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AMOUNT RELATIVES

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It is argued here that English contains a distinct class of relative clauses called amount relatives. On the surface, these are very much like restrictive relative clauses, but they have a syntax and semantics which align them more with comparatives than with restrictive relatives. By positing this new class, we can account in a general way for some apparently exceptional behavior of certain relative clauses. Issues discussed include relativization of the logical subject of a sentence which has undergone *There-Insertion* (such as *every man there is*), as well as the interaction of idiomatic expressions and relative clause formation.*

A distinction has traditionally been recognized between English restrictive and non-restrictive (appositive) relative clauses. Of the criteria which differentiate these two types, the best known is the 'comma' intonation pattern associated with the appositives. But even if this particular criterion did not exist, others could be applied, such as the following:

(a) Appositive relatives, unlike restrictive relatives, must be introduced by a WH-form, and never by *that* (or \emptyset):

(1) George, {who, *that} likes no one, enjoys Handel.

(b) Appositive relatives, unlike restrictive relatives, may co-occur with certain types of head nouns (e.g. proper names):

(2) *George that likes no one enjoys Handel.

(c) Appositive relatives, unlike restrictive relatives, may not co-occur with certain quantifiers:

(3) a. *Any lion, which eats small animals, is cowardly.

b. Any lion that eats small animals is cowardly.

(d) Appositive relatives, unlike restrictive relatives, may co-occur on the same head only if they are conjoined (i.e., they may not 'stack'):

(4) a. The tiger that I saw that I wanted to buy was five weeks old.

b. *The lion, which was five weeks old, which was fed twice a day, ate only fillet of salmon.

(e) Appositive relatives and restrictive relatives have different semantic structures associated with them; the former is much like a conjoined sentence, and the latter more like an adjective.

(f) Appositive relative clauses may relativize NP's that may not be relativized in a restrictive relative:

(5) a. The men, of whom all were astronauts, left.

b. *The men of whom all were astronauts left.

I will argue here that another class of relative clauses, the amount relatives, may be distinguished from restrictive relative clauses by just the types of criteria listed

* My thanks go to Barbara Partee, Emmon Bach, and Edwin Williams for their insights and comments. Errors, of course, are my sole responsibility.

above. This distinction will account for a number of sentences which appear anomalous within the traditional class of restrictive relative clauses.

ANALYSIS OF AMOUNT RELATIVES

1. One context that serves to distinguish restrictive relatives (RR's) from amount relatives (AR's) is illustrated in 6. In 6a we see that an RR cannot relativize the logical subject of a context where *There*-Insertion has applied. In 6b, however, we find a grammatical sentence, where the quantifier has been changed from *some* to *every*. We might at first think of 6b as an RR, but I will claim that it is rather an AR:

- (6) a. *Some man there was ___ on the life-raft died.
 b. Every man there was on the life-raft died.

The ungrammaticality of 6a is predicted by many past analyses of RR's.¹ We will here use a variant of one of them—the NOM-S analysis presented in Stockwell et al. 1973.

1.1. RESTRICTIVE RELATIVES. Under the NOM-S analysis, the NOM of the head and the NOM of the relativized NP must be identical, but their determiners need not be. The determiner associated with the relativized NP is a constant definite (or at least 'specific') determiner, here symbolized as *THAT*. The process of relativization will delete the NOM of the relativized NP on identity with the NOM of the head, change the determiner *THAT* to *who* or *which* (as appropriate), and move the WH-form into the COMP position that abuts the head. For example, the underlying form of the NP *the man who Johnny shot* is shown in Figure 1.

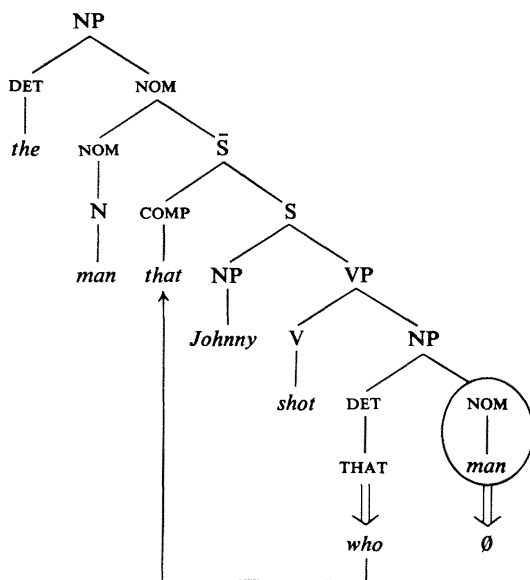


FIGURE 1.

¹ For instance, those of Kuroda 1969, Perlmutter 1972, Martin & Carlson 1974, McCawley 1970, and those analyses which claim that the underlying relativized NP is a definite pronoun, or exhibits a definite determiner.

The circled NOM is here deleted; the determiner THAT of the relativized NP is changed to *who*; and *who* is moved into COMP position. As an option available in all cases, the relativized NP may simply be deleted; this produces a relative clause introduced by the complementizer *that* (which itself may be optionally deleted, resulting in the 'contact' relative).

The ungrammaticality of 6a, then, results naturally from the nature of the underlying form of the relativized NP. Assuming *There*-Insertion to be a cyclic rule, we find that, prior to relativization, the subject NP of 6a would be of the following form:

Some_{NOM}[man_S[that_S[there was_{NP}[THAT man] on the life raft.]]]

Such a structure would be ruled out by the definiteness restriction on *There*-Insertion (see Milsark 1974), whatever its exact nature may be. This restriction, which prevents subject NP's with certain quantifiers and determiners from undergoing *There*-Insertion, is responsible for the unacceptability of 7a-b, containing the definite determiners and the non-cardinal quantifiers (i.e. those quantifiers that specify number only in relation to a given set). But the quantifiers in 7c, which are acceptable, are those which express cardinality (or amount) in some absolute terms:

- (7) a. *There is {the, that, this, Mary's, every, each, any} man in the laundromat.
 b. *There are {all, most} men in the laundromat.
 c. There are {several, many, eleven, few, lots of, etc.} men in the laundromat.

Since the determiner THAT is a definite, of the same class as the determiners in 7a-b, the underlying form of 6a is ruled out for the same reason as 7a-b.²

If we think of 6b as an RR like 6a, then it too should be unacceptable; but in fact it seems quite acceptable. We will be able to account for this by positing a class of modifying clauses, AR's, which may co-occur with quantifiers like *every*, but not with those like *some*. The analysis of AR's will in many ways parallel the analysis of comparative clauses proposed by Bresnan 1973, 1975.

1.2. COMPARATIVES. We note first that the compared NP in a comparative clause may undergo *There*-Insertion:

- (8) There are more women in high school than there are ___ in college.

In the analysis of comparatives assumed here, the head consists of a NOM (or an

² Naturally, the sentences of 7a are acceptable on a 'List-*there*' interpretation, and one might hypothesize that the relative clause of 6b receives this particular sort of interpretation. But this does not appear to be so. Sentence (a) below has no 'List-*there*' reading, but may appear felicitously in a context of the kind found in 6b, as in (b):

- (a) *There was the doctor available.
 (b) Every doctor there was ___ available rushed to room 222.

We further note that the characteristic 'List-*there*' intonation contour is absent from these relative clauses, and that unusual interpretations of certain adverbs, as in (c) with *always*, fail to appear in the relative construction of (d):

- (c) Well, there's ALWAYS the garbage man (for you to date).
 (d) ??Every garbage man there ALWAYS is (for you to date) has made a fool out of me.

ADJ) preceded by a Quantifier Phrase (QP). The QP consists of a determiner and a quantifier (Q), namely *much* or *many* (which I represent here abstractly as AMOUNT). The determiner is *-er*, plus an optional comparative clause introduced by *than*. The compared element of the comparative clause (assuming it to be an NP) has a NOM which may or may not be identical to the head NOM. The QP of the compared NP consists of a Q identical to that found in the matrix, plus a determiner which in some manner is bound by the determiner *-er* in the matrix (I take the liberty of representing this determiner, too, as THAT). The approximate underlying form of 8 is illustrated in Figure 2.

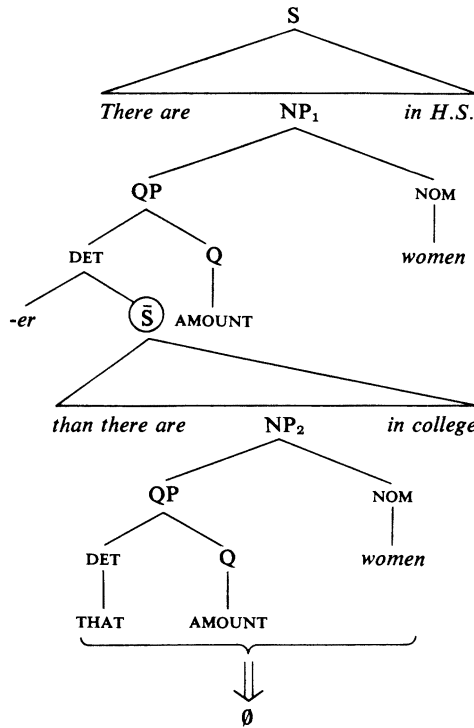


FIGURE 2.

The compared NP is deleted by the rule of Comparative Deletion presented in Bresnan 1975. The circled \bar{S} is extraposed to the end of the NP or sentence, and the determiner *-er* is attached to the following Q. Further rules dictate that *many + er* and *much + er* are both pronounced 'more'.

The QP of the compared NP qualifies as an expression of cardinality or amount, in spite of the fact that the determiner of QP is itself a definite non-cardinal expression. To use a concrete example, though the determiner *that* may not allow *There-Insertion* (as in 9a), 9b shows that the QP *that much* does allow *There-Insertion*, even though the DET of the QP is itself a definite:

- (9) a. *There was THAT horse in the pasture.
- b. There were THAT many horses in the pasture.

Amount relatives can in many ways be treated like comparatives.

1.3. AMOUNT RELATIVES. The AR in 6b is like the comparative in that the relativized NP has the form of a compared NP, with the QP THAT AMOUNT quantifying over the NOM. The source of the AR, like that of the comparative, is within the determiner. But there are a few differences: (a) in place of the *-er* determiner of the comparative, we have those quantifiers like *every* (as opposed to *some*) with which AR's may co-occur; (b) instead of AMOUNT in the matrix, we posit an empty NOM node there, into which the NOM of the relativized NP in the subordinate clause is moved by a raising operation. By this analysis, the underlying structure of the subject NP in 6b has the form of Figure 3.

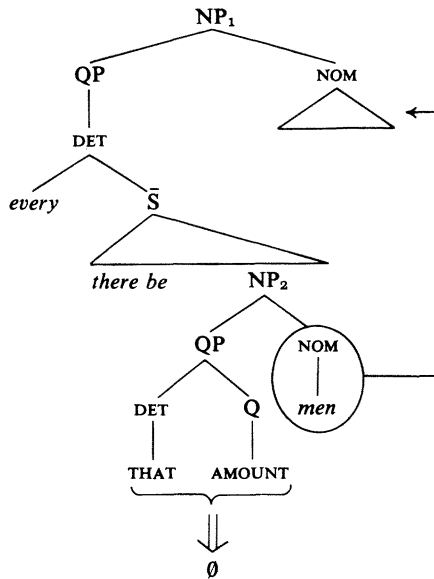


FIGURE 3.

The QP in NP_2 is deleted, the NOM of NP_2 is raised into head position, and the relative clause under the DET is extraposed to the end of the NP, resulting in 6b; this is grammatical because the QP of the underlying form of the relativized NP is an expression of amount, and thus may undergo *There-Insertion*—exactly as in the subordinate clause of 8. What prevents 6a from having the same structure is that the quantifier *some* cannot occupy the position of *every* in Fig. 3; so the subordinate clause there must be an RR, since it cannot be an AR.

In what follows, I will motivate this analysis of AR's, justifying their existence as an independent class of relative clauses. This will be accomplished in three sections. In §2, the underlying form of the relativized NP will be justified as one whose specifier is an expression of amount or cardinality, as in comparatives. This is opposed to the nature of the DET of the relativized NP in an RR, which is a definite non-cardinal determiner. In §3, the raising analysis will be motivated. In §4, I will motivate the determiner source for the amount relative.

THE RELATIVIZED NP

2.1. RANGE OF DETERMINERS AND QUANTIFIERS. Let us for the moment use relativization of the logical subject of an S that has undergone *There-Insertion* as

our chief diagnostic for ascertaining what range of determiners and quantifiers may co-occur with AR's, and what range may not. We find that the items in 10 are those that may head an AR; the remainder, partially illustrated in 11, may not co-occur with AR's:

- (10) a. THE people there were ___ at that time only lived a few decades.
 b. That's ALL there is ___.
 c. {WHAT, THAT} light there is ___ in this painting is quite diffuse.³
 d. ANY beer there may be ___ left in that cooler is mine.
 e. EVERY lion there is ___ eats meat.
- (11) a. *{Five, Most, Several, Many} men there were ___ here disagreed.
 b. *{Some, Each, A} man there was ___ disagreed.

The six items in 10 will be called Class I items; the remainder, Class II items. Class I contains the definite article *the*, the universals *every*, *all*, and *any* (not the polarity item, but the universal quantifier that appears in modal contexts—see fn. 16), the non-deictic *that* (pronounced with low stress), and *what* (including the cases where a head N is missing with *what*, the 'headless' relatives). In Class II are all the cardinal quantifiers, the demonstratives and possessives, *most*, the universal *each*, and the null determiner. Class I items, then, are those that may appear under the determiner with a right sister \bar{S} ; Class II items may not.

I think that the analysis offered here can lead us to an understanding of why these particular items appear in Class I, rather than in some other arbitrary grouping. Recall that, in the analysis of the comparatives, it is assumed that a binding relation of some sort exists between the *-er* determiner of the matrix and the THAT determiner of the subordinate clause. Both of these items may precede some expression of amount in underlying structure (the Q AMOUNT in Fig. 2). If we assume that the relationship between *-er* and THAT may hold only between elements of the same syntactic category, and that the same sort of relationship is found in amount relatives between the quantifier or determiner of the matrix and the THAT in the relative clause, then it should follow that the Class I elements must be of the syntactic category of those elements that precede an expression of amount, like *-er*. Examining those items that may precede some expression of amount, we find the following groupings:

ACCEPTABLE	UNACCEPTABLE
THE 40 men	TEN many people
THESE few insects	FEW several incidents
EVERY ten minutes	LOTS OF many boys
ANY five cigars	MANY twelve pounds
ALL fifty Vikings	A several clods
WHAT few remarks . . .	SOME eight mammals
-ER many bottles	A FEW ten oboes
THESE two answers	SEVERAL many ladies
THESE five criminals	MOST nine squids
MY many dreams	EACH fifty minutes

³ The quantifier *all* is most natural if no nominal follows, and will be excluded from paradigms which require a following nominal. There is also a low-stressed *this*, corresponding to the *that* listed here, which I have not sorted out to my satisfaction; it will be excluded from the paradigms presented here.

As anticipated, the Class I items all may appear prior to some expression of cardinality. Most of the Class II elements may not,⁴ with the exception of the deictics and possessives. We would then anticipate that they, too, would be able to head AR's. In order to prevent this from occurring, I will simply suggest that the demonstratives and possessives are subcategorized for a null determiner clause. This solution may not seem so ad-hoc if we think of the possessives and demonstratives as containing (semantically) whatever *the* contains, plus some other material, which may be rendered in clausal form (though not necessarily). For instance, *this* may be equivalent to *the* + WHICH BE NEAR, or the like. Thus the place under the determiner for a clause may already be filled in some abstract sense, in the cases of the demonstratives and possessives, lending a semantic basis for the subcategorization suggested here. By assuming a comparative-like analysis for the AR, then, we can come to a certain understanding of the composition of Class I.

2.2. WH-FORMS. One of the more striking facts associated with the analysis of AR's is that WH-forms, such as appear in RR's, are wholly banned. This is to be expected if we think of AR's as akin to comparatives in analysis, since comparatives never yield WH-forms either (at least in the majority dialect—see Hankamer 1971). The following are quite unacceptable if a WH-form appears:

- (12) a. *Every man WHO there was disagreed.
 b. *{Those, The, Any} bugs WHICH there were on the windshield were harmless.
 c. *That's all WHICH there is.

In other contexts where RR's may appear, WH-forms are quite acceptable with this range of determiners (except that *what* never allows one):

- (13) a. All WHO came were not disappointed.
 b. {The, Those, Any} friends WHO might have come failed to.
 c. I like every child WHO Harry likes.

In 12, then, it is the nature of the relative clause, not the determiner itself, which blocks the appearance of WH-forms. The analysis proposed here does not allow for the creation of forms such as *who* or *which* in the derivation, since the underlying relativized NP is not of the same structure as corresponding NP's in RR's.

2.3. SINGULAR COUNT NOUNS. Since the quantifier of the relativized NP of an AR is an expression of quantity or amount, we would anticipate that singular count nouns would be incapable of appearing at the head of an AR. This appears to be borne out by the data. In 14, the (a) versions with a plural count noun and the (b) versions with a mass noun are quite acceptable; but the (c) versions, where a singular count noun appears, are distinctly strange:

- (14) a. {Those, The, What} men (that) there were in Austria like Bob.
 b. {That, The, What} meat there was was soon eaten by the cougar.
 c. *{That, The, What} man there was in Austria likes Bob.

In other contexts where an RR may appear, singular count nouns are acceptable with *the* and *that* (but never with *what*).

⁴ It is not certain that *each* must be listed in the Unacceptable group; people's intuitions are not entirely clear on the matter.

The pattern of 14 is predicted by the analysis, since the quantifier of the relativized NP resembles *that much* or *that many*. We find that these expressions cannot precede a singular count noun:

- (15) a. that much sand (mass N)
 b. that many birds (plural count N)
 c. *that much/many lamp (singular count N)

We also note that singular count N's may not be compared:

- (16) a. He said more {words, *word} than I thought.
 b. Fred saw more men than Gerry saw {women, *woman}.

One simply cannot take some amount of a singular count noun. If we examine the proposed underlying structure of 14c, shown in Figure 4, we see that the relativized NP would be ill-formed for precisely the same reason as 15c and 16.⁵

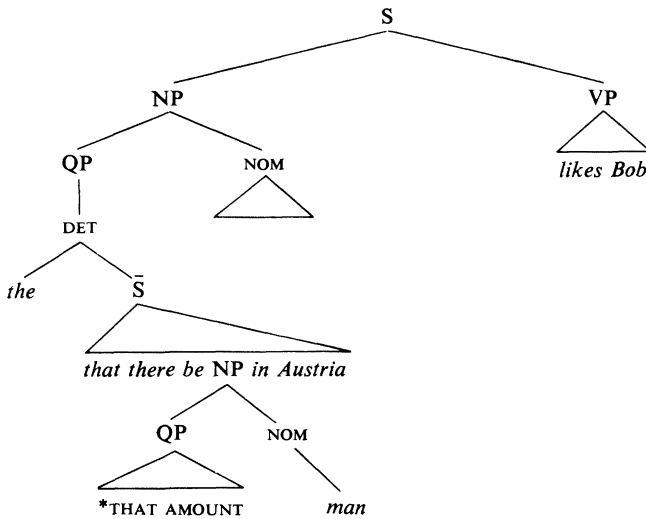


FIGURE 4.

2.4. SEMANTICS. Another context which disallows RR's, leaving the AR's 'out in the open', is exemplified as follows:

- (17) Marv put everything (that) he could in his pockets.

Here the VP of the subordinate clause has been deleted on identity with the matrix VP.⁶ Two things are peculiar about this construction: (a) the deleted VP is dominated by and wholly contained within the matrix VP; (b) the relativized NP is part

⁵ This of course presents us with a problem with the quantifier *every*, which seems to require a singular count N. However, it is clear that, semantically, quantification here applies to a SET; so I take the singular count N to be a syntactic, not a semantic, necessity. Thus *gather* requires a plural subject (at least if *man* is the nominal). I find (a) clearly grammatical, but (b) completely unacceptable:

- (a) Every man that gathered in the street was interviewed.
 (b) *{The, That} man that gathered in the street was interviewed.

⁶ There are several reasons for thinking that this is a true case of VP-Deletion, and not some independent rule. The same parts of an S are left behind:

of the deleted VP. For reasons unknown at this time, RR's are not acceptable under these conditions. In 18 we have clear RR's:

- (18) *Marv put {some, each, many, four, most, etc.} thing(s) he could in his pockets.

But both comparatives and AR's are acceptable here. We find the full range of determiners that may head an AR (and no others); and WH-forms are as clearly disallowed as in the previous diagnostic context:

- (19) a. Marv put {everything, those things, the things} ({*which, that}) he could in his pocket.
 b. Marv put what (things) he could in his pocket.
 c. Marv will put anything he can in his mouth.
 d. Coach Hayes put more players than he (legally) could into the game.

Let us suppose for the moment that 19a-c are instances of RR's, and examine them from a semantic standpoint. If we compare the semantics of 19 with 20, we will see a clear difference. In 20, let us restrict our concern to the objects present in Huey's bedroom:

- (20) Huey put everything which was red in his crib.

Translating this into a logical formula, by conventional means, appears to model the truth conditions of 20 quite accurately. We suppress any predication that may be inherent in the prop-word *thing*:

- (21) $(\forall x) (x \text{ was red} \rightarrow \text{Huey put } x \text{ in his crib})$

This models the truth-conditions of 20 in such a way that, if there were at least one thing that was red, and Huey failed to put it in his crib, then the sentence would be counted as false. This seems quite accurate, even though we realize that universal quantifiers in English are subject to a great deal of hyperbolic usage. If a red ping-pong ball were obviously present, and we knew that Huey failed to put that object in his crib, then 20 would be counted as false (or at least inaccurate).

Now let us assume that Marv is standing in a room which contains a number of small objects, and examine the semantics of the following (= ex. 17):

- (22) Marv put everything he (possibly) could in his pocket.

If the semantics of 22 are like those of 20, the following formula should give an accurate representation of the truth conditions:

- (23) $(\forall x) (\text{Marv could put } x \text{ in his pocket} \rightarrow \text{Marv put } x \text{ in his pocket})$

But 23 does NOT accurately model the truth conditions of 22: it makes the claim that if there were an object in the room that could possibly be put in Marv's pocket,

- (a) Martha put everything she {could, should have, wanted to} in the car.

Parts of a VP cannot be left behind:

- (b) *Max put everything he could CRAM in his pockets.

Adverbial modifiers may be optionally included in the deletion (or interpretation) process, as the ambiguity of (c) attests:

- (c) Max wrote every book he could between 1957 and 1963.

(I.e., every book he could write THEN, or every book he could write ever, was written then.)

One curiosity is that *do so* is clearly unacceptable in this context:

- (d) *The boys put everything they could DO so in the car.

it in fact was put there at some time. If there were a pencil lying on the table which was not put in his pocket, 23 would be false. This, in contrast, would NOT falsify 22, in which Marv must only have jammed his pocket full.⁷ If there were pencils lying on the table when Marv left the room, this would in no way bear on the truth or falsity of the sentence. This interpretation is expected under the analysis of AR's offered here, for the underlying form of the relative clause in 22 would be something of the following nature:

(22') Marv could (possibly) put THAT MANY THINGS in his pocket.

If, on the other hand, 22 exemplified an RR, then 22'' would be the rough form of the relative clause:

(22'') Marv could put THAT THING in his pocket.

But this context, as we have observed, disallows RR's, so 22' is the unambiguous underlying form. Thus a constituent of the meaning of 22 is a statement about Marv's being able to put a CERTAIN number of things in his pocket, and not a statement about each particular object in the area that is able to be put in his pocket. So 22 makes the claim that the whole of that number or amount of things were placed as specified, and likewise in 19a-c. If, instead, the sentence read as 24, then ALMOST that amount of things were put in his pocket:

(24) Marv put almost everything he could in his pocket.

We have observed that a structure like that in 22 is unambiguously an AR. That in 25, however, may be either an RR or an AR:

(25) Bob ate everything that would fit in his pocket.

This is at least two ways ambiguous: one reading asserts that Bob ate a pocketful of something, but a more absurd reading asserts that Bob ate everything (relevant) that was of an appropriately small size. The former reading can be attributed to the AR structure, the latter reading to the RR. Note that if a WH-form—the mark of an unambiguous RR—appears in the relative clause, then only the latter, less plausible reading will appear:

(26) Bob ate everything which would fit in his pocket.

We find 26 not to be ambiguous like 25.

In most contexts, however, the AR and RR structures give rise to equivalent interpretations, resulting in unambiguous sentences. For instance, I would claim, for the sake of syntactic generality, that 27 has two distinct syntactic sources, but an ambiguity is most difficult to discern:

(27) Marv threw out everything that was old.

This equivalence of interpretation in most contexts is no doubt responsible for the difficulty involved in noticing AR's in the first place. The differing interpretations arise only in contexts like 25, where quantity in some way plays a key role.

2.5. CONTEXTS OF CARDINALITY. If the underlying form of the relativized NP of the AR is associated with a QP that is an expression of amount, or cardinality,

⁷ Actually, any number of other parameters could be involved. For example, if Marv's pockets disintegrated after a certain number of objects, or he were in a contest and a period of time elapsed, then 22 would be applicable. I use just one reasonable case and stay with it, for clarity of exposition.

then we may be able to relativize NP's in contexts where an expression of cardinality is required. Consider a context like this:

- (28) The movie lasted {two, several, many, *all, *the, *most, *these} hours past my bedtime.

We see here that the word *hours* with a non-cardinal quantifier (*the, most* etc.) leads to unacceptability. If we maintain the analysis of RR's which holds the determiner of the relativized NP to be definite (i.e. a non-cardinal), we would expect that no RR's could be formed on the NP consisting of QP + *hours*. This seems essentially correct, as the sentences below are rather strange:

- (29) a. *Several hours that the movie lasted past my bedtime passed quickly.
b. *We whiled away some hours which the movie lasted past my bedtime.

We may, however, form an AR in the same context, since with an AR the word *hours* has a QP consisting of an expression of cardinality:

- (30) a. Every hour this movie lasts beyond my bedtime means more aggravation for me.
b. {The, Those, Any} hours (*which) the movie lasts beyond my bedtime make very little difference.

The difference between the RR's of 29 and the AR's of 30 can be schematized as follows:

- (31) a. (AR) the movie lasted THAT AMOUNT hours ...
b. (RR) *the movie lasted THOSE hours ...

Thus the RR's are ruled out, and the AR's are acceptable.⁸

We get similar results in contexts involving some notion of measure; here non-cardinals are not allowed (and consequently RR's are not, either), but cardinal quantifiers and AR's are quite acceptable. A few examples are listed below, where the (a) versions indicate that only cardinal expressions are allowed, the (b) versions show the unacceptability of RR's, and the (c) versions exemplify an acceptable AR. Note, in all the (c) versions, that acceptability is destroyed by the presence of a WH-form:

- (32) a. The road went on for {twenty, many, *the, *most} miles past Dry Gulch.
b. *{Several, These, Twenty} miles that the road went on for — past Dry Gulch were tough ones indeed.
c. {The, Those, What, Every} (few) mile(s) {that, *which} the road went on for — past Dry Gulch were tough ones indeed.⁹
- (33) a. Max weighs {ninety, many, *the, *most} pounds.
b. *{Several, Many, Most} pounds that Max weighs make little difference.

⁸ The RR's also seem to give a strange ontological status to *hours* in these cases as well, as if there are pre-existing entities called *hours* like there are dogs and pencils.

⁹ In these examples, *any* is acceptable only with a mass N, not with a count N. But *each*, unacceptable in previous contexts, improves a good deal here:

- (a) Any distance that the javelin falls short will be appreciated.
(b) *Any feet the javelin falls short will be appreciated.
(c) Each foot your javelin falls short means another dollar for me.

I cannot account for this at all.

- c. {The, Those, What, Every} (few) pounds {that, *which} Max weighs make little difference.
- (34) a. The javelin fell {twenty, several, *the, *most} feet short.
 b. *{Four, Several, Most} that the javelin fell short were predicted.
 c. {The, Those, What, Every} feet/foot {that, *which} the javelin fell short were/was predicted by Mrs. Tivini.
- (35) a. Max owes Bill {fifty, many, *those, *most} dollars. (on natural reading where no particular dollars are owed)
 b. *{Several, Most, Many} dollars that Bill owes Max will be paid.
 c. {The, What, Those, Every} dollar(s) {that, *which} Max owes Bill will be repaid by the end of the month.

Naturally, NP's in the contexts of 32–35 may be compared:

- (36) a. I talked for more hours than the movie lasted — past my bedtime.
 b. Max weighs more pounds than Fred weighs —.
 c. The javelin fell more feet short than the discus landed — long.
 d. Josiah owes John more dollars than ABC owes Howard —.

The patterns of occurrence here would be virtually inexplicable if we supposed that the relative clauses in the (c) sentences above were RR's. By positing the AR's as a separate class of relative clauses, we can quite readily account both for the acceptability of the (c) examples and for the strangeness of the (b) examples.

2.6. SEEING A LOT OF SOMEONE. A curious pattern of relative clauses arises upon examination of certain adverbial constructions exemplified as follows:

- (37) Ted saw a lot of Alice.

This is at least two ways ambiguous: the first way refers to how much of Alice's body Ted was viewing; the second concerns the frequency with which Ted met Alice. It is with the latter reading only that we are concerned. Of those cardinal expressions that may co-occur with mass nouns and function as substantives, all may participate in this construction. Of the non-cardinals that may occur substantively and determine mass nouns, none may occur here:

- (38) a. Ted will see {much, a lot, some, little} of Alice. (cardinal)
 b. *Ted will see {most, all, that, any} of Alice. (non-cardinal)

The quantifiers and determiners that may be associated with an AR become acceptable if we add a relative clause. The non-cardinal quantifiers which cannot head an AR, such as *most*, will not be acceptable. WH-forms are, again, clearly disallowed:

- (39) a. Ted saw {everything, all} of Alice {that, *which} he wanted to see.
 b. Mary saw what she wanted to of Alice.
 c. Lynn, after the tour, will be able to see any of Tom she may care to see.¹⁰
 d. Ted hasn't been seeing much of Alice, but thät of her he has been seeing is too darn much.
 e. *Ted has been seeing {most, this} of Alice he cares to see.

¹⁰ Some object to this as ungrammatical. My intuitions are very clear, however, and this variation remains unexplained.

We see also that the quantifiers of 38a, though acceptable when standing alone, yield unacceptable sentences when we attempt to append a relative clause—the very operation that made several of the quantifiers of 38b acceptable:

(40) *Tom will see {much, a lot, some, little} of Alice that he cares to see.

The unique quantifier here is *more*, which may or may not appear with an associated (comparative) clause:

(41) Tom will see more of Alice (than he cares to see).

This set of facts can be accounted for in a rather straightforward manner if we think of the relative clauses of 39 as AR's rather than RR's. Let us assume that an abstract nominal *X* is present in these examples. This nominal *X* must be determined by an expression of cardinality, and it patterns like a mass N. By making this set of assumptions, we can account for the pattern found in 38. The sentences of 38a take the following form:

(38a') Ted will see {much, a lot, little, some} *X* of Alice.

Since *X* requires a preceding cardinal expression, 38a' is acceptable. In 38b, a non-cardinal would be present, and consequently the structure would be unacceptable:

(38b') *Ted will see {most, all, etc.} *X* of Alice.

This accounts for the pattern found in 38. In 39, we can account for the acceptability of these sentences if we assume the relatives to be AR's. The underlying structure of 39a, e.g., is shown in Figure 5.

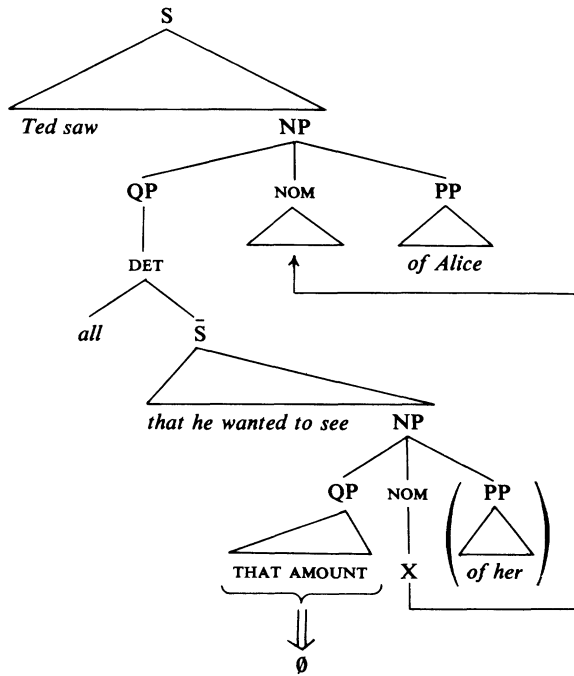


FIGURE 5.

Here we see that *X*, in the relative clause, is preceded by the amount expression that has been proposed for AR's (THAT AMOUNT). In the course of the derivation, *X* is raised transformationally into head position; THAT AMOUNT is deleted; and the relative clause is extraposed. Though on the surface *X* is not preceded by a cardinal expression, it is nevertheless in the underlying form, and thus the structure is acceptable. This is why the sentences 39a-d are good, and why the relative clause MUST be present if a certain class of determiners appears—the Class I items.

The same set of assumptions can also account for the ungrammaticality of 40, if we take these to be instances of RR's. The *X* in the matrix would be acceptable; but the *X* in the relative clause is determined by THAT, a non-cardinal, and this violates the condition that we have placed on *X*. WH-forms in 39 are disallowed for this same reason.

2.7. ABSTRACT NOUNS. English appears to have a large class of nominals which, in many contexts, have the properties attributed to the abstract *X* posited above. These include the gerunds and the abstract mass nouns that do not admit a plural: the former group includes *traveling*, *eating* etc.; the latter includes *courage*, *might*, *calmness* etc. In 42-43, we find the (a) versions quite acceptable, where the nominals are preceded by amount expressions; but the (b) versions have something wrong with them, because they only have non-cardinals before the nouns:¹¹

- (42) a. Huns will exhibit {lots of, much, little} courage in a bad situation.
 b. ??Huns will exhibit {any, the, all, that} courage in a bad situation.
 (43) a. Mary will do {lots of, little, much} traveling tomorrow.
 b. ??Mary will do {that, most, any, all} traveling tomorrow.

As in §2.6, the (a) versions become far less acceptable when a relative clause is appended, but the (b) versions become considerably more acceptable for those items that can head an AR:

- (44) a. ??Huns will exhibit {a lot of, much} courage that they find necessary to take the palace.
 b. Huns will exhibit {any, what, the, that} courage {that, *which} they find necessary to conquer the palace.
 (45) a. ??Mary will do {lots of, much} traveling that she wants to do tomorrow.
 b. Mary will do {any, what, the, that} traveling (*which) she wants to do tomorrow.

Assuming that the relative clauses of the (a) versions are RR's, and those of the (b) versions AR's, our analyses of both constructions will account for the data here as well as in §2.6.

We have now seen several instances where the assumption of a separate class of relative clauses, and of a relativized NP with an open amount expression in underlying structure, can account for several sets of data that would be refractory if we were to assume that the AR's posited here were actually instances of RR's.¹² In

¹¹ *The* may be used in contexts where the noun is being opposed (at least implicitly) to something else, e.g. *The traveling didn't bother Mary so much as the hotels*. So I exclude this particular use of *the* from consideration.

¹² Another context which seems to favor AR's is noted by Stockwell et al. (158). They find (a) unacceptable, but (b) fine:

thinking of the underlying relativized NP as being like that of a comparative, we see that AR's may relativize NP's in contexts which RR's may not relativize out of. I now turn to a second aspect of the analysis proposed here, the raising of the relativized NOM into head position.

RAISING

3. So far, a theme of comparison has been the parallelism noted between the AR's and comparatives. These two constructions appear to share qualities which differentiate them from the RR's. In spite of these similarities, however, there are a number of differences between the two which make it impossible to posit common underlying structures and identical transformations.

The suggested analysis for AR's posits a relativized NP with a structure like that of a compared NP in a comparative clause; but instead of having that NP removed by the rule of Comparative Deletion (Bresnan 1975), I suggest that the QP of the relativized NP is deleted. The remaining NOM is then raised into head position replacing the empty NOM node already there. This has at least two immediate advantages over treating AR's essentially as disguised comparatives. First, comparatives can have adjectives or adverbs as heads, while AR's cannot:

- (46) a. Max is leaner than I thought he was ____.
 b. *Max is the lean that I thought he was.

The Raising analysis automatically rules out 46b.

Second, comparative clauses allow the process of Subdeletion to take place—an impossibility in AR's:

- (47) a. I saw more bulbs than Jeb saw ____ flowers.
 b. *I saw what bulbs Jeb saw flowers.

The Raising analysis will also rule out 47b, as a NOM cannot be left behind if it is raised into head position.

While these two desirable results follow from the Raising analysis, they would of course be equally well accounted for by a Matching analysis such as that proposed for RR's.

One method of argumentation employed in defense of a Raising analysis has been to show that such an analysis accounts for the distribution of certain idiomatic expressions in a principled manner.¹³ Certain nouns, e.g. *headway*, exhibit an extremely limited distribution. This particular item may occur only as the object of the verb *make* at some point in the derivation, and apparently the greatest generality is captured by requiring this relation to hold in the base phrase-marker.¹⁴ *Headway*, however, may subsequently be transformationally repositioned in the tree, so that it is no longer the object of the verb *make*. This sort of analysis correctly

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- (a) *They are all the daughters.
 (b) They are all the daughters (*which) he has.

Of the items that may head an AR, *all* seems to sound the best here.

¹³ I believe Michael Brame should be credited for first using such argumentation, though I am uncertain of the proper reference.

¹⁴ This is no doubt a bit too simplistic, for it does not take into account sentences such as *They MADE what appeared to be pretty good HEADWAY.*

rules out 48a–b, allows 48c, and (most crucially) correctly predicts the acceptability of 48d, where *headway* has been moved into subject position by Passive:

- (48) a. *John likes headway.
 b. *Headway makes sense.
 c. John made headway.
 d. Headway was made by John.

A similar line of thought lends support to the notion that relative clauses are derived by a rule of Raising. Consider the following:

- (49) a. *The headway was satisfactory.
 b. The headway that Mel made was satisfactory.

Assuming that the account given of 48 is essentially correct, we cannot account for the acceptability of 49b if the head noun *headway* is base-generated in its surface location (as required by a matching analysis), for then *headway* in the head would at no point in the derivation be the object of *make*—which is contrary to our suppositions. However, if we assume that the head N of the relative clause in 49b originates as the underlying object of *make*, and that it is subsequently raised into head position, we can offer the same account for 49b as we did for 48d. Note that if the verb in the relative clause is not *make*, the sentence is as ungrammatical as if it were removed by Passive from the object position of that same verb:

- (50) a. *The headway that Marv laughed at was unique.
 b. *Headway was laughed at by Marv.

In this way, a Raising analysis for relative clauses is motivated. Precisely this form of argumentation is used by Schachter 1973 and Vergnaud 1975.

Such a conclusion assumes that the relative clauses in sentences like 49–50 are RR's. But a glance through Schachter reveals that the determiner of the head N is invariably *the*; no WH-forms are used; and the idiomatic nouns themselves are either mass nouns (*headway*, *track*, *homage*) or plural count nouns (*airs*, though I happen to find the idiom *put on airs* entirely frozen). Vergnaud consistently uses the French definite article *le* (apparently many facts indicated here hold for French as well as English, though the extent is not entirely clear).¹⁵ The definite article may, of course, head an AR; so, in the examples used, we run the risk of conflating AR's and RR's.

If we examine the range of determiners that can be associated with *headway* in a context like 49b, we find the following:

- (51) a. {The, All, That, What} headway (that) Mel made was astounding.
 b. Any headway you might make will be appreciated.¹⁶

¹⁵ I wish to thank Paul Hirschbühler for lending me his French intuitions.

¹⁶ This analysis requires the division of *any* into two distinct lexical items. The *any* that can head an AR occurs in modal contexts, and may appear before expressions of cardinality. The polarity item *any* appears in 'affective' contexts, cannot head an AR, and cannot precede an expression of cardinality. In the following, the (a) versions exhibit the polarity item, while the (b) versions exhibit the quantifier ANY:

- (i) a. Ken won't do ANY traveling.
 b. *Ken will do ANY traveling.
 (Cf. Ken will do any traveling YOU ASK HIM TO.)

- c. *{Some, Much, Most, Little, This, \emptyset , etc.} headway that Mel made was satisfactory.¹⁷

Of the elements that may be associated with a mass noun, only those that allow an associated AR appear to be grammatical in 51. But there is clearly no general prohibition which would prevent the items of 51c from appearing prior to a noun like *headway*:

- (52) Mel made {much, little, lots of} headway.

The proper conclusion here is simply that the relative clauses of 51a–b are AR's, not RR's. The AR's, whose head has been raised out of the embedded clause, are acceptable because the head N *headway* was originally the object of the verb *make* in the relative clause. The RR, derived by a Matching analysis, is ungrammatical because the head occurrence of *headway* was at no time the object of the verb *make*.

If the verb *make* appears in the matrix, rather than in the relative clause, the resulting sentence is ungrammatical, even though *headway* appears on the surface as its object:

- (53) a. *We can make any headway that Fred might laugh at. (Cf. Fred might laugh at any headway we can make.)
 b. *Max might make what headway Mel heard of. (Cf. Mel heard of what headway Max might make.)

Examination of idioms demonstrates a point of departure between AR's and comparatives, the latter of which are derived by a Matching analysis. If *headway* is the compared element, then *make* must appear BOTH in the matrix and in the comparative clause:

- (54) a. *More headway than Mel made ___ will be appreciated.
 b. *Mel made more headway than Freddie was surprised at ___.
 c. Mel made more headway than Freddie made ___.

The distribution of 54 is as predicted by a Matching analysis of comparatives.

A further consequence of the analysis offered here is that those idiomatic N's which are singular count nouns should not be amenable to relativization, since AR's do not co-occur with the singulars. A good example is provided by the idiom *let the cat out of the bag*.¹⁸ The idiomatic NP *the cat* may be re-arranged transformationally:

-
- (ii) a. *Ken didn't take ANY three muffins.
 b. Ken may take ANY three muffins.
 (iii) a. Max didn't make ANY headway.
 b. *Max will make ANY headway.
 (iv) a. *I do not believe that ANY two men lifted this rock.
 b. I believe that ANY two men can lift this rock.

For both items, there are corresponding instances of *no*.

¹⁷ The reader should guard against the natural tendency to insert a definite article in reading these. Doing so would result in something which is perfectly acceptable, as predicted by the analysis: *Some of THE headway that Mel made was satisfactory*.

¹⁸ Emmon Bach pointed out this example to me.

the NOM node—then in the presence of an AR there will only be a non-cardinal expression (such as *all*) under the QP that is restricted to amount expressions. This set of assumptions would predict unacceptability for a sentence like 61, where the context requiring cardinality appears both in the matrix and in the relative clause:

(61) Minnie saw all of Mickey that she wanted to see ___ of him.

The underlying structure of 61 would be as represented in Figure 6.

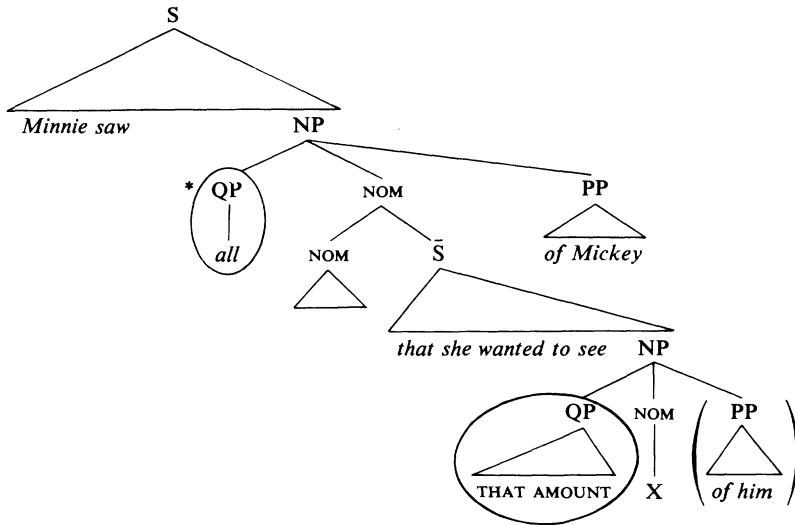


FIGURE 6.

As we can see, the expression of amount in the subordinate clause satisfies the requirements there; but this is not so in the matrix, where the non-cardinal *all* appears under the QP. If our generalizations are correct, we cannot account for the obvious acceptability of 61 if the AR's are generated under the NOM node. By assuming a determiner source, though, we can at least account for the possibility of 61. In moving the clause into the determiner, we create a complex quantifier expression, and thus the possibility that this complex Q will be classified as an expression of amount. If we think of the complex Q as being an amount expression, then the underlying structure of 61 is as illustrated in Figure 7, and the requirements of the environment are met in both the matrix and the relative clause.

We can now also account for the possibility of such sentences as these:

- (62) a. Whew! This desk weighs every pound they said it would weigh ____.
 b. The road went on for that distance beyond Topeka that the dry creek bed went on for ____.
 c. The javelin fell the inches shórt that Mme. Renard had predicted it would fall ____ lóng.

Whether or not this scheme proves correct in the end depends upon a demonstration of the semantics of AR's and complex determiners. Nonetheless, the assumption of a determiner source at least gives the beginnings of an account of sentences like those in 62. This reason alone, however, could hardly be considered adequate

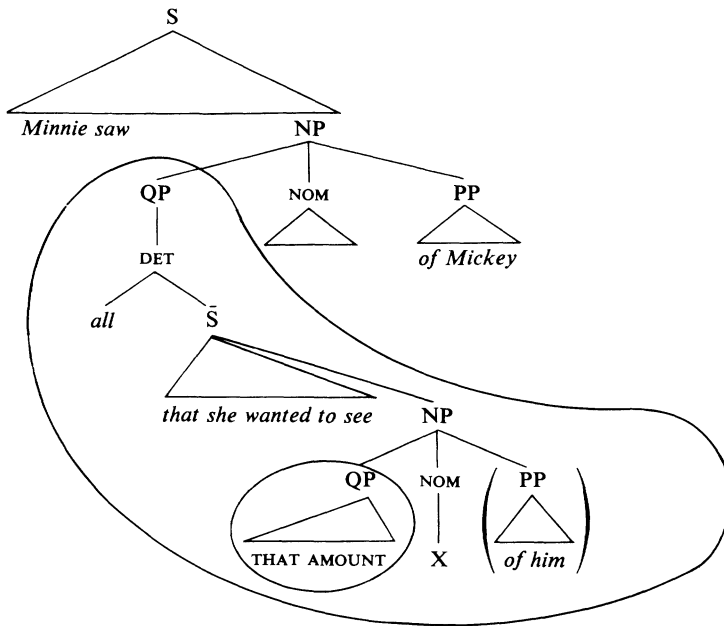


FIGURE 7.

reason to place AR's under the determiner, and I now turn to more substantial arguments.

4.2. COMPLEMENTIZER SELECTION. One of the primary reasons for choosing a determiner source for certain types of clauses, such as comparatives, is that the relationship between the DET and the complementizer of the embedded clause can be expressed conveniently. We find, e.g., the following sorts of co-occurrence relations:

- (63) a. Max is taller THAN Marie is.
 b. Max is so tall that he has to crawl through doors.
 c. Max is AS short AS I thought he was.
 d. Max is TOO tall FOR us TO hire (him) as our resident dwarf.

Likewise, those items which allow associated AR's would be subcategorized for a clausal sister exhibiting a *that* complementizer (which is obligatorily deleted if the DET is *what*).

Though RR's never admit such COMP's as *as* or *than*, they may have infinitival form, exhibiting a *for-to* COMP. If the AR's set of associated determiners may co-occur only with *that*, to the exclusion of all other complementizers, then we would anticipate that the AR's could never have infinitival form. This appears to be true:

- (64) a. Every party {*for there to be, that there is} ___ in this room appears to be a disaster.
 b. Wally will put anything {*for him to be able to, that he is able to} ___ in his mouth.
 c. The headway {*for us to make, that we should make} ___ has been mandated.

The unacceptable sentences of 64 are a consequence of our assumption of a determiner source for AR's as distinct from RR's.

4.3. STACKING. A rather important generalization captured by positing a determiner source for certain types of clauses is that they cannot then stack, or be associated with the same head in a non-conjoined manner. RR's apparently CAN stack (which gives us reason to reject analyses of RR's as constituents of the determiner, as proposed in Smith 1969 and Selkirk 1970). This property is captured by the NOM-S analysis of RR's, and allows sentences such as:

- (65) I dreamed of several books which I SAW YESTERDAY which I HAD HOPED TO BUY.

But comparative clauses and others with a determiner source cannot co-occur in this same way, as there is only room for one clause in the determiner system:

- (66) a. *The plumber sold me more fixtures than I KNEW WHAT TO DO WITH than I SHOULD HAVE EVER BEEN SOLD.
 b. *As much water leaked out as EVAPORATED as LEAKED IN.
 c. *This party is too dull for US TO STAY for US TO BE TOO VERY ENCHANTED.

AR's, too, pattern in this way. It is important to observe first that determiner clauses may co-occur with RR's quite freely:

- (67) The plumber sold me more fixtures {that, which} I KNEW WHAT TO DO WITH than I SHOULD HAVE EVER BEEN SOLD.

An AR, too, may co-occur with RR's, as the raised NOM may already contain any number of them. But two AR's cannot stack, because only one clause is allowed under the DET in the matrix, and the DET of the relativized element (THAT AMOUNT) is not among those items which allow an associated AR. In examining those contexts which exclude RR's, allowing only AR's, we see that stacking is indeed disallowed:

- (68) a. *Jake noticed the headway WE MADE that FRED SAID WE COULDN'T MAKE.
 b. *This desk weighs every pound THEY SAID IT WOULD WEIGH that I HAD HOPED IT WOULDN'T (WEIGH).
 c. *Waylon put what THERE WAS that HE COULD in his pocket.
 d. *Mary saw all of Sgt. Foley that SHE CARED TO SEE that WE HOPED SHE WOULD SEE.

In some other contexts—those which allow RR's as well—we find that AR's may occur quite naturally with them. The sentences of 69 are much more acceptable than those of 68:

- (69) a. Every dog THERE IS IN THERE that IS STILL HUNGRY will be fed immediately.
 b. Mary put all the clothes that SHE COULD that WERE STILL SLIGHTLY SOILED into the washer.

Analysing AR's as having a determiner source, unlike RR's, captures generalizations that otherwise would present difficulties in a NOM-S analysis of AR's.

CONCLUSION

5. It has been argued that a subclass of relative clauses can be distinguished from RR's in a number of ways. The following observations, e.g., have been made:

(a) AR's, unlike RR's, are introduced by *that* (or \emptyset), and never by WH-forms:

(70) *Every man WHO there is here disagrees.

(b) AR's, unlike RR's, occur with certain types of head N's, such as *courage*, *headway*, and *traveling*.

(c) AR's, unlike RR's, occur only with a limited range of determiners (*all*, *any*, *the*, *that*, *what*, *every*).

(d) AR's, unlike RR's, may not be stacked—i.e. do not co-occur with each other attached to the same head, unless conjoined.

(e) AR's and RR's have different semantic structures associated with them; the former is more like a comparative clause, the latter more like an adjective.

(f) AR's relativize NP's that cannot be relativized by RR's:

(71) This weighs every pound they said it would weigh ____.

The existence of AR's has a number of possible consequences for further study. First, it brings up the question of whether or not further subclasses of relative clauses may be distinguished. Second, the data presented here shed new light on the proper analysis of RR's themselves, and certainly undercuts some reasons that have been given for a Raising analysis of RR's (though by no means all; and even with the facts from idioms, a Raising analysis of RR's is not ruled out entirely). Third, there is a further class of subordinate clauses which in many ways patterns like the class of AR's. These are the clauses associated with such items as superlatives—*the only*, *the first (last)*, *the next*, and *the same*—which might impressionistically be called the 'specifiers of uniqueness':

(72) a. That's THE ONLY beer there is ____ left.

b. Coach Hayes put THE BEST players {that, *which} he could into the game.

c. The javelin fell THE SAME distance short that the discus fell ____ long.

At least in these respects, the concept of AR's should have bearing on the analysis of relative clauses.

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