Moreover, so-called negative polarity items $(NPI)^1$ seem to feel quite at ease in *than*-phrases. Among the examples listed in the 1973 paper are:

- (4) a. That amount of spaghetti was more than I was all that keen to eat.
 - b. The fifth glass was more than I cared to drink.
 - c. John runs faster than he needs run.
 - d. He was a greater bore than I could possibly put up with.
 - e. He went further than I had the slightest intention of going.
 - f. My urge to steal was stronger than I could help.

The italicized items are all NPI (including *need* with bare infinitive). Yet they seem happy in *than*-phrases. Positive polarity items (PPI), on the other hand, are excluded in *than*-phrases:

- (5) a. *He has got more support than you *already* have.
 - b. *He carries more than I would rather do.
 - c. *You eat less than I could just as well do.
 - d. *He has more money than he would be *far better* off with.

Yet it is possible to read the sentences of (5) with an extent paraphrase and "and – not" for *than*. We can say, for (5a), "there is an extent such that he has support to that extent and you do not already have that amount of support". But now the second conjunct has the characteristic 'echo' of negated sentences with PPI's. Apparently, the negated second conjunct has to remain without such an echo.²

The second consideration behind the analysis given in (1) is to do with the quantification over extents. Such quantification is profitable in view of sentences of the type:

(6) Planes are safer now than thirty years ago.

Sentence (6) is ambiguous between a reading in which the same planes have become safer, and one in which whatever was a plane thirty years ago was less safe than whatever is a plane now. The analysis of generic plurals (*planes*) is problematic. In 1973 I committed the error of analysing such plurals as a form of universal quantification ("all planes"). But the argument is not affected by this. Let us, for lack of a better solution, analyse *planes* as "if you take an x:plane, then x...". If we apply this analysis to (6) as it stands we can only get:

(7) If you take an x:plane, then x is safer now than thirty years ago.

The second, and more obvious reading is then lost. If, however, we quantify over extents as illustrated in (1), as in:

(8) ∃e:extent [planes are e-safe now Λ ~ [planes were e-safe 30 years ago]]

and if we then apply the analysis of generic plurals, we get two readings:

- a. if you take an x:plane, then ∃e:extent [x is e-safe now Λ ~ [x was e-safe 30 years ago.
 - b. \exists e:extent [if you take an x:plane now, then x is e-safe $\Lambda \sim$ [if you took a y:plane 30 years ago, then y was e-safe]]

A small number of transformational and morphological rules then converts the analytical structures into the desired surface structures.

This is the first stage in the analysis of the comparative as presented in my 1973 paper. It is the analysis figuring in von Stechow's rendering of that paper. There is, however, also a second stage, regrettably neglected by von Stechow. The reason for the second stage is that analyses of the type (1) are inadequate for cases like:

(10) Jim is taller than six feet.

which contain a compared measure phrase (CMP) as the filler of the *than*-phrase. If we apply the analysis as given in (1) to (10), we get:

(11) \exists e:extent [Jim is e-tall $\Lambda \sim [6 \text{ ft is e-tall}]]$

But this is semantically inadequate, since one does not say felicitously "six feet is not that tall". Moreover, if (11) were correct, we would expect *Jim is taller than six feet is tall* to be a possible sentence of English, just as *Jim is taller than Joe is tall* is a possible sentence (albeit marginally possible). Also, if the expression *six feet* functions exactly the way *Joe* does in (1), we would expect the following ungrammatical sentences to be grammatical:

- (12) a. *Six feet is less tall than John.
 - b. *Six feet is as tall as John.
 - c. *John is not so tall as six feet.
 - d. *Six feet is smaller than John.
 - e. *Six feet is not so tall as John.

And we would expect the following grammatical sentences to be ungrammatical:

- (13) a. Six feet is less than John is tall.
 - b. Six feet is as much as John is tall.
 - c. Six feet is not so much as John is tall.
 - d. Six feet is more than John is tall.
 - e. John is more than six feet tall.

It is quite clear that CMP-comparatives are different from 'ordinary' comparatives, and this must be reflected in the analysis while the two types should be kept as similar as possible. To this end a refinement is brought about in the analysis, whereby all comparatives are reduced to comparatives of quantity (*much*). Instead of (1) we now read:

(14) $\exists e:extent$ [the f:extent [Jim has tallness to f] is much to $e \Lambda \sim$ [the g:extent [Joe has tallness to g] is much to e]]

We are now in a position to formulate an adequate, semantically transparent analysis of (10):

(15) ∃e:extent [the f:extent [Jim has tallness to f] is much to e Λ ~ [six feet is much to e]]

The analysis thus corresponds intuitively to something like "Jim's tallness is more than six feet is much".

At first sight it looks as though it is a long way from (14) to *Jim is taller than Joe*. Yet the way is hardly longer than from (1) to the same surface sentence, and there are some extra bonusses. In Seuren 1973 and in later publications it is argued that there is a rule, called *Relative Raising* in 1973, but *Predicate Lowering* later (1974), which has the following effect:

(16) the x S[...x...] be Pred.Nóminal \Rightarrow S[...Pred.Nóminal...]

That is, any underlying structure of the form "the x S[...x...] be Predicate Nominal" will receive sentence nuclear accent on the predicate (i.e., the predicate nominal), and can be reduced to just the relative clause S[...], but with the higher (accented) predicate in the position of the variable x. The higher predicate carries its accent along to the lower clause, which thus carries a nuclear accent on a constituent which itself is not the surface predicate. Thus, from "the x [John wrote x] be the létter" we get "John wrote the létter" (with contrastive accent). It is argued, furthermore, that a sentence of the underlying form "the x:Nominal S[...x...] be Predicate" can be changed into "the x S[...x...] be Predicate Nominal". Thus an underlying "the x:car S[I sold x] be réd", or: "the car I sold was red", we get "the x S[I sold x] be a réd car", and hence, by rule (16), "I sold a réd car".

The rule of Predicate Lowering is optional or obligatory, depending on the language and the construction in which it occurs. Its range of application is wide. In English and many other languages it is used for the purpose of contrast or emphasis.^{3,4} It is used in WH-questions: "Who killed Johnny Ray?" is derived from "the x S[x killed Johnny Ray]be whó" by means of rule (16), plus, if necessary, WH-preposing.⁵ It is used for the analysis of comparatives of the type:

(17) a. Jim bought a faster car than that Ford (is).b. Jim bought a faster car than Joe (did).

which are analysed in the first-stage terms of (1) as, respectively:

- (18) a. ∃e:extent [the x:car [Jim bought x] is e-fast Λ ~ [that Ford is e-fast]]
 - b. ∃e:extent [the x:car [Jim bought x] is e-fast Λ ~ [the y:car [Joe bought y] is e-fast]]

The structures of the type "the x:car [Jim bought x] is e-fast" are first transformed to "the x [Jim bought x] is an e-fast car", and then, by rule (16) to "Jim bought an e-fast car". We then get:

(19) a. ∃e:extent [Jim bought an e-fast car A ~ [that Ford is e-fast]]
b. ∃e:extent [Jim bought an e-fast car A ~ [Joe bought an e-fast car]]

The standard treatment of English comparatives then yields (17a) and (17b).

Going back to (14) and (15) now, we see that the structural bits of the type:

"the f:extent [Jim has tallness to f] is e-much"

is converted first to:

"the f [Jim has tallness to f] is an e-much extent"

and then, by rule (16) of Predicate Lowering to:

"Jim has tallness to an e-much extent".

Morphological rules (discussed in Seuren 1978) reduce this to "Jim is e-tall", so that we are now where we were at stage 1 in analysis (1).

In order to facilitate the discussion I shall operate from now on with the first stage analysis illustrated in (1). But it must be remembered that it is, in fact, a reduction from second stage analyses of the type illustrated in (14) and (15).

2.

In the light of this résumé of my 1973 analysis, I shall now discuss a criticism that has been levelled against it. The criticism in question derives from J.R. Ross (and is published in McCawley 1981:191). Ross observed that NPI's also occur in equative sentences of the type:

- (20) a. Paris is as quiet as ever.
 - b. Two glasses was as much as I cared to drink.
 - c. That was as much as he was willing to *lift a finger* to do.
 - d. Jim is as competent as anybody here could possibly be.

Both Ross and McCawley feel that observations such as (20a-d) speak against my analysis since "as-clauses would not contain an underlying negative".

Clearly, the value of this argument depends upon the plausibility of the assumption that equatives do not involve negation. Ross and McCawley seem to take this for granted. Yet a closer look at equatives quickly shows that this is not a foregone conclusion. Von Stechow, in his article in the present volume, points out (his ex. 203) that a sentence like:

(21) Jim is as tall as Joe (is).

can be interpreted in two ways. It means either (22a) or (22b):

(22) a. Jim is exactly as tall as Joe is.b. Jim is at least as tall as Joe is.

Von Stechow touches here on a difficult point, for which none of the existing theories of comparison has a satisfactory answer. Let me illustrate the point by giving some data. We note that (21) has two negations:

(23) a. Jim is not as tall as Joe (is).b. Jim is not so tall as Joe (is).

The former means that the extent of Jim's tallness and the extent of Joe's tallness are not identical; the latter that the extent of Jim's tallness is *less* than the extent of Joe's tallness. It might be thought that a sentence like:

(24) Jim is 6 foot tall.

is likewise interpretable as either (25a) or (25b):

(25) a. Jim is exactly 6 foot tall.b. Jim is at least 6 foot tall.

Yet, if this is so, it is much less clearly the case than with (21). Anyway, the negation of (24):

(26) Jim is not six foot tall.

must be considered true if Jim's height exceeds 6 ft as well as if it stays below 6 ft. This would indicate that (26) is the negation of (24) only in the reading (25a), which is the reading it most clearly has. On the other hand, a sentence like:

(27) Jim is that tall.

can also mean that Jim is at least that tall. And its negation:

(28) Jim is not so/that tall.

again clearly means that Jim is *less* tall than the measure indicated by *that/so*.

It thus appears that the equative relation expressed by *as...as* is not always symmetrical. The relation specifying extents by measure phrases, as in (24), however does seem to be symmetrical (Jim is exactly as tall as 6 ft is much, and 6 ft is exactly as much as Jim is tall). On the other hand, if an extent is specified by means of a deictic expression, as in (27), the relation is not symmetrical (Jim is at least as tall as 'that' is much, but not vice versa). It is far from clear what the ultimate rationale is for this play between symmetricity and non-symmetricity. We should notice that very similar phenomena occur with verbs that are commonly classified as being symmetrical, such as *meet, equal*, or *resemble*:

(29) a. Jim met Joe.

- b. Jim equals Joe in height.
- c. Jim resembles Joe in the way he walks.

It has often been observed that such sentences are not necessarily symmetrical. If (29a) is said to assert that Jim met Joe at the airport, then surely the predicate is not symmetrical. If (29b) or (29c) are said in a situation where Jim is Joe's father and Joe is an adolescent son, then they are incorrect. For then we feel we must say that Joe equals Jim in height, and that Joe resembles Jim in the way he walks. (We may say that these predicates give rise to a presupposition that the subject (Jim) has been subject to change prior to reaching the state or event described by the sentence. But this aspect will not be pursued any further here.)

The best we can do, with these data in hand, is to posit a real ambiguity between two different readings for equatives like (21). One reading is symmetrical, the other is non-symmetrical. This solution is not satisfactory in every respect, mainly because the ambiguity posited is not of the usual type. Usually, ambiguities differ greatly from language to language since their occurrence in the grammar results from the rules of grammar, which differ from language to language, and their occurrence in the lexicon is usually haphazard. (There seems to be no reason other than historical accident why, e.g., *loom* in English means "weaving machine" or "shaft or handle of an oar" or "indistinct and exaggerated apperance of land at the horizon, seen through mist or darkness" (OED)). If we adopt, therefore, a solution involving an ambiguity between symmetrical and non-symmetrical equatives, we must be prepared to live with ambiguities that are lexical but not haphazard.⁶

We now observe that NPI's do not occur in equatives of the symmetrical type:

(30) a. *Jim is exactly as competent as anybody here could possibly be.b. Jim is at least as competent as anybody here could possibly be.

But they do occur, as in (30b), in non-symmetrical equatives. This would suggest that non-symmetrical equatives do contain an underlying negation, contrary to what Ross and McCawley believe. Let us see what happens if we analyse (21), in the non-symmetrical reading (22b), as follows:

(31) ∀e[the f [Jim has tallness to f] is much to e V ~ [the g [Joe has tallness to g] is much to e]]
 (where e, f, and g are extents)

Intuitively this reads as something like "for all extents of tallness, if Joe has it, so has Jim". This is reduced by Predicate Lowering to:

(32) $\forall e [Jim is e-tall V \sim [Joe is e-tall]]$

This analysis by itself is not sufficient, because it does not enable us yet to extract the correct truth-conditions. We still need a semantics that makes sure that bits like "~ [the g [Joe has tallness to g] is much to e]" or "~ [Joe is e-tall]" are considered true only if Joe is *less* tall than the degree indicated by e. We shall come to this in a moment. Now, assuming the right semantics, we see that the negation of (31) gives the right result. If we place the whole of (31) under negation, we get:

(33) $\exists e [\sim [Jim is e-tall] \land [Joe is e-tall]]$

which entails that Jim is less tall than Joe, provided we have the right semantics for " \sim [Jim is e-tall]"

If we apply this analysis to (20d) above, we get:

(34) ∀e [Jim is e-competent V ~ [anybody here could possibly be ecompetent]]

or, intuitively, "for all extents e, if anybody here could possibly be e-competent, then Jim is e-competent". We now have the negation which is in any case needed if we want to maintain the generalization that NPI's occur only in negative environments. Depending on the general tenability of this whole approach, we may now say that the Ross-McCawley objection has been met. But we cannot say that we have explained the phenomena at hand. One reason is that we still have very little understanding of the behaviour of NPI's. We may posit the condition that any NPI must occur in the scope of some negation in underlying structure, but that condition is hardly enough. Notice, for example, that (20d) lacks the negation form that is typical for non-symmetrical equatives, as in (23b):

(35) *Jim is not so competent as anybody here could possibly be.

(There is a negation for (20d), but with *as...as*, and with radical *not* and an echo:

(36) ! Jim is NOT as competent as anybody here could possibly be.

where the exclamation mark is used to indicate the echo.) The only serious attempt at explaining the occurrence and behaviour of NPI's is Ladusaw 1979, but it is couched in terms of a semantics that is totally alien to this study, and, moreover, as we shall see below, it is inadequate in several respects. In any case, the objection raised by Ross and McCawley is either not valid, or it has to be supported by arguments why the assumption of an underlying negation in non-symmetrical equatives is impossible.

The symmetrical reading of the equative structure (21) can be rendered as follows:

(37) the e [Jim has tallness to e] = the f [Joe has tallness to f]

Likewise, if (24) has the symmetrical reading, we read:

(38) the e[Jim has tallness to e] = 6 ft

where it is to be noted that the expression "6 ft" is the name of an extent (of tallness). If it is felt that (24) can, after all, also mean what is expressed by (25b), we read:

(39) the e [Jim has tallness to e] is much to 6 ft

provided we give a correct semantic description of the predicate *be much* to, as we shall do in a moment. If these structures are negated, we get the right results, provided again that *be much to* is given a proper semantic definition.

A remarkable detail with all this is that the negation used with symmetrical equatives smacks of the radical negation and provokes an 'echo', as in (23a), (26) or (36). On the other hand, there is a feeling of minimal negation when non-symmetrical equatives are negated. In fact, the construction so - Adjective - as is a negative polarity item, whereas as - Adjective - as is a positive polarity item. I do not venture an explanation of these phenomena here.

3.

So far, we do not seem to be faring too badly with our analysis of the comparative. It is time, therefore, to try and find some weaknesses, and this is not too difficult. First of all, the 1973 proposal is poor on the semantics of comparative constructions. The analysis is based on the notion that surface structures are transformationally related to semantically transparent underlying structures, – whereby the rules of transformation must be well-motivated and have a fair load of explanatory value. But nothing is said about what lies beyond the semantically transparent underlying structure. In other words, there is no real semantics yet in that paper. This in itself is not surprising, considering the total lack of real semantics in linguistics till quite recently. The possible world, or model-theoretic, semantics adopted by von Stechow has it origin in the formal semantics for logical languages, and penetrated into linguistics proper only

quite recently. Since my 1973 paper was firmly rooted in the world and the tradition of linguistics, it would have been strange if there had been a well-developed semantics available in that paper.

The situation is a great deal better now. There now is a theory of formal semantics, which is model-theoretic in the sense that it defines functions for the computation of truth-values of sentences given certain independently defined states of affairs (or 'possible worlds'). It is this form of semantics that von Stechow adopts in his study. Against this, it may be observed that existing standard formal semantics suffers from certain central weaknesses. Among these is the fact that the functions provided do not seem to be implementable within the constraints of any reasonable psychological theory: they are cognitively implausible to a very high degree. Moreover, present-day standard formal semantics is strongly sentence-based, and fails to take into account the central role of context or discourse in processes of understanding and interpretation. Many researchers today feel that a reasonably plausible psychological model of linguistic comprehension should incorporate the factor 'discourse' and assign it a central place, while the role of logic should be considered indispensable but marginal. I reckon myself to belong to this group of researchers. I therefore do not accept the semantics used by von Stechow. This means that some of his comments or inferences regarding my 1973 analysis lack relevance, as will become clear below.

Another important respect in which standard formal semantics fails to do justice to linguistic reality is the area of presuppositions. Presuppositions tend to be relegated to an ill-defined 'pragmatics'. In the semantics I am developing (Seuren (forthcoming)) presuppositions are a semantic property of sentences: they are presupposed in previous discourse, and therefore entailed. As was said in note 2, two negations are distinguished in natural language, the minimal, presupposition-preserving negation and the radical, presupposition-cancelling negation, which provokes an 'echo'. Consequently, there are three truth-values, one for truth, one for minimal falsity (whereby the presuppositions are still entailed), and one for radical falsity (where all entailments are cancelled). Presuppositions originate from predicate conditions, i.e., conditions to be fulfilled by term denotations for the application of the predicate to result in truth. Two kinds of predicate conditions are distinguished: preconditions (whose non-fulfilment results in radical falsity), and satisfaction conditions (whose nonfulfilment results in minimal falsity).

I shall now give an outline sketch of the way in which a cognitive, discourse-based, presuppositional theory of semantics might handle the analyses of comparative and equative constructions provided above. In doing this I must ask the reader to keep in mind that it is not really feasible to present a complete and explicit theory at this stage. First, the theory itself is still very much in development, and then, even if the general theory were available in a sufficiently elaborated and explicit form, its application to comparison constructions is likely to be far from trivial. We know that the grammatical description of these constructions is extraordinarily complex; the same may be expected for the semantic description. In what follows I shall aim directly at an account of the predicates *have tallness to* and *be much to*. The account is 'mixed' in that it is couched in truth-conditional terms as well as in terms of mental correlates of expressions occurring in grammatically underlying structures.

We must first postulate a cognitive parameter T of tallness, which starts from the value zero and extends one-dimensionally without any upper limit. The term "extent" applies to parts of parameters. Extents are either limited by the value zero and by some upper limit, in which case they are called *finite*, and *positive*, or they are limited by a lower value other than zero, and are unlimited upwards. These are infinite and negative. (In Seuren 1978 it is argued that positive gradable adjectives (tall, heavy, old) are translatable in terms of positive extents, and negative gradable adjectives (short, light, young) in terms of negative extents.) We furthermore postulate an operation of projection, whereby a gradable property of some entity is mapped onto some parameter. Projection is thus a function which gives a value for a (mental representation of) an entity on some parameter. The value provided is the limit of the extent associated with the entity of the parameter. If the extent is positive, it is the upper limit; if the extent is negative, it is the lower limit. Projection is easily demonstrated by means of a diagram. If we project Jim's tallness on the parameter T, we get the extent e of Jim's tallness:



And likewise, if we project Jim's shortness on T, we get the extent e' to which Jim is *not* tall:



We are now in a position to understand what is meant by an expression

like "Jim has tallness to the extent e". This expression must be interpreted as saying that e is the projection of Jim's tallness on the parameter T. More generally, we specify the predicate conditions of the predicate have tallness to as follows:⁷

(42) "X have tallness to Y" is true iff: preconditions: X is the name of an entity that can be said to have tallness; Y is the name of an extent on the parameter T; satisfaction condition: Y is the projection of X on T.

Note that for (42) to make any sense it is necessary that projections have truth-values. In the context of this paper I shall take the truth-conditions of projections for granted and rely on intuitive processes of grasping the truth-conditions of cognitive representations. Our next step is the definition of the predicate conditions for the predicate be much to, since sentences of comparison are derived from underlying forms typically containing structural elements of the form "the e [Jim has tallness to e] is much to Y", where e is an extent variable, and Y" stands for any extent variable or extent name. The subject phrase, i.e., " the e [Jim has tallness to el'', is now defined as the projection of Jim's tallness on the parameter T. What remains is a definition of the predicate be much to. This definition must be such that its negation generates the entailment that the extent expressed by the subject phrase is less than the extent expressed by the object phrase. We have taken care that this predicate does not occur in symmetrical equatives, so that these do not run the risk of non-symmetricity.

Let us now define be much to as follows:

 (43) "X be much to Y" is true iff: precondition: There is a parameter P such that X and Y are extents on P;³ satisfaction condition: ∀v [v ∈ Y ⊃ v ∈ X], where "v" is a variable ranging over values on P.

It is clear that the negation of this predicate, "~ [X be much to Y]", now has the desired entailment that the extent X is *smaller* than the extent Y, since the negation of the satisfaction condition is equivalent with the statement that there is a value ν on P such that $v \in Y$ but $v \notin X$. Given the way in which we have defined extents and projections, this simply means that whatever is projected on P to yield X is smaller on the P-scale than the extent Y.⁹

This is as much as I can say here about the semantics of comparison constructions.

Another severe limitation of my 1973 paper consists in the fact that, whatever its merits or demerits, it can claim validity only for a highly restricted class of languages, let us call them *than*-languages. In Stassen 1984 it is shown that quantitative comparison of unequal entities is expressed in many different ways in the languages of the world. Without any claim to completeness, we can distinguish the following types (largely based on Stassen 1984):

- (a) "Jim and Joe, Jim is tall" (Malay)
- (b) "Jim is tall, Joe is not tall" (Nahuatl)
- (c) "Jim is tall, Joe is short" (Samoan)
- (d) "Jim exceeds Joe in tallness" (Hausa)
- (e) "Jim tall exceed Joe" (Yoruba, Cambodian)
- (f) "Jim is tall to Joe" (Breton, Masai)
- (g) "Jim is tall from Joe" (Japanese, Korean, Hindi)
- (h) "Jim is tall on Joe" (Georgian).

Furthermore, there are the *than*-languages, which have a semantically non-transparent particle to link up the two terms of comparison, as well as a morphological or lexical marking expressing the notion "more" or the notion "less". The languages of the types (e)-(h), moreover, sometimes have a "more" -marking on the adjective. Sranan (Surinam Creole), for example, has besides a *than*-comparative, also a comparative of type (e), i.e., with the serial verb *psa* ("exceed"), but with the adverb *moro* ("more") to modify the adjective.

The categories (a)-(e) are fully transparent semantically, in that these languages do not have a separate construction for the comparative but make use of existing means to express what the comparative expresses in languages that have a special category for it. The most one can say here is that the construction types shown are the conventional means for expressing the comparative notion. In (f)-(h), on the contrary, there seems to be a stronger form of conventionalization in that metaphors of place are used conventionally to express the comparative.

Type (e) is intermediate in that a serial verb construction is used, which makes these languages particularly prone to conventionalization and even reanalysis. In many West African languages, for example, as well as in many Creoles whose speakers originate from West Africa, one finds a rich and productive use of serial verb constructions alongside with frequent reanalyses of serial verbs into prepositions, adverbs and particles. Thus, in Sranan (and analogously in most Caribbean Creoles) the sentence A lon gwe, derived historically from a ("he") run go away, simply means

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"he ran away", and the originally serial verb gwe is no longer felt to be verbal but adverbial. Typically, in serial verb languages the dative preposition is identical with or derived from the verb for "give". And many other examples could be cited. (A clear indication, in these languages, that reanalysis has taken place is that the 'new' adverbs, prepositions, particles can no longer be combined with indicators of tense and aspect.)

The *than*-languages are the least transparent of all, which probably explains why their constructions of comparison are so complex. What is known of the history of the comparative constructions in at least the Germanic and the Romance languages indicates that older stages of the construction in these languages were more transparent. Germanic thansentences as well as Romance que-comparatives derive historically from a construction of the type "Jim is tall to an extent to which Joe is not tall", or "Jim is tall to some extent and Joe is not tall to that extent". This appears from the etymologies of than and its Germanic cognates (from bon-ne meaning "by which not"), of Romance que (from Latin quo meaning "by which", whereby the negation has not been lexicalized into que but crops up again in the comparative clause as was shown in ex. (2) above), of the English dialectal form nor ("and not") for than. The occurrence of particles meaning "or" for than in certain languages (West Flemish, Ancient Greek) might be explained by the assumption that those comparatives derive from historical predecessors meaning "for all extents e, either Jim is e-tall or Joe is not e-tall", i.e., the equative, with some semantic shift towards the comparative in the course of historical reanalysis.

Although many, perhaps even most, historical details are shrouded in mystery and may even remain that way forever, enough is known to assert with some confidence that the European than-comparatives derive historically from semantically more transparent constructions. An interesting confirmation is provided by Italian, which has two comparative particles, di (from Latin de meaning "from") and che (from Latin quo, the Italian counterpart of French que). These two particles are in complementary distribution: di is used whenever the than-phrase consists of a noun phrase; che is used before a than-clause, i.e., with a finite verb. However, instead of *che* followed by the comparative clause it is also possible to have di quello che ("from that which", where che is not the comparative particle but the relative pronoun "which"). In formal standard Italian the negation non (together with the use of the subjunctive) is required in the than-clause whenever its complementizer is the comparative che. But when the clause is relativized by means of *di quello che* there is no negation and no subjunctive:

 (44) a. Luigi è più alto che non pensassi. ("Luigi is taller than l thought") b. Luigi è più alto di quello che pensavo. ("Luigi is taller from what I thought")

This difference is confirmation for the hypothesis that the *che*-comparative in Italian derives historically from a construction involving the negation, whereas the *di*-comparative does not. In general, however, the evidence is relatively messy, and a great deal of mixing of construction types seems to have been going on.¹⁰

The overall conclusion is that we must seriously reckon with the possibility that comparatives are the result of historically preceding semantically transparent constructions into either new construction types or already existing grammatical categories. *Than*-comparatives by themselves typically form new construction types in the languages where they develop. Yet certain elements of this construction type fall in with existing categories. Thus, the deletion rules for comparatives show non-trivial similarities with deletion rules in conjunctions. Closely related languages may differ in details of reanalysis. In English, for example, *than* turns into a preposition when it is followed by a noun phrase, as appears from the oblique form of personal pronouns (45a) as well as from the possibility of stranding *than*, as in (45b):

(45) a. Jim is taller than me (*1).b. Jim is the one nobody is taller than.

In the closely related Dutch construction, with the particle *dan* for *than*, this is not so:

(46) a. Jim is groter dan ik (*mij).
b. *Jim is degene waar niemand groter dan is.¹¹

Against this partially fuzzy and blurred background of historical development, the question now arises what historical reanalysis means in terms of synchronic description. What exactly happens when a semantically transparent construction jells into a new category or is shaped into the form of an existing category thereby affecting the semantic transparency of the latter? This question, again, is not easy to answer.¹² Clearly, any answer to this question will necessarily have to be heavily theory-dependent. In my theory, I would be inclined to say that reanalysis in the case of comparative constructions in the European languages means that the lexicon has been enriched with a ready-made bit of computation, so that it is no longer necessary, psycholinguistically, to go through the whole semantic computation of the comparative, as it was in the semantically transparent construction type. Computationally there is an advantage in that a system with a larger inventory of ready-made but semantically more complex building blocks for sentences is more efficient in terms of processing than a system with fewer ready-made items and less complex internal analyses: single lexical items are grammatically easy to handle, and can still carry a considerable load of semantic information. Such storing of semantic information into ready-made lexical items occurs generally when the semantic information in question is of a typical, recurring nature.

This answer, however, is deceivingly simple. In actual fact, there are a great number of complications associated with this 'jelling' of semantic information into single lexical items. In language, as in all other areas of nature, the truth is rarely simple, and never pure.

5.

In this section I wish to expand a little on the complexities of lexicalisation, in particular with regard to a serious problem raised by von Stechow in his paper in this volume.

The analysis of the comparative that I presented in my 1973 paper was entirely in the tradition of what was then called 'generative semantics' (or 'semantic syntax', as I have always preferred to call it). This tradition was characterized by the notion that a grammar of a language is a set of rules mapping underlying structures and surface structures of sentences onto each other (i.e., the traditional idea of philosophical grammar), and by the idea that the deepest syntactically underlying structure (deep structure or DS) is identical with the semantic analysis (or SA) of a sentence. At the same time it became clear that at least some lexical items lend themselves to internal analyses along lines strictly parallel to syntactic analyses found for 'open' syntactic constructions. The most successful illustration of this type of analysis was McCawley's analysis of causative verbs (in particular kill, which was analysed as "cause to become dead"), as proposed in many publications. The central rule operative in bringing together "cause to become dead" under one single V-node is the rule of Predicate Raising, which has since been shown to occur in the open syntax of many languages in the world (Seuren 1972; Evers 1975). Given the assumption that DS equals SA, it was assumed as well that complex lexical items were best described in syntax by inserting them into syntactic trees as part of the overall transformational process. This is also what is done in my 1973 paper: a DS-cum-SA is assumed (what I have called "analysis" in this paper), and the bit "and -not" is replaced by than at some stage in the derivation.

Since then we have grown a little wiser. First, it became clear that

many lexical items that lend themselves for decomposition also carry a great deal of 'extra' information over and above the information contributed by the internal syntactic analysis. Thus, for example, the item assassinate in the English lexicon not only contains the bit "cause to become dead", but also a great deal extra which is not open to such clearcut quasi-syntactic analysis. For it to be true that A assassinates B, B must not only be killed, but the killing must be a case of murder (i.e., unlawful and with malice afore-thought), and B must be a person of public importance, and the killing must take place on account of B's public importance. All this information is part of the meaning of assassinate, but not conveyed by any motivated form of prelexical syntactic analysis. Many linguists drew the conclusion that, therefore, the whole theory of lexical decomposition was worthless, but that conclusion was a little premature. What does follow, however, is that a semantic analysis of a sentence containing the predicate assassinate had better be presented in two stages: one stage (the DS) where the item itself is left unanalysed, and one further stage which has no effect on the syntax but which unravels the lexical meaning of the word, partly in terms of "cause to become dead". This means that it makes sense to distinguish between a deepest syntactically underlying structure DS, which only provides a partial semantic analysis, and a full semantic analysis 'underneath' the DS.

This is all right for a number of semantically complex lexical items. It explains, for example, why they are impenetrable for quantification. This is an important point: if *kill* is analysed as "cause to become dead" (or, for ease of reference, "cause to die"), then, one might ask, why is it that:

(47) Harry killed someone.

can only mean $S[\exists x_S[Harry cause S[x die]]]$, and not $S[Harry cause S[\exists x_S[x die]]]$. In the 'primitive' semantic syntax theory there is nothing that could exclude the latter reading, since cyclic treatment will first transform $S[\exists x_S[x die]]$ into S[someone die], and further cyclic Predicate Raising will give S[Harry V[cause-die]] someone] and hence Harry kill someone. But if quantification is made to operate on structures with all lexical items filled in, we can avoid this awkward consequence without any extra cost.

The attractiveness of this theory is illustrated by a case like French *défendre*, which is analysed as either "not allow to take", i.e., prohibit, or "not allow to be taken", i.e., defend, with an extra passive thrown in. A sentence like:

(48) Jean a défendu le vin à un enfant.

can only mean "there is a child such that Jean forbade it wine", and not "there is no child that Jean allowed to take wine" or "Jean did not allow there to be a child that took wine". If all complex lexical items behaved in such orderly manner, theory-building would be relatively easy. Unfortunately, however, matters are more complex. For there are propositional operators, such as *almost*, which do penetrate into complex items. Morgan (1969) made the famous observation that:

(49) Harry almost killed Bill.

can mean "Harry almost caused Bill to become dead", or "Harry caused it almost to happen that Bill became dead", or "Harry caused Bill to become almost dead".¹³ On the other hand, the negation behaves like the quantifiers:

(50) Harry did not kill Bill.

cannot mean "Harry caused it not to happen that Bill became dead" or "Harry caused Bill to become not dead".

Moreover, some complex lexical items do allow for certain quantifiers to 'penetrate', but never the 'open' quantifiers some, all, every and their class, and never the negation not. The quantifiers that do sometimes penetrate are unstressed a and any with its class (ever, the slightest), the latter requiring a negation somewhere in the complex item. Thus, if we analyse look for as something like "try (for) to find", a sentence like:

(51) Harry is looking for a secretary.

is, as is widely known, ambiguous between a specific reading where Harry is looking for a specific secretary ($\exists x$:secretary [Harry is trying to find x]), and a reading where what Harry wants is a secretary (Harry is trying for $\exists x$:secretary [Harry finds x]). Likewise, the item *lack*, decomposed as "not have", with the presupposition that the subject could do with what it does not have, clearly allows for internal quantification with *a* or *any*:

(52) a. She lacks any charm.b. He lacks a sense of humour.

It thus seems that we must distinguish between two kinds of operators (including quantifiers). On the one hand we have the class of 'external' operators, such as *not*, *some*, *all*, *every*, which never penetrate into a lexical item, and the 'internal' operators, such as *almost*, *a*, the zero article,

any, ever, which can penetrate into some lexical items, but not into all. And we must distinguish between the 'closed' items which are entirely impenetrable, and the 'open' items which do allow for penetration by the internal operators. I'm not sure that this picture is adequate, but the distinctions mentioned seem inevitable in any theory of grammatical and semantic description. They are not a peculiarity of the theory of semantic syntax, but have the status of facts that need a description and an explanation. For the theory of semantic syntax these and similar observations have far-reaching consequences, the details of which transcend the limits of this paper.

It must be mentioned, however, given the immediate relevance to the present context, that the notion of 'penetration' into a complex item extends to the position just after any incorporated negation, even if the negation stands at the extreme right of the analysis. Von Stechow notes (his exx. (84) ff.) that *Jim is taller than Joe* would entail *Jim is taller than everyone* in my theory. His reasoning is as follows. Assuming that proper names may denote only existing individuals, my analysis of this sentence, as given in (1) above, entails:

(53) \exists e:extent [Jim is e-tall $\Lambda \exists x \sim [x \text{ is e-tall}]$]

which again is equivalent with:

(54) $\exists e:extent [Jim is e-tall \land \sim \forall x [x is e-tall]]$

which would have to be convertible into the comparative:

(55) Jim is taller than everyone.

Von Stechow touches on an important point here, but it is not, as he presents it, a point that affects my theory in particular. On the contrary, we have here a fact that needs a description and an explanation in *any* theory of the comparative.

Let us have a closer look. Sentence (55) does not mean what (54) says. (54) means that not everyone is as tall as Jim,¹⁴ but (55) means that for every x it is the case that Jim is taller than x. So the problem does not lie in the logic that gives (54) as an entailment from (1), but in the grammar that must prevent the derivation of (55) from (54). The grammar must make sure that everyone in (55) is given scope over the whole sentence. In fact, the grammar must make sure that all external quantifiers after *than* have largest scope. Only the internal quantifiers can have scope under *than*. In all of the following sentences the quantifier has largest scope:

- (56) a. Jim is taller than someone.
 - b. Jim is taller than no-one here.
 - c. Jim is taller than many people.

Not so with the internal quantifiers:

- (57) a. Jim is taller than anyone here.
 - b. Jim is taller than you will ever be.
 - c. Jim is taller than a six-year-old.

Here the quantifier scope is, or may be, limited to the clause under than.

Note that it would be wrong to propose that, e.g., (57a) should be read as "for everybody here it is true that Jim is taller than him", since that analysis fails for (57b), which clearly cannot mean "it is always the case that Jim is taller than you will be", The proposal that *any* in (57a) should be taken as the universal quantifier with large scope thus fails on account of the analogous case (57b) where this analysis is blocked. The sentences (57a-b) are to be analysed as, respectively:

(58) a. ∃e:extent [Jim is e-tall Λ ~ ∃x [x is e-tall]]
 ∃e:extent [Jim is e-tall Λ ~ ∃t [at t [you will be e-tall]]]
 (where "t" is a variable over time moments).

Notice also that (57b) is ungrammatical when *ever* is replaced by *sometimes* or by *always* (i.e., by external quantifiers):

(59) a. *Jim is taller than you will sometimes be.b. *Jim is taller than you will always be.

The reason for this ungrammaticality is simple (in semantic syntax). Both *sometimes* and *always* would have to take large scope, i.e., preceding the initial existential extent quantifier. But then these words will inevitably end up in the main clause:

a. Jim is sometimes taller than you will be.
b. Jim is always taller than you will be.¹⁵

As has been said, we have here a problem, not noted before, to my knowledge, in the literature, which is general and exists for any theory that assumes a clause (always or sometimes) after *than* at any structural level that is input to the semantics. And, of course, there is no theory that does not make such a claim. The problem is that a sentence like:

(61) Jim is taller than everyone thinks.

requires overall scope for *everyone*, and excludes any interpretation with the scope of *everyone* limited to the *than*-clause. (61) means unambiguously "for every x, Jim is taller than x thinks", and not "not everyone thinks Jim is as tall as he is". Since there is a clause after *than*, any theory recognizing this clause will have to account for the fact that this type of clause is subject to the constraint that it does not allow for quantification under an external quantifier. Only internal quantification is allowed there. We must be grateful to von Stechow for coming up with his problem of "unwarranted inferences", since without that we would not have noticed this troublesome and therefore interesting fact.

This is not the right place to venture a theoretical explanation and a descriptive frame for the distinction between external and internal operators, and the distinction between those items that do and those that do not allow for operator penetration. It must suffice here that these distinctions are real, and are, apparently, at work in the comparative as well as in other cases of complex lexical items. From this viewpoint, the complication at hand, though unsolved in the general theory of linguistic description and explanation, is a further argument in favour of the decomposition of *than* into "and – not".

6.

In this last section I will discuss the main remaining points in von Stechow's paper that affect my comparative analysis.

6.1 Ambiguous counterfactuals

Von Stechow points out that a sentence like:

(62) If Jim had worked harder than he did, he would have passed.

has at least the following two readings:

- (63) a. If, at the time under discussion, "Jim works harder than he does" had been true, he would have passed.
 - b. If, at the time under discussion, Jim had worked harder than he actually did, he would have passed.

The former reading is somehow absurd, since it entails that a condition for Jim's passing is that he does and does not work hard to some extent,

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which will make it wellnigh impossible for him to pass. The second reading is the reasonable one. Von Stechow points out as well that any adequate theory of the comparative must allow for an account of both readings, in particular reading (b), which is the more difficult to achieve.

Up to this point I have no quarrel with von Stechow. But he then proceeds to present an analysis of counterfactuals in terms of a possible world semantics and Lewis-operators, using this account of counterfactuals as a touchstone for the various theories he discusses. In doing so he seems to take it for granted that his account of counterfactuals (and the wider semantic theory of which it forms a part) is the correct theory. It must be observed, however, that some comparative analyses may perhaps not easily lend themselves to a von Stechow-type account of counterfactuals but be naturally compatible with other semantic theories and counterfactual accounts. In other words, the criterion of "ambiguous counterfactuals" says little about the comparative theories discussed as long as there is no agreement on the intrinsic quality of possible world semantics. On the other hand, however, the challenge posed by (62) must be met, and if a possible worlds account is rejected, it would be good if it could be shown how an alternative account would work.

All I can do here is give a summary sketch of the alternative theory. (For details see Seuren (forthcoming).) I envisage an incremental semantics, whereby each new utterance adds a bit of structure to a discourse domain D. Additions to D (i.e., increments) are of two kinds: they either add to the bulk of D or they add to D an instruction constraining subsequent developments of D. The conjunction if is analysed in deep structure as a predicate taking clauses as arguments. Its contribution to any given D consists in an instruction to the effect that, given if A then B, all subsequent developments of D are subject to the constraint that if A is added, B is added as well. So far there is no difference between ordinary conditionals and counterfactuals. Counterfactuals differ, however, from ordinary conditionals in that the instruction says "for all subsequent developments of D', if A is added so is B, - where D' = D except that D entails not-A and D' lacks that entailment". (In actual fact, I would stipulate that for counterfactuals the predicate if presupposes that D entails not-A and *asserts* for D' what ordinary conditional *if* asserts for D.)

The important point now is that it must be possible for any clause proposed for incrementation to D' to contain expressions referring to elements in D. If the means for doing so is secured, there is in principle no obstacle left for a solution to the problem posed by (63b). Technically this is easily achieved in discourse semantics. Increments to nontruth domains must be marked anyway, as well as definite descriptions, for a number of reasons. Thus, e.g., any theory of semantics must account for the non-contradictory readings of sentences like: (64) The girl with brown eyes has blue eyes.

This sentence is true if the subject-NP refers to a girl with brown eyes who, for example, has been represented in a painted portrait as having blue eyes, - or vice versa, if the subject-NP denotes a portrait of a girl painted with brown eyes who, in fact, has blue eyes. (Cp. Fauconnier 1979).

For increments to non-truth domains we can use subscripts indicating the domain to which a clause is to be added. For (63b) we get something like:

(65) IF(\exists e:extent D'[Jim has worked e-hard] $\Lambda \sim D$ [Jim has worked e-hard]], D'[Jim has passed]

This analysis takes if to be a deep structure predicate. as was said a little earlier, taking clauses as arguments.¹⁶ As was said in Section 3 above, extents are interpreted as parts of parameters. They are thus domain-independent. Projections, however, as well as clauses indicating or specifying their quantity (by means of the predicate be much to) are domainspecific. Thus, "D'[Jim has worked e-hard]" is a quantity specification in D' of the intensity of Jim's work by means of the permanently available intensity parameter. The same clause indexed for D is the same in D. (A parsimonious notation would leave out all indexings for D and mark only subdomains that are not intended to be held up for truth-testing.) (65) thus says that for any addition to D' where an intensity extent eis identified for the projection of Jim's working on the intensity parameter in D' such that e is larger (greater) than the truthful specification of the intensity of Jim's working in the truth-domain D, for any such addition to D' it is required that "Jim has passed" be likewise added to D'. The presupposition that there is no intensity extent e fulfilling the same conditions but involving only D-increments is trivially satisfied, since no domain can contain a contradiction.

6.2 Downward entailment

In his Section IV, von Stechow discusses the use made in Seuren (1973) of negative polarity items (NPI), and rejects the support value of their occurrence in *than*-phrases and *than*-clauses for the assumption that *than* contains a negation on the grounds that, according to von Stechow, it is shown in Ladusaw 1979 that NPI's occur typically in *downward entailing* contexts, i.e., roughly, in positions where a replacement of the constituent filling that position by another constituent denoting a proper subpart of the extension of the original constituent results in an entail-

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ment of the original sentence. This allows us, still according to von Stechow, to give up the hypothesis of underlying negation in *than*.

I am afraid I disagree entirely. First, even if Ladusaw's theory were adequate, there would not be any good reason for giving up the hypothesis of underlying negation. For the theory that says that NPI's occur typically in downward entailing contexts does not say anything about the reasons for the downward entailments. If indeed, as I assume is the case for many downward entailing positions at least, the downward entailments can be seen to result from underlying negations, negation being the prime dowward entailment generating operator, then both Ladusaw's and my theories are helped. In other words, there is no contradiction between Ladusaw's account and mine.

There would be a contradiction if it was claimed that all NPI's always require an underlying negation and if it could be shown that there are cases where an underlying negation is impossible. Von Stechow seems inclined to read such a claim into Seuren (1973), but without reason. I have never made that claim about NPI's (though it would be nice if it were found to be viable). My inference from NPI's after comparative than to underlying negation is of a tentative kind, intended to lend further support to the analysis, not to 'prove' it. Moreover, where von Stechow mentions downward entailing positions that also allow for NPI's such as the common noun position after every, then to claim that the assumption of an underlying negation would make no sense, one does not have the impression that he has looked very hard for a viable analysis with underlying negation. One can easily do better than analysing the universal quantifier as $\sim \exists \sim$ just in order to let negations jump out of the logical hat. All one would have to do is apply, one way or another, the standard analysis of the universal quantifier in predicate logic, i.e., through an implication. And the implication "A \supset B" is equivalent with "~ A V B", which makes the desired negation jump out of the hat rather more elegantly. Not that I intend to defend this analysis here, but it is an obvious thought, which might well be usable in a theory of semantic syntax coupled with discourse semantics.

There are, moreover, independent problems with Ladusaw's theory. First, it is by no means the case that all NPI's behave similarly. Many, but not all, occur in *than*-environments. To give an example, the NPI *can be helped* is out of place in:

(66) *The child must be left alone more than can be helped.

The sentence becomes grammatical when it is negated:

(67) The child must not be left alone more than can be helped.

I wish I knew why, but I don't know. No-one to my knowledge has so far made any kind of representative survey of English NPI's and the environments in which they can occur. It has been done for Dutch, however (Hoppenbrouwers 1983), and it is immediately obvious that Ladusaw's theory does not cut ice. It only cuts some ice for the extremely limited class of NPI's considered in his study. Even for those, however, there are problems. *Every*, for example, is downward entailing with regard to its common noun, and it allows for NPI's in that position. But *each* is likewise downward entailing in that way and it does not allow for NPI's there:

(68) *Each boy who had ever read any science fiction was hooked on it.

Then, *few* allows for NPI's (some at least) in its CN-position, like *every*, but it is not downward entailing with respect to that position (contrary to what von Stechow says):

(69) Few animals fled ⊭ Few dogs fled.

Likewise, be surprised allows for NPI's in its complement clause, but it is not downward entailing:

(70) She was surprised that Harry came to the party ≠ She was surprised that Harry and Rita came to the party.

It seems to me, therefore, that my analysis is not seriously threatened by Ladusaw's theory, and that the latter will need a great deal of refinement and correction, if it does not turn out to be a blind alley altogether.

6.3 Negation and quantifiers

In connection with his exx. (93) and (94), von Stechow states that sentences of the type:

(71) Jim is taller than Joe and Steve.

are a problem for my theory, since my theory would make the obviously false prediction that at least in one of its readings (71) should mean the same as:

(72) Jim is taller than Joe or Jim is taller than Steve.

which is, of course, not so.

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There is some justification for this objection, since under the assumptions of classifical calculus an analysis like:

(73) \exists e:extent [Jim is e-tall $\Lambda \sim$ [Joe is e-tall Λ Steve is e-tall]]

which would correspond to (71), is equivalent with:

(74) [∃e:extent [Jim is e-tall Λ ~ [Joe is e-tall]] V ∃f:extent [Jim is f-tall Λ ~ [Steve is f-tall]]]

which corresponds to (72). In my 1973 paper there is no indication that I wish to deviate from classical calculus, so that any critique solely based on that paper is fully justified in drawing attention to this point. There are, however, later papers which make it clear that I entertain unorthodox notions regarding the logic underlying natural language use.

In my paper 'Negative's travels' (1974) I draw attention to the fact that De Morgan's laws seem to apply only asymmetrically in natural language. It is observed there (pp. 201 ff.) that (75a) and (75b) 'feel' equivalent, but (76a) and (76b) do not:¹⁷

- (75) a. He doesn't like tea and he doesn't like coffee.b. He doesn't like tea or coffee.
- (76) a. He doesn't like tea or he doesn't like coffee.b. He doesn't like tea and coffee.

In a footnote on p. 203 it is pointed out that this phenomenon is found again in comparatives. The two sentences in (77) 'feel' equivalent, but those in (78) do not:

- (77) a. Jim is taller than Joe and Jim is taller than Steve.b. Jim is taller than Joe or Steve.
- (78) a. Jim is taller than Joe or Jim is taller than Steve.b. Jim is taller than Joe and Steve.

In Seuren 1979, 1980, and (forthcoming), I argue that the logic found in natural language is three-valued, with the values 'true', 'minimally false', and 'radically false', and that there are two negations, the minimal negation (\sim), and the radical negation (\simeq),¹⁸ as indicated in note 2 above. I feel entitled, therefore, to claim that my comparative analysis should be seen in the light of the published papers, which means, at least, that it should be clear that I do not share all assumptions of classical logic.

It does not mean, however, that I have all the answers ready. But one observation can be made, which may be sufficient to show that this particular problem of and and or, at least for the present, does not constitute a serious threat. The observation is that the conjunction operator and seems to be a positive polarity item, which means that when placed under negation, that negation must be the radical negation, so that an 'echo' is provoked or anyway some special intonation is called for, as in (76b). If this is so, then (73) is an impossible structure since it has the minimal negation over a conjunction. That negation should be the radical one. But then there is no longer a conversion into than. Consequently, (73) cannot be an analysis of (71), and, in fact, in my comprehension of English (71) must be interpreted either with large scope for and, so that (71) is the same as (77a), or as meaning that Jim is taller than Joe and Steve taken together, for which reading I am hesitant to propose an analysis. It will be evident that there is no problem in relating (77a) and (77b).

6.4 Differential measure phrases

A neglected aspect of the comparative question is the analysis of differential measure phrases (DMP), such as six inches in:

(79) Jim is six inches taller than Joe.

At the end of my 1973 paper I mention the problem of DMP's and propose a very tentative solution in sketchy outline. The idea put forward there is that DMP's should be anlaysed as metaphorically interpreted extension-phrases, more or less like "Jim is tall to an extent to which, over a stretch of 6 in, Joe is not tall". This analysis is called "speculative" there (p. 561). In any case it seems that DMP's are most naturally analysed as modifying phrases taking scope over the than-clause. (In deep structure these phrases function as predicates.) If we are prepared to fall back on the notion of reanalysis, it is not even very important any more what kind of semantically transparent modification is taken to underly DMP's, since they have become a specialized category in their own right, used just to function as differential measure phrases. It may also be that the historically underlying modifying phrase is not necessarily the same in all than-languages. What I had not noticed in the 1973 paper is that, in English, the preposition by seems to lurk just beneath the surface of DMP's:

- (80) a. She was his elder by fifteen years.
 - b. I'll make you shorter by the length of one head.
 - c. He beat me by two minutes.

A similar modification seems to underlie Latin DMP's which are placed in the ablative case. If by underlies DMP's, (79) would read as "Jim is tall to an extent to which, by 6 in, Joe is not tall", at least historically. The semantics of DMP's is clear: DMP's result in cognitive extents on the relevant parameter representing the parameter extension covered by the comparing entity and not covered by the comparee, – more or less as is proposed by Hellan 1981. In any case, it is clear that we haven't seen the end of the day yet in comparative analyses.

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NOTES

1. "Negative polarity items" is the term commonly used for lexical items or combinations of them, or grammatical constructions, which (for largely unknown reasons) require either a full negation (not) or a negative word, such as hardly, or only, in declarative main clauses, on pain of ungrammaticality. Examples are at all, all that (+ adj.), in the least, ever, any, so - adj. - as, any more, as much as (+ VP), can possibly, bat an eyelid, etc. Positive polarity items are items which, when placed under negation, provoke an 'echo'. Examples are relatively/absolutely/eminently etc. (+ adj.), still, not, splendid, some, far from (+ adj.), perhaps, etc....

2. In work I have done after 1973 (e.g. 1979, 1980) I argue that a distinction must be made between two negations in natural language, the minimal negation (\sim), which is presupposition-preserving, and the radical negation (\simeq), which cancels presuppositions. The negation required by NPI's is the minimal one, whereas PPI's allow for only the radical negation, which is the source of the 'echo' observed by many linguists in negative sentences with PPI's. Moreover, if a negation is morphologically or lexically incorporated, it can only be the minimal negation. It thus follows that the negation of the comparative is the minimal negation, not the radical one. The ungrammaticality of the sentences of (5) is thus explained. For a more complete account see Seuren (forthcoming).

3. An obvious problem is formed by those cases where the contrasted element is not a syntactic constituent but, e.g., a morphological element, as in:

(i) I didn't DEcode it; I ENcoded it.

Note that contrastive accent is a problem for all existing theories of grammar. One way or another, they all encounter difficulties here. In particular those theories which proclaim that any grammatical element can always be adorned with contrastive accent fail to explain why, e.g.,

(ii) *I don't suppose Harry has arrived yet; BILL has.

For cases like (i) I would suggest that they should be treated as contrasting quoted elements, more or less as:

(iii) not [the x ["Ipast x-code it"] is "de"; the x ["I past x-code it"] is "en".

It is noteworthy, anyway, that in French constrastive Predicate Lowering is not allowed when the contrasted element is a full nominal constituent, but obligatory when it is something else. Thus, French has (iv) but not (v):

- (iv) Dieu DISpose; il ne PROpose pas.
- (v) C'est DIS que Dieu pose; ce n'est pas PRO.

Clearly, a thorough general study of the relation between (pseudo)clefting and Predicate Lowering in various languages would be extremely useful.

4. Montague grammarians often use a variant of Predicate Lowering in order to account for contrastive accent. Their analysis is cast in terms of lambda-calculus:

(i) λx [John wrote x] (the letter)

Lambda-conversion then yields the surface sentence John wrote the letter. It should be noted, however, that this is a spurious use of lambda-calculus. Lambda-formulas are simply logically equivalent with their conversions; their usefulness lies in the fact that a semantic function named as a lambda-formula can 'anticipate values in certain argument positions provided 'higher up' in the categorial tree. However, the use of lambda-formulas as underlying structures in syntactic descriptions is entirely different, and the difference should be noted.

5. This analysis of WH-questions has interestingly correct consequences for multiple questions of the types (Baker 1970):

- (i) Who bought what?
- (ii) Who remembers what we bought?
- (iii) Who remembers that we bought what?
- (iv) Who remembers where we bought what?

But we cannot go into this question here.

6. The situation is somehow similar to what we find with negations (see note2). In the case of negation, however, there is a principled explanation for the ambiguity, as is explained in Seuren (forthcoming).

7. We can, on the basis of (42), define derived predicates such as *have tallness to* half-Y. The satisfaction condition is then "Y is half the projection of X on T". This will produce the correct semantics for cases like *Jim is half as tall as John*. 8. There are cases such as:

(i) The corridor is longer than the room is wide.

where two parameters with a common measuring system are collapsed into a single parameter of that measuring system. Besides, there are cases of 'sloppy' comparison, such as:

(ii) He has more clothes than cupboards to put them in.

which means something like "he does not have enough cupboards to put all his clothes in". Or:

(iii) he talks more than he has money.

which is even further removed from the ordinary meaning of comparatives.

9. This analysis is, in fact, a provisional follow-up of note 17 in Seuren (1973:561). 10. I am intrigued by the fact that German and Ancient Greek, which have comparative particles (als and \mathcal{E} , respectively) that do not historically incorporate a negation, allow for negative verbs in a way that English and Dutch, whose comparative particles do incorporate a negation, do not. We find, e.g., in Ancient Greek (Plato, Sophist 258c):

(i) Pleion ē 'keinos apeipe skopein...
 (lit: "More than he forbade to look...")

or in ordinary standard German (in a TV-play):

(ii) Das ist ja schneller gegangen als ich befürchtet hätte.
 (lit: "That went faster than I had feared.")

whereas they mean, respectively, "more than he *allowed* to look" and "that went faster than I had *suspected*".

11. Preposition stranding is not the same in Dutch and in English. Some forms of colloquial Dutch, however, come pretty close to standard English in this respect. Yet even in these forms of Dutch no equivalent of (45b) is ever possible.

12. The main author in the linguistic literature on questions of diachronic reanalysis and grammaticalization is T. Givón (1979a; 1979b), who is a severe critic of 'established' syntactic theory.

13. Remarkably, the three readings are distinguished in French. The first corresponds to something like *Harry aurait tué Bill*; the second is rendered as *Harry a failli tuer Bill*; the third is *Harry a presque tué Bill*. (I am indebted to Lance Ridley of Sydney University for this observation.)

14. Notice that, in the terms of the equative analysis given above, the sentence:

(i) Not everyone is as tall as Jim.

is analysed. as:

(ii) $\sim \forall$ e:extent [$\forall x$ [x is e-tall] V \sim [Jim is e-tall]]

which is equivalent to (54).

15. Hoeksema (this volume) maintains that *anyone* as in (57a) is indeed the universal ('free choice') *any*, and not, as I maintain, the (negated) existential *any*. The point is of considerable weight for his analysis, since he defends the thesis that NP-comparatives are upward entailing and S-comparatives are downward entailing. (I reject the thesis, as well as the grammatical distinction beyond anything deeper than shallow structure: the semantic differences are all accounted for by operator scope.) Hoeksema's argument is that *any* in NP-comparatives can be modified by *almost* or *nearly*:

(i) Jim is taller than almost/nearly anyone here.

whereas (negated) existential any cannot:

(ii) *There wasn't almost/nearly anyone here.

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However, it must also be noted that

(iii) There almost/nearly wasn't anyone here.

is a fine sentence, where *almost/nearly* takes *not* in its scope. Note that (i) does the same semantically: "Jim is tall to an extent to which almost/nearly no-one here is". In much the same way I know takes *not* in its scope in, e.g.:

(iv) Jim is taller than I know his brother is.

which is "Jim is tall to an extent to which I know his brother is not".

Hocksema's argument is too weak altogether. Note, for example, that universal any always requires a modal or 'irrealis' context:

(v) *Any teacher drank a lot at the party/ \sqrt{Any} teacher will drink a lot at the party.

One would expect this condition to be present in NP-comparatives with *any*, but it is not:

(vi) Bennie drank more than any of the teachers at the party.

One would moreover expect, on Hoeksema's account, that the inverted comparative should be acceptable, but it is not:

(vii) *Any of the teachers drank less than Bennie at the party.

Finally (for now), Dutch quite clearly shows the untenability of Hoeksema's position in this respect, since Dutch has a clear lexical distinction between 'free choice' any(= wie dan ook) and existential any (= ook maar iemand). We now see that the latter is perfectly normal in NP-comparatives:

(viii) Hij weet meer dan ook maar iemand van ons. He knows more than anyone of us

I submit, therefore, that Hoeksema's argument is insufficient. I submit, moreover, that this point is crucial.

16. The lexical analysis of *if* will reduce it to a structure with the analysis " $\sim A V B$ " (for "if A then B") as a central element. This will then be the basis for an explanation of the occurrence of many NPI's in *if*-clauses.

17. The difference is described there as a result of *and* being a Negation Raising predicate, whereas *or* is not. Though I still hold that view, more is needed to explain this whole complex of phenomena.

18. For the properties and proof theory of this three-valued propositional calculus, see Weyters 1982.

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