DETERMINER RESTRICTION IN AMOUNT RELATIVE CLAUSES[1]

Abstract*: The aim of this paper is to present some aspects of the interpretation of a special kind of relative clause construction, which is distinguished from restrictive relative clauses and appositives, namely degree relatives. Degree or amount relatives show restriction in the relativizers they allow, in the determiners that can combine with them and in their stacking possibilities. We mainly focus on the determiner restriction here. Amount relatives restrict (under the amount reading) the determiners acceptable on the relative head to the ones that can be followed by an amount expression (Carlson, 1977) or to the definite and universals (Grosu and Landman, 1998). We examine the approaches proposed in Carlson (1977), Heim (1987), Grosu and Landman (1998), offering a contrastive view on English and Romanian data (Herdan, 2008; Grosu and Landman 1996, 1998). Possible solutions and open questions conclude our discussion about determiner restrictions in amount relative clauses.*

Keywords*: syntax, semantics, relative clause constructions*.

1. INTRODUCTION

One of the traditional distinctions that have been recognized between English restrictive and non-restrictive (appositive) relative clauses is the fact that appositive relatives, unlike restricted relatives, may not co-occur with certain determiners (cf. Carlson, 1977). Carlson (1977) observed that another class of relative clauses, the amount relatives, may be distinguished from restrictive relative clauses by the criterion mentioned above.

While an ordinary relative like (1) places no constraint on determiner choice, Carlson notes that in (2a) *some* and *three* can't relativise the logical subject of a *there*-insertion context. But if the determiner is changed to either *every* or *the* as in (2b), the resulting sentence is grammatical.

(1) {Some man | Three men | Every man | The men} who {was | were} on the life-raft died.
(2) a. *{Some man | Three men} there {was | were} on the life-raft died.
b. {Every man | The men} there {was | were} on the life-raft died.

2. CARLSON'S PUZZLE. CONTEXTS OF AMOUNT

In his study of degree relatives, Carlson (1977) noted two major types of environment that appeared to allow the CP-internal "relativized" nominal of an amount relative[2], but not that of a restrictive or appositive relative. These were: (i) environments with narrow-scope properties, and (ii) a null VP that has been elided under "antecedent-contained" conditions. The problem posed by (i) was elucidated to a significant extent by Carlson. However, Heim (1987) offered a number of valuable refinements, and more recently, Grosu and Landman (1996) proposed a complete analysis of amount/degree relatives and other constructions which went beyond Carlson's and Heim's. In contrast to (i), neither Carlson, nor Heim, nor anyone else (according to Grosu and Landman, 1996) was able to shed any light on (ii). In this section of our article, we present this

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[2] Throughout this article, the term *amount* will be used to refer to the restrictive relative clauses with an amount/degree interpretation in the spirit of Carlson (1977) and not *degree* (cf. Heim, 1987; Grosu and Landman, 1998).

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state of affairs and the proposed solutions to (ii) which rely on the analyses of (i) in the studies cited above and in particular in Grosu and Landman (1996 and 1998).

2. 1. THEORETICAL BACKGROUND

Carlson (1977) observed that relativization into a variety of narrow-scope contexts is possible in English, provided that wh-pronouns are not used. The phenomenon is illustrated in (3) in relation to the presentational *there*-insertion context.

(3) a. 'John and Mary, who there were at last night's party, are my best friends.
*The students who there were at the party behaved rather unseemingly.
The students (that) there were at the party behaved rather unseemingly.

The analysis proposed by Grosu and Landman (1996) is a modification of the Carlson-Heim analysis and has the following advantages over its predecessors:

(A) it correctly predicts that "subdeletion" is impossible in degree relatives (because the sortal must be "resumed");

(B) it correctly allows the entire construction to designate a plural individual, not just a degree (because the individual is a member of the maximal triple that constitutes the meaning of CP);

(C) it correctly predicts that the class of external D(eterminer)s is restricted to definites and universals, as illustrated in (4) (weak or partitive D's violate resumptiveness);

(D) it yields a reasonable account of the fact that degree relatives (in contrast to restrictives and appositives) may not iterate (stack), as shown in (5) (since the sortal and cardinality properties of the plural individual are fixed within CP, they cannot be independently specified within multiple CP's).

(4) I took away {every, all the, those, the (three), #three, #many, #most} books that there were - on the desk.

(5) The only sailor that there was on the boat (*that there had been on the island) died in the explosion.

These distinctions have been demonstrated and justified in relation to the presentational *there* context, but comparable distinctions can be found in a variety of additional narrow-scope contexts, as partly illustrated in (6)-(9).

(6) a. Every kilo {that, *which} you put on increases the risk of a heart attack.
b.'Two kilos that you put on increase the risk of a heart attack.

(7) a. Every minute {that, *which} the movie lasted past midnight increased my discomfort.
b.'Two minutes that the movie lasted past midnight increased my discomfort.

(8) a. John is almost the doctor {that, *who, * which) his father was.
b.'John is almost a doctor that his father was.

(9) a. Every time {that, *which} the bell rang I opened the door.
b. Three times that the bell rang I opened the door.

2.2. THE RANGE OF DETERMINERS IN *THERE*-INSERTION CONTEXTS

Carlson (1977) points out that amount relatives (AR) can only occur with certain determiners and quantifiers, as already mentioned. He uses relativization of the logical subject of a sentence that has undergone *there*-insertion[1] as the diagnosis for determining what range of determiners and quantifiers may co-occur with AR's, and

[1] McNally (2006) argues, based, among other things, on the unavailability of the amount reading in *there*-insertion relatives, that these should not be considered "amount" relatives at all.

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what range may not. He finds that the items in (10) are those that may head an AR; the others, 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.
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.

Carlson calls the six items in (10) *Class I items* and those in (11) *Class II items*. Class I contains the definite article *the*, the universals *every*, *all*, and *any* (not the polarity item, but the universal quantifier), the non-deictic *that* 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. Further on, he argues that Class I items are those that may appear under the determiner in amount relative clauses; Class II items may not.

The analysis presented in Carlson (1977:525) was intended to offer an understanding of why these particular items appear in Class I, rather than in some other arbitrary grouping. For that, he resorts to the analysis of the comparatives, in which 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. If it is assumed 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, Carlson finds the following groups:

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

The Class I items may appear as determiners for some expressions of cardinality, whereas Class II items may not, with the exception of deictics and possessives.

The solution proposed by Carlson is demonstrated by assuming a comparative-like analysis for amount relatives, thus reaching a certain understanding of Class I items. Nonetheless, Carlson does not offer sufficient explanation as to why Class I determiners and quantifiers may appear in amount relatives.

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3. EXPLAINING THE RESTRICTION

3.1. A SEMANTIC APPROACH

The facts proposed by Carlson concerning the determiner restriction are particularly interesting since they seem to hold cross-linguistically. The data in (12) illustrate this with examples from Romanian.

(12) a. Am luat cu mine *fiecare* carte/*orice* carte/carti**le**/cele trei carti/trei dintre cartile care erau pe masa.

b. *Am luat cu mine trei carti/putine carti/multe carti/majoritate a cartilor care erau pe masa.

Grosu&Landman (1998) explain the determiner restriction as involving an operation of *maximalization*[1], which takes place at the CP level, much the same way as in comparatives. Their claim is that the set of degrees denoted by the degree/amount relative is only available for interaction with other semantic operations after the operation of degree maximalization (picking the maximal degree in the set) has applied to it. The definition of the maximalization operation is given below:

(13) MAX(CP) = {max(CP)} if max(CP) ∈ CP
undefined otherwise

Maximalization restricts the set of degrees to the singleton set containing the maximal degree (if there is one). Thus, the full interpretation of the CP in a relative sentence like (14a), is (14b):

(14) a. (cartile) care erau __ pe masa

b. MAX({<[x], CARTI, x>: CARTI(x) and PE-MASA(x)})

After max(CP) is defined, the sentence in (14b) is equivalent to (15): (using P for PE-MASA):

(15) {<[t{x ∈ CARTE: P(x)}>, CARTILE, t{x ∈ CARTE: P(x)}>}

This is the singleton set containing the cardinality of the sum of the books on the table, the sortal predicate CARTI/BOOKS, and the sum of the books on the table. Thus, the NP *carti* is interpreted as the set of all sums of books.

In fact, maximalization is the semantic operation which mediates the relation between what is syntactically CP-internal and what is syntactically CP-external. In amount relatives, max is specified inside the CP, and thus in essence the semantics of these relative constructions is determined inside the CP. For the purpose of our article, the consequence would be that the CP can only combine with determiners that preserve the internal CP information (as Grosu and Landman (1998:146) put it: '*determiners that do not reset the size of MAX*'). Such determiners are, of course, just the definite and universals.

3.2. A SYNTACTIC APPROACH

Syntactically, the determiner restrictions were explained by adopting new strategies in analyzing the structure of the left periphery. Herdan (2008) presents novel data regarding relativizer restrictions in Romanian and proposes that the structure of the left periphery of the relativized nominal phrase has a marked effect on the structure of the left periphery of a relative clause.

[1] According to Grosu&Landman (1998:138), *maximalization*, as an operation on a set of degrees triples, maximalizes pointwise: it selects out of a set the unique triple all of whose coordinates are maximal (maximalizes all coordinates). Maximalization operations have been proposed to be at work in the semantics of a variety of constructions, like questions, free relatives and comparatives.

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The paradigm is given in (16) below for Romanian. The relativizer *care* (which) is the unmarked form, while *ce* is generally used in formal contexts where it need not be inflected. Surprisingly, the bare quantifier *tot* (all) in (16a) can only combine with *ce*, which is not the case when it is accompanied by a noun (overt or covert).

(16) a. Am cumparat tot ce/*care mi-a placut.
have.1sg.aux bought all what/which me.dat-has.aux liked
I bought everything I liked.
b. Am cumparat toate cartile care/ce mi-au placut.
have.1sg.aux bought all.f.pl books.f.pl which/what me.dat-has.aux liked.
I bought all the books I liked.
c. Nu mai am lapte. L-am pus pe tot pe care l-am avut.
not more have.1sg milk. him.cl-aux put PE all PE which him.cl-aux had
I don't have any more milk. I put in all I had.

The proposal Herdan makes is that the location of an intonational phrase boundary (IntPB) at the level of the relative clause determines which relativizer will be used. The edge of the phase and of the IntP must coincide in that either the Spec or the head of the phase must be pronounced. Since CP is a phase parsed as an IntP, it will be properly marked only if the C head (*ce*) is spelled out. The structures below show the reason for the contrast in (1a).

(17) [QP Q tot [CP C ce [TopP Top [IP...]]]] OR *[QP Q tot [CP C; [TopP care Top [IP...]]]]

Evidence that an IPB plays a role in relativization comes from the following contrast:

(18) * Le place totul ce/care depaseste limita.
them.D like all.the what/which exceeds limit.the
'They like everything that is beyond the limit'.

The bare all can be accompanied by a definite article, but Romanian disallows a relative clause with either relativizer. Syntactically, *ce* is a complementizer, as argued by Kayne (1976) for French, while *care* is a phrase occupying a specifier position.

However, if the relative clause has an overt noun, as in (16b), a DP will be projected which will be parsed as an IntP. Since D is overtly filled by the article and the raised noun, no problem arises. The presence of the DP allows the CP to not be parsed as an IntP, thus allowing *care*.

(19) [DP toate D carti-le [AgrP Agr ti [CP C; [TopP care Top [IP ...]]]]]

(16c) shows that it is not just a DP phase that can rescue the CP from being parsed as an IntP. While no D is projected, the quantifier agrees with an NP expressed in the prior discourse. Just like vP in the verbal domain is a phase corresponding to an agreement domain, we can argue that the presence of AgrP in the nominal domain also triggers a phase and hence an IntP.

In sum, the relativizer restrictions discussed above argue for an interaction between the structure of the left periphery in the nominal and in the verbal domains. They provide support for the idea that phenomena at the syntax-phonology interface, such as the proper marking of IntPBs, have an effect on the syntax proper.

3.3. A 'UNIFIED' APPROACH

Butler's (2001) approach aims to present a unified semantics for all relative clauses. The focus is on providing a single analysis for ordinary restrictives and degree relatives that avoids recourse to degrees (Butler, 2001:1). He argues that Carlson's

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famous example in (12) repeated here has its expected restricted reading and also, what he calls, an *exhaustive* reading.[1]
(12) a. Marv put everything {*which, that, 0} he could in his pocket.

Instead of using degrees, Butler uses exhaustification. Resorting to dynamic semantics (DQMLE[2] as he calls it), control operator (E) and internal semantic heads (s-heads), he argues that degree relatives are limited to exhaustive reading. Thus, the only external determiners acceptable will be those that continue to guarantee exhaustivity, e.g. definite and universals, ruling out indefinites, cardinals, *most*, *many* etc.

4. CONCLUSIONS

In this paper, we presented some aspects regarding the problems raised by one of the properties of amount relative clauses, namely determiner and quantifier restriction. Data from English and Romanian were analysed in order to account for the fact that this restriction can be easily tested cross-linguistically. Some of the solutions proposed in the literature were sketched so that to offer a general view on the topic, leaving for further study the idiosyncrasies of the Romanian language.

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[1] As an illustration of the exhaustive reading, let's look at the following example and at the readings proposed by Butler (2001: 1-2) leaving aside the semantic representations.
(i) Peter ate everything that would fit in his pocket.
Restrictive reading: Peter ate everything (relevant) that was of an appropriately small size.
Exhaustive reading: Peter ate a pocketful of something.
[2] That is a smart dynamic quantified modal logic with exhaustification (Butler, 2001:8).

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