Degrees and Amounts in Relative Clauses

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This dissertation discusses primarily two types of relative clauses that have been subsumed under the term amount relatives: *there*-relatives and a subset of ACD relatives. Based on their syntactic and semantic properties, I argue that the two types of relatives do not belong to the same class. They do not share all the relevant syntactic restrictions or the interpretation expected to result from degree relativization. More specifically, I analyze *there*-relatives as degree relatives containing a covert superlative morpheme. ACD relatives with amount readings show no syntactic evidence of degree relativization as originally assumed in the Carlson (1977)/Heim (1987) tradition. This forces a terminological distinction between degree relatives, which involve syntactic degree relativization (with or without an amount reading), and amount relatives, relatives with amount interpretations. I argue that the covert superlative is responsible for the absence of an amount reading in *there*-relatives, as it "absorbs" (combines with) the degree variable and yields an individual rather than a degree. In addition, I show that the amount readings available in some ACD relatives are not identical to the pure amount readings we expect to obtain as a result of pure degree relativization. Additional support for this split approach comes from a cross-linguistic investigation of relativizer restrictions and from the temporal interpretation of noun phrases in the two kinds of relative clauses.

Degrees and Amounts in Relative Clauses

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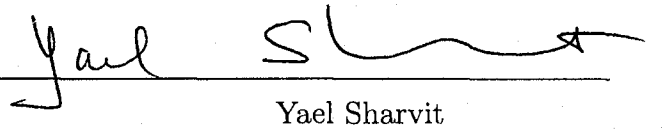
Co-major advisor 
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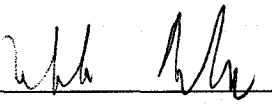
Co-major advisor 
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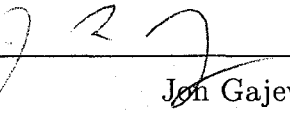
Associate advisor 
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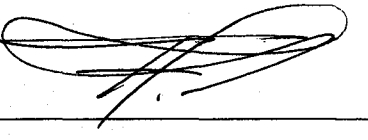
Associate advisor 
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To the memory of my father, Jean-Michel Herdan

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LIST OF ABBREVIATIONS

acc	accusative
ACD	antecedent contained deletion
AGR	agreement
aux	auxiliary verb
cl	clitic
dat	dative
fem	feminine
gen	genitive
inf	infinitive
instr	instrumental
masc	masculine
NEG	negation
neut	neuter
nom	nominative
pl	plural
pp	past participle
refl	reflexive
subj	subjunctive

CHAPTER 1

BACKGROUND

1.1 Motivation for the work

Amount/Degree relatives have been under investigation since Carlson's 1977 seminal work on the subject. Carlson (1977) challenges the traditional two-way division between restrictive and appositive relatives and identifies syntactic and semantic properties of a subclass of relative clauses which he calls amount relatives. Several illuminating follow-up works have refined Carlson's proposal, but the topic is still largely understudied and several crucial observations are in need of an adequate explanation.

The goal of this dissertation is to open the way to a more principled account of the syntactic and semantic differences between the subtypes of the original group of amount relatives. The dissertation will examine and challenge the existing notion of what counts as an amount relative. The primary motivation for proposing a new theory is the existence of a range of observations regarding the distribution of amount readings that cannot be accommodated in the existing frameworks. The main proposal of the dissertation will challenge Carlson's view of a uniform class of amount relatives. The fact that not all relatives that Carlson identifies as amount relatives show the characteristic amount reading will be taken as an indication that these various types of amount relatives should be considered on their own. More specifically, my proposal focuses on the differences between *there*-insertion relatives and ACD relatives with amount readings. I propose that *there*-insertion relatives have a special semantics which is responsible for the absence of the amount reading despite the presence of degree relativization. I also argue that while some ACD relatives have an interpretation that intuitively appeals to degrees, they do not show the syntactic behavior consistent with degree relativization. Moreover, I show that

the range of readings available to these relatives in different contexts makes it even more difficult to propose a degree semantics that would account for all the readings.

This dissertation is organized as follows. Chapter 1 introduces the main observations from the literature and gives a brief evaluation of the existing analyses. Chapter 2 defends the view that *there*-relatives and ACD relatives with amount readings have different syntactic behaviors. The latter do not evince the syntactic hallmarks of degree relativization. I propose and motivate a semantics for *there*-relatives involving a covert superlative morpheme and show how it can account for the absence of an amount interpretation and for the syntactic restrictions.

In chapter 3 I discuss in detail the readings available in some ACD relatives which have been traditionally analyzed as amount relatives and conclude that, while amounts seem to be involved in some way, these relatives do not show the readings expected if we adopted a semantics analogous to that used for *there*-relatives or modal relatives. I also show that neither Grosu and Landman's 1998 uniform semantics for amount relatives nor the superlative semantics I propose in chapter 2 for *there*-relatives can account for the amount readings of these ACD relatives. I also present new data illustrating the various ways in which amounts are involved in amount readings.

Chapter 4 deals extensively with complications surrounding the relativizer restrictions observed with amount relatives. Using syntactic evidence, I argue that the impossibility of *which* as a relativizer in some contexts in English is not a reliable indicator of amount relative status in the sense of Carlson, Heim, and Grosu and Landman, who equate it with degree relativization. I provide evidence from Romanian and Polish that the relativizer restriction on ACD relatives is independent of an amount interpretation. I also show that for

ACD relatives the amount interpretation is actually not dependent on raising, which casts doubt on the correlation between the amount reading and degree relativization, which is assumed to require raising. In the second part of chapter 4 I discuss a previously unnoted systematic restriction on the relativizers appearing with bare generalized quantifiers. I propose that the restriction can be captured in terms of the location of an intonational phrase boundary at the level of the relative clause, which I argue is affected by the presence of a nominal element. These data further illustrate the fact that relativizer restrictions can arise in non-amount relative contexts and support the claim that this restriction shouldn't be taken to always indicate degree relativization, as argued for *there*-relatives.

Chapter 5 addresses issues concerning the temporal interpretation of noun phrases in *there*-relatives and ACD relatives with amount readings and argues that the differences in interpretation provide further evidence for a non-uniform analysis of amount relatives, and for the special status of *there*-insertion relatives in particular. Chapter 6 contains a summary of the results and of issues left for future research.

1.2 A sketch of the analysis

In brief, the proposal that I will motivate and develop in this dissertation is that *there*-relatives and ACD relatives with amount readings do not have the same semantics. In particular, ACD relatives do not have a semantics involving degree relativization of the kind traditionally assumed (see Carlson (1977), Heim (1987), and Grosu and Landman (1998)). In chapter 2 I will argue for a superlative semantics for *there*-insertion relatives which can account for the absence of the amount reading, the interpretation associated with degree relativization of the Carlsonian/Heimian type. I propose that *there*-relatives

contain a degree variable, as Heim (1987) had proposed, as well as a covert superlative morpheme. The function of this covert superlative morpheme is to absorb the degree variable and yield a set of individuals, as shown by the semantic paraphrase in (1c) below.

(1) I took with me the books that there were on the table.

a. (books) that there were (d-many books) on the table

b. [[EST-C] $\lambda n.\lambda x.$books(x) & on the table(x) & $|x| \geq n$]

c. I took with me the largest plural individual X such that there is a number n such that X is books on the table and $|X| \geq n$ and for all y such that $y \neq X$ and $y \in C$, y is books on the table and $|y| < n$ (with a particular value for C)

In chapter 3 I will show that the ACD relatives which had been assumed to denote sets of degrees because of their amount interpretations do not in fact generally receive true amount readings. The interpretation of (2) can be paraphrased as in (2a), or more formally as in (2b).

(2) Marv put in his pocket all the toys that he could.

a. Marv put in his pocket *some sum of toys of the maximal amount that could fit in his pocket.*

b. There is a choice function CH: WORLDS $\rightarrow$ SUMS such that
a) for all worlds w accessible from w_0 CH(w) = y_w where y_w is a subsum of the sum of relevant toys there are, and in w y_w fills Marv's pocket completely, AND

b) for some world w accessible from w_0, Marv put in his pocket in w_0 CH(w).

However, it is difficult to see how this semantics could be obtained compositionally.

In chapters 4 and 5 I provide additional evidence for a non-uniform semantics for the members of Carlson's class of amount relatives. In particular, I will further emphasize the fact that while the semantics of the original class of amount relatives may uniformly involve degrees, the LFs and the syntax of these constructions need not be at all uniform. In order to fully justify my proposal I will start by presenting the initial motivation for the analyses of amount relatives that assume a uniform syntax/LF in the form of degree relativization.

1.3 What are amount relatives?

1.3.1 The structure and interpretation of amount relatives

The literature on relative clauses traditionally identifies two kinds of relative clauses: restrictive, such as (3a), and appositive, such as (3b).

(3) a. Every student who studies semantics likes it.

b. Mary's brothers, who never studied anything, hate school.

Restrictive relatives, such as the one in (3a), denote sets which combine intersectively with the head noun (see Partee (1973)). In order for this sentence to be acceptable, it is not necessary that all the students should like semantics, but only that a subset of them do. Appositives, illustrated in (3b), on the other hand, get their meaning from a relation of discourse anaphora between an element they contain and an NP they modify, as argued

in Sells (1985). In this case, it is necessary for the truth of the sentence that all of Mary's brothers never studied anything, therefore the appositive relative does not restrict the set defined by the head noun.[1]

Carlson (1977) brings attention for the first time to a class of relatives, which he dubs *amount relatives*, whose semantics is different from that of both restrictives and appositives. This semantics, which is assumed to involve degrees in the tradition following Carlson, is one of the hallmark features of amount relatives. Consider the following relative clauses:

(4) a. Marv put in his crib everything that was red.

b. $\forall$x such that x is red, Marv put x in his crib.

(5) a. Marv put in his pocket everything that he could.

b. Marv put in his pocket as many things as he could.

While the truth of the sentence in (4a) would be falsified by the existence of a red object that Marv did not put in his crib (as implied by the paraphrase in (4b), which requires that every relevant item in the situation in question which has the property of being red also have the property of having been placed in the crib by Marv), the meaning of (5a) cannot simply be that of a restrictive relative, since it would not be falsified by the existence of a pen that was never in Marv's pocket. (5a) can intuitively be true even in that case if Marv stuffed his pocket full. It is this interpretation that earns this type of relative clause the name *amount relative*. However, as we will see later, not all types of relative clause that

[1]See however Potts (2005) (p.94-95) for evidence that this truth-conditional distinction is not always present and that "restrictive" relative clauses do not always involve restriction.

have been subsumed under the term amount relative evince the kind of interpretation that we get in the antecedent contained deletion (ACD) relative in (5a) above.

Carlson assumes that it is the syntactic behavior of relative clauses that determines their inclusion in the class of amount relatives. For example, amount relatives are special with respect to their ability to stack. Amount relatives are unlike restrictives in that they resist stacking, a feature which, according to Carlson (1977)[2], they share with appositives, as illustrated below (examples from Carlson (1977:540)).

(6) a. I dreamed of several books which I saw yesterday which I had hoped to buy.

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

c. * Waylon put what there was that he could in his pocket.

Carlson also notices some restrictions which are shared by appositives and the newly identified amount relatives, but not by restrictive relatives. While restrictive relative clauses in English can be introduced by a *wh*-relativizer, by the relativizer *that* or by the null relativizer $\emptyset$, appositives and amount relatives can only be introduced by certain relativizers. In fact, the relativizers used in the two kinds of relatives are in complementary distribution: *wh*-forms in the case of appositives and *that* or the null relativizer in the case of amount relatives, as illustrated in (7) and (8):

---

[2]Grosu and Landman (1996, 1998) suggest that stacking (or rather lack of it) should be treated as a diagnostic for amount relatives, since they alone do not stack. However, they give no examples contradicting Carlson's claim that appositive relatives do not stack either. Nothing I will say here, however, depends on how this issue is resolved.

(7) George, who/*that likes no one, enjoys Handel. (appositive)

(8) Marv put in his pocket everything that/∅/*which that he could. (amount)

Interestingly, amount relatives and appositives are sensitive to the value of the same feature, but differ with respect to the actual choice allowed.

Another restriction which will feature in our discussion of amount relatives is incompatibility with certain quantifiers. *There*-insertion relatives, which are argued by Carlson (1977) to belong to the class of amount relatives (see section 1.3.3), along with appositives, evince the same kind of restriction, but, as in the previous case, they make different choices with respect to the quantifiers they allow. Restrictives, on the other hand, do not show any quantifier restrictions (Carlson 1977:520).

(9) a. *Any lion/Lions, which eats/eat small animals, is/are cowardly. (appositive)

b. Any lion/*Lions that there was/were ate small animals. (amount)

c. Any lion/Lions that eats/eat small animals is/are cowardly. (restrictive)

While amount and appositive relatives show restrictions in the same domains, the actual relativizers and quantifiers that *are* allowed differ from the ones admissible in appositive relatives. It is these syntactic and interpretative differences that led Carlson to introduce amount relatives as a third class of relative clauses. Before we discuss some of the actual proposals regarding amount relatives, let us take a more detailed look at the syntactic restrictions on amount relatives.

1.3.2 The role of the relativizer

We have seen above that there is a group of relative clauses which cannot be introduced by *wh*-relativizers, unlike restrictive and appositive relatives. More interestingly, Carlson points out that the relativizer choice seems to correlate with the availability of a special interpretation of the relative clause, which we will refer to as the *(identity of) amount reading*. While both (12a) and (12b) are acceptable in the context described in (10), only (12b) containing the relativizer *that* or the null relativizer $\emptyset$ is compatible with the scenario described in (11).[3]

(10) Marv owns a dozen toys, all of which are small enough to fit in his pocket independently. However, he likes carrying all of them around so he puts all of them in his giant coat pocket. (restrictive scenario)

(11) Marv owns a dozen toys, all of which are small enough to fit in his pocket independently. However, if he tries to put all of them together in the pocket, only 8 of them can fit. Even though he would like to take all of the toys along, he knows it's impossible and only takes the 8 that can fit. (amount scenario)

(12) a. Marv put in his pocket all the toys which he could put there. - restrictive reading only

---

[3]Note that the relativizer *which* is independently bad in an elliptical relative such as (i) below.

(i) * Marv put in his pocket everything which he could.

However, not all ACD relatives formed with the relativizer *which* are ungrammatical, as can be observed from the following example from Jacobson (1998), who attributes it to Bouton (1970).

(ii) John read every book which Bill did.

I will discuss the issue and complications involving the relativizer restriction in detail in chapter 4. However, the examples I will be using in the text will temporarily be full relatives to illustrate the relevant contrast. Subsequently, I will return to using ACD relatives, unless otherwise noted.

b. Marv put in his pocket all the toys that/∅ he could put there. - amount and restrictive reading possible

Crucially for the proposal that I will make in chapter 2 regarding the treatment of the various types of amount relatives, further investigation of cross-linguistic data provides evidence that *wh*-forms are not universally unable to introduce relatives with amount readings. Consider the following data from Romanian:

(13) Marv a pus în buzunar toate jucăriile pe care le-a putut
Marv aux put in pocket all toys-the PE which them.acc.cl-aux can.pp
pune.
put.inf
'Marv put in the pocket all the toys that he could put.'

(13), which is the equivalent of the full *which*-relative in (12a) above, is felicitous in a situation where there were toys that Marv could have put in the pocket because they were small enough but which were left outside because the pocket was full.

An additional case involving this relativizer restriction is illustrated in another construction that has been argued to be an amount relative. Heim (1987) notes that the relative clause in (14) has the amount reading in (14a) in addition to the "substance" reading in (14b).

(14) It will take us the rest of our lives to drink the champagne that they spilled at the party.

a. It will take us the rest of our lives to drink the *amount* of wine d such that they spilled d-much wine at the party.

b. It will take us the rest of our lives to drink the wine x such that they spilled x at the party.

Importantly, however, the interpretation in (14a) disappears if the relativizer *that* is replaced with *which* in (14). Along the same lines, Szczegielniak (2004) reports for Polish a distinction between relatives that allow amount readings of the type observed by Heim (1987) and ones that do not. Specifically, a *co/čto* relative[4] allows an amount reading where what is at issue is an *amount* of champagne that was spilled today, while *który/kotory* relatives only have the pragmatically implausible reading where the champagne to be drunk is the actual champagne that was spilled.

(15) Całe życie nam zajmie wypić ten szampan, co oni rozlali dziś.
whole life us take drink this champagne that they spilled today
'It will take us our whole life to drink all the champagne that they spilled today.'

(16) ?? Całe życie nam zajmie wypić ten szampan, który oni rozlali dziś.
whole life us take drink this champagne which they spilled today
'It will take us our whole life to drink all the champagne which they spilled today.'

We must note here that in Polish examples resembling (13) above, the restriction on *wh*-relativizers is absent, just like in Romanian. These facts will be presented in chapter 2 as evidence against treating ACD-type amount relatives as crucially dependent on a raising analysis of the type originally proposed by Carlson (1977). Following Carlson (1977) and Heim (1987), I will assume that degree relativization (as in the semantics they propose

[4]Note that, unlike in English, Polish orthography follows the rule of placing a comma before all relative clauses, regardless of whether the relative is restrictive or appositive.

for *there*-relatives) entails the presence of a relativizer restriction (i.e. impossibility of *wh*-relativizers), but I will argue that the correlation is not two-way. As I will show in chapter 4, the relativizer restriction is not always the result of degree quantification, but can be triggered by other requirements.

1.3.3 Determiner restrictions: amount relatives in *there*-insertion contexts

Before introducing a new set of data, let us look back on how we can describe, given the discussion so far, the class of relatives that Carlson dubbed amount relatives: they differ in interpretation from restrictives and appositives, and (in English) they can only be introduced by the relativizers *that* and ∅.

Interestingly, Carlson (1977) notes another case with such restrictions and additional limitations - relative clauses in a *there*-insertion context. Just like the ACD relatives with amount readings discussed above, relatives in *there*-insertion contexts can only be introduced by the relativizers *that* or ∅:

(17) a. I took with me the three books that/∅/*which there were on the table.

b. There is a set of books X with the cardinality 3 on the table and I took X with me.

As I will show in section 1.4, Heim (1987) proposes that both *there*-insertion relatives and ACD relatives with amount readings should be interpreted as sets of degrees. However, in chapter 2 I will argue that the difference in meaning between (17a), informally paraphrased in (17b), and ACD amount relatives is one of the reasons to argue for a different analysis of *there*-relatives and the relevant ACD relatives.

Let us now return to the syntactic restrictions on amount relatives. Carlson observes that *there*-insertion relatives show a determiner restriction on the relativized noun phrase. DPs headed by a definite amount expression are acceptable as heads of amount relatives, but indefinite expressions are not.

(18) a. I took (all) the three books that there were on the table.

b. * I took three books that there were on the table.

More precisely, he proposes the following empirical generalization: the class of determiners that can be followed by an expression of amount, illustrated in (19), can appear with the relativized noun of a *there*-insertion relative, and the class of determiners that cannot be followed by an expression of amount, given in (20), may not appear on the relativized NP in a *there*-relative.

(19)	ACCEPTABLE	(20)	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 FEW ten oboes

Carlson also provides a number of cases where the grammaticality of the sentence depends on more than just the presence of a particular determiner. Consider the contrast in (21a-b)

(21) a. * The man that there was on the life raft died.

b. The men that there were on the life raft died.

The definite determiner *the* in (21a) cannot appear by itself with a singular noun relativized out of a there-insertion context. However, the definite determiner is fine in the minimally different sentence with a plural noun. In addition, (21a) can be rescued by an item like *one*, *only* or *single*:

(22) The one/only/single man that there was on the life raft died.

Superlatives and ordinals rescue definite singulars in *there*-relatives in the same way:

(23) The last/tallest man that there was on the life raft died.

An interesting feature of these rescuing "specifiers of uniqueness", in Carlson's words, is the fact discussed in Bhatt (2002) that they behave as a group with respect to NPI licensing in relative clauses. Moreover, a definite singular DP cannot license NPIs in a relative clause unless it is preceded by the independently NPI-licensing *every*, but the presence of a superlative-like element rescues the construction:

(24) a. * This is the book that I have *ever* read

b. This is the *longest/first/only* book I have *ever* read.

Interestingly, NPI licensing is also subject to a definiteness effect, as noted in Herdan (2004). An indefinite superlative, such as the one in (25a), is subject to contextual restrictions, but is grammatical in an appropriate context.

(25) a. This class has a best student.

b. In most classes it is hard to identify who the best student is. The classes either have more than one student of the same ability or for some other reason it is hard to identify the student with the strongest record. How-

ever, there is one class in the school that has a student of really exceptional ability.

On the other hand, a superlative-like element can only license NPIs in a relative clause if the DP is definite, as illustrated in (26).

(26) a. This class has the best student with *any* knowledge of French.

b. * This class has a best student with *any* knowledge of French.

I refer the reader to Herdan and Sharvit (2006), which provides an analysis of the interaction of the definite article with this set of expressions which explains both the determiner restriction and the rescuing effect.

A similar rescuing effect on definite singulars appears with exceptives (see Hoeksema (1987)):

(27) a. * Except for Bill, I am the realtor around here.

b. Except for Bill, I am the only/best realtor around here.

While an unmodified definite singular is ungrammatical in (27a), a definite singular modified by a superlative-like element is grammatical.

ACD relatives also show determiner restrictions that correlate with the availability of the amount reading, similar to those found with *there*-relatives. While ACD relatives are in principle possible with both definite/universal and indefinite determiners, the amount reading is only available with the former class of determiners:

(28) a. Marv put in his pocket all the toys that he could.

b. #Marv put in his pocket some toys that he could.

While the example containing a universal can have the meaning that the pocket has been stuffed full, the example with an indefinite determiner cannot. In addition, note that Carlson's rescuing effect on definite singulars works in the same way in ACD relatives as in *there*-insertion relatives.

(29) a. * Coach Hayes put the player that he could into the game.

b. Coach Hayes put the best/first player that he could into the game.

In this section I discussed a restriction on the class of determiners allowed in amount relatives. Moreover, I have noted that the same class of elements that rescues a definite singular in a *there*-insertion context has a similar effect on the definite's ability to license NPIs or to appear in exceptives. However, even in the presence of the right determiner and the right relativizer, additional factors interfere with the availability of the amount reading. These restrictions will be explored in the next section.

1.3.4 The role of modality

Grosu and Landman (1998) first discussed the effect of certain modal contexts on the availability of the amount reading observed by Heim (1987). Consider the examples in (30).

(30) a. Yesterday I spent the whole day drinking the wine that they spilled at the party.

b. It will take us the rest of our lives to drink the champagne that they spilled at the party.

While (30a) only has the pragmatically implausible reading according to which the wine to be drunk is actually the wine spilled, (30b) has an additional reading according to

which what is at stake is the time it would take to drink the *amount* of wine spilled.[5] The first reading is often referred to in the literature as *the identity of substance reading*, while the second reading, specific to amount relatives, is called *the identity of amount reading*.

Further evidence for the role of modality comes from the contrast below. Unlike in Heim's example, the modal is in the relative clause and not in the main clause. However, the identity of amount reading is still dependent on the presence of the modal. When the modal *could* is present, as in (31a), the sentence can receive an identity of amount reading claiming that Marv stuffed his pocket full, however, when *could* is replaced with the auxiliary *did*, as in (32a), the identity of amount reading disappears.

(31) a. Marv put everything he could in his pocket.

b. Marv put the maximal amount of things that he possibly could in his pocket.

(32) a. Marv put in his pocket everything he did the night before.

b. #Marv put the maximal amount of things in his pocket that he possibly could put the night before.

(32a) does, however, allow an identity of substance reading whereby the things that Marv puts in his pocket today are the same as the ones from yesterday. Notice, however, that it only accidentally entails an identity of amount. The quantity is the same since the objects are identical. If we imagine a situation in which the objects are clearly different,

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[5]Interestingly, not all languages allow this interpretation even when the sentence is in the future. For example, both Romanian and German (Susi Wurmbrand (p.c.)) disallow the amount reading in relatives such as (30b). As I will not discuss modal relatives in detail, an explanation of these facts is beyond the scope of this work. However, one possibility is that the answer has to do with the ability of these languages to interpret the future auxiliary as a modal.

the identity of amount reading disappears, as noted above. (32a) is not acceptable as a continuation of the discourse below:

(33) #Last night Marv stuffed his pocket full with his brother's toys and later hid them under his bed. Today he stuffed his pocket with toys again with the intention of hiding these as well. So today **Marv put in his pocket everything he did the day before.**

The literature, however, does not discuss the fact that the pure presence of a modal is not enough to make the amount reading possible. While the periphrastic form of *could* does lead to an amount reading in (34), the amount reading is not available in (35).[6]

(34) Marv put in his pocket everything he was able to. - amount reading OK

(35) Marv put in his pocket everything he had to. - no amount reading.

It appears that the semantic content of the modal *could* and its periphrastic counterpart *was able to* contributes in some way to obtaining the amount reading. In chapter 3 I will discuss in more detail the contexts that make the amount reading possible.

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[6]Note that the tense of the modal expression has to match the past tense in the main clause, as pointed out to me by Jonathan Bobaljik and Jon Gajewski (p.c) and illustrated by the contrast below:

(i) ?? Marv put in his pocket everything that he should.

(ii) Marv put in his pocket everything that he should have.

However, as illustrated by the grammaticality of (31a), the modal *could* can be interpreted as past without the auxiliary *have*. Note also that the non-periphrastic form *must* cannot be interpreted in the past, which causes ungrammaticality just like in (i) above:

(iii) ?? Marv put in his pocket everything he must.

Note also that while the presence of a modal seems to facilitate an identity of amount reading, it is by no means necessary, at least in some relatives, as we can see from the following example from McNally (2006):

(36) We lost the battle because we lacked the soldiers our enemy had.

These data indicate the need for a more thorough investigation of the role of modality in licensing amount relatives. I will argue in chapter 3 that the readings available in ACD relatives are highly context dependent and therefore potentially influenced by the modal alternatives supplied. However, a thorough discussion of the contribution of the modal is beyond the scope of this dissertation and will be left open for future research.

1.3.5 Additional restrictions on ACD amount relatives

We have seen that the availability of the identity of amount reading with ACD relatives depends on the presence of a modal context. Interestingly however, further restrictions seem to apply. At first sight it appears that the subject of the main clause must be coreferential with the pronominal (not proper name) subject of the relative clause.

(37) a. Marv_1 put in his pocket everything he_1 could. - amount reading present

b. Marv_1 put in the box[7] everything he_1 could. - amount reading present.

c. Marv_1 put in his pocket everything he_2 could. - amount reading absent

d. Marv put in his pocket everything Bill could. - amount reading absent

e. #Marv_1 put in his pocket everything Marv_1 could.

[7]Notice that the fact that *his* is also coindexed with *Marv* in the previous example does not play a role in the availability of the amount reading.

Moreover, it is the subject itself and not something within the subject that needs to be coindexed with the subject pronoun of the relative clause:

(38) Marv's$_1$ mother put in the box everything he$_1$ could. - amount reading absent.

The amount reading does not become available when the pronoun in the relative clause is embedded:

(39) Marv$_1$ put in the box everything his$_1$ mother could. - amount reading absent.

This paradigm is interesting in that, in principle, we could attribute the lack of amount readings in *there*-relatives to the impossibility of coreference between the subject of the main clause and the subject of the relative clause, which is an expletive. However, this requirement is not active in modal relatives, nor in ACD relatives with mass nouns (Jonathan Bobaljik (p.c)):

(40) We$_1$ will never be able to recruit the soldiers that the Chinese$_2$ paraded on May Day.

(41) He$_1$ can drink in one hour the wine that you$_2$ can in one day.

1.3.6 Summary

In this section I have described a large range of data which indicate that amount relatives appear to be a syntactically heterogeneous group, characterized by a wide range of interesting restrictions, some of which also appear in traditionally unrelated constructions. The question that immediately arises is whether the occurrence of similar restrictions in some of these constructions warrants the inclusion of all the constructions presented in a single class of amount relatives. The answer that I will defend in this dissertation is

no. I will argue that adopting the view that these relative clauses do not form a unitary class allows us to formulate a proposal for the semantics of *there*-relatives that does not need to cover the ACD cases as well. This is particularly welcome in light of the fact that the reading that is missing from *there*-relatives is not precisely the one that we have to account for in ACD relatives. Also, this view opens the way to a better understanding of the restrictions associated with amount relatives as a group.

Before concluding this chapter I would like to introduce some of the current analyses of amount relatives and discuss how they propose to account for the above data. In chapter 2 I am going to challenge the unified analysis approach and argue that this unification obscures some important properties of these relatives and places undue focus on the relativizer restriction. In chapters 3 and 4 I will show that the interpretation we have been calling the identity of amount reading is actually not necessarily linked to a raising analysis of relative clauses (as in Carlson's and Heim's proposals). Nor is it directly correlated with the presence of the relativizer restriction described above. The contribution of this dissertation regarding ACD relatives with amount reading will not consist in offering a semantics that covers all the readings of these relatives, but rather in pointing out the difficulties in deriving these readings compositionally.

1.4 Evaluation of previous analyses

Research on amount relatives has taken two major directions. One line, including Carlson (1977), Heim (1987) and Grosu and Landman (1998), argues for a unification of traditionally unrelated syntactic constructions by assigning to all of them the same degree semantics. A different approach, proposed by McNally (2006) (see also McNally

(2008)), argues against including *there*-insertion relatives in the class of amount relatives, based among other things on the unavailability of the identity of amount reading in this subclass of relative clauses. To anticipate, the proposal I will make in chapter 2 will follow the latter line, but will arrive at a rather different conclusion. I will show that *there*-insertion relatives have a special degree semantics, even though they do not allow the identity of amount reading, while ACD relatives that allow this reading show no syntactic evidence of degree relativization analogous to that present in *there*-relatives in the Carlsonian/Heimian tradition. In the rest of this chapter I will only be concerned with the former class of approaches, while the latter will be dealt with in chapter 2.

1.4.1 Amount relatives as sets of degrees (the Carlson/Heim account)

In section 1.3 I presented a number of syntactic restrictions that appear to be shared by *there*-insertion relatives and ACD relatives. These similarities in otherwise unrelated constructions have led to their inclusion in a class of their own, amount relatives, which were originally assumed to have the same semantics. Part of the motivation for postulating a uniform semantics for these relatives stems from one of the more striking characteristics of amount relatives - their relativizer restriction. The relativizer *which* cannot appear in a *there*-relative or with the amount interpretation discussed above[8].

(42) a. I took with me the three books that/∅/*which there were on the table.

b. Marv put everything in his pocket that/∅/*which he could put there.

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[8]The star in (42b) refers only to the absence of the amount interpretation. Recall, however, that the ACD counterpart of (42b) is also ungrammatical with *which* on the restrictive construal, hence the overtness of the VP material in the relative clause.

Carlson (1977) explains the unacceptability of *which* in (42a) by appealing to the similarity between amount relatives and comparatives, which also do not allow *wh*-forms. For Heim (1987), however, the explanation is based on the infelicity of an individual variable in an existential context. Heim's analysis relies on the weak/strong distinction proposed by Milsark (1974), who observes that noun phrases in English can be divided with respect to their ability to appear felicitously in existential *there*-sentences, as illustrated in (43) and (44) below.

(43) a. There are (some/two/few/many) pets (in the garden).

b. There is a pet (in the garden).

(44) a. ?? There are the/these/most/all the/my/John's pets playing in the garden.

b. ?? There is the/that/every/each/my/John's pet (playing in the garden).

c. ?? There is Mary (playing in the garden).

According to Milsark's classification, the noun phrases that cannot appear in existential *there*-sentences are "strong", while the ones that can are "weak". Following Safir (1982), this contrast has been known as the *Definiteness Effect.*

Heim capitalizes on the weak/strong distinction and suggests that the individual variable x that is left behind by relativization in a *there*-sentence such as (45) below is strong and therefore subject to the definiteness effect, which would predict (45a) to be ungrammatical.

(45) a. The horses that there were in the field belong to this farm.

b. horses λx. there was/were x in the field

To account for the possibility of relativization out of an existential context, she argues that sentences such as (42a) and (45a) are grammatical with the relativizer *that* because of this relativizer's ability to bind a degree variable. Moreover, the gap is now filled by a weak NP of the form *d-many x*, which does not violate the Definiteness Effect. The relevant piece of evidence for the weakness of a degree expression comes from its ability to appear in a *there*-insertion context such as (46b), which is subject to the same definiteness effect discussed above. Even though both expressions have a definite determiner, the sentence containing the QP *that many horses* is grammatical.

(46) a. * There was THAT horse in the pasture.

b. There were THAT many horses in the pasture.

c. there were d-many horses x in the pasture

Therefore, according to Heim's proposal, the structure for the *there*-insertion relative in (45a) above should be as in (47).

(47) λd. there were d-many horses in the field

Finally, in order to explain why the relativizers *that* and $\emptyset$, but not *which*, are allowed in *there*-insertion relatives, we have to stipulate that only the former can bind the degree variable, which is why (47) is free from the definiteness effect.

However, Heim's analysis of the relativizer restriction does not carry over straightforwardly to ACD relatives with amount readings, such as (48) below.

(48) * Marv put in his pocket everything which he could.

In principle, (48) has a restrictive as well as an amount reading. Even if we assume that the infelicity of the *there*-relative in (42a) with a *wh*-relativizer is replicated in (48) for

reasons that have to do with it being an amount relative, an explanation is still needed for its unacceptability on the restrictive construal. Such an explanation for the ungrammaticality of (48) on both the restrictive and the amount reading is put forward by Grosu and Landman (1996). I postpone my criticism of their analysis until chapter 4 when I will have already established the motivation for a split approach to amount relatives.

Recall that in the case of *there*-relatives it is the necessity to bind a degree variable that motivates the relativizer restriction. Unlike *there*-insertion contexts, ACD structures are not associated with a definiteness effect, so a strong, individual variable should be a legitimate object in such an environment. Therefore, ACD relatives with amount readings do not in principle require a degree variable to avoid the definiteness effect. The motivation for having a degree in the semantics of an ACD relative has to do with obtaining the amount reading. Consequently, if the amount reading can be obtained in contexts not subject to the relativizer restriction, then, given the assumption that degree relativization of the type used by Carlson and Heim is responsible for the relativizer restrictions, we may be forced to conclude that a different semantics is needed to obtain the identity of amount reading in ACD relatives.

However, Carlson expresses the intuition that the meaning of an amount relative is different from that of a restrictive relative precisely in that the former underlyingly contains an amount expression. According to him, the right underlying form of the ACD relative in (42b), repeated here as (49), is that in (49b), not (49a).

(49) Marv put everything in his pocket that he could (put in his pocket).

a. Marv put THAT THING in his pocket. (restrictive)

b. Marv put THAT MANY THINGS in his pocket. (amount)

To sum up, for Carlson the semantics of amount relatives involves reference to amounts, which makes it similar to the semantics of comparative clauses.

In the same spirit, Heim (1987) proposes a semantics for amount relatives according to which the amount relative expresses a set of degrees, in line with Carlson's intuition that amount relatives involve talking about amounts. This semantics is intended to hold of both *there*-relatives and ACD relatives with amount readings whose structure is illustrated in the a. examples. Their semantics is informally paraphrased in the b. examples and more formally in the c. examples.

(50) I took with me the books that there were on the table.

a. (books) that there were _ on the table

b. (books) that there were (d-many books) on the table

c. $\{d:\exists x[\text{BOOK}(x) \text{ and } |x|=d \text{ and ON-THE-TABLE}(x)]\}$

(51) Marv put everything he could in his pocket.

a. (things) that he could put _ in his pocket

b. (things) such that he could put d-many (things) in his pocket

c. $\max(\lambda d.\text{Marv could put d-many things in his pocket.})$

Recall that having a degree expression in the position of the gap has the added benefit of eliminating the definiteness effect problem in *there*-relatives, if such an expression is indeed to be treated as weak.

In addition, Heim's motivation for this analysis lies with examples like (52), which seem to allow a reading where only an identity of amounts, not of substances, is required. The relevant amount reading is given informally in (52a) and formally, according

to Heim's proposal, in (52b). The sentence in (53), without the modal *will*, does not have the reading in (53a).

(52) It will take us the rest of our lives to drink the champagne that they spilled that evening.

a. It will take us the rest of our lives to drink as much champagne as they spilled.

b. max(λd.they spilled d-much wine)

(53) Yesterday I drank the champagne that they spilled that evening.

a. #Yesterday I drank as much champagne as they spilled that evening.

Recall also that the availability of the identity of amount reading in ACD relatives is subject to a number of constraints, including, among others, dependence on the presence of modality and relativizer and determiner restrictions. Heim's account makes an important step in proposing a semantics for the identity of amount reading, but, like Carlson's, does not attempt to account for its limited distribution. According to Heim, all amount relatives express sets of degrees, which predicts that all of Carlson's amount relatives should be able to have an identity of amount reading. This, however, is contrary to fact, in particular in the case of *there*-insertion relatives, which never show an identity of amount reading. Moreover, as we will see in chapter 3, the amount readings that we do observe are not always identical to the readings that are predicted by treating the amount relative clause as a set of degrees. In the next section, I will turn to the proposal put forth by Grosu and Landman (1998) and point out a number of issues surrounding their analysis.

1.4.2 The complex degree analysis - Grosu and Landman (1998)

As mentioned above, according to Heim's analysis of amount relatives, all amount relatives are interpreted as sets of degrees. Grosu and Landman (1998) observe however that this predicts that an identity of amount reading will be the only possible reading of amount relatives and should arise by default, rather than under poorly understood licensing conditions. In particular, in light of Heim's proposal, the role of modality in (52)-(53) above remains mysterious, as does the complete absence of an identity of amount reading in *there*-insertion relatives. Adopting Heim's semantics, if the meaning of the relative *book that there was on the table* is as in (54b), then the relative in (54) is expected to show exclusively an identity of quantity/amount reading, which is illustrated in (54d). The only attested reading, however, is the identity of substance reading given in (54c).

(54) I took with me the books that there were on the table.

a. (books) that there were (d-many books) on the table

b. max λd.there were d-many books on the table

c. I took with me the books x such that x was on the table. - identity of substance

d. I took with me the maximal number of books d such that there were d books on the table - identity of quantity

Consider the following situation. There are 3 books on the table and I took with me 3 books from the shelf. Heim's semantics predicts that (54) would be judged as true in this scenario, contrary to our intuitions.

Grosu and Landman (1998) leave aside the issue of the role of modality and focus on the issues raised by *there*-insertion relatives. In particular, two different problems arise: on the one hand, as we saw above, the identity of amount reading paraphrased in (54d) is not attested, and on the other hand, the identity of substance reading, paraphrased in (54c) cannot be obtained if the amount relative expresses a set of degrees rather than a set of individuals. I will argue in chapter 2 that part of the difficulty involved in deriving the distribution of the identity of amount reading comes from the view that amount relatives form a uniform class with a uniform semantics. I will then argue that the identity of amount readings cannot be derived by the degree semantics based on the proposal of Heim (1987).

As I have mentioned above, one of the arguments against the uniform semantics for amount relatives that Carlson and Heim aimed for is the absence of the identity of amount reading from *there*-insertion relatives. Two approaches have been proposed to deal with this problem. McNally (2006), to whom I will return in the next chapter, proposes abandoning the uniformity idea, which I will do as well, but argues that no degree relativization is involved in *there*-insertion sentences. Grosu and Landman (1998) (and McNally (1992)) put forward a solution that still assumes degree relativization in both *there*-insertion and ACD relatives, but argues that a special kind of degree relative is involved. Grosu and Landman's instantiation involves postulating a richer notion of degree, which they call DEGREE, that also keeps track of the kind of thing measured and its cardinality. As (55) below illustrates, the new degree is actually a triple consisting of the cardinality of the plural individual x, the sortal predicate P, and the plural individual x itself.

(55) For all plural individuals x: DEGREE$_P$(x)=$< |x|, P, x >$

Assuming that numerals have the semantics of modifiers, we obtain the semantics below:

(56) For all plural individuals x: N$_{BOOKS}$(x)=$< |x| = n, BOOKS, x >$

Grosu and Landman (1998) adopt the LF and the semantics proposed by Heim (1987), as in (57a) and (57b), but given that their degree is a complex one, the resulting interpretation is as in (57c).

(57) I took with me the books that there were on the table.

a. (books) that there were (d-many books) on the table

b. {d:∃x[BOOK(x) and DEGREE(x)=d and ON-THE-TABLE(x)]}

c. {< |x|, BOOKS, x>: BOOKS(x) and ON-THE-TABLE(x)}
('The set of all measure triples, of which the object measured is a sum of books on the table.')

Grosu and Landman also argue that two other operations are needed for their analysis to work: a maximalization operation, which applies at the level of the relative clause CP for degree relatives with the effect of selecting "out of a set the unique triple all of whose coordinates are maximal", and a "SUBSTANCE" operation, that turns a set of degree triples into a set of individuals. Maximalization restricts the set of degrees that is the meaning of the amount relative to a singleton set containing the maximal degree, if there is one, yielding (58a) for our case. The SUBSTANCE operation applies as a default to give the set of third elements of the triples, i.e the substances, as shown in (58b).

(58) a. {< |⊔{x∈BOOK: ON-THE-TABLE(x)}|, BOOKS, ⊔{x∈BOOK: ON-THE-TABLE(x)}>}

b. $\{\sqcup\{x \in \text{BOOK:ON-THE-TABLE}(x)\}\}$

Let us now see what the theory looks like with the Carlson/Heim and Grosu and Landman analyses in place. Heim's degree semantics, together with Grosu and Landman's revised notion of degree and the SUBSTANCE and MAXIMALIZATION operations, allows us to derive both the identity of substance and the identity of amount readings. If the SUBSTANCE operation does apply, the CP is interpreted as a set of individuals, as in (58b) above. This corresponds to the identity of substance reading. However, in order to obtain the degree meaning for a sentence such as (59), we also start from a degree triple, given in (59a). Then, leaving aside the substances, we construct a degree phrase meaning from the degree value and the sortal, as in (59b), which is informally paraphrased as (59c).

(59) We will never be able to recruit the soldiers that the Chinese paraded last May Day.

a. $\{< |\sqcup\{x \in \text{SOL:PAR}(x)\}|, \text{SOL}, \sqcup\{x \in \text{SOL:PAR}(x)\}>\}$

b. $\{d: \exists n \exists x[d = <n, \text{SOL}, x> \text{ and } n \geq |\sqcup\{x \in \text{SOL:PAR}(x)\}|]\}$

c. 'The set of degrees of soldiers whose number is at least as great as the number of soldiers the Chinese paraded/as many soldiers as the Chinese paraded soldiers.'

Finally, in order to get the meaning of (59), Grosu and Landman interpret the set of degrees in (59b) as part of a comparative structure (which was also Carlson's intuition): "We are not able to recruit a degree of soldiers which is in (59b)."

While this is certainly a step in the right direction, we still lack the tools to predict the distribution of the two readings. While the MAXIMALIZATION operation needs to apply in order to obtain either reading of amount relatives, the SUBSTANCE operation is only needed to account for the identity of substance reading. If the SUBSTANCE operation strips away the individual part of the degree triple, what is left over is exactly what is needed for the identity of amount reading to obtain (see the derivation of the amount meaning of (59) above). This view has the benefit of allowing both readings to be derived. However, a problem arises in connection with Grosu and Landman's suggestion that the SUBSTANCE operation applies by default. The immediate question is what prevents the identity of amount reading from being generated every time the SUBSTANCE operation applies. As we have seen above, modals appear to be involved in licensing an identity of amount reading in some ACD relatives, but not crucially in Heim's modal relatives, which can have an amount reading in the absence of a modal, as seen in (36) above. Grosu and Landman's proposal does not provide any obvious way to account for the connection between the presence of a modal and the availability of the identity of amount reading.

Let us now turn our attention to the other peculiar restrictions that apply to amount relatives. Grosu and Landman make the claim that their use of the maximalization operation in the interpretation of amount relatives predicts the determiner restrictions noted by Carlson (1977). This determiner restriction is encoded in a constraint to the effect that CP-external material preserve the value of MAX into the quantification, universal quantifiers and definite articles being the only elements capable of achieving this effect. In the context of their proposal, Carlson's definite singular puzzle, illustrated in section 1.3.3 above, is completely unexpected. Informally, Carlson notices a distinction between

definite singulars and definite plurals. In the absence of a "specifier of uniqueness" (items like *only*, *tallest*, *one* or *single*), a definite singular is unacceptable in a *there*-relative, as shown by (60), repeated from above.

(60) * The man that there was on the life raft died.

The problem is that as far as preserving the value of MAX goes, the definite singular and the definite plural *the* should show identical behavior. Grosu and Landman give a semantics for degrees of plural individuals (see (55)), but they intend it to hold of singularities as well. Therefore, it should be possible to talk about the set of men with the cardinality 1. To solve this problem resort to the claim that the definite singular is interpreted out-of-the-blue as a proper name, which is strong, and not as a degree expression, which is weak. Items like *only*, *one* or *single* are assumed to provide the explicit cardinality needed to make the DPs acceptable in amount relatives.

In addition, as pointed out above, the rescuing effect arises in ACD relatives as well, where no definiteness effect is expected:

(61) a. * Coach Hayes put the player that he could into the game.

b. Coach Hayes put the best/tallest/only player that he could into the game.

In chapter 2, I will provide an analysis of amount relatives that involves a covert superlative morpheme. I will also explain why an overt superlative morpheme rescues the definite singular, while the covert superlative I will be arguing for does not.

1.4.3 Summary of results

Despite their contribution to our understanding of amount relatives, the Carlson/Heim and Grosu and Landman analyses cannot explain some basic properties of the class we

have called amount relatives. I will put aside for the rest of this chapter the issue of the relativizer restriction and take it up again in chapter 2 and more extensively in chapter 4. To anticipate, I will conclude that membership in a special class of relative clauses should not be motivated by the relativizer restriction. I will show that cross-linguistic data argue against the relevance of such distinctions in ACD relatives.

To sum up the degree analyses outlined above, the degree analysis proposed by Heim (1987) building on Carlson (1977) solves the problem of the Definiteness Effect, but is problematic in that her degree relatives have no access to individual interpretations. Grosu and Landman (1998) correct this problem, but at the cost of introducing the notion of complex degrees. However, even their analysis lacks a principled way of deriving the circumstances under which the identity of amount reading is available.

In chapter 2 I will motivate and develop the central proposal of this dissertation. I will argue that there are good reasons to believe that a uniform semantics for *there*-relatives and ACD relatives is undesirable. My proposal shares this intuition with a proposal by McNally (2006), but differs from it considerably regarding the actual semantics of the two types of relatives. I will defend the idea that *there*-relatives contain a covert superlative morpheme which has the function of absorbing the degree variable proposed by Heim (1987) and yielding an individual reading. I will also show that the presence of an amount reading in some ACD relatives does not correlate with the relativizer restriction.

Before concluding, a terminological clarification is in order. Since I will be arguing that not all types of relatives that have been assumed in the literature to be amount relatives are in fact obtained by degree relativization, I will use quotes around the word "amount" when referring to the label that has been applied to a certain class of relatives. Also, as

will become clear after my proposal is laid out, a more appropriate term for *there*-relatives would be the term degree relative used by Heim (1987). Unlike Carlson's amount relative, the term degree relative suggests more explicitly the syntactic role of the degree. In order to be designated as a degree relative, the meaning of the relative must be one of the following:

(62) The meaning of degree relatives

a. {d:.....} - a set of degrees

b. {<x,d>:.....} - a set of individual/degree pairs

Under the uniformity analysis, the issue is naturally not whether all traditional "amount" relatives are degree relatives in the above sense, since they all involve relativization over degrees by design. The issue is why consistent use of a single degree analysis does not consistently yield amount readings of the type predicted by Heim's analysis. Throughout the discussion of my proposal, I distinguish between degree relatives and non-degree relatives based on the definitions in (62) above. Therefore, the proposal is that *there*-insertion relatives *are* degree relatives and that Carlson's ACD relatives with amount readings are *not* (or at least that they do not involve degrees in the same way).

I will also argue that the issue of how to derive the amount readings is orthogonal to the issue of the relativizer restrictions and a raising analysis of relative clauses. This leads us to a clarification of the term *amount reading*. In one sense, due to Heim (1987), an amount reading arises when the relative clause expresses a (maximal) degree, yielding an *as many*-reading. As we saw above, this reading is, however, unavailable in *there*-insertion sentences, unlike in some ACD sentences:

(63) I took with me the books that there were on the table. $\neq$ I took with me as many books as there were on the table.

(64) Marv put in his pocket everything he could. = Marv put in his pocket as many things as he could.

In the first case, the meaning of the relative clause should not determine only the cardinality of the set of books taken, but also who the actual members of the set are. On the other hand, I will show in chapter 3 that while it is possible to obtain an *as many*-reading for the ACD sentence, the notion of amount or degree is not involved in the way predicted by Heim (1987). Notice also that the designation *amount* reading refers to the fact that the cardinality/size of the set of objects in questions is the only requirement. Indeed, the sentence in (64) above would be felicitous even if Marv filled his pocket with different objects on different occasions. This will become crucial in chapter 3 section 3.4.3 in our discussion of the effect of superlatives on the availability of the amount reading.

CHAPTER 2

A SUPERLATIVE THEORY OF AMOUNT RELATIVE

2.1 Introduction

The original Carlsonian proposal regarding the criteria for inclusion in the class of "amount"[1] relatives relied on the presence of relativizer and determiner restrictions to identify the appropriate relative clauses. This led to the formation of a heterogeneous class, which includes at least *there*-insertion relatives, some modal relatives, and some relatives involving antecedent contained deletion. However, as we saw in chapter 1, the heterogeneity of this class of relatives poses a number of problems for a uniform analysis. Crucially, the problems seem to arise from the fact that "amount" relatives do not behave consistently across different syntactic types. More precisely, as I have already discussed, even the most developed accounts of the semantics of "amount" relatives fail to account for the peculiar distribution of the flagship identity of amount reading. In addition, there is no satisfactory account of the interaction between such relatives and superlatives and superlative-like elements.

This chapter motivates and develops the central proposal of the dissertation. The main goal is to provide a principled explanation for the absence of the identity of amount reading from *there*-relatives. As a first step, I will argue against the view that treats "amount" relatives as a uniform class. I will discuss two approaches to the problems of "amount" relatives and show where they fail with respect to the data and the goal of accounting for the absence of the amount reading from *there*-relatives.

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[1]Recall that I am using "amount" to refer to the class of relatives identified by Carlson (1977). I will no longer use the term *amount relative*, without quotes, but rather use the expression *relative clauses with amount readings* to refer to Carlson's ACD relatives and Heim's modal relatives.

One approach (see Grosu and Landman (1998)) seeks a unified semantics for all syntactic types of "amount" relatives. On the other hand, other proposals (see McNally (2006)) argue that not all relatives that have been subsumed under the term "amount relatives" actually involve degree relativization. The split approach, as I will refer to this kind of view, assumes that the difference in the availability of the amount reading is indicative of a difference in semantics. In light of the data, which I reconsider here from the perspective of the two approaches, I will conclude that a split approach to "amount" relatives is preferable, but will come to a rather different conclusion regarding the presence of degrees. Unlike McNally (2006), I will argue that the proper interpretation of a *there*-insertion relative is dependent on quantification over degrees in the form of degree relativization.

In order to reconcile this finding with the distribution of the amount reading I propose a new semantics for *there*-insertion relatives, illustrated in (1).

(1) [[EST-C] $\lambda n.\lambda x.$books(x) & on the table(x) & $|x| \geq n$]

I argue that postulating a covert superlative in *there*-relatives naturally accounts for the fact that the identity of substance reading is the only reading, as well as for the rescuing effect of superlatives and superlative-like elements.

2.2 Sorting out "amount" relatives

Before presenting the main proposal of this dissertation, I will revisit the data presented in chapter 1 from the perspective of the theories they motivate. At least three syntactically-distinct constructions have been argued to be candidates for inclusion in the

heterogeneous class of "amount" relatives: *there*-insertion relatives (2a), ACD relatives (2b) and modal relatives (2c).

(2) a. I took with me every book that there was on the table.

b. Marv put in his pocket everything that he could.

c. It will take us the rest of our lives to drink the wine that they spilled at the party.

Aside from the syntactic restrictions which formed Carlson's (1977) original motivation for postulating a third class of relative clauses the three constructions above do not form a natural class. What they have in common is a relativizer restriction, as shown in (3), which precludes *wh*-relativizers from appearing in these constructions, and a determiner restriction as illustrated in (4), which precludes determiners other than the definites and the universals from heading the relativized phrase.

(3) a. I took with me every book that/∅/*which there was on the table.

b. Marv put in his pocket everything that/∅/*which he could.

c. It will take us the rest of our lives to drink the wine that/∅/*which they spilled at the party.

(4) a. I took with me every/*some book that there was on the table.

b. Marv put in his pocket everything/*something that he could.

c. It will take us the rest of our lives to drink the/*some wine that they spilled at the party.

Compare now the readings available to the first two types of "amount" relatives introduced above. The ACD relative in (2b) has the characteristic amount reading in (5b).

This is in addition to the restrictive reading in (5b'). The *there*-relative in (2a), on the other hand, does not have the amount reading in (5a), but only the individual reading in (5a'), a fact first pointed out and discussed by Grosu and Landman (1998).

(5) a. I took with me the/a plural individual consisting of as many books as there were on the table. (amount reading - unattested)

a' For all x, such that x is a book on the table, I took x with me. (individual reading - attested)

b. Marv put in his pocket as many things as he could. (amount reading - attested)

b' For all x, such that Marv could fit x in his pocket, Marv put x in his pocket. (restrictive reading - attested)

The peculiarity of the amount reading comes out more strongly in a situation in which the restrictive reading would be unavailable, such as (6) below.

(6) Marv owns a dozen red toys, all of which are small enough to fit in his pocket independently. However, if he tries to put all of them together in the pocket, only 8 of them can fit. Even though he would like to take all the toys along, he knows it's impossible and only takes the 8 that can fit.

The facts are as follows. Informally, the readings for (7a) and (8a) in the situation described in (6) above can be represented as in (7b) and (8b), respectively. While the ACD relative in (7a) is acceptable in the situation described in (6) above on the reading in (7b), the non-ACD relative in (8a) is not acceptable in the same context on the reading in (8b).

(7) a. Marv put in his pocket all the toys that he could.

b. Marv put in his pocket as many toys as he could. (amount reading)

c. {d:∃n∃x[d=<n,THING,x> and n≥ | ⊔ {x∈THING:MARV-COULD-PUT(x)}|]}. (pure degree reading)

(8) a. Marv put in his pocket all the toys that are red.

b. For all x such that x is a relevant red toy, Marv put x in his pocket. (restrictive reading)

The reading that we can obtain for (7a) in the situation described in (6) has been labeled *the identity of amount reading*. The designation is meant to emphasize the contrast with the reading we obtain for *there*-relatives, as in (5a') above, which is an *identity of individuals* reading. The plural individual taken must consist of the actual book individuals on the table, and not merely of a plural individual consisting of books with the same cardinality. However, as noted above, (7a) cannot receive the pure degree paraphrase in (7c), which is modeled on Grosu and Landman's paraphrase for the meaning of modal relatives as in (12) above, which involves a complex degree. To elaborate a little on this observation, if the paraphrase in (7c) were indeed available, we would expect that only the cardinality of the set is important. For instance, (7a) would be acceptable in a situation such as (9) below.

(9) Marv put 8 1-inch marbles in his pocket together. However, we know that yesterday he filled his pocket with 8 2-inch marbles.

In fact, uttering (7a) in this context is altogether odd. If we know that 8 larger marbles fit together, putting in 8 smaller ones wouldn't satisfy (7a), since presumably more toys could have been put in the pocket. What is required is that Marv put in his pocket the

same number of objects of the same size as the ones he used to test the capacity of the pocket. What needs to remain constant across different situations in which the sentence can be felicitously uttered is not the cardinality of the set of things placed in the pocket, but the total size of the plural individual placed in the pocket, i.e the amount is determined by the size of the pocket itself. For such examples, Grosu and Landman's complex degree semantics does not in fact yield exactly the right results, despite the fact that it yields a set of degrees of marbles.[2]

Notice, however, that using a mass noun in an ACD relative does lead to a pure degree reading, as in (10), much like the one we obtain for modal relatives in (11) (J. Bobaljik (p.c.)):

(10) I drank in one hour the wine that Marv can in one day. →
I drank in one hour as much wine as Marv can in one day.

(11) It will take us the rest of our lives to drink the wine that they spilled at the party. →
It will take us the rest of our lives to drink as much wine as they spilled at the party.

In what follows I will generally leave aside modal relatives, as in (2c) and (11). One reason has to do with the fact that there is considerable speaker variation in the acceptability of the amount reading. In addition, it is not at all obvious that the amount reading is the only reading involving a degree that can be obtained from a modal relative. Consider

[2]To be fair, the problem with Grosu and Landman's semantics only arises if the cardinality of the (plural) individual placed in the pocket is tracked in the complex degree. If instead we used a different measure, such as volume or weight, the issue surrounding the example in (9) does not arise.

(12). Interestingly, it can have more than one reading that involves identity of degrees - not just numerical degrees as in (12a), but also degrees of braveness as in (12b).

(12) We will never be able to recruit the soldiers that the Chinese paraded last May Day.

a. We will never be able to recruit as many soldiers as the Chinese paraded.

a.' $\{d:\exists n\exists x[d = <n, SOL, x> \text{ and } n \geq |\sqcup\{x \in SOL:PAR(x)\}|]\}$ (Grosu and Landman (1998:18))

b. We will never be able to recruit as brave soldiers as the ones that the Chinese paraded.

Grosu and Landman's semantics, given in (12a'), can account for the numerical reading, but would have to be modified to account for the reading(s) involving non-numerical degrees. If the semantics for all the original "amount" relatives is indeed uniform, the facts above beg the question of why ACD relatives with amount readings do not get readings similar to (12b) above. Such a reading would be as in (13b).

(13) I drank in one hour the wine that Marv can in one day.

a. $\rightarrow$I drank in one hour as much wine as Marv can in one day. BUT

b. $\not\rightarrow$I drank in one hour as fine wine as Marv can (in one day).

Unlike in the case of the soldiers above, the comparison cannot refer to the quality of the wine.

One possible reaction to the failure of the inference involving (13b) is to point out the fact that *brave* is contextually salient as a characteristic of soldiers, but *fine* is not salient

in (13b). However, adjusting the context to make the fineness of the wine salient does not make the inference possible, as illustrated by (14).

(14) Last night I was in my cellar deciding which of the many fine wines to drink. In the end, I drank (in one hour) the wine that Marv can (in one day). $\not\rightarrow$ I can drink in one hour as fine wine as Marv can in one day.

These facts, of course, require an adequate explanation, but pursuing one is beyond the scope of this dissertation.

To summarize, the data above show that the identity of amount reading is not uniformly available to all relatives that have been subsumed under the term "amount" relatives; in particular, the amount reading is absent from *there*-relatives. Moreover, what we require for an amount reading is not always the same in modal relatives and in ACD relatives. This means that the unifying property of "amount" relatives is not their interpretation, which is unexpected, considering that they were originally assumed to share the same semantics. It is therefore useful to evaluate the original motivation for assuming a uniform analysis. Recall that I will be arguing that not all types of relatives that have been assumed in the literature to be "amount" relatives should be assigned a semantics similar to the Carlsonian/Heimian one. As noted at the end of chapter 1, in order to point out the inadequacy of the label, I will use quotes around the word "amount" when referring to the members of the class of relatives that Carlson originally proposed. When I am referring explicitly to an identity of amount interpretation, I will omit the quotes.

In the next section, I will begin by arguing against the uniformity analysis that originated with Carlson (1977) and Heim (1987), and was later developed by Grosu and Landman (1998). Then I will present my motivation for pursuing a split approach, along

the lines of McNally (2006). McNally (2006) argues, based among other things on the unavailability of the amount reading in *there*-insertion relatives, that they should not be considered "amount"/degree relatives at all. The proposal that I make, just like McNally's, does not assume a uniform treatment of the two kinds of relatives. Regarding *there*-relatives, I make the opposite claim from McNally (2006), which is that they do in fact involve degree relativization, which is what being an "amount"/degree relative means to me. However, I assume that *there*-relatives also contain a covert superlative morpheme which absorbs the degree variable and is therefore responsible for the absence of the amount reading. On the other hand, I argue that ACD "amount" relatives do not involve degree relativization in its Carlsonian/Heimian instantiation. I will present evidence that, if Carlson was right about the syntactic reflexes of degree relativization in *there*-relatives, we should not assign that same semantics to ACD relatives with amount readings.

2.3 "Amount" relatives and degrees

Carlson (1977) and Heim (1987) both argue that all "amount" relatives should be assigned the same degree semantics, despite the absence of the predicted amount reading in *there*-relatives (a problem which was noted first by Grosu and Landman (1998)). For *there*-relatives, the reason for this assumption is the parallelism with the well-known fact going back to Milsark (1974) that "strong" noun phrases are ungrammatical in *there*-sentences, while "weak" noun phrases are allowed:

(15) a. * There was every book on the table.

b. There were some books on the table.

Carlson's and Heim's reasoning is that abstraction over individuals in a *there*-relative would produce a variable of type <e> in a *there*-insertion context, which should result in ungrammaticality, contrary to fact, as illustrated by the grammaticality of *there*-insertion relatives.

To account for this fact, Heim (1987) proposes that "amount" relatives clauses denote sets of degrees, as in (16c) for the relative clause in (16a), repeated here from above.

(16) a. I took with me every book that there was on the table.

b. (book) there were (d-many books) on the table

c. λd.there were d-many books on the table

Her proposal relies on the idea that *d-many books* is an indefinite weak noun phrase despite the fact that the individual variable is strong on its own, by parallelism with the following contrast between a DP with a strong determiner and a DP with a strong determiner embedding a degree expression:

(17) a. * There was THAT horse in the pasture.

b. There were THAT *many* horses in the pasture.

The central problem raised by her proposal, however, is that it predicts that *there*-insertion relatives should always show the identity of amount reading. As discussed above, this is clearly not true. In fact, the absence of this reading from these relatives prompted two different responses in the literature. Even in the cases where the amount reading *is* available, such as some ACD relatives, Heim's account does not aim to offer an explanation of the limited distribution of this reading.

2.3.1 Two approaches to the problem

The existing literature on "amount" relatives can be divided into two general approaches to the problem outlined above. The first approach, which I call the *uniformity approach*, takes the similarity with respect to the determiner and relativizer restrictions identified by Carlson as defining. For example, despite the absence of the characteristic amount reading, the proponents of this approach assume that *there*-relatives are a special case of "amount" relatives. Thus, in order to maintain a uniform degree semantics Grosu and Landman (1998) postulate a richer notion of degree, which they call DEGREE, that also keeps track of the kind of thing measured in addition to its cardinality. In conjunction with the SUBSTANCE operation, which was described in chapter 1, the complex degree account can derive both the identity of substance reading needed for *there*-relatives and the identity of amount reading needed for ACD relatives.

The problem with Grosu and Landman's approach is that it does not offer the necessary tools to predict the distribution of the amount reading in ACD relatives. Grosu and Landman intend their postulated SUBSTANCE operation to apply by default, since the identity of substance reading seems to be always available, even if inappropriate in the context. It is, however, less than clear how they view the process of obtaining the amount reading. The application of the SUBSTANCE operation has the effect of stripping away the individual part of the degree triple, leaving behind the sortal and the numeral, which are responsible for the amount reading. This is an undesirable consequence since the amount reading only arises in limited environments. There is no mechanism in place that would be capable of regulating its interaction with the SUBSTANCE operation, since nothing in the theory predicts the distribution of the identity of amount reading.

The second approach, which I will call the *split approach*, holds that not all so-called "amount" relatives should be assigned the semantics proposed by Carlson (1977), Heim (1987) or Grosu and Landman (1998). In particular, McNally (2006) argues that *there*-relatives are not "amount" relatives at all, but plain restrictives with a sortal restriction which accounts for the determiner and relativizer restrictions. McNally argues that the postverbal position of an existential sentence is filled by an entity correlate of a property, which is of type <e>. According to McNally, the absence of an identity of amount reading from *there*-relatives is evidence that such sentences do not involve degree relativization. In the next section I will first present evidence against adopting a uniform approach. However, I will also give evidence that the split approach in the form proposed by McNally (2006) does not adequately account for the *there*-insertion data. This will lead me to adopt a different version of the split approach, which maintains the advantage of acknowledging the differences between *there*-relatives and ACD relatives without tying the availability of the amount reading to degree relativization.

2.3.2 Against the uniformity approach

From the perspective of Carlson's original discussion of the class of "amount" relatives, which relies on the relativizer and determiner restrictions for determining class membership, "amount" relatives are a uniform class, hence the idea of a uniform semantics, of the type proposed by Heim (1987). However, the difference in interpretation between *there*-relatives and ACD relatives with amount readings, which I have outlined above, seems to argue against a uniform treatment of these two kinds of relatives. Recall

that the *there*-relative in (16a) above lacks the reading in (5a), which is what the amount reading presumably would be.

In order to rescue the uniform semantics, we could assume with Grosu and Landman (1998) that the semantics is underlyingly the same, and that additional factors determine the presence or absence of the amount reading. What is more worrisome, however, is the fact that the syntactic criteria used by Carlson actually speak against a uniform analysis.

Take the determiner restriction first. This criterion does not apply in the same way in *there*-relatives and ACD relatives. Specifically, indefinite determiners in ACD relatives, as in (19), do not cause ungrammaticality like in the case of *there*-insertion relatives in (18), but they merely make the amount reading unavailable or indistinguishable from the restrictive reading.

(18) * I took with me some book that there was on the table.

(19) Marv put in his pocket something that he could. (no distinguishable amount reading)

Even more challenging is the view of the relativizer restriction that arises when looking at languages other than English. There appears to be no correlation between the presence of an amount reading and the impossibility of *wh*-relativizers. Despite the existence of a relativizer restriction involving ACD, Romanian relative clauses do allow amount readings with both relativizers.

Romanian relativizers are all formally *wh*-words, but ACD is only possible with the relativizer *ce* (that[3]), and not with *care* (which)[4], as illustrated below.

(20) Marv a pus în buzunar tot ce a putut.
Marv aux put in pocket everything that aux can.pp
'Marv put in his pocket everything he could.'

(21) * Marv a pus în buzunar toate lucrurile pe care le-a putut.
Marv aux put in pocket all things PE which them.acc.cl-aux can.pp
'*Marv put in his pocket everything which he could.'

Since the use of the relativizer *ce* is highly constrained, and it is the relativizer *which* in English that is subject to the restriction, it would be useful to find an amount reading in a relative clause that uses *care* in Romanian. Fortunately, the full version of (21), with the ACD gap spelled out, is grammatical, as shown by (22). Moreover, it can display an amount reading, i.e. it is grammatical in a context where Marv only filled his pocket to capacity despite the existence of other things which could have been put in the pocket.

(22) Marv a pus în buzunar toate lucrurile pe care le-a putut
Marv aux put in pocket all things PE which them.acc.cl-aux can.pp
pune.
put.inf
'#Marv put in his pocket everything which he could put.'

---

[3] *Ce* is literally translated as *what*, but, as I will argue in chapter 4, it behaves like a complementizer. I will therefore gloss it as *that* for ease of comparison.

[4] In chapter 4 I take up the issue of the relativizer restriction in more detail. I conclude there, as I do here, that the relativizer restriction in English ACDs is merely a confounding factor in the issue of "amount" relatives.

Finally, even in English, there is no evidence of a correlation between the presence of an amount reading in an ACD relative and a raising analysis of relative clauses in which the relativized NP moves from a relative clause internal position to SpecCP. The amount interpretation proposed by Carlson (1977) requires the relativized NP to be interpreted internally to the relative clause, which can only be the case if the relative clause contains a copy of the relativized NP. However, there is syntactic evidence that the amount reading can be obtained in a situation where raising is disallowed. Hulsey and Sauerland (2006) argue that in relative clauses where a raising analysis is forced, such as those where the head is part of an idiom, extraposition is impossible. This is shown by the following examples from Hulsey and Sauerland.

(23) a. * Mary praised the headway last year that John made.

b. * I was shocked by the advantage yesterday she took of her mother.

It is possible to use this argument to show that raising is not a prerequisite for obtaining an amount reading. The crucial evidence is the fact that extraposition is possible in English relative clauses with amount readings:

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

The relative clause has been extraposed over the PP *in his pocket*, but the amount reading is still available. This indicates that the amount reading is not necessarily obtained by raising. Restrictive relative clauses in general need to allow both a raising and a matching analysis (for further discussion see chapter 4).

On the other hand, *there*-relatives in English cannot undergo extraposition, as shown by the ungrammaticality of (25).

(25) * I took all the books with me that there were on the table.

The fact that extraposition is banned in *there*-relatives, which do not have an amount reading, but allowed in ACD-type relatives, which do show an amount reading, suggests that the two types of relatives are distinct, at least with respect to some property.

Not all research on "amount" relatives, however, promotes the idea of a uniform class. In the next section I will argue against a particular version of what I call the "split approach". Based on the fact that, unlike ACD relatives, *there*-relatives do not have an amount reading, McNally concludes correctly, I believe, that one must either draw the conclusion that they are not "amount" relatives at all or else that they are a special kind of "amount" relative. However, while in McNally (1992), she concludes, like Grosu and Landman (1998), that *there*-insertion relatives must be a special kind of "amount" relative, in McNally (2006) she argues that they are purely restrictive relatives. My goal will be to show that this latter approach cannot be maintained.

2.3.3 Against *there*-relatives as restrictive relatives

A direct consequence of a theory that treats *there*-insertion relatives as regular restrictive relatives is that their gap position must be of type <e>, as is the case with run-of-the-mill restrictive relatives. Recall, however, that traces of individuals are ungrammatical in existential sentences by virtue of their belonging to the class of strong NPs, as proposed by Heim (1987). If *there*-relatives are restrictives, in order to explain their grammaticality we have to account for the clash between the need to have a gap of type <e> and the need for a gap interpretation that is compatible with an existential context.

Many theories of *there*-insertion defend the view that only nominal expressions of type <e,t>, the type of predicates, are grammatical in existential constructions. Such an account has been recently proposed by McNally (2006). A peculiarity of this account is that it suggests that relative clauses based on existential constructions are purely restrictive and contain a gap of type <e>, the type of individuals. I will argue below that her analysis faces two types of problems.

On the one hand, the requirement that only predicates can appear in existential contexts has a number of exceptions. On the other hand, the assumption that *there*-insertion relatives are restrictive is challenged by a number of contrasts between relatives involving *there* and their counterparts without *there*. It has been argued, however, that adopting an analysis that requires expressions of type <e,t> in existential sentences does not force us to assume that the relative clauses based on such sentences are restrictive. This is the line taken by Landman (2004). Landman's solution to the problems is compatible with an analysis of *there*-relatives as degree relatives, as proposed for example by Grosu and Landman (1998). However, that analysis is not entirely adequate for the reasons outlined in chapter 1.

McNally (2006) argues that *there*-insertion relatives are merely restrictive relatives with a sortal restriction induced by the existential context. In McNally (1998) she argues that nominals in the postverbal position of existential sentences are restricted to non-particulars. More precisely, she models non-particulars as entity correlates of a property, a notion she borrows from Chierchia (1984). Since entity correlates of properties are of type <e>, there is no need to assume that the gap in these relatives is of a special type

(cf. Heim (1987)). The semantics she uses for existential sentences is an "instantiate" semantics as in (26b).

(26) a. There was a white gorilla (at the Barcelona Zoo).

b. instantiate($\cap\lambda$x[gorilla(x) $\wedge$ white(x)]

The function $\cap$ relates properties-*qua*-functions to their entity correlates by turning a function of type <e,p>[5] into one of type <e>. On this analysis, the gap of a *there*-relative corresponds to an entity correlate of a property, which is a subclass of the type <e>, as desired.

The problem with McNally's account is that it does not have a satisfactory account of the grammaticality of quantified expressions such as *exactly three boys* or *between two and five boys* in existential contexts. On the instantiate semantics, non-monotone increasing NPs such as in (27) do not receive the correct interpretation. If we assert the instantiation of a set of individuals appropriately described by *exactly three boys*, we cannot rule out the existence of more than three such individuals, which does not correspond to our intuitions about the interpretation of (27).

(27) There were exactly three boys at the party.

McNally (1998) proposes that the problem of *exactly three boys* or *at most five boys* disappears once we no longer treat these NPs as unanalyzable units. *Exactly* and *at most* are to be interpreted as adverbs that scope out and combine with a proposition-denoting expression that has a set of alternatives associated with it, as in (28).

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[5]In Chierchia's system tensed clauses are treated as propositions, which form a separate sort, represented as <p>, just like entity correlates of properties.

(28) a. $[\![\textit{at most}]\!](\alpha) = \forall p[[C(p) \wedge \text{true}(p)] \rightarrow [\alpha \in p]]$

b. $[\![\textit{at most}]\!]([\![\textit{There are three books on the table}]\!]) = \forall p[[C(p) \wedge \text{true}(p)]$
$\rightarrow [[\![\textit{There are three books on the table}]\!] \in p]]$

According to this semantics, the proposition that *at most* appplies to is asserted to be the highest ranked proposition in the relevant alternative set.

However, while the adverbial analysis may make sense for *at most*, and to a lesser extent for *exactly*, it does not straightforwardly extend to *between two and five boys*, *more than half of the boys* or *either zero or else more than zero boys*.

(29) a. There were between two and five boys at the party.

b. There were more than half of the boys at the party.

c. There are either zero or else more than zero students in the garden.

Landman (2004) puts forward an analysis that avoids this problem. His analysis relies on restricting NPs in the postverbal position of *there* to type <e,t>. In Landman (2004), the type requirement on the gap position of *there*-relatives is placed in the larger context of the restrictions on existential sentences.

His analysis of existential sentences assumes that NPs in the postverbal position are adjuncts[6] that can only be obtained from NPs that have the basic type of properties. Unlike in the traditional view (cf. Partee (1987)), where NPs are generated at the types - <e> and

[6]This predicts that they will yield strong ungrammaticality when extracted out of an island, as they will cause an ECP violation rather than a mere subjacency violation in the case of argument extraction. This is confirmed by the severe ungrammaticality of the following sentence:

(i) * Which cats_i did you like the place where there were t_i in the garden?

<<e,t>,t>, and predicates are derived types, Landman argues that NPs are born either at the type of arguments or at the type of sets/predicates. Moreover, since Landman's system does not allow lowering operations, we obtain a straightforward explanation for the infelicity of purely quantificational expressions in existential contexts, due to the impossibility of lowering them to the type of predicates. In this system, indefinite expressions are generated at the type of sets and can be type-shifted into the type of adjuncts by the intersective type-shifting operation ADJUNCT. In order to account for the impossibility of proper names and definites in an existential context a further constraint must be imposed to the effect that only NPs that are generated at the type of sets can be involved in type-shifting by ADJUNCT. The explanation for this fact is that the former type-shifting operation does not belong to the same system as the type-shifting from type <e> to type <e,t> which is driven by the type of predicate position. NPs that are type-shifted to a modifier interpretation by ADJUNCT are in effect "hijacking" a type shift operation for adjectives (adjunction).

Landman's analysis is not compatible with relativization in *there*-sentences leaving a gap of type <e>, as McNally proposes. Complementing Landman's analysis of *there*-existentials is Grosu and Landman's degree relativization proposal for *there*-relatives. For reasons that I have outlined in chapter 1 above, Grosu and Landman's analysis is not suited to deriving the distribution of the amount reading.

In sum, in order to maintain that *there*-relatives are purely restrictive, what we would want is an analysis that avoids the problems of McNally's analysis, but allows for a gap of type <e>. Such an analysis is, to my knowledge, not available.

More importantly, McNally's analysis faces additional problems. Her argument against the special status of *there*-relatives relies on examples such as those in (30) and (31), showing *there*-relatives that do not contain definite or universal determiners, which are the only ones compatible with maximality and uniqueness:

(30) For instance, they can observe that there's a difference between reasons there are to believe P - where these include reasons not now available to you - and reasons you have to believe P. For example, one reason there is to believe you'll soon be sick is the fact that you just drank poison. (J. Pryor, 'Is There Non-Inferential Justification?', ms. Princeton U., emphasis original)

(31) Let's start with posting a summary of the things you don't believe in, the reasons you don't believe in them, and possible reasons there are to believe in them.... (McNally's (40b))

McNally suggests that these NPs can be interpreted as kinds (which are good examples of entity correlates of properties), which makes them suitable in existential sentences. While I will not have a lot to say about the determiner restriction here, it should be noted that such examples are rare and highly context dependent. In addition, existential constructions are also known to show exceptions in that they allow strong NPs in special circumstances, such as the list reading[7]:

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[7]Fred Landman (p.c.) points out that data with *reason* are problematic because they are also involved in well-known blatant violations of the definiteness effect even in the absence of a list context:

(i) There is *every reason* to be suspicious of these data.

When we control for such cases however, the determiner restriction shows a robust pattern.

(32) Who is coming with us on the trip?

There's John, Susan, the guy from the chess club and Tom.

Moreover, further restrictions on the class of definites, which her analysis predicts to be allowed to accompany relativized NPs in *there*-sentences, cast doubt on the success of a restrictive relative analysis of *there*-existentials.

In particular, if we adopted McNally's analysis, Carlson's definite singular puzzle would become even more mysterious than under the degree relativization analysis. An unmodified definite singular is bad in *there*-relatives, as noted by Carlson (1977), which is suprising if *there*-relatives are merely restrictive relatives. Restrictive relatives do not normally show such a restriction, as shown by the grammaticality of (33a).

(33) a. I took with me the book that was on the table.

b. * I took with me the book that there was on the table.

c. I took with me the longest book that there was on the table.

There is, however, one desirable aspect of McNally's approach, which I will retain in my proposal. Unlike Grosu and Landman's account, which requires the postulation of a SUBSTANCE operation, McNally's account provides a straightforward explanation for the absence of the amount reading from *there*-insertion relatives. If these relatives are indeed purely restrictive, as McNally (2006) suggests, then there is no reason why they should show an amount reading. I have shown, however, that there are crucial restrictions on *there*-relatives which cannot be accounted for using the proposed type conditions.

In this dissertation I will make a proposal that shares with McNally's the intuition that *there*-insertion and ACD relatives are different types of relatives, but differs in assuming

that the former rather than the latter have a derivation that involves sets of degrees (despite the absence of an identity of amount reading). Hence, in my system, *there*-relatives denote sets of degrees (at some point), while ACD relatives with amount readings do not involve degree relativization. In chapter 3 I will discuss in more detail why the degree semantics that have been proposed for "amount" relatives are not enough to derive the wide range of amount readings available in ACD relatives. In the rest of this chapter I will turn to the details of my semantics for *there*-relatives, demonstrating how it can account for the absence of amount readings.

2.4 A superlative theory of "amount" relatives

In this section I will motivate and develop my semantics for *there*-relatives. First, I will sketch the reasoning and the results we will obtain in this section.

I will begin by providing evidence in favor of postulating a covert superlative in *there*-insertion. Then I will show formally how postulating a covert superlative morpheme in *there*-insertion relatives accounts for the absence of the amount reading, and for Carlson's puzzle. In short, the covert superlative morpheme has the effect of "absorbing" the degree variable in the *there*-relative and yielding a set of individuals rather than of degrees.

The motivation for postulating a covert superlative morpheme in *there*-insertion relatives comes from an observation regarding the effect of certain superlative-like modifiers on *there*-relatives. As discussed in section 2.3.3, Carlson (1977) notes that an unmodified definite singular is ungrammatical as the head of a *there*-relative such as in (34a). The puzzle, however, is that the restriction disappears when the definite singular is accompanied by a superlative or a superlative-like element.

(34) a. * I took with me the book that there was on the table.

b. I took with me the longest/second/only book that there was on the table.

I will take these facts to indicate that the semantics of *there*-relatives involves a covert superlative morpheme. Before presenting the details of the analysis, let us consider first the semantics of overt superlatives.

2.4.1 The semantics of superlatives

The analysis of *there*-insertion relatives I am proposing takes seriously the effect of the superlative morpheme on the definite singulars and assumes that the effect is indicative of what is happening inside the *there*-insertion relatives. I will show that a covert superlative morpheme has the effect of eliminating the amount reading by combining with a degree expression and yielding an individual (or a set of individuals). This will allow us to account for the unavailability of the amount reading in *there*-insertion sentences.

Before looking at the effect of a covert superlative morpheme on *there*-relatives, let us first analyze the basic structure of a superlative construction such as *the tallest man*. Following Heim (1999), I will assume that the attributive adjective takes the noun as an argument and has the semantics in (35) below.

(35) Let P be a 1-place property, x an object, and d a degree. Then $[\![tall]\!]$(P)(d)(x) = True iff P(x) = True and x's maximal degree of tallness includes d.

Following the semantics for the comparative proposed by Seuren (1973), whereby "x is taller than y" means the same as "x is tall to a degree that y is not", Heim assigns to the superlative expression *tallest man* the semantics in (36).

(36) $[\![\textit{tallest man}]\!](x) = \text{True iff } \exists d\ (x \text{ is a d-tall man } \&\ \forall y\ [\ y \neq x \rightarrow \neg\ y \text{ is a d-tall man}])$

Her semantics for the superlative presupposes that the relation between the objects and the degrees is downward monotonic, as it is indeed in (35) above:

(37) A relation R between objects and degrees is <u>downward monotonic</u> iff

$\forall x,d,d'\ [R(d)(x) = \text{True } \&\ d>d' \rightarrow R(d')(x) = \text{True}]$

This means that if x is exactly 6' tall, then he is also 5'8" or 5'10", but not 6'2". So if y, $y \neq x$, is exactly 5'7", then x is tall to a degree to which y is not.

The motivation for treating gradable adjectives as monotonic is based on the interpretation of superlatives in intensional contexts, as discussed in Sharvit and Stateva (2002). In addition to having two *de re* and two *de dicto* readings, (38) also has a fifth reading which unambiguously compares "needers" rather than mountains ((Szabolcsi, 1986; Heim, 1994, 1999)), called "split scope" reading by Heim (1999) and the "upstairs *de dicto*" reading by Sharvit and Stateva (2002). These readings are illustrated below (Sharvit and Stateva (2002:455)):

(38) John needs to climb the highest mountain.

(39) *De re*

a. For all worlds w compatible with John's needs in the actual worlds, he climbs in w the actual mountain that is higher than any other relevant actual mountain.

b. For all worlds w compatible with John's needs in the actual world, he climbs in w the actual mountain that is higher than any other actual mountain that anybody else needs to climb.

(40) *De dicto*

a. For all worlds w compatible with John's needs in the actual world, he climbs the mountain in w that is higher in w than any other relevant mountain in w.

b. For all worlds w compatible with John's needs in the actual world, he is the best mountain-climber in w.

(41) *Upstairs de dicto*:

Scenario:

Mary needs to climb a 3000 ft mountain (or higher) to improve her ranking.

Bill needs to climb a 4000 ft mountain (or higher) to improve his ranking.

John needs to climb a 5000 ft mountain (or higher) to improve his ranking.

	Worlds where needs are satisfied		
Mary	w1	w2	w15
	3000	4000	9500
Bill	w225	w226	w237
	4000	5000	9500
John	w339	w340	w357
	5000	6000	9000

(38) can be uttered felicitously in the scenario in (41) above even though there is no particular mountain that John needs to climb, which excludes the *de re* readings, and John's mountain isn't always the highest, which excludes the *de dicto* reading. The "upstairs *de*

dicto" reading merely requires John to have the most demanding needs, even if the others climbed higher mountains than John in their need worlds.

The "upstairs *de dicto*" reading is however not captured if we assume that gradable adjectives are non-monotonic (cf. von Stechow (1984), Rullmann (1995) and others):

(42) $[\![high]\!]$(d)(x) = True iff x's maximal height is d.

Assuming this non-monotonic definition of adjectives, the definition of the superlatives needs to be as follows:

(43) $[\![-est]\!]$(R)(x) = True iff there is a degree d such that R(d)(x) = True and for all d', if $y \neq x$ and R(d')(y) = True, then $d' < d$.

This yields the interpretation in (44b) for (38) above assuming the LF in (44a) where *-est* has moved above the intensional verb.

(44) a. John [C-est [1 [needs-@ [2 [PRO climb-w_2 ~~the~~ d_1-high-mountain-w_2]]]]

b. There is a degree d such that for all w compatible with John's actual needs, John climbs in w and exactly d-high mountain; and for all other individuals y, for all d', if for all w compatible with y's actual needs y climbs in w an exactly d'-high mountain in w, then $d' < d$.

A characteristic of these truth conditions is that they require John to climb a mountain of the same height in all his "need" worlds, which is not consistent with the "upstairs *de dicto*" reading described in (41) above. In addition, (44b) predicts (38) to be true in a situation where John needs to climb a mountain which is exactly 5000 ft high, and Mary needs to climb a mountain which is between 6000 ft and 7000 ft high. Intuitively, however, the sentence is false in this scenario. If we model the truth conditions of (38)

on (36) above, which assumes a monotonic semantics for adjectives, we correctly predict falsity in the same scenario: in addition to John, Mary also climbs a mountain that is 5000 ft tall in all her need worlds.

(45) There is a degree d such that in all of John's need worlds he climbs a mountain whose height contains d, and for all other individuals y, it is not the case that in all of y's need worlds, y climbs a mountain whose height contains d.

Now that we have established the motivation for adopting a monotonic semantics of adjectives, let us return to the semantics of superlatives. Given that *tallest* is assumed here to have the same meaning as *taller than everything else*, the superlative is context-dependent in the same way as the universal quantifier. This leads Heim to include a domain argument among the arguments of *-est*, as used in (44a) and illustrated in the amended lexical entry below:

(46) $[\![-est^{sg}]\!]$(C)(R)(x) = True iff ∃d R(d)(x) = True and ∀y [y≠x and y∈C → ¬ R(d)(y) = False], where

(i) C is a set of singular relevant individuals

(ii) x ∈ C

The example in (47a) now gets a semantics as in (47b).

(47) a. The dean praised the best student.

b. The dean praised the unique student x, x∈C, such that x is a d-good student and for all y∈C such that y≠x, ¬[y is a d-good student].

If, on the other hand, we are working with plural superlatives, as we will need to in the case of *there*-relatives, we need a different lexical entry. Stateva (2005) argues that a com-

positional interpretation of plural superlatives requires more than just a reliable theory of singular superlatives. In order to obtain the distributive reading of plural superlatives Stateva assumes, following Lønning (1987), Lasersohn (1990), Schwarzschild (1996), and Brisson (1998), that distributivity is a property of the VP and that the plural morpheme is the instantiation of the distributive operator. In particular, the interpretation of a sentence like in (48) cannot be obtained from a semantics such as (48b).

(48) Mount Everest and K2 are the highest summits.

a. [[Mt Everest⊕K2] [^{D} [1[t_1 (be) (the) [-est [high summit]]]]]]

b. [[*Mount Everest and K2 are the highest summits*]] = True iff
∀x[x∈MtEverest⊕K2 → max(λd.high(d)(x) & summit(x)) > max(λd.∃y≠x[y∈C & high(d)(y) & summit(y)])]

c. [MtEverest∈MtEverest⊕K2 → max(λd.high(d)(MtEverest) & summit (MtEverest)) > max(λd.∃y≠MtEverest[y∈C & high(d)(y) & summit(y)]) & K2∈MtEverest⊕K2 → max(λd.high(d)(K2) & summit(K2)) > max(λd.∃y≠MtEverest[y∈C & high(d)(y)& summit(y)])], where C={x:x is a summit}

The reason why the semantics in (48b) is not appropriate for (48) is that it requires each of the summits in the group of highest summits to satisfy the condition in (48c), i.e to be higher than the rest of the members of C, which can never be the case if C contains all the summits. Stateva (2005) argues that the way to eliminate this problem is to modify (contra Heim (1999)) the presupposition that the external argument of the predicate is part of the comparison class. The adjusted comparison class would look as in (49).

(49) C={x:x is a summit & x≠MtEverest & x≠K2}

However, Fitzgibbons et al. (to appear) argue that it is possible to solve Stateva's distributivity problem without removing the presupposition that x ∈ C, which they argue *is* in fact a presupposition of the superlative. They propose that the problem can be avoided by using a unified semantics for the singular and plural superlative and removing the superlative from the scope of the distributive '*'-operator. They propose the LF in (51) with '**' on *tall* and '*' on *student* as an alternative to the LF in (50) which is responsible for the distributivity problem noted by Stateva.

(50) John and Bill *[-*est* [tall student]]

(51) John and Bill [-*est* [**tall *student]]

The '*'-operator pluralizes 1-place predicates such as *student*. Fitzgibbons et al. (to appear) argue that the '**'-operator, which normally attaches to verbs denoting <e,<e,t>> functions and delivers functions of the type shown in (52) (see Sternefeld (1998) and Beck (2001)), may also attach to expressions that denote <d,<e,t>> functions, in which case we obtain functions of the type shown in (53).

(52) a. ⟦ [*John and Bill*] **love* [*Mary and Sue*] ⟧ = True iff each member if {John, Bill} loves at least one member of {Mary, Sue}, and each member of {Mary, Sue} is loved by at least one member of {John, Bill}.

b. For any relation R, **R is the smallest relation such that:

i. R⊆**R, and

ii. If $< a, b >$∈**R and $< c, d >$∈**R, then $< \{a, c\}, \{b, d\} >$∈**R

c. If the characteristic set of $[\![love]\!]$ is {<John, Mary>, <Bill, Sue>}, then the characteristic set of $[\![^{**}love]\!]$ is {<John, Mary>, <Bill, Sue>, <{John, Bill}, {Mary, Sue}>, ...}

d. $[\![^{**}love]\!](Y)(X)$ is defined only if:

Whenever there is an $x \in X$ and a $y \in Y$ such that $[\![^{**}love]\!](y)(x)$ = True, then for all $x \in X$ there is a $y \in Y$ such that $[\![^{**}love]\!](y)(x)$ = True, and for all $y \in Y$ there is an $x \in X$ such that $[\![^{**}love]\!](y)(x)$ = True.

Whenever defined, $[\![^{**}love]\!](Y)(X)$ = True iff there is an $x \in X$ and a $y \in Y$ such that $[\![^{**}love]\!](y)(x)$ = True.

(53) a. If the characteristic set of $[\![tall]\!]$ is {<d1, John>, <d2, Bill>}, then the characteristic set of $[\![^{**}tall]\!]$ is {<d1, John>, <d2, Bill>, <{d1, d2}, {John, Bill}>}

b. $[\![^{**}tall]\!](D)(X)$ is defined only if:

Whenever there is a $d \in D$ and an $x \in X$ such that $[\![^{**}tall]\!](d)(x)$ = True, then for all $d \in D$ there is a $x \in X$ such that $[\![^{**}tall]\!](d)(x)$ = True, and for all $x \in X$ there is a $d \in D$ such that $[\![^{**}tall]\!](d)(x)$ = True.

Whenever defined, $[\![^{**}tall]\!](D)(X)$ = True iff there is a $d \in D$ and an $x \in X$ such that $[\![^{**}tall]\!](d)(x)$ = True.

c. Whenever defined, $[\![^{**}tall\ {}^{*}student]\!](D)(X)$ = True iff there is a $d \in D$ and an $x \in X$ such that $[\![tall]\!](d)(x)$ = True and $[\![student]\!](x)$ = True.[8]

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[8] $[\![tall]\!]$ and $[\![student]\!]$ are combined via a type shifting operation as in (i):

(i) $[\lambda R \in D_{<d,<e,t>>}.\lambda P \in D_{<e,t>}.\lambda d \in D_d.\lambda x \in D_e.R(d)(x)$ and $P(x)]$.

The final ingredient is their semantics for *-est*, given in (54), which yields for (55a) the interpretation in (55b).

(54) $[\![-est]\!]$(C)(R)(X) is defined only if: (i) X∈C, (ii) for all Y∈C such that Y≠X: Y does not overlap X, and (iii) for all Y∈C: there is a D (a singularity or a plurality of degrees) such that R(D)(Y) = True.

Whenever defined, $[\![-est]\!]$(C)(R)(X) = True iff there is a D such that R(D)(X) = True and for all Y≠X such that Y∈C, R(D)(Y) = False.

(55) a. John and Bill are the tallest students.

b. Whenever defined, $[\![John\ and\ Bill\ [-est[^{**}tall\ ^{*}student]]]\!]$(C) = True iff there is a plurality of degrees D such that $[\![^{**}tall\ ^{*}student]\!]$(D)({John, Bill}) = True and for all Y≠{John, Bill} such that Y∈C, $[\![^{**}tall\ ^{*}student]\!]$(D)(Y) = False.

Their solution to Stateva's distributivity problem relies on removing the superlative out of the scope of the distributive operator and on the **-operator to produce a set of individual-degree pairs. In the next section I turn to the details of my semantics for *there*-insertion relatives using their semantics for superlatives.

2.4.2 Covert superlatives in *there*-insertion relatives

Heim's semantics for *there*-insertion relatives shown in (56c), according to which the "amount" relative is a set of degrees, predicts that the amount reading should be freely available, but in reality the reading is completely absent.

(56) I took with me the books that there were on the table.

a. (books) that there were _ on the table

b. (books) that there were (d-many books) on the table

c. {d:∃x[BOOK(x) and |x|=d and ON-THE-TABLE(x)]}

Our goal for the semantics of *there*-relatives is to eliminate the need to stipulate Grosu and Landman's SUBSTANCE operation to account for the absence of the identity of amount reading. I will pursue here the idea that "amount" relatives contain a covert superlative element, since the superlative takes an expression of type <d,<e,t>> and returns a set of individuals, which is consistent with the observed interpretation. I will propose here two hypotheses regarding the implementation of this proposal, and discuss their respective advantages and disadvantages.

The first proposal involves an LF identical to the one used by Carlson (1977) and Heim (1987). It also shares with Grosu and Landman (1998) the use of relativization over complex degrees. However, I assume that the complex degree involves just two elements, yielding degree-individual pairs, rather than triples containing a sortal as well. For Grosu and Landman (1998), the sortal is needed to obtain the relevant amount reading of modal relatives, but not for *there*-relatives, which I will assume involve only degree-individual pairs. In function talk, the semantics involving such pairs corresponds to a function of type <d,<e,t>>, which is of the right type to serve as an argument for the superlative. The use of the superlative eliminates the need for the SUBSTANCE operation, as well as the need to use maximality, since the latter is built into the semantics of the superlative. Recall also that Heim (1987) argues that an individual variable embedded in a degree expression counts as weak for the purposes of *there*-insertion. However, the presence of a trace of an individual, which is definite, would predict the wrong temporal interpretation

for the relativized noun phrase, an issue which I will take up in chapter 5. Relativizing over complex degrees, i.e individual-degree pairs, avoids this problem.

The second proposal involves a different LF from that used by Heim (1987) and Grosu and Landman (1998) in that it uses a complex Fox-style copy, modified to be an indefinite trace. This version of the proposal also eliminates the need for the SUBSTANCE operation to apply and does not require the use of complex degrees.

2.4.2.1 A numerical covert EST

Before turning to showing how this semantics accounts for the properties of *there*-relatives, we need to start by saying a few words about the choice of C. Overt numerical superlatives have the interesting property (first noted by Szabolcsi (1986) for English *most* and *fewest*) that they only receive a comparative reading. To illustrate, compare (57) and (58). (57) has both the comparative and absolute readings. (58), on the other hand, has the comparative reading in (58a), but not the absolute reading in (58b).

(57) Bill climbed the highest mountain.

a. Bill climbed the mountain with the largest height compared to other relevant individuals. (comparative reading)

b. Bill climbed the highest mountain in the world, i.e Mt Everest. (absolute reading)

(58) Bill bought the most books.

a. Bill bought the largest number of books compared to the other relevant individuals. (comparative reading)

b. #Bill bought the largest number of books in the world, i.e. all of them. (absolute reading)

Interestingly, *there*-relatives behave in the opposite way from overt numerical superlatives: they allow only an absolute reading of the superlative. For example, the *there*-relative in (59) cannot have the comparative reading in (59a), but only the absolute one in (59b).

(59) I took with me the books that there were on the table.

a. #Of all the people who took books from the table, I was the one who took the largest collection of books on the table.

b. I took the largest collection of books on the table, i.e all of them.

Neither of these facts follows straightforwardly from the semantics of the superlative, so we have to postulate a restriction on the structure of C, the comparison set. Whenever C contains the set of all relevant objects as required for the absolute interpretation, in our case, books, the requirement that C contain more than 1 member will guarantee some overlap between the members of C. Therefore, for (58) the comparison class needs to be as in (60a) below.

(60) The books on the table are arranged in 3 stacks: one of 8 books, one of 4 books and one of 6 books, corresponding to the books Bill, Sam and Susan bought.

a. C_{comp}:{{A,B,C,D,E,F}, {G,H,I,J}, {K,L,M,N,O,P,Q,R}}

b. C_{abs}:{{A,B,C,D,E,F}, {G,H,I,J}, {K,L,M,N,O,P,Q,R}, {A,B,C,D,E,F,G,H,I,J,K,L,M,N,O,P,Q,R}}

In order to account for the fact that *there*-relatives only have an absolute reading, we will be forced to eliminate the non-overlap presupposition[9] of the superlative semantics proposed by Fitzgibbons et al. (to appear), given in (54) above, from the semantics of the covert *EST*. Moreover, in order to obtain the absolute reading, we have to make sure that the set containing all the relevant books is always included in C. If the comparison set for (59) were C_{comp}, the semantics given in (62d) below would predict (59) to be grammatical if I took with me the largest stack of books, i.e. that containing 8 books, contrary to fact.

To summarize, the distinction between the overt and the covert numerical superlatives lies in their presuppositions concerning the comparison class: the overt *-est* requires that the members of C do not overlap, which excludes the set of all relevant objects as a member of C, while the covert *EST* requires that the same set always be a member of C. Let us now see in more detailed how our semantics for *EST* accounts for the properties of *there*-relatives.

Using the superlative semantics for *EST* in (62c), the semantics of the *there*-insertion relative in (62) containing a covert superlative comes out as in (62d). Recall that relativization is over degree-individual pairs.[10] Such a pair consists of an individual x and some number n, defined as in (61). In function talk this is equivalent to abstracting independently over degrees and individuals as in (62b).

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[9]It should be noted that Hackl (to appear) proposes a semantics for *most books* which yields similar results to that of Fitzgibbons et al. (to appear). He also argues that the impossibility of an absolute reading for numerical superlatives follows from the assumption that the comparison class contains at least 2 different members (see Heim (1999)) and a strong condition for the non-identity of pluralities, i.e complete non-overlap (as opposed to some non-overlap).

[10]These complex degrees only differ from the DEGREES adopted by Grosu and Landman (1998) in that the sortal is missing. The sortal was needed to account for the fact that the meaning of modal relatives is a set of degrees of a specific kind of individual, not of any kind. For *there*-relatives, the sortal is not needed.

(61) For all individuals x: <x,n> is a degree of x iff $|x| \geq n$

(62) I took with me the books that there were on the table.

a. (books) that there were (d-many books) on the table

b. [[EST-C] $\lambda n.\lambda x.$books(x) & on the table(x) & $|x| \geq n$]

c. $[\![EST]\!]$(C)(R)(X) is defined only if: (i) $X \in C$; (ii) for all $y \in C$, there is a number n such that R(n)(y) = True; and (iii) C is C_{abs}

Whenever defined, $[\![EST]\!]$(C)(R)(X) = True iff there is a number n such that R(n)(X) = True and for all $y \in C$, $y \neq X$, R(n)(y) = False.

d. $[\![EST]\!]$(C)([$\lambda n.\lambda x$ [books(x) & on the table(x) & $|x| \geq n$]])(X) is defined only if: (i) $X \in C$; (ii) for all $y \in C$ there is a number n such that y is books on the table and $|y| \geq n$; and (iii) C is C_{abs}.

Whenever defined, $[\![EST]\!]$(C)([$\lambda n.\lambda x$ [books(x) & on the table(x) & $|x| \geq n$]])(X) = True iff there is a number n such that X is books on the table and $|X| \geq n$ and for all $y \neq X$, $y \in C$, y is books on the table and it is not true that $|y| \geq n$.

This analysis differs in this respect from Grosu and Landman (1998) who assume a non-monotonic semantics for "amount" relatives. Their degree triple includes a number that is equal to the cardinality of x. If we adopted this view of the numerical part of the complex degree, the set containing all the relevant individuals in C_{abs} would no longer be the only

one that satisfies the truth conditions: any of the sets in C_{abs} has a cardinality n, which none of the other sets do.[11]

The semantics in (62d) also gives us the desired result that the books that were taken are the actual books that there were on the table, and not merely a set of books with the same cardinality. By postulating a covert *EST* in the semantics of "amount" relatives, we have obtained a more principled way of explaining why the default interpretation of "amount" relatives is the identity of individuals/substance reading, even though the relative clause by itself gives us a set of degrees and not a set of individuals. The structure, however, is not very different from Heim's, except in containing abstraction over an individual variable in addition to the degree variable.

2.4.2.2 An alternative *EST*: Herdan (2008)

In section 2.4.2.1 above I have appealed to a unified semantics for singular and plural superlatives as the model for the semantics of the covert *EST* I have argued plays a role in the semantics of *there*-relatives. I will now discuss an alternative semantics for the covert *EST* which I have entertained in Herdan (2008). In this work I adopt the position that Stateva's distributivity problem discussed above stems from assuming a semantics for the plural superlative that is identical to that of the singular shown in (63). Given this, I propose a separate semantics for the plural superlatives, shown in (65).

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[11]Note, however, that monotonicity is not crucial for this proposal. If we chose not to assume monotonicity and use a semantics for the adjective and the superlative as in (42) and (43) above, we would still obtain the desired result, which is that the superlative always picks from C_{abs} the set containing all the relevant individuals. On the other hand, in the second version of the covert superlative proposal to be presented in section 2.4.2.2 below, monotonicity is crucial in ensuring that the superlative yields the set containing all the relevant individuals.

(63) $[\![-est^{sg}]\!](C)(R)(x)$ = True iff $\exists d$ (R(d)(x) = True and $\forall y$ [$y \neq x$ and $y \in C \rightarrow$ R(d)(y) = False], where

(i) C is a set of relevant atoms

(ii) $x \in C$

(64) a. The dean praised the best student.

b. The dean praised the unique student x, $x \in C$, such that x is a d-good student and for all $y \in C$ such that $y \neq x$, $\neg$[y is a d-good student].

(65) $[\![-est^{pl}]\!](C)(R)(d)(X) \Leftrightarrow$ for all atomic x such that $x \in X$, R(d)(x) = True and $\forall y$ [$y \in C$ and $y \notin X \rightarrow$ R(d)(y) = False] , where

(i) R is downward monotonic

(ii) C is a set of atomic individuals

(iii) d is a standard supplied by the context

(iv) X is a non-atomic individual such that for all atomic x such that $x \in X$, $x \in C$

(66) a. The principal praised the best students.

b. The principal praised the plural individual X consisting of students such that for all atomic x such that $x \in X$, x is a d-good student and for all atomic y such that $y \notin X$, $\neg$ [y is a d-good student]

Adopting (65) solves the distributivity problem by ensuring that the individuals contained in X no longer compete with each other, but with other individuals in C. A further modification with respect to the semantics of the singular superlative is the presence of an additional argument for *-est* in the form of a "standard", which behaves like the domain argument C proposed by Heim. Unlike in the case of the singular superlative, where we

have a uniqueness presupposition, in the case of the plural, the cardinality of the set of "best students" will be determined by this standard, e.g. the students who only earned As, the students who earned As and A minuses, the students who received As in advanced placement classes, etc. In some cases the standard is more likely to correspond to a natural cutoff point that is determined by the context. For example, if 27 out of the 30 students in the class earned As and A minuses and the last 3 earned Cs, then we are likely to include all 27 students in the class of best students. (see also Fitzgibbons et al. (to appear) for discussion of the cutoff point).

As Fitzgibbons et al. (to appear) point out, even though this proposal solves the distributivity problem, cross-linguistic evidence strongly suggests that there is only one superlative morpheme. The evidence is manifested in the fact that no language has two distinct lexical items corresponding to singular and plural superlatives, or plural morphology expressed exclusively on the superlative morpheme.

In addition to the empirical evidence against postulating two different lexical entries for the singular and plural superlatives,[12] a disadvantage of adopting the superlative semantics in (65) for use with the covert *EST* is that it requires further modifications. Consider the interpretation of the *there*-relative in (67) that we obtain by applying (65).

(67) the books that there were on the table

a. [the [EST^{pl}-C-d] λd'.λx.there were d'-many([λy.book/books(y) & y=x]) on the table]

[12]By itself, the issue of the two lexical entries for singular and plural superlatives can be resolved.

b. The maximal plural individual Y such that for all y such that $y \in Y$ and $y \in C$, there were d-many book(s) y on the table, and for all z such that $z \in C$ and $z \notin Y$, it is not the case that there were d-many book(s) z on the table.

Here I am borrowing the intuition of Fox (2002) that traces can embed variables, but not his idea that they have to be accompanied by a definite article. Fox (1999, 2002) argues that a trace, interpreted as a copy of the moved element, is converted to a definite description via the process of Trace Conversion, which models the interpretation of the trace/copy of a noun phrase on that of a definite description like *the book x*.

(68) Trace Conversion:

a. Variable Insertion: (Det) Pred $\rightarrow$ (Det) [Pred $\lambda y(y=x)$]

b. Determiner Replacement: (Det) [Pred $\lambda y(y=x)$] $\rightarrow$ the [Pred $\lambda y(y=x)$]

(69) trace of *book*: the [book $\lambda y.y=x$]

Essentially, we want to preserve the first step of Trace Conversion, the Variable Insertion, but not the second step, the insertion of the definite determiner. One problem we would encounter if we used a definite trace, which I will discuss in chapter 5, is the fact that it predicts the wrong temporal interpretation for the *there*-relative. The issue is resolved if the trace used is an indefinite one.

In addition, presupposition (ii) in (65) above restricts y to being atomic which means the degree d must also be restricted to 1. This solution gives the desired result that the set of books in (67) is the set of all books on the table. Even though all books (on the table

or not) would have the degree 1, the ones that are not on the table would not satisfy the semantics in (67b).

In sum, this version of the covert superlative proposal requires a different semantics for the superlative and a different LF (in the form of a Fox-style copy).[13] It requires removing from the semantics of the superlative the presupposition that not all members of C have some degree of R and imposing the presupposition that C is a set of atomic individuals. In solving the distributivity problem, these two modifications in the presuppositions would replace Stateva's requirement that the subject is not a member of C.

Let me also summarize how these two alternatives differ from the view of degree relativization proposed by Heim (1987). The first hypothesis presented in section 2.4.2.1 makes use of the same LF as Heim, but adopts complex rather than simple degrees, following Grosu and Landman (1998). These DEGREES are however pairs of individuals and degrees and do not include the sortal used by Grosu and Landman (1998). The second hypothesis avoids the need to postulate complex degrees, but does so at the cost of adopting a different LF, involving Fox-style complex copies, and a different semantics for the covert superlative. Given the cross-linguistic evidence and the special interpretation required for degrees combining with the covert *EST*, the solution presented in section 2.4.2.1 seems preferable. It is compatible with a unified semantics for *-est* in singular and plural superlatives, and it does not require a radical departure from the semantics of overt numerical superlatives.

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[13]For discussion of the problems related to Fox-style copies see Sharvit (2007).

2.4.3 Accounting for the definite singular puzzle

Until now I have assumed that, neglecting the differences in the presuppositions regarding C, the covert *EST* has the same semantics as the overt *-est* morpheme. This assumption will need to be slightly modified in light of some differences between the overt and covert versions of the superlative. In the previous section a covert superlative was postulated in *there*-relatives precisely to replicate one of the effects of the overt superlative morpheme, i.e its ability to absorb a degree variable. However, we still need to explain the effect of the overt superlative morpheme on the unmodified definite singular, i.e. Carlson's puzzle.

As I have mentioned above, Carlson (1977) notes that a superlative or superlative-like element rescues an unmodified definite singular in an "amount" relative, as illustrated by the contrast repeated here in (70). The unmodified definite singular DP in (70a) is ungrammatical as the head of a *there*-insertion relative, and so is the DP in (70b), which contains an adjective in the positive form. The definite superlative DP in (70c), on the other hand, is completely grammatical.

(70) a. * the book that there was on the table

b. * the long book that there was on the table

c. the longest book that there was on the table

However, given my proposal that *there*-insertion relatives contain a covert superlative morpheme, we would expect all the examples in (70) to have the same grammaticality status. This indicates that the covert superlative morpheme has to be in some ways different from its overt counterpart.

I suggest that the key to the difference in grammaticality is the kind of degree that the two morphemes can combine with. While the overt superlative can range over any kind of degree, the covert one is able to range only over numerical degrees.[14] If the covert *EST* were allowed to combine with the degree introduced by *long* in (70b), we would expect (70b) to be acceptable with the reading in (71), contrary to fact.

(71) The unique/maximal x such that there is a degree d such that there was a d-long book x on the table, and for all y $\neq$ x , there wasn't a d-long book y on the table.

However, if the covert *EST* can only combine with numerical degrees, we can account for the ungrammaticality of (70b), since the singular is pragmatically incompatible with a numerical degree, as shown in (72).

(72) #The unique/maximal x such that there is a degree d such that there was a d-many long book x on the table, and for all y $\neq$ x, there wasn't a d-many long book y on the table.

(70b) is ruled out on the same pragmatic grounds that rule out the use of *tallest* or *only* in a context where there is just one relevant individual, as in (73a) and (73b).

(73) a. #Sue is the tallest woman who won the prize. - when there is only one individual who won the prize

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[14]A potential question is why there is no overt counterpart to numerical covert *EST*. We might however speculate that numerical *EST* is a semantic object introduced as a last resort, similar to the indices that are used in semantic computations, which do not have any reflex in either syntax or phonology so they are not expected to appear overtly. Hackl (to appear) also notes that, unlike English *the most books*, the German *die meisten Bücher* is ambiguous between a comparative reading and a proportional reading along the lines of that of *most books*. However, what we would like to find is an overt numerical superlative that only has an absolute reading.

b. #Sue is the only woman who won the prize. - when there is only one woman in the competition.

As discussed in Herdan and Sharvit (2006), the superlative would be pragmatically odd even if more than one relevant individual exists, but only one individual is a woman who won a prize. *Only*, on the other hand, would be acceptable in such a scenario; in fact, it is the only way to make (73b) felicitous. (73b) is pragmatically odd only in a context in which there is only one potential individual that can bear the property of being a woman, i.e. only one individual in the relevant world. Notice then that the covert element in *there*-relatives cannot be *ONLY*, as it would predict the definite singular to be felicitous, as long as there is more than one potential book in the world. The covert superlative, however, makes the right predictions regarding the definite singular: if there is only one book on the table, infelicity arises.

Now that we have an explanation for the ungrammaticality of (70b), I would like to show what causes the ungrammaticality of Carlson's singular in (70a) above. (70a) does not contain an adjective so the covert *EST* no longer clashes with a non-numerical degree. In order to understand what is going on, consider first the distinctions between the singular and the plural superlative.

An overt singular superlative, like *the smartest boy*, has a cancelable implicature that there is more than one boy, and the plural, *the smartest boys*, has an implicature that not all the relevant boys are smart up to the contextual standard d. This is shown by the oddity of the following discourses:

(74) Sam is the smartest boy in his class.

#In fact, he is the only boy in his class. All the other students in his class are girls.

(75) Sam and Tom are the smartest boys in their class.

#In fact, they are the only boys. All the other students in their class are girls.

#In fact, all the boys in their class are equally smart.

As suggested above, I argue that the ungrammaticality of (70a) with a covert superlative stems from the same pragmatic awkwardness that arises from using an overt superlative in a context where there is only one relevant individual to consider.

Finally, of the three examples above, (70c), with an overt superlative, is fine with an interpretation like that in (71) since the context C provides other alternatives to the *longest book*.

Recall, however, that, unlike in *there*-insertion relatives, the definite singular is acceptable in ACD relatives:

(76) Marv put in his pocket the marble that he could.

This distinction between the two kinds of relatives can be taken as evidence in favor of treating them as distinct constructions. Moreover, in chapter 3 I show that a semantics analogous to that for *there*-relatives is not adequate for deriving the amount readings of ACD relatives.

2.4.4 Accounting for determiner (and other) restrictions

Let us now address briefly the determiner restrictions in *there*-insertion relatives. Unlike in the case of the ACD relatives with amount readings, non-definite determiners are simply ungrammatical in these constructions.

(77) I took with me the three/*some books that there were on the table.

It should be mentioned first that my proposal makes the same predictions regarding the determiner restrictions as Grosu and Landman (1998) by virtue of replacing maximalization with the contribution of the superlative morpheme. However, the presence of a covert superlative in the structure of *there*-relatives raises an additional issue. An immediate candidate for the source of this restriction could be an incompatibility between the postulated covert *EST* and indefinite determiners. However, in Herdan and Sharvit (2006) we argue that indefinite superlatives are in principle available given the right context. Consider the following sentences:

(78) a. The dean praised the best student.

b. The dean praised some best student (or other).

Imagine a situation where every class in the college has a student who is better than any other student in that class. (78a) implies (on its most salient reading) that the dean praised the best student in the college. (78b) implies (on its most salient reading) that she praised, in some class, the best student in that class. (78b) improves when continued as in (79).

(79) The dean praised some best student. He happened to be the best student in the class of '05. The best students in the other classes were not praised at all.

Given the above evidence that non-definite superlatives exist, there must be an independent reason why non-definite determiners are banned with *there*-relatives.[15]

Let us first see how non-definite superlatives behave in *there*-relatives:

(80) ?? The dean praised some best students that there were at the ceremony.

(81) The dean praised some best students that were present at the ceremony.

The fact that non-definite superlatives appear to be degraded (compared to a non-definite superlative with a restrictive relative clause) in the same context where I have postulated a covert superlative indicates that the incompatibility has to do with the non-definiteness of the superlative and not with its being covertly or overtly realized. The generalization is that only determiners that are compatible with the largest individual are acceptable, i.e. *the, every*. This means that we cannot have a covert partitive in the structure, as that would predict all determiners to be acceptable.

2.5 Summary

The literature on "amount" relatives identifies three kinds of relative clauses which have been argued to involve relativization over degrees: *there*-relatives, some ACD relatives and (some) modal relatives. Up to this point I have provided evidence that only one of these types of relatives involves relativization over degrees, in particular *there*-relatives. For this class, my proposal involves a departure from the traditional semantics in that it argues that a covert superlative morpheme is present in these relatives. This has allowed

[15]Butler (2001) argues that existential relatives do not involve degree relativization and ascribes the determiner restriction to the interaction between an exhaustification operator E that is found in all restrictive relatives and a T operator that requires its output to be different from its input.

me to eliminate the need to stipulate the SUBSTANCE operation proposed by Grosu and Landman (1998).

I have also shown that we have good reasons to question the need to assign an analogous semantics to *there*-insertion relatives and ACD relatives, a conclusion which I share with McNally (2006). My conclusion is, however, different from McNally's. While McNally's analysis indirectly assumes that it is the ACD relative and not the *there*-relative which involves degree relativization, my analysis crucially assumes that the *there*-relative does contain a degree which we relativize over.

For the modal relatives, degree relativization may be enough to derive the numerical degree interpretation first observed by Heim (1987). However, it is not clear whether such relativization can account for the other available readings involving identity of non-numerical degrees. I leave this issue open for future research.

In chapter 3 I turn to the amount interpretations of ACD relatives. I will first show that neither the degree relativization analyses in the literature, e.g. Heim (1987) and Grosu and Landman (1998), nor the covert superlative analysis presented in this chapter can be used to successfully derive the relevant amount readings. Then I will show that, in fact, we have to derive more than one amount interpretation, which makes it even harder to find a degree semantics that can correctly predict all the amount readings observed.

CHAPTER 3

AMOUNT INTERPRETATIONS IN ACD RELATIVES

3.1 Introduction

In chapter 2 I have argued for treating *there*-relatives and ACD relatives with amount readings differently. This conclusion was based, on the one hand, on the fact that they do not show the restrictions that were originally taken to be the hallmarks of degree relativization. For *there*-relatives, on the other hand, we do have good reasons to assume that degree relativization is involved. However, the problem arising from the latter view is that the attested interpretation of *there*-relatives is not that of a set of degrees, the expected result of using degree relativization. My proposal aims to correct this problem. The solution proposed in chapter 2 involves a covert superlative morpheme which has the function of "absorbing" the degree variable and yielding a (plural) individual, as expected.

The goal of this chapter is to show that even if we adopted for ACD relatives a degree semantics of the type proposed in Heim (1987) or in Grosu and Landman (1998), we still need to account for a much wider range of readings than previously assumed. I will discuss in detail the complexities of the readings available in the specific class of ACD relatives which Carlson (1977) had subsumed under the term "amount relatives". I will first provide data that show that the reading traditionally identified as amount is not a *pure* amount reading in that it does not merely involve identity of amounts or degrees, but identity of individuals having a certain cardinality, amount or degree. For this reason, as I will show in section 3.3, this reading cannot be obtained by appealing to the degree semantics proposed by Grosu and Landman (1998). Moreover, the semantics adopted in chapter 2 for *there*-relatives could be in principle allowed for ACD relatives, but it does not yield the right interpretation in these cases. Despite the maximality effect introduced by the covert superlative and the fact that application of the covert superlative to the

degree yields an individual interpretation, what we obtain is merely a restrictive reading. Finally, in section 3.4, I will discuss a number of readings of ACD relatives that fit into the general pattern of amount interpretations, but that do not require maximal cardinality. Complicating the picture even more is the fact that ACDs with overt superlatives have readings that are not identical to the amount readings traditionally associated with these relative clauses.

3.2 Amount readings in ACD relatives

Carlson's 1977 seminal article on amount relatives brought under scrutiny a class of ACD relatives which show a reading that crucially involves amounts and which is not available to run-of-the-mill restrictive relative clauses. As I have already pointed out in the previous chapters, on a purely restrictive construal involving universal quantification over the relevant toys, (1) is not expected to be true in a situation where Marv had 10 toys, but only put 8 in his pocket. However, (1) *is* acceptable in the situation above. The intuition behind its acceptability in this scenario is that in saying (1) we may merely be stating that Marv put in his pocket as many toys as would fit at the same time, which is illustrated in the paraphrase in (1a). Such a rescuing mechanism is not available for non-ACD relatives such as the one in (2), whose amount construal is missing, making it impossible to use (2) in the situation described above.

(1) Marv put in his pocket all the toys that he could.

   a. Marv put in his pocket as many toys as he could. (amount reading)

   b. For all x such that x is a relevant toy, Marv put x in his pocket. (restrictive reading)

(2) Marv put in his pocket all the toys that are red.

a. #Marv put in his pocket as many red toys as he could. (amount reading)

b. For all x such that x is a relevant red toy, Marv put x in his pocket. (restrictive reading)

So what exactly do ACD amount relatives mean on their amount construal? The crucial situation is the following: Marv's toys are 10 identical little blocks. Marv tries to fit them all in his pocket, but he can't. It turns out that only 8 blocks fit together, so he takes 8 blocks. As a first approximation, we can use the informal paraphrase in (3) for the relative clause in (1) above.

(3) Marv put in his pocket *some sum of blocks of the maximal amount that could fit in his pocket (8).*

Since there are in principle 45 different groups of 8 blocks that Marv could take, but he can only take 1, it is possible that the semantics involves a choice function, as suggested by Fred Landman (p.c.). The modal alternatives present us with a set of alternatives, each picking out a sum of 8 that maximally fills the pocket. A choice function from worlds to such sums picks in context a sum of 8:

(4) There is a choice function CH: WORLDS $\rightarrow$ SUMS such that

a) for all worlds w accessible from w_0 CH(w) = y_w where y_w is a subsum of the sum of relevant things there are, and in w y_w fills Marv's pocket completely, AND

b) for some world w accessible from w_0, Marv put in his pocket in w_0 CH(w).

Even though this semantics gives us the desired result, it is difficult to see how it would be possible to obtain it compositionally from the relative clause meaning. Moreover, universally quantifying over groups of blocks that fill Marv's pocket yields the wrong results as well, since he didn't put in his pocket *all* such groups, but only one of them.

In addition, as we will see in section 3.4, this paraphrase does not subsume all the possible readings of this sentence. For the time being, however, it will allow me to show that neither the analyses involving degree relativization available in the literature nor the superlative analysis I have presented in chapter 2 are capable of capturing the amount interpretations of ACD relatives.

3.3 (The Absence of) Degree relativization in ACD relatives

Since non-restrictive construals of ACD relatives make crucial reference to amounts, the most obvious semantics for these relatives would be one involving relativization over degrees or complex DEGREES, as proposed by Grosu and Landman (1998). However, the semantics in (6) yields the wrong result since it makes it possible for the objects placed in the pocket to be different (in size, for example) from the objects used to determine the number of things the pocket would hold. Consider again an ACD relative such as (5).

(5) Marv put in his pocket every marble he could.

(6) $\{d:\exists n\exists x[d=<n,MARBLE,x> \text{ and } n\geq \mid \sqcup \{x\in MARBLE:MARV\text{-}COULD\text{-}PUT(x)]\}$ (pure degree reading)

Suppose now that Marv has a large collection of marbles of three sizes: small, medium and large. He also knows that his pocket can hold at most 8 large marbles. The semantics given above would predict that (5) is acceptable in a situation in which Marv put in his

pocket 8 marbles of any size. This is contrary to fact. On the restrictive interpretation, the oddity is obvious, as there are many more marbles that Marv could have put in his pocket individually. In fact, we would have expected him to put in his pocket all the marbles in his collection. On the amount interpretation, which is what interests us here, we seem to be requiring that the same space, i.e. Marv's pocket, be filled with as many marbles as possible, not that the number of objects placed in the pocket be the same as some predetermined number, in this case 8. This is the reason for the oddity of (5) on the scenario above.

Relativizing over degrees, as we have done above, requires mere identity of cardinality, a much weaker requirement than that imposed by the amount reading(s). One possibility would be to allow n in (6) to refer to the volume of the objects placed in the pocket instead of the cardinality. The issue, however, already pointed out in chapter 2 and to be discussed in detail in chapter 4, is that we find no syntactic evidence to suggest either obligatory raising or a relativizer restriction connected to the availability of amount readings in ACD-type relative clauses. The interpretation of these relative clauses strongly suggests that degrees are involved, but the syntactic evidence argues against a structure like (7).

(7) x λd. . . . d-many x

Consider now the consequences of extending the analysis of *there*-relatives presented in chapter 2 to ACD amount relatives. It is in principle possible to allow the covert superlative morpheme and the degree variable to occur freely in (ACD) relative clauses. One potential advantage of this would be that the relatives would now refer to individuals, which was not the case with the semantics in (6). However, by allowing the covert EST

to absorb the degree variable, we also lose the possibility to refer to amounts. Without going into details, the best we can expect from applying to (5) above the covert superlative analysis proposed for *there*-relatives is to obtain the plural individual consisting of all the things Marv can put in his pocket. This is, however, no different from what we would obtain from a purely restrictive construal of these relatives.

We have seen in this section that it is extremely difficult to compositionally derive the meaning of ACD amount relatives. In the rest of this chapter I hope to provide more convincing evidence that the difficulty of solving the problem of ACD amount relatives goes beyond accounting for the reading discussed above, which I will call the "maximal cardinality" reading in what follows. While in many situations requiring maximal cardinality guarantees that the maximum amount of space is used, this is not always the case. Some ACD relatives are acceptable where the maximal cardinality does not lead to optimal space use. The next section addresses these and related issues.

3.4 The role and source of maximality in amount readings

3.4.1 Distinguishing amount readings

A highly confusing aspect of the interpretation of ACD relatives with amount readings is the fact that the source of the amount interpretation is not always the same. The literature following the Carlsonian tradition focuses on the reading where maximality refers to the amount/cardinality of the objects involved - in our examples, of things Marv put in his pocket. However, I believe it is necessary to distinguish between two kinds of amount readings/interpretations depending on what the maximality refers to:

(8) A. maximal cardinality - "as many/much interpretation"

(9) B. maximal temporal/spatial extendedness - "full coverage interpretation"

The reason why distinguishing these two interpretations is so difficult is that the "as many/much interpretation" generally entails the "full coverage interpretation," but not the other way round. The fact that Marv stuffed his pocket full does not guarantee that he did so in the most efficient manner. Moreover, even the "as many/much interpretation" doesn't guarantee that absolute "full coverage" will be obtained.

Let me illustrate the reasoning above with some examples. Consider first the situation with Marv's pocket once again. The toys under consideration are marbles of 2 sizes - small and large - in unlimited quantities. The "as many interpretation" arises only in a situation in which Marv put only small marbles in his pocket until the pocket was full (see figure 3.1). This interpretation entails that all usable space is now occupied by marbles, i.e. Marv's pocket is stuffed full. Since in this case maximizing the cardinality entails

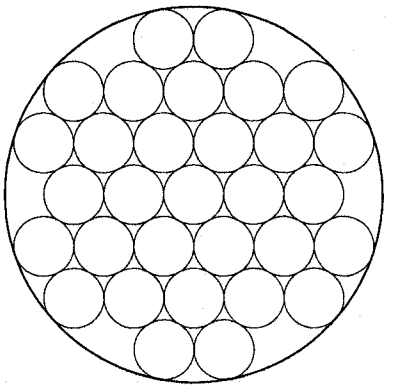

Figure 3.1. Maximal cardinality, optimal use of space

optimal use of space, the interpretations associated with other possibilities are harder to obtain. Marv's goal may be only to take with him a pocketful of marbles, in which case more than one solution to his problem is available. Any combination of marbles that fills

up the pocket can be taken, as in figure 3.2. Marv may even satisfy this requirement

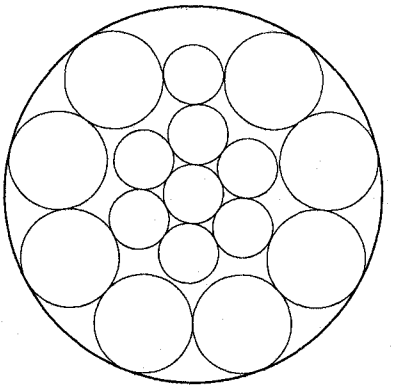

Figure 3.2. Full coverage of space, random selection of marbles

by taking the largest marbles only, in which case he actually filled the pocket with the smallest number of marbles (see figure 3.3).

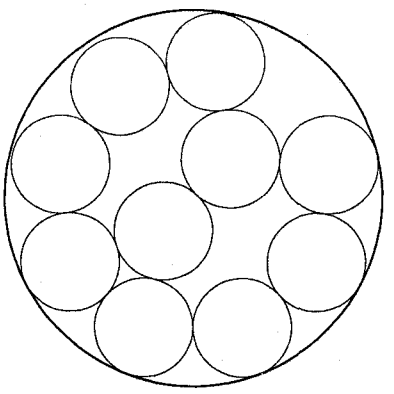

Figure 3.3. Full, but least optimal use of space

In the example above, the best use of the space coincided with the combination containing the highest number of toys. This is not always the case. Imagine that we have 4 large blocks and 8 smaller blocks. We also have one box that can be entirely filled by the 4 large blocks, as in figure 3.4. However, the box can also be filled with 8 small blocks,

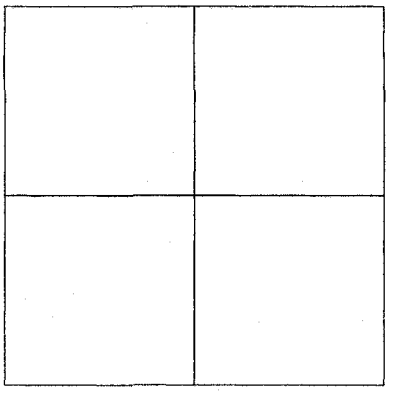

Figure 3.4. Full coverage, lowest cardinality

as in figure 3.5.

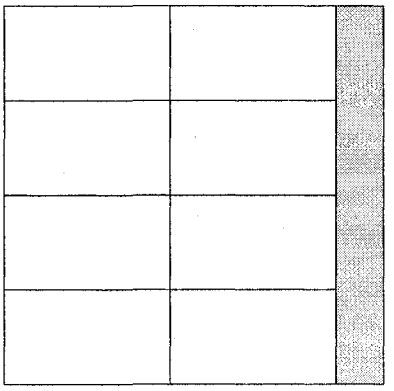

Figure 3.5. Maximal cardinality, non-optimal use of space

While it may be true that none of the remaining blocks can fit in the box, this combination does not optimize the use of space. Moreover, just like in the case of Marv's pocket, we can in principle also satisfy the "full coverage" requirement in other ways that do not maximize the number of blocks used nor optimize the use of space (see figure 3.6). However, the acceptability of the amount interpretations of these ACDs in such situations is somewhat decreased.

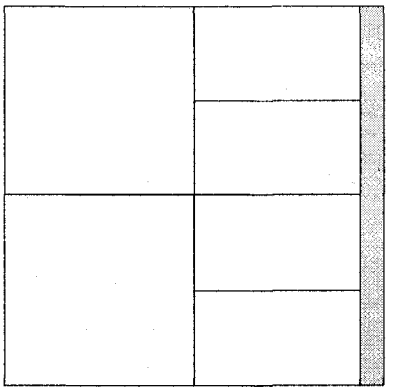

Figure 3.6. Full coverage, random block selection

Moreover, the acceptability of a particular sentence in a particular scenario seems to depend on the shape of the relativized element. Consider again the situations described in figures 3.4 - 3.6 and the sentences in (10).

(10) a. Marv put in the box everything he could.

b. Marv put in the box all he could.

c. Marv put in the box all the blocks he could.

d. Marv put in the box all the things he could.

The use of *everything* or stand-alone *all* biases the interpretation to the situation in figure 3.4, where the space is used optimally. However, the presence of an overt noun such as *blocks* in (10c) or *things* in (10d) makes the situation in figure 3.5 salient, i.e Marv has to put in the box "as many blocks as possible".

The point of these examples is that different amounts can satisfy the requirements for the amount reading(s), which makes it even more difficult to obtain the readings by

merely relativizing over degrees. The wide range of interpretations available strongly suggests that pragmatics plays an important role in their determination.

3.4.2 Superlatives in ACD relatives

In the previous section I explored the difficulties resulting from the wide range of readings/interpretations available to ACD amount relatives. However, as we will see in this section, there are further complications surrounding the issue of the maximality effect. ACD relatives containing overt superlative and superlative-like elements, which introduce their own maximality effect, complicate the picture even more. The crucial observation is the fact that the presence of a superlative or superlative-like element in an ACD relative that otherwise allows an identity of amount reading seems to have the effect of eliminating this (weaker, as I will show) reading.

A slightly different form of this effect was, to my knowledge, first noted by McNally (2006) for the modifier *only* in modal relatives.[1] She observes that (11) cannot have the expected reading in (11a), where an amount is involved, but that the identity of substance reading in (11b) is attested.[2]

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[1]McNally also discusses the same effect for *different*, as in (i).

(i) We will never be able to recruit the different soldiers that the Chinese paraded last May Day. (McNally (2006:14))

(ii) We will never be able to recruit the different kinds of soldiers that the Chinese paraded last May Day.

Different removes the amount reading by making reference to kinds salient (cf. (ii)). I assume that the availability of the amount reading is essentially a pragmantic effect, which can be affected by the presence of *different*. However, in this dissertation I will not discuss the issue of kind interpretation in any detail.

[2]Željko Bošković (p.c.) points out that we cannot obtain the amount interpretation with *only* even by overtly inserting the word *amount*:

(11) It will take us the rest of our lives to drink the only champagne they spilled that evening. (= McNally's (41a))

a. #It will take us the rest of our lives to drink the amount of champagne d such that d is the unique amount of champagne that they spilled that evening.

b. It will take us the rest of our lives to drink the champagne x, such that x was spilled that evening.

However, a noun phrase must be able to have a plural or mass interpretation in order to get the identity of amount interpretation, as in *the wine they spilled at the party.* The problem with (11) is that, out of the blue, *the only champagne* has a different interpretation, namely as a singular kind in contrast to other kinds (Fred Landman (p.c.)). This criticism also applies to apparent cases of superlatives removing the amount reading from modal relatives, as in (12).

(12) It will take us the rest of our lives to drink the best champagne that they spilled at the party.

Just like in the case above, the noun phrase containing the superlative, *the best champagne*, does not get the required plural or mass interpretation. A modal relative in which the superlative noun phrase has the mass interpretation *can* have the amount reading:

(i) * It will take us the rest of our lives to drink the only amount of champagne that they spilled that evening.

(13) Suppose that at a party they spilled three kinds of champagne: Yarden Brut, Moet et Chandon and an exceptionally expensive Pieper. Let us assume they spilled most of the cheapest, less of the medium priced one and even less of the most expensive. Then still, I can tell you:

It would take us the rest of our lives to even drink the most expensive champagne they spilled at the party. (F. Landman (p.c.))

The reason why the amount reading is available in this context is that I can be understood as presenting a choice of three mass entities.[3]

McNally also uses these facts as evidence that *there*-insertion relatives are not amount relatives, since *only* can routinely modify the head of the *there*-insertion relative:

(14) The only boys there were in the class refused to play (so the girls had to).

I believe, however, that since *there*-relatives do not usually exhibit an amount reading in the first place, the effect of *only* is not relevant in this case. While I do agree with McNally that the effect of these modifiers is essential to our understanding of the semantics of *there*-insertion relatives, I believe that the relevant paradigm is the rescuing effect of these modifiers on definite singulars in *there*-relatives. In particular, I have argued in chapter

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[3]We can also reproduce the context above for the case of *only*:

(i) Suppose there were 3 kinds of beer, which all got spilled, 4 kinds of vodka, which all got spilled, and 3 kinds of champagne, only 1 kind of which got spilled.

In this scenario (11) becomes acceptable on the amount reading, particularly with the addition of *even*:

(ii) It will take us the rest of our lives to drink (even) the only champagne they spilled that evening.

2 that the superlative morpheme involved in the semantics of these modifiers is always present covertly in *there*-insertion relatives, which causes the amount reading to go away.

At first sight, however, it appears that the presence of a superlative or superlative-like element in ACD relatives that ordinarily can receive amount interpretations precludes the availability of an amount reading. While the readings made available by the (overt) superlative morpheme do have a maximality contribution, I will show in the next section that it is a stronger contribution than that of the maximality involved in the amount readings of the type we have discussed above.

3.4.3 Interpreting superlative ACDs

In this section I turn to a detailed discussion of the interpretations that arise in ACD relatives containing plural superlatives. The main goal is to show that all of these readings lack an important characteristic of the identity of amount reading(s). More specifically, I will show that in these sentences the choice of individuals in the set associated with the relative clause is restricted by the interpretation of the superlative. This is unlike in the case of the ACD relatives we discussed above, where only the cardinality or the size of the set needs to be restricted in order for the amount reading to be available. The superlative-containing ACDs have stronger truth conditions than those associated with amount readings, which is what makes the latter readings disappear.

As an example of the behavior that I alluded to, consider (15). The comparison class C for the superlative NP is a set of marbles of various degrees of niceness.

(15) Marv put in his pocket the nicest marbles^{C} that he could.

(16) C={x:x is an atomic individual }

In order to show that the superlative "removes" the amount reading, we need to be able to show that all the available readings of (15) are not amount readings. I will first discuss in detail how the various readings of this sentence can be obtained and then I will show that all of them are different in crucial ways from the amount readings obtained in ACD relatives without the superlative.

(15) has at least two readings that concern us here. Anticipating the discussion below, I will call them the distributive and the collective readings. In order for the first reading of (15) (the distributive one) to obtain, the requirement is that the collection of marbles placed in the pocket consist of the nicest marbles, according to some standard d, (provided they are also small enough to fit in the pocket), and that no marble that can fit in the pocket that is nicer than any of the marbles placed in the pocket could have been left outside. If, for example, the context provides marbles A, B, C and D which are nicer than the standard, but only A, B, and C are of an appropriate size, and d, e, f and g, which are all of the appropriate size, but are not nicer than the standard, (15) can be felicitously used if the marbles placed in the pocket are A+B+C, but not if they are d+e+f+g. At first sight, this reading appears to be an amount reading. However, as I will discuss after I have formally derived the reading, this requirement is much stronger and comes from the maximality built into the superlative, rather than into the relative clause. A purely amount reading of (15) would be paraphrased as in (17).

(17) Marv put in his pocket as many marbles as he could from the set of nicest marbles according to some standard d.

This amount reading does not impose any requirement on the choice of individual marbles out of the set of "nicest marbles". What matters is the amount of marbles or the size of

the plural individual made up of marbles. The intuition, however, is that (15) *does* require a particular choice.

One obvious option for the choice is the one illustrated above. The marbles picked must be the nicest of the set of "marbles which are nice up to some standard d". According to the second reading, however, the collective one, the requirement is merely that the pocket contain the collection of marbles that looks nicest as a whole, provided it can also fit in the pocket as a whole, regardless of whether possibly a nicer marble has been left out. In this case, it may be enough that A+C be placed in the pocket, if it happens that the presence of B would somehow make the collection lose some of its appeal, e.g. possibly because it is oddly shaped, but still quite nice by itself. Moreover, neither of the above readings requires that Marv's pocket is stuffed full.

Before we discuss other examples of plural superlatives in ACD sentences, I propose a way to derive the two readings identified above. I will rely on the theory of plurality proposed by Landman (1989). Landman proposes the existence of two kinds of plural individuals: one is obtained by sum predication (e.g. a+b+c) and the other by predication of a Group[4] (e.g. $\uparrow$(a+b+c)). While sums are to be interpreted distributively, Groups are always interpreted collectively and count as singular individuals.

For the purpose of deriving the two readings described above I will assume that sums and Groups can in principle be freely generated out of a set of individuals in the comparison class C. The "nicest collection" reading therefore reduces straightforwardly to

[4]I follow Brisson (1998) in using Group to refer to the specific use Landman makes of the term *group*.

the semantics of a Group, which behaves like a singular individual for the purposes of superlative semantics:

(18) Marv put in his pocket the unique Group X, such that X is d-nice and $\forall$ Groups $Y \neq X$, $\neg$[Y is d-nice].

(19) C is a set of individuals that are marbles - singular individuals or Groups

If, on the other hand, a sum is used, then the superlative has to distribute down to the atoms of the plural individual.

(20) Marv put in his pocket the unique sum X, such that $\forall x \in X$, $x \in C$, x is d-nice and $\forall y \in Y$ such that $y \notin X$, $\neg$[y is d-nice].

(21) C={x:x is an atomic individual}

Notice also that in order to get the right interpretation we had to introduce in the semantics the requirement that only the subparts of Y that do not overlap with subparts of X be less nice than the least nice subpart of X. Consider the following situation where P is a set of sums that we generate from a C containing the marbles a, b, c, d and e, in decreasing order of niceness:

(22) C={a, b, c, d, e}

(23) P={a+b+c, a+d+e, d+e}, where P is the set containing plural individuals we obtain from C, and which can fit into Marv's pocket

If Marv put in his pocket a+b+c, in the absence of the requirement that all the subparts of Y do not overlap with subparts of X, we would predict (15) to be false in the situation above, since there is a sum, namely a+d+e, which contains a marble, namely a, which is

at least as nice as the least nice marble of a+b+c. This is an undesirable effect which can be eliminated by adopting the semantics in (20).

It should also be noted that not all predicates allow both readings with equal ease. For example, while the adjective *expensive* lends itself to both the distributive and the collective interpretation, the adjective *cheap* is not so readily associated with the collective interpretation.[5] Also, adjectives like *small* and *large* seem to require the superlative to distribute down to the atoms of the sum:

(24) Marv put in his pocket the smallest/largest marbles that he could.

a. Marv put in his pocket the smallest/largest relevant marbles.

b. #Marv put in his pocket the smallest/largest group of relevant marbles.

These facts are clearly related to a phenomenon noted by Schwarzschild (2007). He notes the existence of a group of predicates that he calls stubbornly distributive, or "stubs". Consider the following examples from Schwarzschild:

(25) a. These violets are large.

b. This bunch of violets is large.

(25a) has a reading according to which every violet in the relevant group is large. Crucially, however, it lacks a collective reading equivalent to that of (25b), where only the

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[5]One example in which *cheap* receives a collective interpretation is the following provided by F. Landman (p.c.):

> Suppose that you have two tiaras each with six places to fit stones in, three big places and three small places, and there are two sets of stones set in them:
>
> a. A has 3 cheap small stones and 3 expensive big ones.
>
> b. B has 3 expensive small stones and 3 cheap big ones.
>
> A is more expensive than B. The tiaras themselves aren't the important thing, it's the stones. I buy B, and tell you (my accountant): "I bought Mary the cheapest stones I could."

bunch as a whole is large, the individual violets may actually be small. Also, the fact that the plural superlative *smallest marbles* prefers a distributive reading may have to do with the fact that the smallest group (and Group) would always be a singleton, which makes the use of a plural superlative infelicitous.

The predicate *cheap* generally behaves in a similar way.[6] Suppose that the context makes both ↑(a+b+c) and ↑(d+e) salient. If the situation is as in (26) below, it is possible to utter (27) regardless of whether Marv put in his pocket ↑(a+b+c) (on the collective reading) or ↑(d+e) (on the distributive reading). However, when we utter (28), it is more difficult to accept the ACD relative clause on the collective reading, i.e. when Marv puts in his pocket $\uparrow (d+e)$, the marbles that are collectively cheaper, rather than $\uparrow (a+b+c)$, the marbles that are individually cheaper.

(26) a. C={a, b, c, d, e}, where a, b, c cost 80c each and d and e cost $1 each

b. P={↑(a+b+c), ↑(d+e), etc.}

(27) Marv put in his pocket the most expensive marbles that he could.

(28) ? Marv put in his pocket the cheapest marbles (↑(d+e)) that he could.

However, the predicate *cheap* does not behave like Schwarzschild's "stubs" in that a collective reading is also available.

(29) These roses are cheap.

a. The price of each rose is low, but together they may be quite pricey. (distributive)

b. The price of the bouquet of roses is low. (collective reading)

---

[6]See however the example in footnote 5 above.

The reason for the unacceptability of the collective reading of *cheapest marbles* may be the one suggested for *smallest marbles* above. The cheapest group of marbles will always be a singleton, which makes the use of a plural superlative odd.

In addition, there also appears to be speaker variation with respect to the availability of the collective reading. I will assume that the availability of the collective reading is subject to pragmatic constraints, which may provide accounts of variation both among predicates and among speakers.

It is also important to notice that, with some predicates, the readings obtained seem to entail that Marv's pocket was filled with marbles, as is the case with the predicate *expensive*, in particular on the collective reading, when the standard becomes less important than the total price of the marbles. Imagine the following situation:

(30) a. C={A, B, C, d, e, f, g, h, i, j}, where A, B, and C are large marbles and cost $2 each and d, e, f, g, h, i, j are small marbles and cost $1 each}

b. P_{Sum}={A+B+C, A+C+d+e+f, d+e+f+g+h+i+j, etc. }

c. P_{Group}={↑(A+B+C), ↑(d+e+f+g+h+i+j), ↑(A+C+i+j), etc.}

d. Marv put in his pocket the most expensive marbles that he could.

On the scenario in (30a), (30d) is acceptable both if Marv puts in his pocket A+B+C and if he puts ↑(d+e+f+g+h+i+j), as long as both combinations fill up the pocket, and no combination that can be placed in the pocket can be worth more than the $7 that ↑(d+e+f+g+h+i+j) is worth. The former is the distributive reading and the latter is the collective reading.

At this point we are ready to show, as I have promised above, that the readings identified above are not amount readings of the type that we obtain if the superlative is absent from the ACD. I will start by pointing out that the reading outlined in (30) is certainly reminiscent of the amount reading requirement in that the pocket will be filled to capacity. However, in the case of the collective reading, the maximalization effect is a side effect of the maximalization requirement imposed on the Group by the superlative. This effect is different in that it is stronger than the amount reading effect. The collective superlative interpretation is not available if we merely maximize the cardinality of the set on which the Group filling up Marv's pocket is based; it has to be the set whose combined price is the highest. It is the highest price requirement that leads to maximizing the use of the space. Consider again a scenario:

(31) Marv has 5 marbles, the largest one of which is worth $5 dollars (A) and the other smaller 4 are worth 50c (b, c, d and e).

(32) C={↑(A+b), ↑(c+d+e), etc.}

Both ↑(A+b) and ↑(c+d+e) fill up Marv's pocket, however only ↑(A+b) would satisfy (30d).

Finally, let me point out that ACD relatives containing overt superlatives are not merely missing the randomness component. Recall that the collective interpretation of the superlative does not seem to trigger a maximal cardinality interpretation. If we choose the predicate *nice*, the nicest Group does not necessarily have to be the largest or to fill up Marv's pocket, since we can imagine that adding one or more marbles would spoil the effect of the others. In this situation, (33) does not have an amount reading at all.

(33) Marv put in his pocket the nicest marbles he could.

In fact, the reading we obtain on this collective interpretation of the plural superlative *is* a restrictive reading since we are treating the set of *nicest marbles* as a Group or singular individual.

3.5 Summary

Let us take stock of what we have accomplished in this chapter. I have shown that the existing analyses of amount relatives involving relativization over degrees fail to give us a proper semantics for the maximal cardinality interpretation of ACD amount relatives. In addition, the analysis I presented in chapter 2 for *there*-relatives is also not successful in deriving the relevant amount interpretation in ACD relatives. Moreover, I pointed out the complications surrounding the different amount readings and the source of role of maximalization in order to show why the readings of ACD relatives are so hard to derive compositionally.

The next chapter is dedicated to the issue of the relativizer restriction in ACD relatives and provides additional support for the view that ACD relatives and *there*-relatives do not belong to the same class. Based on crosslinguistic data, I will argue that the relativizer restriction is orthogonal to the issue of amount relatives. If, following Heim (1987), we assume that the relativizer restriction in *there*-relatives is related to the inability of a *wh*-relativizer to bind a degree variable, then ACD relatives with amount readings do not involve degree relativization in the same way. In languages other than English, amount readings are available even in relative clauses introduced by *wh*-relativizers, which makes

the relativizer restriction an unreliable indicator of "amount relative" status in Carlson's original construal, which relied on degree relativization as the unifying feature.

CHAPTER 4

THE RELATIVIZER RESTRICTIONS AND AMOUNT RELATIVES

4.1 Introduction

Carlson's initial motivation for postulating a third type of relative clause, in addition to the traditional restrictive and appositive relatives, relies heavily on the properties of ACD relatives. The syntactic relativizer and determiner restrictions on a subclass of these relatives that I have discussed in the previous chapters, as well as the special amount interpretation which is found with these relatives, led Carlson (1977) to postulate the class of "amount" relatives. However, it is the similarity in syntactic restrictions, and not in the interpretation, that led Carlson to include *there*-insertion relatives in the same class.

In this dissertation, however, I argue that *there*-insertion relatives, but not ACD relatives, are special in that they involve relativization over degrees. In chapter 2 I have presented arguments against a uniform treatment of *there*-relatives and ACD relatives with amount readings. However, one issue, namely the relativizer restriction in some English ACD relatives, did not receive a proper explanation. In short, the issue is the following. I have argued that ACD relatives with amount readings do not show the restrictions that Carlson originally attributed to relativization over degrees. Given this, the existence of the same restriction on *wh*-relativizers as in *there*-relatives is unexpected in ACD relatives with amount readings. Restrictive relatives, including many non-amount ACD relatives, are normally compatible with the *wh*-relativizer.

In this chapter I will show using cross-linguistic data that the relativizer restrictions we observe in English ACD relatives with amount readings should not be inherently linked to the availability of the amount reading. In chapter 2 we have seen evidence that amount readings arise independently of the availability of raising or of the presence of a non-*wh*-relativizer. To further support that conclusion, I will explore the syntax of the comple-

mentizer area of relative clauses based on other relativizer restrictions in the Balkan and Slavic languages. The existence of systematic relativizer restrictions in these languages that are attested independently of the availability of an amount reading casts further doubt on the usefulness of the relativizer restriction as a criterion for "amount" relative status.

I will begin the chapter by discussing two previous analyses of the relativizer restriction on "amount" relatives, pointing out why they fail to capture the problem in a desirable way. In the second part of the chapter, we will see evidence that the relativizer restrictions do not go hand in hand with the availability of the identity of amount reading. I will argue that the peculiar relativizer restrictions that seem to correlate with the availability of this reading are independently attested and, in languages where they are more systematic, attributable to different factors, such as the presence or absence of an intonational phrase boundary at the level of the relative clause.

4.2 Relativizer restrictions à la Grosu and Landman (1996)

In chapter 1 we have seen that the relativizer restriction is traditionally one of the hallmark characteristics of "amount" relatives. It is also rather elusive. Heim (1987) stipulates that the difference between the *wh*-relativizer on the one hand, and *that* or the null relativizer on the other hand, is the inability of the former to bind the degree variable present in these relatives. However, with respect to ACD relatives with amount readings, any analysis of the relativizer restriction faces an additional challenge: the presence of a *wh*-relativizer also precludes the identity of substance reading. This happens, however, only in the constructions that otherwise allow the identity of amount reading when the relativizer is a non-*wh* one. For instance, (1) is ungrammatical regardless of interpretation,

which is not generally the case with ACDs, as shown in (2), taken from Jacobson (1998), who attributes it to Bouton (1970).

(1) * Marv put everything which he could in his pocket.

a. #For all x, such that Marv could put x in his pocket, Marv put x in his pocket.

b. #Marv put in his pocket as many things as he could.

(2) John read every book which Bill did.

This indicates that whatever is responsible for the relativizer restriction in (1) is specific to this kind of example. The confounding issue is that the availability of the identity of amount reading is subject to independent constraints. As we have shown in chapter 1, the identity of amount reading disappears if the modal *could* is replaced with *did* as in (2). However, the fact that the relativizer *which* is ungrammatical even on the restrictive construal of (1) supports the conclusion of this chapter that amount readings of ACD relatives are not to be treated as related to relativizer restrictions.

Grosu and Landman (1996) were the first to attempt to derive the relativizer restrictions in ACD relatives and propose a new analysis which challenges Carlson (1977)'s observation that the restriction on *which* has to do with ACD and the proper containment of the relativized nominal in a VP-ellipsis site. They note that the interpretations of ACD relatives are not limited to amount readings and that grammatical restrictive construals can be forced by using weak determiners in ACD contexts, as in (3).

(3) Bob kissed {many, three, most} girls that his brother {**didn't, wouldn't, refused to.**}

Based on such examples and other intersective interpretations of ACD amount relatives, they argue that, for the sake of syntactic generality, an ACD relative should be in principle allowed to be generated from a restrictive relative structure, as well as from a degree structure.[1] As a consequence, an explanation is now required for the ungrammaticality of *which* on both structures.

Grosu and Landman's proposal relies primarily on the requirement that restrictive relatives need a (contrastively)[2] focused element in the relative clause, unlike "amount" relatives. They argue that the focus requirement is due to the fact that while restrictive relatives divide naturally into a topic-focus articulation, "amount" relatives, whose head is interpreted internally, do not. More specifically, they analyze the relativized element "as a focus-related topic and the remainder of the relative as an informative comment on it, which must therefore include a focus." (Grosu and Landman 1996:135) Crucially, the focus requirement is only active in restrictive relatives.

Let us see now how Grosu and Landman's analysis accounts for the relativizer restriction paradigm. Under this analysis *which* is ungrammatical in (1), repeated here as (4), because the relative clause only contains items that cannot be focused: a relativizer, a pronoun and a modal verb.

---

[1]Grosu and Landman (1996) assume with Carlson (1977) and Heim (1987) that amount readings of ACD relatives are to be obtained via relativization over degrees.

[2]If the requirement involved non-contrastive focus, it would be obviously false, as pointed out by the following examples provided by Željko Bošković:

(i) Q: Who read every book which/that Bill did?
A: John read every book which/that Bill did.

The only focused element in the answer is *John* since the rest of the material is old information (present in the question).

(4) * Marv put everything which he could in his pocket.

To anticipate, I will show below that the claim that pronouns and modals in ACD constructions cannot be focused is unsubstantiated. However, let us first examine the logic of Grosu and Landman's analysis. The relativizer's inability to bear focus, they claim, has to do with the fact that it is bound by the CP-external D. It is this structure that excludes the possibility of providing the set of alternative construals necessary for focus. Recall, however, that due to the structural ambiguity of ACD relatives we have to account for the ungrammaticality of (4) on the "amount" relative construal as well. In this case, the crucial property of *which* is its inability to bind a degree gap, as proposed by Heim (1987). On the other hand, *that* and $\emptyset$ are acceptable on the "amount" relative construal because these relativizers can bind a degree variable, and "amount" relatives are not subject to the focus requirement. Grosu and Landman (1996) make no explicit reference to the fate of relatives introduced by *that* and $\emptyset$ on the restrictive construal. The null hypothesis, however, is that the relatives they introduce are subject to the same focus requirement. The options for (5) are summarized in Table 4.1.

(5) Marv put in his pocket everything that/$\emptyset$/*which he could.

Relativizer	Restrictive structure	Degree structure
which	* (no focus)	* (cannot bind a degree relative)
that/$\emptyset$	* (no focus)	OK (no focus needed; can bind a degree variable)

Table 4.1. Relativizers in ACD relatives with amount readings

Note, however, that the focus requirement does not preclude all restrictive construals of ACD relatives with *that*, ∅ or *which*. If the subject of the relative clause is a proper name, as in (6) (adapted from Jacobson (1998)), or if a main verb is present, as in (7), these elements can bear focus, making the sentences grammatical, even with *which*.

(6) John read everything which/that BILL did.

a. For every x such that Bill read x, John read x.

b. * John read as many books as Bill did.

(7) Mary read everything which/that she BOUGHT.

a. For every x such that Mary bought x, Mary read x.

b. * Mary read as many things as the things she bought.

Crucially, these sentences are only acceptable on the identity of individuals/substance reading, illustrated in the a. sentences above.

Although Grosu and Landman's account is very attractive at first sight, since it aims to account for the impossibility of *which* in (4) on both a restrictive and "amount" relative construal, some of their claims do not hold empirically. Their analysis crucially relies on the impossibility of focus on a pronoun or modal in ACD relatives. As mentioned above, I will show both that the claim about the possibility of focusing a modal is not correct and that the focus requirement on restrictive relatives is itself not valid.

The first counterargument concerns the impossibility of focus on the pronoun in the ACD relative. This is in fact incorrect:

(8) John can drink in one hour the wine that YOU can in one day.

Moreover, focus is acceptable on modals such as *could*. Schuyler (2002) argues that focus is necessary in the relative clause in cases of A-bar movement out of an ellipsis site. Therefore, according to Schuyler's theory, a sentence such as (9) needs to have focus on either the embedded subject or on the modal verb. Importantly, both focus realizations are possible:

(9) Bill read everything that Sue could.

a. Bill read everything that SUE could.

b. Bill read everything that Sue COULD.

Moreover, in her discussion of ACD relatives Jacobson (1998) notes that (10) is grammatical with or without contrastive focus in the relative clause.

(10) a. John read every book which Bill did.

b. John read every book which BILL did.

Regardless of whether Jacobson's example argues against Schuyler's claim about the obligatoriness of focus, the fact that a modal *can* be focused in an ACD relative is enough to cast doubt on the validity of Grosu and Landman's claim and account.

Serbo-Croatian also provides additional evidence that *which* can, under specific circumstances, be focused. *Li* in (11) and (12) is a focus interrogative complementizer which must always be preceded by a focused element (see Bošković (2001)). Compare (11), where the focused element is precisely the *wh*-form *which*, with (12), where the focused element is the object Marko:

(11) Koji li je on kupio auto?
which LI is he bought car

'Which is the car that he bought?'

(12) Marka li je on vidio?
Marko LI is he seen
'Is it Marko that he saw?'

To summarize, we have seen that Grosu and Landman's account of the relativizer restriction fails because the focus requirement on restrictive relatives, if correct, *can* be satisfied by a modal such as *could*, contrary to their claim. We thus would expect ACD relatives to be always acceptable with *which* on the restrictive construal, contrary to fact.

4.3 A syntactic account of relativizer restrictions

The semantic accounts of relativizer restrictions in "amount" relatives we have seen until now rely on the stipulation that a *wh-relativizer* cannot bind a degree variable. However, Aoun and Li (2003) defend a syntactic account that treats the relativizer restrictions as morphosyntactic reflections of the presence or absence of head raising in the derivation of the relative clause. Before presenting their account, let us review some of the arguments that have been adduced for the existence of two structures for relative clauses. In section 4.4, I will address the question of the relativizer restrictions in ACD relatives cross-linguistically. While Aoun and Li's arguments presuppose that an amount reading in the ACD relatives is obtained by degree relativization and that the head of the relative is therefore interpreted internally to the relative clause, I will show that the lack of a relativizer restriction with ACD relatives with amount readings in languages other than English is indicative of the absence of relativization over degrees. This finding is con-

sistent with the discussion in chapter 3 showing that amount readings in ACD relatives cannot be obtained via simple degree relativization.

4.3.1 Two structures for relative clauses

The literature identifies two major types of analyses for relative clauses, labeled the *promotion/raising* analysis and the *wh-movement/matching* analysis. The promotion analysis (see Schachter (1973) and Vergnaud (1974)), which has the head moving from within the relative clause, arose from the observation that the head of a relative clause can be interpreted as if it were in the gap position of the relative clause. Kayne (1994) and Bianchi (1999) revive the promotion analysis and argue for a complementation structure for the relative clause that is compatible with Kayne's (1994) Antisymmetry approach, which rules out right-adjunction:

(13) *The Promotion analysis*

$[_{DP}$ D $[_{CP}$ NP/DP$_i$ [C $[_{IP} \ldots t_i \ldots]]]]$

Chomsky (1977), on the other hand, suggests that under the matching analysis relative clauses are obtained by *wh*-movement, similarly to *wh*-interrogatives, clefts, comparatives, topicalization etc., which share with relative clauses the presence of a gap, the availability of long-distance relations, and sensitivity to islands. The relative pronoun is moved to the left periphery of the relative clause and enters into a predication relation with the head of the relative clause, as represented schematically in (14) below.

(14) *The matching analysis*

$[_{NP/DP}[_{Head}$ NP/DP$_i \ldots][_{RelativeCP}$ *wh*$_i$ $[_{IP} \ldots t_i \ldots]]]$

Carlson (1977) argues that both analyses are needed to account for the full range of relative clauses, a point that has been further supported by Sauerland (1998, 2003) and Hulsey and Sauerland (2006), among others.[3] One of the major arguments for adopting both analyses comes from Munn (1994), who notes that a relative clause head can allow reconstruction for variable binding without showing Condition C reconstruction:

(15) a. The relative of John$_i$ that he$_i$ likes lives far away.

b. The relative of his$_i$ that everybody$_i$ likes lives far away.

What this contrast shows is that it must be possible for the head of the relative clause to be interpreted both outside and inside the relative clause in order to avoid a condition C violation and to allow variable binding, respectively. The matching analysis is required[4] in the first case, while the raising analysis is required for the second one.

Reconstruction should also lead to ungrammaticality if we build in conflicting requirements, as in (16a).

(16) a. * The relative of his$_1$ mother$_2$ that everybody$_1$ knows she$_2$ hates is her$_2$ mother-in-law.

b. The [relative of his$_1$ mother$_2$] that everybody$_1$ knows she$_2$ hates [relative of his$_1$ mother$_2$] is her$_2$ mother in law.

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[3]However, Carlson comes to the conclusion that all relative clauses where raising is obligatory, such as relatives where the relativized NP is part of an idiom, are "amount" relatives.

[4]Not forcing reconstruction with A'-movement would in principle be enough to account for (15). However, the obligatoriness of reconstruction effects in relative clauses with idiom chunks, discussed in the text below, suggests that mere optionality would not work in the general case.

The variable *his* needs to be reconstructed in the scope of the universal quantifier *everybody* in order for the functional reading to arise; however, reconstruction of the NP *relative of* his_1 $mother_2$ causes a condition C violation as the noun *mother* is now c-commanded by a coindexed pronoun.

Evidence has also been adduced in favor of a raising analysis of amount relatives. Carlson (1977) notes that relative clauses containing idiom chunks are subject to the same relativizer and determiner restrictions as "amount" relatives. Consider the examples in (17), based on Carlson's (51)-(52).

(17) a. {The, All, That, What} headway (that) Mel made was astounding.

b. * {Some, Much, Most, Little, This, ∅, etc.} headway (that) Mel made was satisfactory.

c. Mel made {much, little, lots of} headway.

Carlson's claim is based on the absence of any obvious reason why the determiners in (17b) should not be able to appear before a noun like *headway*. He concludes, therefore, that these relatives containing idiom chunks are in fact "amount" relatives. In addition, he observes that the noun *headway* must be interpreted in its base position as the object of *make* in order for the idiom to be felicitously interpreted. This fact leads him to conclude that the head noun must have been raised out of the object position inside the relative clause since it must be allowed to reconstruct to that position. Recall, however, that I have argued that the determiner and relativizer restrictions in ACD relatives with amount readings are independent of the existence of an amount reading. Carlson's evidence then does not force us to assume that ACD relatives with amount readings are necessarily

obtained by raising as well. In fact, I will show in section 4.4 that Romanian provides evidence against a raising analysis in some relatives with an amount reading.

4.3.2 Relativizer restrictions and reconstruction: Aoun and Li (2003)

Following in the tradition of using reconstruction to probe the structure of relative clauses, Aoun and Li (2003) develop an account whereby the relativizer restrictions follow from the choice of structure for the relative clause. Like Sauerland, Aoun and Li argue that both the promotion analysis and the matching analysis are needed to account for the range of relative constructions available. Moreover, they claim that some relative clauses can be derived via both analyses. In the case of the head raising/promotion analysis, the nominal to be relativized moves to the relative head position, while in the case of the operator/*wh*-movement/matching analysis, the *wh*-operator is moved to the Spec of the relative clause in order to mediate the relation between the base-generated head and the relative clause. With the distinction between the two kinds of analyses for relative clauses comes an important correlation with reconstruction. Recall that while the head raising analysis allows for the possibility of head reconstruction, the matching/base-generation analysis does not.

Aoun and Li (2003) take the reconstruction facts further and make a stronger claim. They argue that the relativizer choice is dependent on the possibility of reconstruction, yielding the following division of labor:

(18) Aoun and Li (2003)

i. *Non-wh*-relatives are derived by Head-raising or Operator movement

ii. *Wh*-relatives are derived by Operator movement

Their evidence for this correlation concerns the fact that relative clauses headed by a noun that is part of an idiom are worse when they are introduced by *which* rather than *that*:

(19) a. The careful track that she's keeping of her expenses pleases me.

b. The headway that Mel made was impressive.

c. I was offended by the lip service that was paid to civil liberties at the trial.

(20) a. ?? The careful track which she's keeping of her expenses pleases me.

b. ?? The headway which Mel made was impressive.

c. ?? I was offended by the lip service which was paid to the civil liberties at the trial.

Moreover, they note that *which* is acceptable in a relative clause that does not contain part of an idiom:

(21) John pulled the strings which got Bill the job.

In addition, they argue that reflexive anaphors and bound pronouns in the head position of a relative clause can be successfully reconstructed inside the relative clause if the relativizer is *that*, but not if it is *which*.

(22) a. We admired the picture of himself$_i$ (that) John$_i$ painted in art class.

b. We admired the picture of himself$_i$ (that) John$_i$ likes best.

c. * We admired the picture of himself$_i$ which John$_i$ painted in art class.

d. * We admired the picture of himself$_i$ which John$_i$ likes best.

(23) a. We admired the picture of his$_i$ mother that every student$_i$ painted in art class.

b. ?* We admired the picture of his$_i$ mother which every student$_i$ painted in art class.

In order to show that reconstruction is at stake here, we can appeal again to the strategy of creating conflicting requirements on the LF position of the head of the relative clause:

(24) * We admired Mary's$_1$ picture of himself$_2$ that John$_2$ told her$_1$ to buy.

In (24) the head of the relative should remain in its surface position to keep the proper name *Mary* from the scope of the pronoun *her*, but the reflexive pronoun *himself* requires reconstruction of the relative head in the scope of the proper name *John*.

Regarding Carlson's conclusion, which I have alluded to in footnote 3 above, that all relative clauses that require raising are to be considered "amount" relatives, Aoun and Li conclude that the contrast in (18) cannot be reduced to the contrast between "amount" relatives and restrictive relatives. Therefore, in Aoun and Li's system the relativizer restriction on amount/degree relatives stems from the inability of *wh*-relativizers to appear in structures that require raising.

Aoun and Li's analysis, if correct, has the advantage of eliminating the stipulation required by Heim's analysis that the relativizer *which* cannot bind a degree variable, and incorporating the restriction in a wider context. However, their analysis faces a different challenge - with respect to variation in the acceptability of *which*. Aoun and Li (2003) themselves acknowledge in a footnote (see fn 15 page 244) the fact that "[s]ome speakers do not find a contrast between *wh*-relatives and non-*wh*-relatives with respect to re-

construction." For these speakers the two types of relatives are stylistic variants, with *wh*-pronouns perceived as more formal and polite than *that* or ∅. In particular, they put forward the suggestion, which they attribute to Andrew Simpson (p.c.), that such speakers reanalyze *wh*-pronouns as heads occupying the complementizer position, similarly to *that* or ∅, rather than as XPs occupying the SpecCP position. The evidence they provide in favor of such an account comes from the fact that reconstruction becomes impossible, even for these speakers, if the *wh*-pronoun is part of a larger XP structure, as illustrated in (25) below.

(25) * I saw the girl of his$_i$ dreams whose pictures (John said) every boy$_i$ was showing off.

However, I would like to point out a prediction of this analysis, which, to my knowledge, is not borne out. If the speakers who reanalyze *which* as a head allow reconstruction to take place into the relative clause, we would expect them to allow the relativizer *which* in all environments where *that* or ∅ is allowed, including *there*-relatives and ACD relatives with amount readings.[5]

To recapitulate, Aoun and Li argue that the relativizer and determiner restrictions in certain kinds of relative clauses, including "amount" relatives, are merely "morphosyntactic indications of the absence of Head raising." Even if Aoun and Li's data are correct, all that we have shown is that relative clauses that require reconstruction of the head require a non-*wh*-relativizer. However, the goal of the rest of the chapter is to bring evidence that

[5]Three of eight native speaker informants I have consulted accepted *wh*-forms in ACD relatives of the type that shows an amount reading. However, none of the eight speakers accepted *wh*-forms in *there*-relatives.

there is no reason to believe that the availability of an amount reading in certain ACD relatives is indicative of obligatory reconstruction.

Before turning to cross-linguistic evidence, let me point out how we can make a case against obligatory reconstruction in English as well. In the ACD relative in (26), the amount reading is available despire the fact that reconstruction of the head would trigger a condition C violation.

(26) $John_1$ put in his pocket all the [pictures of $Mary_2$]$_i$ that he_1 told her_2 he_1 could t_i.

In the next section I provide further evidence in support of dissociating the existence of an amount reading from obligatory reconstruction, and, according to Aoun and Li, obligatoriness of non-*wh*-relativizers.

4.4 Amount readings with *wh*-relativizers: cross-linguistic data

In chapter 1 I have presented examples from Szczegielniak (2004) showing that, like English, Polish evinces a relativizer restriction in modal relatives, as illustrated in (27). Only relative clauses introduced by *co* have the reasonable amount reading discussed by Heim (1987), according to which what is at issue is the time necessary to drink the amount (rather than the substance) of champagne that was spilled.

(27) a. Całe życie nam zajmie wypić ten szampan, co oni rozlali dziś.
whole life us take drink this champagne that they spilled today
'It will take us our whole life to drink all the champagne that they spilled today.'

b. ?? Całe życie nam zajmie wypić ten szampan, który oni rozlali
whole life us take drink this champagne which they spilled
dziś.
today
'It will take us our whole life to drink all the champagne which they spilled today.'

Like Aoun and Li (2003), Szczegielniak (2004) argues that what distinguishes the two kinds of relativizers is the ability to appear in a raising construction, as identified by the possibility of reconstruction. In (28) the head noun triggers a condition C violation in the relative with *co/čto*, which suggests that reconstruction, and therefore raising, is obligatory. The relatives with *który/kotory*, on the other hand, do not show condition C violations, which indicates that reconstruction is not forced.

(28) a. ?? Znam koleżankę Janka$_1$ **co** on$_1$ powiedział że chce polubić.
know friend John that he said that wants like
'I know a friend of John that he said that he wants to like.'

b. ? Znam koleżankę Janka$_1$ **którą** on$_1$ powiedział że chce polubić.
know friend John who he said that wants like
'I know a friend of John that he said that he wants to like.'

Just as we concluded above from our discussion of Aoun and Li's data, these data from Polish show nothing about the necessity of attributing the relativizer restrictions in ACD relatives to the availability of an amount reading and/or degree semantics. Moreover, closer examination of the Polish relativizers and their behavior in ACD relatives provides good evidence that any relativizer restrictions in ACDs are independent of the amount

reading. Virtually identical judgments and structures are found in Romanian, so I will be using pairs of examples throughout.

The two relativizers that we have seen in the Polish sentences above, as well as the ones from Romanian, are *wh*-forms and can both introduce non-appositive relative clauses.[6] One of the forms is identical to the *wh*-pronoun *what* and is undeclinable (Polish *co* and Romanian *ce*) while the other is identical to the *wh*-pronoun *which* and is declinable (Polish *który* and Romanian *care*). The fact that the relativizers *ce* and *co* are undeclinable suggests that they are in fact complementizers rather than *wh*-phrases, much like English *that*. This is important considering Heim's conjecture that *wh*-forms are not capable of binding a degree variable. What the data will show, however, is that Romanian and Polish relative clauses *can* have an amount reading regardless of the relativizer choice, which is consistent with the claim I make in chapters 2 and 3 that amount readings of ACD relatives are not dependent on the degree semantics that causes relativizer restrictions in *there*-relatives.

Before we can discuss the relevant cases, a short explanation is in order. Just like in English, Romanian and Polish ACD relatives containing a modal, which is required to test for the identity of amount reading, are ungrammatical with the *wh*-relativizer, as illustrated in (29).

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[6]Romanian *ce* is generally restricted to the literary or written language, with the interesting exception of relatives headed by *tot* (everything), which can only be introduced by *ce*. I will return to this puzzling fact, which is also true of Polish, in the main text.

(29) a. * Marv a pus în buzunar toate lucrurile pe care le-a
Marv aux put.pp in pocket all things-the PE which them.acc.cl-aux
putut.
can.pp

b. * Marv włożył do kieszeni wszystkie rzeczy które mógł
Marv put.past to pocket.instr all.fem/neut things.acc which can.past
'#Marv put in his pocket all the things which he could.'

While this at first sight appears to confirm the suspicions that ACD amount relatives with *wh*-relativizers are bad, a more detailed examination of ACD relatives in Romanian and their relativizers reveals a different story.

It is important to point out that the reason for the ungrammaticality of ACD is not the choice of this particular relativizer, since the sentence is still bad if *ce* is used, as in (30).

(30) * Ion a pus în buzunar toate biluţele ce le-a putut.
Ion aux put.pp in pocket all beads-the that them.cl-aux can.pp
'John put in his pocket all the beads that he could.'

At this point it may be tempting to conclude that *wh*-relativizers in general are disallowed in ACD relatives. This is not the case, however. ACD relatives are grammatical in Romanian, in certain cases. Consider the following two examples:

(31) a. Ion a pus în buzunar tot ce a putut.
Ion aux put in pocket everything that aux can.pp
'John put in his pocket everything that he could.'

b. Ion s-a însurat cu fata cu care a putut.
Ion refl-aux married with girl with which aux can.pp.
'John married the girl he could.'

One possible reason for the ungrammaticality of the Romanian examples in (29) and (30) above, in light of the acceptability of (31), is the obligatory presence of the clitic left behind by the left dislocation of the relative clause head. This is corroborated by the fact that the only grammatical ACD relatives containing a modal are headed by a generalized quantifier or a prepositional phrase, neither of which requires or allows a clitic.

Despite the fact that the counterparts of the English ACD relatives with amount readings we have discussed are ungrammatical in Romanian, as shown in (29) above, these sentences become grammatical if the ACD configuration is removed by repeating the main verb as an infinitive in the position of the gap, as shown in (32). Moreover, it is important to note that, despite the presence of the relativizer *which*, the following Romanian and Polish non-ACD sentences in (32) are grammatical in the context in (33), which makes the amount reading the only possibility.

(32) a. Marv a pus în buzunar toate lucrurile pe care le-a
Marv aux put.pp in pocket all things PE which them.acc.cl-aux
putut pune.
can.pp put.inf
'#Marv put in his pocket everything which he could put.'

b. Marv włożył do kieszeni wszystkie rzeczy które mógł
Marv put.past to pocket.instr all.fem/neut things.acc which could
włożyć
put.inf
'#Marv put in his pocket all the things which he could put.'

(33) Marv has 20 (relevant) beads, which could all fit in his pocket independently. However, if placed together, only 15 fit, which is what Marv put in his pocket.

For the sake of parallelism with the English examples, I will continue to call relative clauses such as (32) ACD relatives, despite the absence of an ellipsis site.

In order to show that the relativizer restrictions in ACD relatives are not related to the obligatoriness of raising it would be valuable to find evidence that Aoun and Li's claim that the availability of the identity of amount reading correlates with the availability of reconstruction does not hold for the Romanian sentences. What we have seen until now is that Romanian relative clauses *can* have amount readings when the relativizer *which* is present. However, one might suggest that, unlike in English, all Romanian relativizers are compatible with reconstruction. It is nevertheless possible to show that reconstruction is at the very least not obligatory in such relatives. In section 4.3.2 above, we constructed examples for English in which obligatory reconstruction would force a condition C violation. The same example can be constructed for Romanian:

(34) Ion$_1$ a pus în buzunar toate [pozele cu Maria$_2$]$_i$ pe care
Ion aux put.pp in pocket all photos-the with Maria PE which
i-a spus tatălui ei$_1$ că le poate pune t$_i$.
him.cl-aux said father-the.dat hers that them.cl can put
'John put in his pocket all the pictures of Mary that he told her father he could.'

If reconstruction were required in this example, we would expect the sentence to be ungrammatical due to proper name *Maria* being reconstructed to a position where it is bound by a pronoun. This, however, is not borne out. (34) has an amount reading and it does not trigger a condition C violation.

There are two possible implications of the availability of an amount reading in a relative clause containing a *wh*-relativizer: either Heim's claim that *wh*-relativizers cannot

bind degree variables is wrong, or the amount reading in these sentences is not dependent on this kind of degree relativization, which is the position I have defended in chapter 2.[7]

The Romanian and Polish data I have presented argue strongly for an analysis of ACD relatives with amount readings that does not rely on raising of the relative clause head and/or relativization over a degree in the position of the gap as proposed by Carlson (1977) and Heim (1987). Moreover, an investigation of languages other than English gives us the opportunity to explore the restrictions without the interference from prescriptive rules about the use of *wh*-forms in non-appositive relatives. In particular, we have seen that the restrictions regarding ACD in Romanian are related to the presence of a clitic, and not to the interpretation of the relative clause.

4.5 Consequences for the syntax of relativization

4.5.1 Bare quantifiers and the choice of relativizers

In the first part of this chapter I have discussed evidence that the relativizer restrictions found in English ACD relatives with amount readings are not related to the amount reading as such, or to the obligatoriness of raising. In the rest of the chapter I would like to explore some further restrictions on the choice of relativizer in Romanian and

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[7]It is interesting that speakers who do not allow the identity of amount reading in ACD sentences with the relativizer *which* in English do not allow it even when the ACD is removed, unlike in the Romanian and Polish examples in (32). One explanation for this fact could be the reported prescriptive bias against *wh*-forms in non-appositive relatives, which some English speakers may have internalized. However, all the informants who rejected the *wh*-relativizer in the ACD sentence found some improvement when the ACD gap is eliminated, as in (i):

(i) Marv put in his pocket everything which he could put.

other Balkan languages and discuss the consequences of these facts for the syntax of the complementizer area of the clause. I will conclude that the relativizer restrictions provide evidence for locating the two different relativizers, roughly corresponding to *that* and *which* in English, not just in different places within the same phrase, but in different phrases altoghether. The relativizer corresponding to *that* occupies the head of CP, while the one corresponding to *which* is the specifier of the next lowest projection below CP, assuming a fine grained left periphery for the clause (cf. Rizzi (1997)). With respect to the general goal of this dissertation, the existence of relativizer restrictions in non-amount contexts adds to the evidence that the relativizer restriction is not an adequate indicator of "amount" relative status in the original sense of Carlson (1977).

Reminiscent of the highly intractable relativizer restriction in English ACD relatives is the incompatibility between *everything* and *which* in Romanian and Polish. However, as we saw above, this problem is not strictly related to ACD, since the problem persists even in the absence of ACD, as shown in the Romanian (36):

(35) a. Marv a pus în buzunar tot ce/*care a putut.
Marv aux put.pp in pocket everything that/which aux can.pp

b. Marv włożył do kieszeni wszystko co/*które mógł
Marv put.past to pocket.instr everything that/which can.past
'Marv put in his pocket everything that/*which he could.'

(36) * Ion a pus în buzunar tot care a putut pune.
Ion aux put in pocket everything which aux can.pp put.inf
'#John put in his pocket everything which he could put.'

Moreover, the incompatibility cannot be purely semantic, since universally quantified DPs *are* compatible with *care/kotory* in non-ACD relatives, as we have already seen in (32) above.

One issue that I have ignored until now is the difference in the categorial status of the various relativizers. As mentioned in passing above, the Romanian relativizer *ce* is invariable/undeclinable, unlike the relativizer *care*, and is therefore disallowed in certain environments, such as the object of prepositions.

(37) Grosu (2005) p.21

a. Muntele {care, ce} se înalţă în zare e acoperit de
mountain-the {which, what} refl rises in horizon is covered with
zăpadă.
snow
'The mountain {which, that} rises at the horizon is covered with snow.'

b. Muntele la {care, *ce} se uită Maria e foarte înalt.
mountain-the at {which, what} refl looks-at Mary is very tall
'The mountain at {which, *that} Maria is looking is very high.'

This behavior is the same as that of French *que*, which Kayne (1976) argued is an invariable particle functioning as the complementizer of finite subordinate clauses, and of English *that* and Italian *che* (cf. Cinque (1978)). Even though the Romanian *ce* is not identical to the form used as a complementizer in finite declarative clauses, *că*, I will assume in what follows that it occupies the same position as English *that* - the highest head in the complementizer domain.

Since we have seen that there is a contrast between the behavior of the generalized quantifier *tot* and that of the quantified DP *toţi/toate+DP*, we need to check if the same restriction appears in the case of all generalized quantifiers. Interestingly, the answer is no. Both relatives with *nimic* (nothing) and with *ceva* (something) are grammatical with the relativizer *care*:

(38) a. Nu am găsit nimic care să-mi placă.
not 1sg.aux found nothing which subj-me.dat like.subj
'I didn't find anything which I might like.'

b. Am găsit ceva care mi-a plăcut mult.
1sg.aux found something which me.dat-aux like.pp much
'I found something which I liked a lot.'

What makes the restriction in the combinatory possibilities of generalized quantifiers and relativizers worth investigating is the fact that it is not limited to Romanian. In Romanian, a relative clause headed by the bare quantifier *tot* (everything) can only appear with the relativizer *ce*, and not with *care*, a restriction that doesn't extend to the other generalized quantifiers. Other languages, however, show similar restrictions.

Greek, which also has multiple relativizer options, singles out *everything* in the same way Romanian does. The Greek paradigm is more interesting, however. Let us first examine the behavior of the GQ *all*. While the morphologically simple form *ola* in (39a) requires a special form of the relativizer, which does not normally introduce relative clauses, the morphologically complex *otiðipote* does not need or allow an overt relativizer, as shown in (39b).

(39) a. Marv evale sti tsepi tou ola osa/*pou/*to opio borouse.
Marv put in pocket his all that/that/the which could.3sg
'Marv put in his pocket everything that he could.'

b. Marv evale sti tsepi tou otiδipote *(osa/pou/to opio) borouse.
Marv put in pocket his everything that/that/the which could.3sg
'Marv put in his pocket everything he could.'

The GQs *kati* (something) and *tipote* (anything) allow both usual relativizers - *pou* and *to opio*:

(40) Vrika kati pou/to opio tha thelis.
Found.1sg something that/the which will want.2sg
'I found something you will want.'

(41) Dev vrika tipote pou/to opio tha ithela.
Not found.1sg anything that/the which will want.1sg
'I didn't find anything I will want.'

Albanian appears at first sight to present the same pattern. While relative clauses in general can be introduced using either *që* (roughly *that*) or *të cilën* (roughly *which*), a relative clause formed with *çdo gjé* (everything) can only be introduced by *që*:

(42) Dalina Kallulli (p.c.)

a. Beni futi në xhep çdo gjë që mundi.
Ben-the put in pocket every thing that could-he
'Ben put in his pocket everything that he could.'

b. * Beni futi në xhep çdo gjë të cilën mundi.
Ben-the put in pocket every thing AGR which-the could-he

However, Kallulli (2008) points out that relative clauses in which the relativized NP is definite must be introduced exclusively by the complementizer *që*:

(43) a. Lexova librin që (*e) mora në bibliotekë.
read.1sg book-the.acc that cl.3sg.acc got.1sg in library
'I read the book that I got from the library.'

b. * Lexova librin të cilin (e) mora në
read.1sg book-the.acc AGR which-the.acc cl.3sg.acc got.1sg in
bibliotekë.
library
'I read the book which I got from the library.'

An indefinite generalized quantifier, such as *diçka* (something) can be relativized using either form:

(44) a. Beni më bleu diçka që (e) kam dashur prej
Ben-the me bought something that (it.cl) have.1sg wanted from
kohësh.
times
'Ben bought me something that I wanted for a long time.'

b. Beni më bleu diçka të cilën e kam dashur prej
Ben-the me bought something AGR which it.cl have.1sg wanted from
kohësh.
times

However, just like in the case of *çdo gjé* (everything), *asgjë* (nothing) behaves like a definite in that it only allows *që* (that) as a relativizer:

(45) Nuk gjeta gjë/asgjë/asnjë gjë që/*të cilin doja.
not found.1sg thing/nothing/not-a thing that/AGR which-the.acc wanted.1sg
'I didn't find anything that/which I wanted.'

Given the additional restriction on definites, I will put Albanian aside.

Consider now the following data from Polish. Unlike in Romanian (and Greek), in Polish all generalized quantifiers may only appear in relative clauses with the invariant *co* (that) and not with *które* (which).

(46) a. Marv włożył do kieszeni wszystko co/*które mógł.
Marv put.past to pocket.instr everything what/which could
'Marv put in his pocket everything that he could.'

b. Jan przyniósł coś co/*które mnie zaskiczyło.
Jan brought something.acc what/which me.dat surprised
'Jan brought something that/which surprised me.'

c. Jan nie przyniósł niczego co/*które mnie zaskoczyło.
Jan NEG brought nothing.gen what/which me.dat surprised.
'Jan didn't bring anything that/which surprised me.'

In Serbo-Croatian, the restriction on the relativizers appearing with bare quantifiers is also present. *Sve* (all) and the other bare quantifiers can only form a relative clause with the invariant complementizer *što*[8]:

(47) Našao sam sve što/*koje sam želeo.
found aux.1sg all that/which aux.1sg wanted.1sg
'I found all I wanted.'

---

[8]Note also that *što* in Serbo-Croatian can be used independently as a complementizer introducing emotive factive clauses, as discussed by Browne (1980).

(48) Našao sam nešto što/*koje sam želeo.
found aux.1sg something that/which aux.1sg wanted.1sg
'I found something I wanted.'

(49) Nisam našao ništa što/*koje sam želeo.
not-aux.1sg found nothing that/which aux.1sg wanted.1sg
'I didn't find anything I wanted.'

The same is also true of Russian:

(50) a. Ja kupil vsë čto/*kotoroe ty prosil.
I bought all that/which you asked

b. Ja zabyl čto-to čto/*kotoroe ty poprosil.
I forgot something that/which you asked.

c. Ja ničego ne kupil čto/*kotoroe ty prosil
I nothing NE bought that/which you asked.

At first sight, this relativizer restriction might appear to be a characteristic of the Slavic languages since Polish, Serbo-Croatian and Russian all show it. However, crucially, Bulgarian does not show the restriction at all. In addition to the invariant relativizer *deto* (what), which I assume is located in C (just like English *that*, Serbo-Croatian *što* and Romanian *ce*), the relativizer *koeto* (which) can also be used, in fact with all generalized quantifiers:

(51) Namerih vsičko koeto/deto go iskah.
found.1sg all which/what it wanted.1sg

(52) Namerih nešto koeto/deto go iskah.
found.1sg something which/what it wanted.1sg

(53) Ne namerih ništo koeto/deto go iskah
not found.1sg nothing which/what it wanted.1sg

Until now we have seen three different patterns of interaction between the relativizers and the generalized quantifiers: Serbo-Croatian, Polish and Russian disallow the relativizer *which* with all generalized quantifiers, Romanian (and Greek) disallows it only in the case of bare *all* and Bulgarian[9] does not display any restrictions.

At this point, a generalization begins to emerge. Among the Slavic languages, Bulgarian and Macedonian are unique in having articles, on a par with other Balkan languages like Romanian, Greek and Albanian. In light of this, I propose the following empirical generalization:,

(54) Languages without articles which use two relativizers disallow the inflected *wh*-relativizer in relatives with bare quantifiers.

Notice that this generalization does not cover the case of Romanian *tot*, since Romanian *does* have articles, for which we need to say something different. However, the options seem to be limited to the following two: either all generalized quantifiers (as in Polish, Serbo-Croatian and Russian) are restricted to relatives introduced by a complementizer or only the bare *all* is (as in Romanian and Greek).

In this section we have seen that a number of different languages show relativizer restrictions in sentences with bare quantifiers. These facts have an important implication for the theory of "amount" relatives presented in this dissertation. In particular, they

[9]As noted above, we cannot reach a conclusion about Albanian due to interference from additional factors. Recall, however, that Albanian does allow *which* with some generalized quantifiers, which may be important in light of the generalization in (54) below.

provide evidence that relativizer restrictions are not always connected with the possibility of amount readings, or even degree relativization. Recall that I have argued in chapter 2 that amount readings *can* appear in relatives headed by the relativizer *which*. The fact that relativizer restrictions systematically affect relative clauses where degree relativization is not an issue further supports the conclusion that this restriction is a very poor indicator of amount/degree relative status.

In the next section I will outline an explanation of the relativizer restrictions that affect relatives with bare quantifiers. I will make two suggestions. On the one hand I will provide some evidence that the invariant bare quantifier *all* is located higher in the nominal structure than the DP projection. On the other hand, I will argue that the relativizer restriction is caused by the presence of an intonational phrase boundary between the bare quantifier and the relative clause.

4.5.2 Relativizer restrictions and intonational phrase boundaries

We have seen above that the factors determining relativizer choice go beyond the issue of "amount" relatives. However, these restrictions are relevant to our discussion as they corroborate my claim that the relativizer restrictions in ACD relatives with amount readings are independently motivated. In addition, the data provide insight into the syntax of relativization. The facts I discuss below support the idea proposed by Bianchi (1999) that the relativizers *that* and *which* (or other *wh*-relativizers) should be generated not just in different positions of the same phrase, but in different phrases altogether.

I will begin this section by pointing out a further surprising fact about relative clauses with *tot* in Romanian. It is a characteristic of this quantifier that it can combine with nouns bearing the definite article and that it can bear the definite article itself:

(55) Tot zaharul e pe jos.
All sugar-the is on floor
'All the sugar is on the floor.'

(56) Totul e minunat.
all-the is wonderful

Surprisingly, however, the presence of the definite article on *tot* precludes the presence of a relative clause, regardless of the chosen relativizer:

(57) * Le place totul ce/care depăşeşte limita.
them.dat like all-the that/which exceeds limit-the
'They like everything that is beyond the limit.'

If, on the other hand, the definite article is on a noun accompanying *tot*, the sentence is fully grammatical with either relativizer.

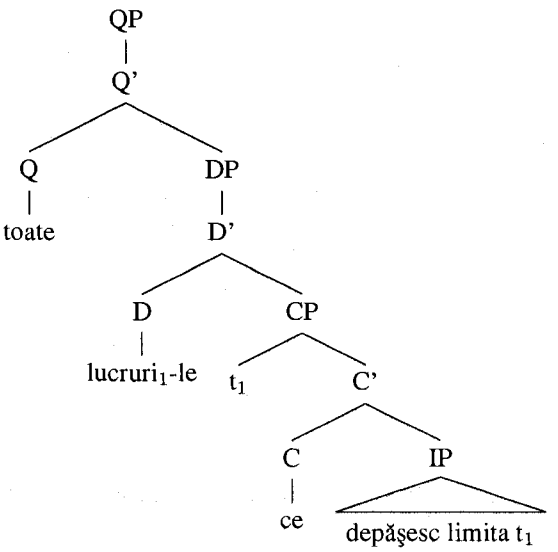
(58) Le plac toate lucrurile ce/care depăşesc limita.
them.dat like all things-the that/which exceed limit-the

I propose that the difference between the two cases has to do with the location of intonational phrase boundaries (henceforth IPBs). It is well-known that IPBs prevent the application of certain phonological processes across them and that many environments have been argued to be obligatorily parsed as separate intonational phrases, e.g. root clauses, parentheticals, tag questions, vocatives, certain moved elements and more recently null-C-disallowing contexts (see Cooper and Paccia-Cooper (1980), Selkirk (1978, 1984, 1986), Nespor and Vogel (1986), Schütze (1994), Bošković (2001) and An (2007b),

among many others). What is also relevant in the Romanian case is that the definite article is an enclitic, i.e. it has to attach at the right edge of an element of the right category.

Consider the following structure for the Romanian relative clause in (58).

(59)



I have assumed that the relative clause is generated as a complement to D, following Kayne (1994) and much subsequent literature, and that the head noun is raised from inside the relative clause - first to a position at the edge of the relative clause and then to D, via N-to-D movement (see Dimitrova-Vulchanova and Giusti (1998); Bouchard (1998, 2002); Dobrovie-Sorin (2000); Ticio (2003) among others; see also Dimitrova-Vulchanova (2003) for an alternative view). However, if the quantifier *tot* appears without a noun, as in (57), the definite article generated in D lacks a nominal host and can only move to attach to the quantifier above it.

Why is then (57) ungrammatical with either relativizer? The solution I will propose here relies on the account of the contexts that disallow null C in English and other languages put forth by An (2007a,b). The descriptive generalization established by An is that

moved clauses are parsed as independent IPBs and they must have either C or SpecCP filled. This generalization is illustrated in (60-61) below.

(60) a. [What ∅ John likes] is apples. (Bošković 1997:182)

b. [That Sue will buy the book] was expected by everyone. (An 2007:20)

c. I believe very strongly [that John likes linguistics]. (An 2007:23)

(61) a. * [Sue will buy the book] was expected by everyone.

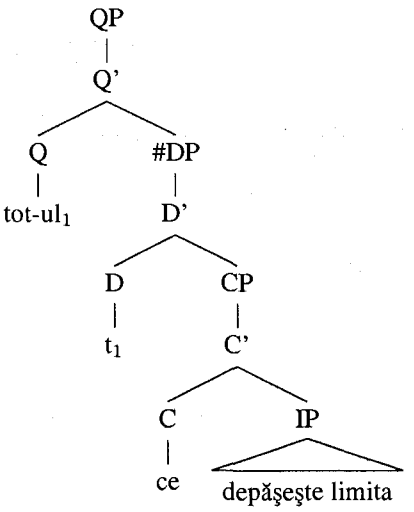
b. * I believe very strongly [John likes linguistics].

An (2007b) argues that these null C violations can be explained as failures to satisfy the requirement that the edge of an IPB (more precisely, either the specifier or the head of the phrase that is mapped into an IPB) be phonologically realized. In order for this to work we need to make some assumptions regarding the location of IPBs. It is a natural assumption that IPBs should correspond to phases, i.e. to spellout domains. However, in their recent Chomskyan instantiations, phases and spellout domains do not overlap precisely. Only the complement of a phase head is sent to spellout, to the exclusion of the specifier. Here I will assume that intonational phrases correspond to full phases.

Let us now see what we would have to say to account for the impossibility of a relative clause modifying the definite article bearing universal quantifier in Romanian. I assume that DPs are phases (see Bošković (2005) and Svenonius (2004)) and that the DP phase determines an intonational phrase. A problem arises regarding the head-movement of the definite article to Q. We can actually explain this in two ways. If the movement of the article is treated as a PF process, i.e PF encliticization, and intonational phrasing takes place before the article moves to Q, then the edge of the IPB is properly marked

since D^0 is phonetically realized. However, the application of a phonological process, such as encliticization of the definite article is impossible across an IPB, as mentioned above. On the other hand, if the encliticization head movement and all head-movement takes place in syntax, which means that intonational phrasing takes place after the head-movement in question, the edge of the intonational phrase boundary, which corresponds to the DP phase, is not properly marked by a phonetically realized element; hence the ungrammaticality of (57), whose structure is outlined in (62) below (the IPB is marked by #).

(62)



Let us now turn to the Slavic languages for further evidence for the role of intonational phrasing in the phenomenon under consideration.

It has been long known that Serbo-Croatian clitics (both auxiliary and pronominal clitics) must occur in the second position of their intonational phrase (cf. Radanović-Kocić (1988, 1996) and Bošković (2001)). Given this fact, we can obtain evidence that there is an intonational phrase boundary right above *što*.[10] The auxiliary clitic *sam* must occur

[10]Recall that the relativizer restriction holds for other bare quantifiers as well.

in the position immediately following the relativizer *što*, as evidenced by the contrast in grammaticality between (63a) and (63b). Note also that the order participle-auxiliary is in principle possible, as shown in (64).

(63) a. Našao sam sve što/*koje sam želeo.
found.1sg aux.1sg all that/which aux.1sg wanted.1sg

b. * Našao sam sve što želeo sam.
found.1sg aux.1sg all that wanted.1sg aux.1sg
'I found all I wanted.'

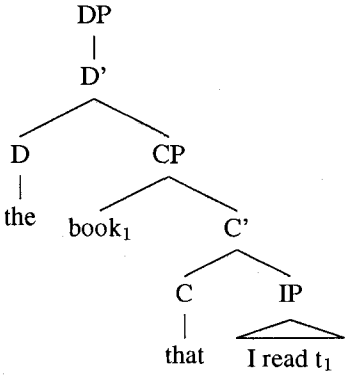
(64) Želeo sam to.
wanted.1sg aux.1sg it
'I wanted it.'

The data above suggest that the two relativizers appear in different structural positions. If CP is parsed as an intonational phrase, then *što* must be in CP in order for the IPB to be properly marked. In order to explain the ungrammaticality of the versions with the other relativizer, *koje* should be located in a lower projection leaving the IPB at the level of the CP improperly unmarked. As we will see below, these facts will require us to adopt a particular structure for the complementizer area of relative clauses.

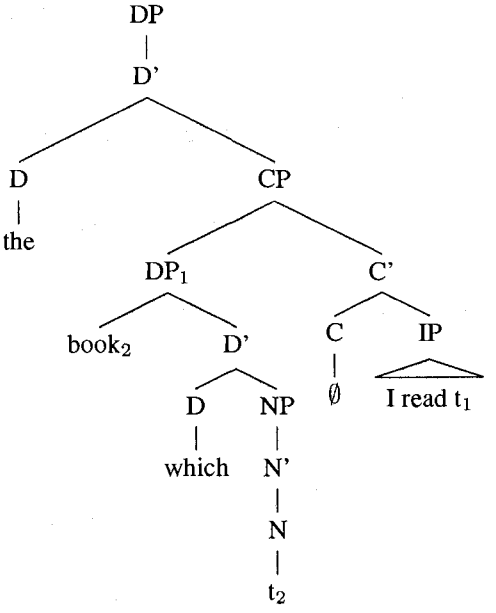
According to Kayne (1994), the difference between a *wh-* and a *that* relative is not in the location of the relativizer but in the category of the moved element (assuming a raising analysis). In the former case, a DP of the form *which*+NP is raised to SpecCP and the NP further raises to the specifier of the *wh*-relativizer, yielding the expected word order. In the latter case, the relativizer *that* is generated in C^0, which is filled by a null relativizer

in a *wh*-relative. The relativized element is only an NP now and is raised to SpecCP. The two derivations are given below:

(65) a.

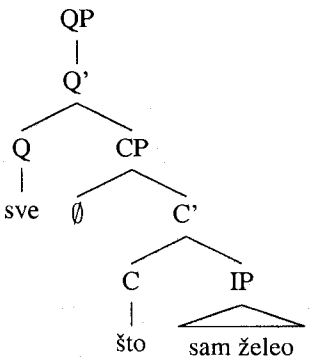


b.

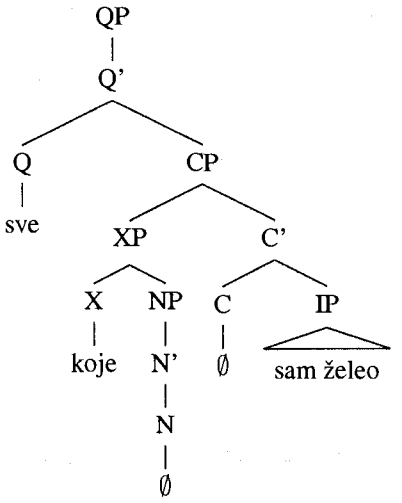


If these were the right structures for relative clauses, then we would expect both versions of (63a) to be grammatical, as far as the marking of an intonational phrase boundary is concerned. The relevant structures are given in (66a) and (66b) below.

(66) a.



b.



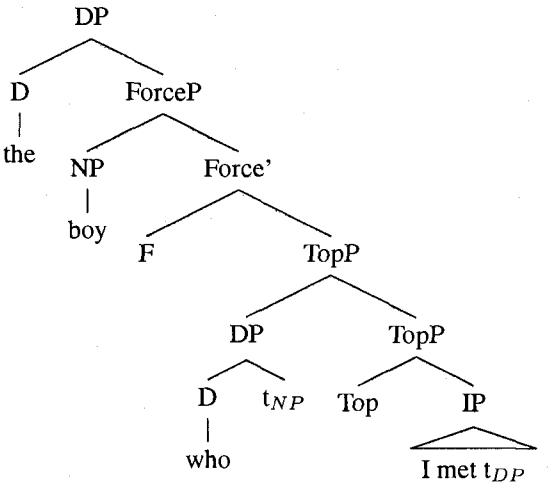
Bošković (2005, 2008) (see also Corver (1992), Willim (2000) and Zlatić (1997)) argues that in the Slavic languages that lack articles, the DP projection is absent (see these works for relevant evidence). Bošković (2008) extends the conclusion to all languages without articles.[11] I assume therefore that *koje* is located in the next available nominal projection, the nature of which is not relevant for us here, so I will refer to it as XP. The data from second position clitics in (63a) and (63b) indicate that an intonational phrase boundary is located between *sve* and *što*. On Kayne's structure, the only candidate for an intonational

[11]Bošković's main argument is based on a number of syntactic and semantic generalizations where the presence vs. absence of articles in a language plays a crucial role. The generalizations concern left-branch extraction, adjunct extraction, scrambling, negative concord, superlatives, clitic climbing, superiority, genitive complements, polysynthesis, and head-internal relatives.

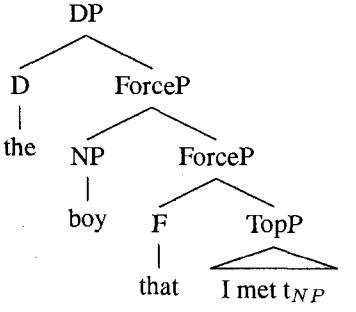
phrase is CP. Notice, however, that both in the structure involving *što* and the one involving *koje* the intonational phrase boundary is properly marked. In the former case the head of the CP phrase is phonologically realized; in the latter case, the specifier of the CP is. In the case of Serbo-Croatian in particular, the existence of second position clitics helps us ascertain that there is indeed an intonational phrase boundary at the level of the CP, as evidenced by the ungrammaticality of (63b), where the auxiliary clitic *sam* is in the third position starting with the relativizer. The fact that the relativizer *koje* is disallowed suggests that its position cannot be in the same phrase as *što*.

To recapitulate - in our attempt to explain the relativizer restrictions involving bare quantifiers we have found evidence that the two relativizers need to be located in two different phrases, not merely in different positions, i.e specifier or head, of the same phrase. Such a proposal has indeed been made. Based on Rizzi's (1997) seminal study of the left periphery of the clause, Bianchi (1999) proposes an alternative two-step derivation of *wh*-relatives which assumes a rich functional structure in the left periphery of the clause. In particular, she argues that the NP head of the relative clause can target either the head of the Force phrase or the Top(ic) phrase. The consequence of this for English relative clauses is that zero-relatives do not project a ForceP in addition to a TopP, while *wh*-relatives and *that*-relatives do. The derivations are illustrated in (67a)-(67c) below. I refer the reader to Bianchi's work for a justification of the structures.

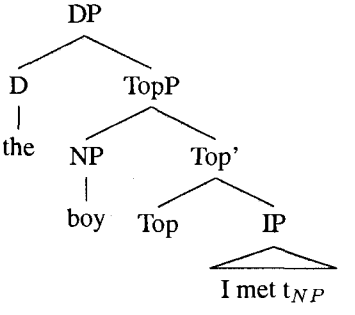
(67) a.



b.



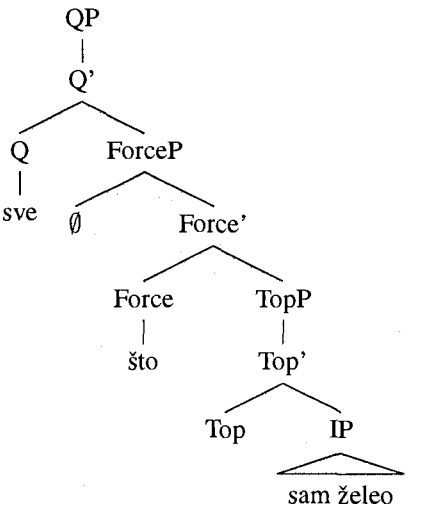
c.



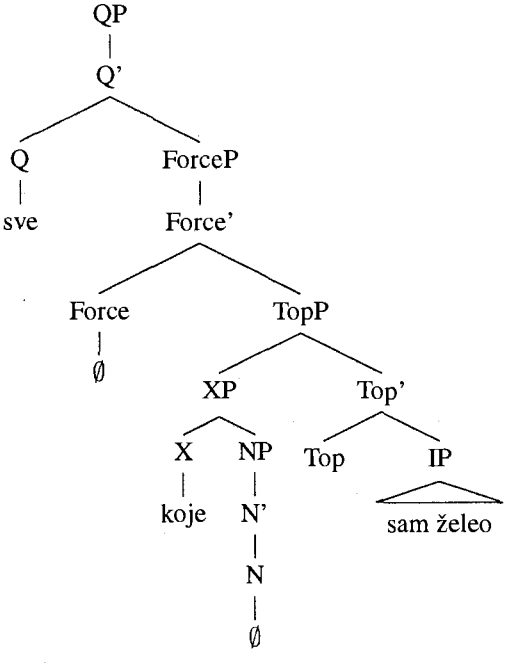
This analysis provides two different phrasal projections that can host a relativizer. With the additional assumption made above - that the DP phrase is not projected in languages without articles - Bianchi's structure can be used to account for the relativizer restrictions in the Slavic languages without articles.

Reconsider the Serbo-Croatian examples in (63a), this time on Bianchi's structure.

(68) a.



b.



I assume that the intonational phrase boundary in these structures is at the level of ForceP, which in fact corresponds to CP in the non-split CP framework. When *što* is used, it serves to mark the boundary, while with *koje* ForceP is phonologically empty and the boundary is unmarked, leading to ungrammaticality.[12]

[12]In the case of sentences with an overt noun, which under Bianchi's analysis described in the text above is placed in SpecForceP, the intonational phrase boundary would have to fall between the specifier and the

4.5.3 The role of D in the relativizer restriction

In the previous section I have given an empirical generalization regarding the relativizer restriction which has to do with the presence or absence of articles in a particular language, and an account of the relativizer restrictions with bare quantifiers in article-less languages. In this section I will explore in detail the role of the determiner phrase and of other nominal projections in the distribution of the relativizer restriction, which will require investigation of traditional Noun Phrases with rich internal structure. I will argue that the presence of a relativized noun enables the CP/ForceP layer of the relative clause to be optionally parsed with the preceding noun, which makes both relativizers possible. First, I will turn to explaining the relativizer restrictions in languages without articles.

4.5.3.1 Relativizer restrictions in languages without articles/D

As we have seen in section 4.5.1 above, Serbo-Croatian, Polish and Russian allow only the invariant relativizer to appear in relative clauses with bare quantifiers. I will

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head of the ForceP (in order to have the clitic in the second position of the intonational phrase in (i)(a)), an undesirable consequence. It may therefore be necessary to adopt a slightly different version of the above structures, also suggested by Bianchi (1999:200), which features the head noun of the relative clause in an AgrP projection above the ForceP. I will return to the issue at hand in detail below.

(i) (a) svi ljudi što su došli
all men that aux.cl come
'all men who came'

(b) * svi ljudi što došli su
all men that come aux.cl

(c) [$_{QP}$ [$_{Q}$ svi [$_{AgrP}$ ljudi$_i$ [$_{Agr}$ [$_{FP}$ t$_i$ [$_{F}$ što [$_{TopP}$ [$_{IP}$ su došli]]]]]]]]

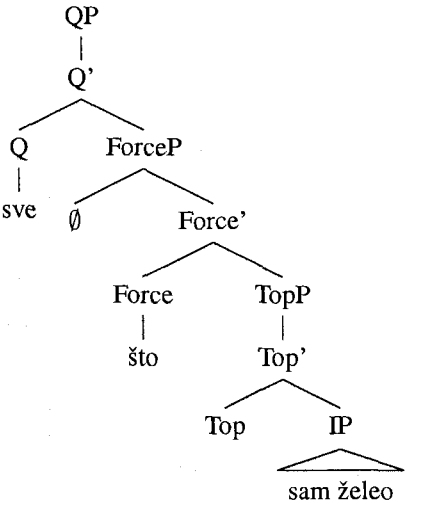
This allows us to maintain the idea that the intonational phrase boundary is at the level of the ForceP. The Agr projection in this particular version of Bianchi's proposal will become crucial to our understanding of the role played by the article in determining the possible relativizers.

assume that the structure for these relatives is as in (71) shown for the Serbo-Croatian example in (69), given that no noun or article is present.

(69) Našao sam sve što/*koje sam želeo. (Serbo-Croatian)
found.1sg. aux.1sg all that/which aux.1sg wanted.1sg
'I found all I wanted.'

(70) Ja kupila vsjo čto/*kotorye ty prosila. (Russian)
I bought all that/which you wanted.

(71)



What we need to explain here is why Force phrase is obligatorily parsed as an intonational phrase, which is what I have argued in the previous section is responsible for the relativizer restriction in general (as well as clitic placement in relative clauses). The explanation cannot be merely that all relative clauses are obligatorily parsed as separate intonational phrases. An (2007b) argues based on cross-linguistic data from Tagalog, Brazilian Portuguese, Tuscan Italian and Korean that restrictive relative clauses may be, but need not be parsed as separate intonational phrases, unlike the closely related noun complement clauses.

With this issue in mind, let us examine the data An (2007b) uses to illustrate the contrast between the parsing behavior of noun complements and restrictive relative clauses. According to Richards (1999), Tagalog features both affixal (*-ng*) and non-affixal (*na*) complementizers. The examples in (72) and (73) illustrate a difference between noun complements and restrictive relatives. In the noun complement clause in (72b), the affixal complementizer is ungrammatical, unlike in the relative clause in (73). An's account of these data appeals to a difference in parsing. The affixal complementizer needs to have the preceding nominal as a host, so it is only expected to be grammatical in case there is no IPB in between the affix (*-ng*) and its host (*balita*). This is expected if the noun complement clause in (72b) is parsed as an IPB, which makes the affixal complementizer ungrammatical; in the relative clause in (73), the affixal complementizer is acceptable, which suggests that the relative clause need *not* be parsed as an intonational phrase.

(72) a. ang balita [na kinain ni Juan ang tambakol] (NC)
news that ate Juan mackerel
'the news that Juan ate the mackerel'

b. * ang balita [-ng kinain ni Juan ang tambakol] (NC)
news that ate Juan mackerel (Richards 1999)

(73) ang balita [-ng dinala ni Juan] (RC)
news that brought Juan
'the news that Juan brought.' (Richards 1999)

The same distinction can be made with respect to English. The noun complement clause in (74) cannot be introduced by a null complementizer - a null affix, as proposed by

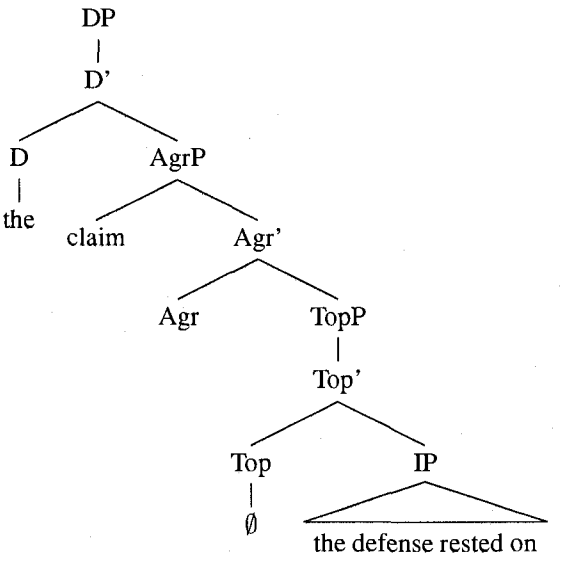
Pesetsky (1992) (see also Ormazabal (1995) and Bošković and Lasnik (2003) for further discussion). This is not the case in the corresponding restrictive relative in (75).

(74) The claim that/*∅ Mary offended Bill is unsubstantiated. (NC)

(75) The claim that/∅ the defense rested on was supported by the witness. (RC)

The data above are consistent with a view along the lines of Stowell (1981) who treats noun complements as appositives, which are always obligatorily parsed as separate intonational phrases. Relative clauses, on the other hand, are only optionally parsed as intonational phrases, as evidenced by the grammaticality of the null complementizer in (75). As first outlined in section 4.5.3, I propose that in the case of (75), the noun above the CP plays a relevant role in determining how the relative clause is parsed. The top layer of the relative clause can optionally be parsed together with the preceding noun. According to Bianchi (1999), the null C option for relative clauses (and declarative sentences) is really a reflection of the noun selecting for the phonetically null head Topic^0. The resulting structure is shown in (76), adopting the modification discussed in footnote 12.

(76)



If the IPB were located at the level of TopP, (75) would be expected to be ungrammatical, contrary to fact. If the TopP layer is parsed together with the noun in SpecAgrP, no ungrammaticality is expected. This also explains why relative clauses with overt nouns, such as those in Tagalog above, are only optionally parsed as separate intonational phrases. More evidence for this optionality will be presented in our discussion of clitic placement in Serbo-Croatian relative clauses.

Let us now return to the issue of the relativizer restriction in Serbo-Croatian introduced in (69). In (71) there is an intonational phrase boundary at the ForceP level, which triggers the relativizer restriction, as a result of which *što*, but not *koje*, is possible in the context in question.

Recall however that not all relative clauses in Serbo-Croatian exhibit this restriction. Interestingly also, Serbo-Croatian sentences with the bare quantifier *sve* show an improved ability to combine with *koje* (which) when the quantifier agrees with a noun previously mentioned in the context:

(77) Context: There are 15 girls in the choir, but 5 of them are home sick. Only 10 showed up for the show.

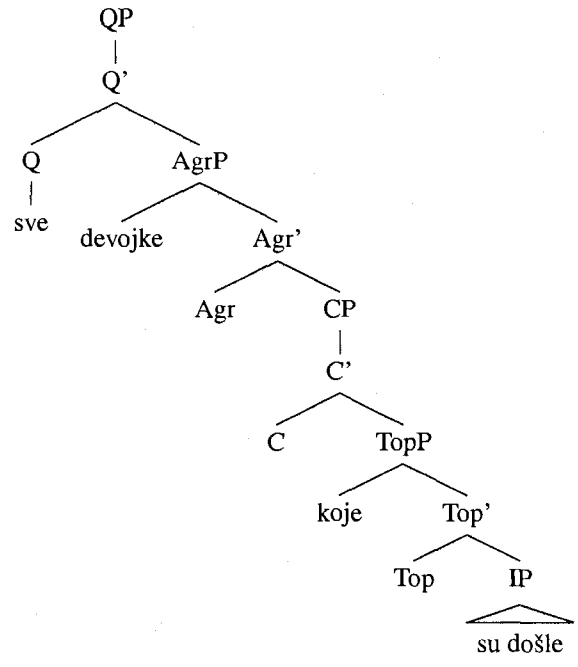
(78) Sve [devojke] koje su došle pevale su
all.fem.pl [girls] which.fem.pl aux.3pl come.3fem.pl sung.3fem.pl aux.3pl
punim srcem.
full.instr heart.instr
'All [girls] who came sang whole-heartedly.'

In order to understand why that may be the case, it may be helpful to consider relative clauses with overt relativized nouns, which do not evince any relativizer restrictions, as seen in (79) below.

(79) Sve devojke što/koje su došle pevale su
all.fem.pl girls that/which aux.3pl come.3fem.pl sung.3fem.pl aux.3pl
punim srcem.
full.instr heart.instr

The absence of the relativizer restriction may be at first attributed to the presence of the overt noun *devojke* in SpecCP, which means that the IPB needn't be marked by the relativizer, making *koje* acceptable. However, recall from the discussion in section 4.5.2 that Serbo-Croatian clitics are required to be in the second position in their intonational phrase. Given this, the question arises regarding the grammaticality of (79) with *koje*, whose structure is shown in (80).

(80)



An IPB at the level of CP in (80) would not be properly phonetically marked, and would therefore trigger ungrammaticality. Moreover, allowing the CP to be only optionally parsed as an intonational phrase does not yield the right results since the clitic would be located in the fourth position in the whole relative clause when the CP does not form a separate intonational phrase.

I propose that the optionality of parsing the relative clause as a separate intonational phrase, discussed for English above, should not be interpreted to mean that the noun and the whole relative clause form an intonational phrase together, but rather that the CP/ForceP layer can be optionally parsed with the noun instead of with the rest of the relative clause. Consider again (79) when the relativizer *koje* is chosen. The two parsing options are as follows:

(81) a. the CP is parsed as a separate intonational phrase: the clitic *su* is in 2nd position, but IPB is not properly marked → ungrammaticality

b. the noun *devojke* and the rest of the CP/ForceP layer are parsed separately; the relative clause starting with the TopP layer is parsed separately: the clitic *su* is in 2nd position → grammaticality

When *što* is selected, the options are the same, but it is the first option that results in grammaticality:

(82) a. the CP is parsed as a separate intonational phrase: the clitic *su* is in 2nd position and the IPB is properly marked by the presence of *što* → grammaticality

b. the noun *devojke* and the rest of the CP/ForceP layer are parsed separately; the relative clause starting with the TopP layer is parsed separately: the clitic *su* is in 1st position → ungrammaticality

We can now try to explain the difference between relatives with *sve* without a noun and relatives with *sve* which agrees with a contextually specified noun. I propose that Serbo-Croatian has two *sve* elements. One is invariant and never appears with a noun, overt or inferred; the other always agrees with a noun, either overt or covert. I argue that only the invariant *sve* triggers the relativizer restriction, since no noun is available for the CP layer to be parsed together with. On the other hand, when the agreeing *sve* is used, a noun is always available at the point when intonational phrasing takes place. In some cases, however, the noun undergoes PF deletion following intonational phrasing.

The remaining issue is the behavior of the Serbo-Croatian generalized quantifiers *nešto* and *ništa*, which, unlike their Romanian counterparts, do trigger a relativizer restriction, as seen in (48) and (49) above. These quantifiers are also invariant, so I will

assume that they behave essentially like invariant *sve*. I will return to the relevance of their morphology and of the presence or absence of D when I discuss Romanian below.

4.5.3.2 Relativizer restrictions in languages with articles/D

Let us now turn to accounting for the relativizer restrictions in languages with articles, such as Bulgarian and Romanian. Recall from the previous discussion that Bulgarian shows no relativizer restrictions, while Romanian only shows a relativizer restriction in one case: when the universal quantifier *tot* is used unaccompanied by a noun or a definite article.[13]

With respect to the universal quantifier *tot/toţi*, Romanian behaves just like Serbo-Croatian, discussed in the previous section. We can therefore assume that Romanian also has two quantifiers *tot*: an invariant one, which triggers a relativizer restriction, and an agreeing one, which is always accompanied by a covert or overt noun. Recall that it is the presence of this noun that is responsible for the optionality in the location of the intonational phrase boundary of the relative clause. The CP layer has the option of being parsed with the noun, to the exclusion of the material in TopP and below.

On the other hand, the quantifiers *ceva* (something) and *nimic* (nothing) do not trigger a relativizer restriction, unlike in Serbo-Croatian, a fact which needs to be accounted for. Essentially, relatives involving these quantifiers behave just like those where a noun is projected. It is therefore possible that these quantifiers are the phonetic realization of a nominal projection incorporated into D, since they cannot combine with nouns, but only

[13]See the data in (57), which shows that *tot* accompanied by a definite article cannot be modified by a relative clause. Recall that I have already given above an account of these facts, which do not merely illustrate a relativizer restriction, since all relativizers are bad.

with adjectives, as shown in (83). In fact, the English counterparts of *ceva* and *nimic* do overtly what Romanian may do covertly, i.e they incorporate a noun - *thing*.

(83) ceva bun/*creion
something good/*pencil

The Romanian *ceva* is also likely bimorphemic, though less transparently so. *Va* can combine with all the *wh*-forms, including *ce* (what), yielding indefinite quantifiers: *cineva* (someone), *careva* (anyone), *undeva* (somewhere), etc. Here the *va* morpheme corresponds to a nominal while *ce-* is located in the DP, which also straightforwardly accounts for the data in (83), both the impossibility of combining with a noun and the word order with adjectives. Given what I have said above about the parsing effect of an overt nominal in the relative clause, I assume that the nominal part of these quantifiers is responsible for optionality in the location of the intonational phrase boundary in this case as well.

Before closing this section we need to discuss the case of Bulgarian, which by now is expected to behave like Romanian since it has a definite article, a rare feature among the Slavic languages.[14] Unlike in Romanian, the bare quantifier *vsičko* always allows

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[14]Macedonian may represent a potential problem since it seems to display a relativizer restriction with bare quantifiers, similarly to Serbo-Croatian. However, there are some differences between Macedonian and Serbo-Croatian that may be relevant here. The invariant C form is actually a part of the *which* form. Moreover, the invariant C form is preferred even when an overt noun is present, in contrast to Serbo-Croatian, which suggests a general preference for the invariant C in all contexts. At any rate, a more detailed investigation of Macedonian is in order (as well as more data collection since so far I have been able to consult only one speaker).

(i) Kupiv se' shto/*kojshto sakav.
bought.1sg all/everything that/which wanted.1.sg

(ii) Kupiv neshto shto/*kojshto sakav.
bought.1sg something that/which wanted.1.sg

(iii) Ne kupiv nishto shto/*kojshto sakav.
not bought.1sg nothing that/which wanted.1.sg

both relativizers - the invariant *deto* and the agreeing *koeto*. In light of our analysis of Romanian and Serbo-Croatian one possible explanation is that non-agreeing *vsičko* is simply absent in Bulgarian. For the other generalized quantifiers (*nešto* and *ništo*), the morphological analysis presented for Romanian carries over straightforwardly.

4.5.3.3 A remaining issue

Before concluding this section, let us turn to a potentially problematic subset of the Serbo-Croatian data. In all the examples we have discussed until now, the relativized element was located in a position where structural case, e.g. accusative, is assigned. In these examples, the relativizer *što* was either required or, at the very least, allowed. However, if the relativized element is in the complement position of a verb that needs to assign inherent Case, such as dative, the relativizer *što* becomes impossible:

(84) Divim se svemu čemu/*što se ti diviš.
admire-1.sg refl all.dat what.dat/that refl you admire-2nd.sg
'I admire all that you admire.'

(85) Divim se svima kojima/*što se ti diviš.
admire-1.sg refl all.dat who.dat/that refl you admire-2nd.sg
'I admire everyone that you admire.'

(iv) Gi kupiv site knigi shto/?kojshto gi sakav.
them.cl bought.1sg all books that/which them.cl wanted.1.sg

(v) Gi kupiv nekoi knigi shto/?kojshto gi sakav.
them.cl bought.1sg some books that/which them.cl wanted.1.sg

(vi) Ne kupiv nitu edno od knigite shto/?kojshto gi sakav.
not bough.1sg none one of books-the that/which them.cl wanted.1.sg

The reason for the ungrammaticality of *što* in the examples above is that inherent Case in Slavic must be realized, as argued by Bošković (2006), Franks (1994) and Freidin and Sprouse (1991), which is not possible in the case of the invariant *što* (see the discussion below).[15] The question that immediately arises is what makes the forms *čemu* in (84) and (85) grammatical. I suggest that Case assignment cannot take place directly to the agreeing adjectival form *svima*. Rather, the adjective gets its Case by agreement with a noun, which means that a noun is always present. This default noun, something like *thing* in (84) and *person* in (85), appears as a last resort to help assign inherent Case and is later deleted, but only after intonational phrasing has already taken place.

Finally, let us return to the original examples involving *sve* which did not allow the presence of the relativizer *koje*, such as (63a) above, repeated here as (86).

(86) Našao sam sve što/*koje sam želeo.
found.1sg aux.1sg all that/which aux.1sg wanted.1sg

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[15]A similar pattern appears in Russian with the so-called genitive of quantification (data from Bošković (2006)).

(i) a. Ivan kupil odin mašinu.
Ivan bought one.acc car.acc

b. Ivan kupil pjat' mašin.
Ivan bought five cars.gen

(ii) a. Ivan vladeet odnoj fabrikoj.
Ivan owns one.instr factory.instr

b. * Ivan vladeet pjat' fabrik.
Ivan owns five factories.gen

c. Ivan vladeet pjat'ju fabrikami.
Ivan owns five.instr factories.instr

Unlike lower numerals whose accompanying noun receives the Case assigned by the verb, higher numerals (*five* and above) assign genitive Case to their nouns. However, when the verb assigns inherent Case, the genitive of quantification, which is otherwise obligatory, does not apply. Abstractly, whatever forces genitive of quantification does not apply when inherent Case is at stake, just like whatever bans *koje* does not apply when inherent Case is at issue.

'I found all I wanted.'

I have proposed above that Serbo-Croatian has two different *sve* elements. *Sve* in this respect behaves like Serbo-Croatian numerals. The numeral *pet* (five) is invariant and Caseless (see Bošković (2004) and Franks (1994)), and for this reason it cannot appear in an environment where inherent Case must be realized, such as in (87).

(87) * Divim se pet ljudima.
admire.1sg refl five people.dat
'I admire five people.'

The quantifier *sve* in (86) is just like it.

The lower numerals, such as *one* in (88), always require Case and the presence of a noun to agree with (at some point in the derivation).

(88) Divim se jednom čoveku.
admire.1sg refl one.dat man.dat
'I admire one man.'

The other, agreeing *sve*, is similar to these numerals. Only the former and not the latter is involved in the relativizer restriction involving *koje*. I thus suggest combining the analysis of agreeing, adjectival numeral *one* and non-agreeing Caseless numeral *five* (see Bošković (2004) and Franks (1994) for an account of these numerals) for Serbo-Croatian *all*.[16]

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[16]Alternatively, we could assume that the Case inflected *svima* in (85) is located in Agr, just like a noun, since after all it does not really have the expected adjectival morphology. Compare (85) with the example below:

(i) Divim se <u>svim</u> ljudima kojima se ti diviš.
admire-1.sg refl all.dat people.dat who.dat refl you admire-2nd.sg
'I admire everyone that you admire.'

One final question arises regarding the reason why the agreeing *sve* cannot be used in (86) since the numeral *one* can be used in accusative contexts. One possible explanation is that the cased version of *sve* only has inherent Cases, which would make it impossible in (86). Alternatively, we can suggest that the default noun, which I have alluded to above, appears only as a last resort to help realize inherent Case.

4.6 Summary

In this chapter I have presented and argued against two different analyses of the relativizer restriction on "amount" relatives: Grosu and Landman's (1996) proposal that restrictive relatives but not "amount" relatives must bear focus and Aoun and Li's proposal that the impossibility of *which* is a morphosyntactic reflex of the obligatoriness of raising. My criticism of the first analysis rested primarily on empirical grounds, in particular on the existence of counterexamples to Grosu and Landman's generalization that restrictive relatives, unlike "amount" relatives, require a focused element in the relative clause. As far as Aoun and Li's syntactic analysis is concerned, I have merely tried to show that their conclusions need not and do not extend to the subclass of ACD relatives that show amount readings. Whether their analysis is correct or not in identifying the relativizer choice as a mere morphological reflex of the choice of relativization operation, their explanation of the speaker variation in the acceptability of the reconstruction facts makes a crucial prediction with respect to *there*-insertion relatives which is not borne out.

In the second part of the chapter I have discussed a range of cross-linguistic data illustrating relativizer restrictions in purely restrictive relatives. I have shown that the restrictions are systematic and that they argue strongly against using the relativizer restriction

as an indicator of "amount"/degree relative status. I also propose that the relativizer restrictions that involve bare quantifiers can be explained in terms of the need to properly mark an intonational phrase boundary.

CHAPTER 5

TEMPORAL INTERPRETATION AND AMOUNT RELATIVES

5.1 Introduction

In chapter 4 I have discussed the issue of the relativizer restriction in a number of languages that otherwise allow (at least) two different relativizers in restrictive relative clauses. Based on the existence of systematic restrictions on the use of the relativizer *which* in contexts not associated with amount readings, I have concluded that the relativizer restriction is not a good indicator of the availability of the amount reading. Moreover, the availability of identity of amount readings in sentences with the relativizer *which* was taken to indicate that degree relativization is not necessary to obtain the identity of amount reading. I am still assuming with Carlson (1977) and Heim (1987) that *which* cannot bind a degree variable. What I am proposing is that there is only a one way correlation between the relativizer restriction and degree relativization: if the semantics of a construction involves degree relativization, then the relativizer *which* is disallowed; however, the presence of a relativizer restriction does not guarantee that degree relativization is involved. The cross-linguistic data provide support in favor of the conclusion reached in chapter 3 that the complexity of amount readings cannot be derived via simple degree relativization.

In this chapter I will provide additional evidence in support of the proposal defended in chapter 2 for *there*-insertion relatives. Data from the temporal interpretation of noun phrases in *there*-insertion relatives will be used in support of the special status of these relatives, contra McNally (2006), who argues that they should be treated simply as restrictive relatives.

This chapter is organized as follows. First, I will briefly discuss the literature concerning temporal interpretations of noun phrases. Then I will turn to the temporal inter-

pretation of noun phrases in existential sentences. Finally, I will show that the temporal interpretation of noun phrases in *there*-insertion relatives is crucially different from that of the same noun phrases in minimally different relatives not involving *there*. I will argue that this difference provides a further argument in favor of treating *there*-insertion relatives as a special class.

5.2 The temporal interpretation of noun phrases

The major questions that the literature on the temporal interpretation of noun phrases seeks to find an answer to are given in (1) in the form given by Musan (1999):

(1) Is the temporal interpretation of noun phrases determined or affected by the temporal interpretation of the rest of their clause?

   a. Is the temporal location of times of existence of individuals affected by the temporal interpretation of the rest of the clause?

   b. Is the temporal location of predication times of nouns affected by the temporal interpretation of the rest of the clause?

In this chapter I will address the issues surrounding the temporal location of predication times of nouns in *there*-insertion contexts, so let us focus on the question of predication times first.

Enç (1981) favors the view that the temporal location of predication times of nouns phrases is independent of the temporal interpretation of the rest of the clause. The empirical evidence supporting this view comes first from the temporal interpretation of the sentence in (2a).

(2) a. Every fugitive is now in jail. (Enç p.65)

b. Every former fugitive is now in jail.

Her argument goes as follows. Despite the fact that the sentence in (2a) is in the present tense, the predication time of nominal *fugitive* can be in the past, as evidenced by the fact that the relevant sentence has the same interpretation as (2b). This means that the temporal interpretation of the noun phrase fugitive is independent of the temporal interpretation of the sentence.

There is additional evidence against the idea that the temporal interpretation of the verb affects the temporal interpretation of noun phrases. In particular, Enç argues that this assumption leads to a number of paradoxes regarding the scopal interaction of the temporal existential quantifier with the other quantifiers in the sentence. For details regarding this issue I refer the reader to Enç's work and to Musan (1995).

Leaving the scope issue aside, what the data in (2) only indicates is that it is *possible* for a noun phrase interpretation to be temporally independent of the temporal interpretation of the verb. In her dissertation, Musan (1995) begins her argumentation by pointing out that there are indeed temporally dependent interpretations of noun phrases, in particular, in existential constructions. To anticipate, my goal is to argue that noun phrases in relatives based on existential constructions show the same temporally dependent interpretation, an interpretation which is not generally available to noun phrases in purely restrictive relative clauses. This fact, I will argue, adds to the body of evidence that *there*-insertion relatives *are* special. I will also attempt to show that interpreting a copy of the relative clause head internally to the relative clause can provide an account of the temporally-dependent interpretation of the relativized noun phrase. I begin by reviewing

Musan's account of the temporal interpretation of noun phrases in existential constructions.

5.3 The temporal interpretation of NPs in existentials

Musan (1995, 1999) observes that for a large number of speakers, there is a basic contrast regarding the temporal (in)dependence of the interpretation of noun phrases. The relevant contrasts are given in (3)-(4).

(3) Musan (1995:11)

a. Many fugitives are now in jail.

b. There are now many fugitives in jail.

(4) a. A professor was sick.

b. There was a professor sick.

For the relevant group of speakers, the individuals in the (a) examples above are easily understood as former fugitives, e.g. individuals who escaped from jail only to be caught and imprisoned again, or individuals who were sick prior to being professors, but the individuals in the (b) examples can only be construed as being fugitives from something other than the jail or being sick while being a professor.

Based on these data, Musan (1995) challenges Enç's conclusion (see also Bäuerle (1983) and Larson (1983)) that an indexical analysis is best suited to accounting for the temporal interpretation of noun phrases. Enç argues that it is only the discourse context and contextual plausibility that restrict the temporal location of noun phrases. Musan, on the other hand, argues that in the general case the temporal interpretation of the noun

phrase is highly dependent on the temporal interpretation of the rest of the clause. Temporally independent interpretations, however, when available, are a consequence of additional mechanisms affecting the interpretation of the noun phrase. In order to understand Musan's proposal it is useful to introduce the notion of existence-(in)dependent predicate. Temporally independent interpretations, as we will see, are only interesting to us in so far as they occur with predicates that are otherwise existence-dependent. This is because existence-independent predicates always trigger a temporally independent interpretation for a noun phrase, even in an existential context like (3b) above.

Kratzer (1988) discusses the contrast in the interpretation of individual-level and stage-level predicates in (5) and (6) below:

(5) a. Gregory was from America.

b. Gregory had blue eyes.

(6) a. Gregory was happy.

b. Gregory had a cold.

She notes that the sentences in (5) exhibit what she calls life-time effects. Unlike the sentences in (6), which are acceptable whether Gregory is still alive or not, the sentences in (5) are only felicitous if Gregory is dead at the time the utterance is made. Moreover, both kinds of properties can only be predicated of Gregory at a time when he is alive, as we can see from the inappropriateness of the b. examples below:

(7) a. Utterance: "Gregory is from America." - Situation: Gregory is still alive.

b. #Utterance: "Gregory is from America." - Situation: Gregory is dead.

(8) a. Utterance: "Gregory is happy." - Situation: Gregory is still alive.

b. #Utterance: "Gregory is happy." - Situation: Gregory is dead.

Interestingly, however, there is a class of predicates that do not impose any existence requirement on their subject's existence, which Musan (1995) calls "existence-independent predicates". This is shown by the felicity of the utterance containing the predicate in both situations used above:

(9) a. Utterance: "Gregory is famous." - Situation: Gregory is still alive.

b. Utterance: "Gregory is famous." - Situation: Gregory is dead.

Musan (1995) argues that life-time effects and existence-independent predicates should be given a pragmatic explanation, in terms of the informativeness of a particular sentence when uttered in a specific context.

What interests us here is the fact that even weak noun phrases in existential contexts have temporally-independent interpretations if they function as arguments of existence-independent predicates:

(10) [Talking about the class of 1995] There were few students talked about at the alumni meeting.

In contrast to (3b) where the referents of the noun phrase *many fugitives* have to be fugitives at the time of being in jail, the noun phrase *few students* in (10) can be used to refer to individuals who are no longer students.

Both Musan (1995) and Musan (1999) propose to explain temporally dependent interpretations in terms of the interaction of the presuppositionality of noun phrases with

quantification over stages of individuals. For ease of exposition I will discuss here only the version defended in Musan (1999).

The crucial correlation, Musan argues, is to be made between temporal independence and the information-status of the noun phrase:

(11) Correlation of temporal independence and hearer-establishedness:

A noun phrase occurrence that does not realize an existence-independent argument of the main predicate is temporally independent if and only if it is treated as if it were established in the discourse model of the hearer. (Musan 1999:644)

The initial prediction of this correlation is that presuppositional noun phrases should never realize a temporally-dependent interpretation, as presuppositional noun phrases are hearer-old. However, Musan observes that the ability of a presuppositional noun phrase to receive a temporally-dependent interpretation is dependent on the possibility to ignore the presupposition. Hence, the hierarchy of presuppositionality of noun phrases corresponds to their hierarchy of acceptability in *there*-constructions. Moreover, Musan (1999) argues that temporal dependence of noun phrases comes about as a result of an ontology containing stages of individuals as primitives.

Let us see now how this theory can account for the temporal dependence of non-presuppositional noun phrases in existential contexts. The assumption is that when we are confronted with hearer-new noun phrases, which introduce new discourse references, we focus just on the stages of the host individual that satisfy the noun. On the other hand, if the noun phrase is interpreted as established in the discourse, the stage can be extended to entire individuals. Consider (12).

(12) A college student invented a time machine.

Here, the indefinite noun phrase introduces a new discourse referent, which forces us to focus on the stage of the relevant individual that satisfies the property of being a college student. Since the predicate *invent a time machine* imposes an existence presupposition on its argument, at least part of the individuals's inventing a time machine must coincide with the individual's being a college student, leading to temporal dependence. However, in (13) the argument of *invent a time machine* is a definite noun phrase, which is interpreted as hearer-established causing the whole individual to be considered, rather than merely the stage when the individual was a college student.

(13) The college student invented a time machine.

In this case, the time of inventing a time machine need only intersect with the time of existence of the individual,[1] yielding a temporally-independent interpretation. Finally, if the noun phrase functions as the argument of an existence-independent predicate, the predication time of the verb does not have to intersect at all with the existence time of the subject argument, which leads to a temporally-independent interpretation even in an environment that only allows hearer-new noun phrases, such as the *there*-insertion context.

Now that we have seen how to obtain temporally-(in)dependent interpretations of noun phrases, we can discuss the interpretations of noun phrases in *there*-insertion relatives.

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[1]Željko Bošković (p.c.) points out that the time of the invention of the machine need not even intersect with the student's life, if the machine was put together using his notes, after his death. This is consistent with the fact that the NP *the college student* can receive a temporally-independent interpretation.

5.4 The temporal interpretation of NPs in *there*-relatives

We have seen above that noun phrases in existential contexts are generally given a temporally-dependent interpretation, unless they appear as arguments of an existence-independent predicate. In this section, I will discuss the temporal interpretation of noun phrases that are relativized out of a *there*-insertion context. The basic contrast that I will address is the one in (14) and (15).

(14) #I will take with me every fugitive that there is in that jail.

(15) I will take with me every fugitive who is now in that jail.

As pointed out by Sharvit (In progress), *fugitive* in the *there*-insertion relative in (14) has to be interpreted as being temporally-dependent on the time of being in jail, which is responsible for the oddity of the sentence. However, no such oddity is present in (15), where *fugitive* heads a restrictive relative clause and has the option of being interpreted externally to the relative clause. (14), however, can still be easily accepted in a situation such as the following:

(16) A draft dodger during the Vietnam era is on the run in Canada and gets arrested by the Canadian authorities for stealing a car. (J. Bobaljik (p.c.))

In this situation the time of being a fugitive overlaps with the time of being in jail without creating a contradiction. However, situations where a contradiction arises if a temporally-dependent interpretation is forced can provide better evidence that the contrast is available, at least for the speakers for whom there is a contrast in the interpretation of noun phrases in non-existential and existential contexts as in (3)-(4) above.

In the following examples, a temporally dependent interpretation of the noun phrases *unemployed people*, *pregnant women* and *hostages* would lead to unacceptability due to the presence of a prepositional/noun phrase (underlined in the examples) that is incompatible with the state described by the noun phrase:

(17) Situation: Jane is organizing courses to help unemployed people get new skills for the job market. She even follows up on them after they have gained employment. She comments:

a. The few *unemployed people* who are in steady positions now have all successfully completed my course.

b. #The few *unemployed people* that there are in steady positions now have all successfully completed my course.

c. The few *people* that there are in steady positions now have all successfully completed my course.

(18) Situation: Susan is organizing fitness classes for pregnant women, as well as for women who want to get back into shape after giving birth. Some of the women attended both programs. Susan comments:

a. The few *pregnant women* who attended both my prenatal and my postnatal class are happier than the women who chose to attend only the second one.

b. #The few *pregnant women* that there were in both my prenatal and my postnatal class are happier than the women attending just the second one.

c. The few *women* that there were in both my prenatal and my postnatal class are happier than the women attending just the second one.

(19) Situation: During a hostage situation, most of the hostages have been released and are now outside the building where the others are being kept.

a. The few *hostages* that are now outside the building are crying with happiness.

b. #The few *hostages* that there are now outside the building are crying with happiness.

c. The few *people* that there are now outside the building are crying with happiness.

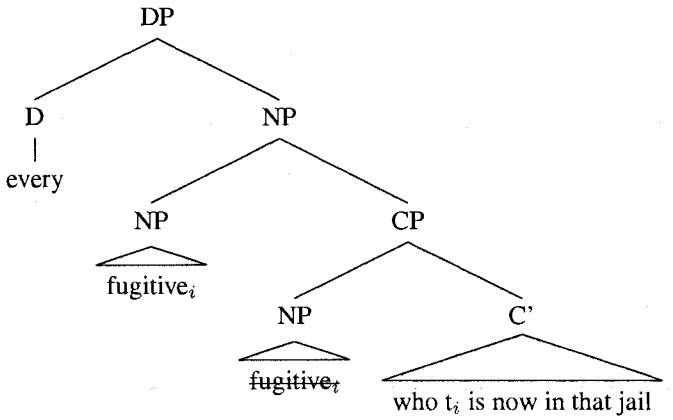
What we notice is that, unlike the non-existential relatives in the (a) examples, the relatives based on existential constructions in the (b) examples are infelicitous. Moreover, notice that the infelicity disappears from the existential relatives in the (c) examples above when the noun phrase is changed to one that is not incompatible with the underlined phrase.

The data above indicate at the very least that *there*-insertion relatives have indeed some properties that distinguish them from purely restrictive relatives (contra McNally (2006)). However, it would be desirable to show that the temporally-dependent interpretation can be explained if we assume that the head of a *there*-insertion relative is always interpreted internally to the relative clause, as argued by Carlson (1977) and Heim (1987).

Consider first the case of the restrictive relative in (15). As we saw in chapter 4, restrictive relative clauses have been argued extensively to require two different structures.

Sentences where reconstruction of the relative clause head would cause a condition C violation argue in favor of a matching analysis, while sentences where reconstruction is needed for appropriate variable binding argue for a raising analysis. On the matching analysis the relative clause in (15) has a structure as in (20), based on Hulsey and Sauerland (2006).

(20) a.

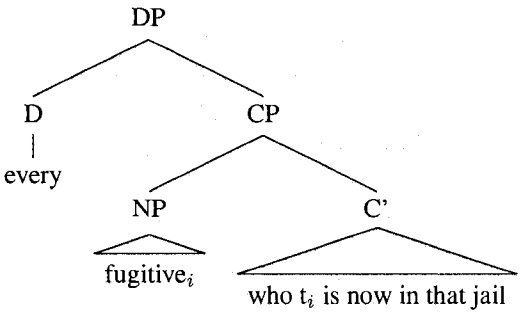


b. every fugitive λx. who x is now in jail

Since the trace in the relative clause is of type <e>, it will be interpreted as a strong noun phrase, which is hearer-established and, according to Musan (1995, 1999), associated with an individual in its entire temporal extendedness. The predicate *be in jail* imposes an existence presupposition on its argument, so the event of being in jail must have taken place during the time of existence of the individual, though, crucially, not necessarily during the time of the individual's being a fugitive. This results in a felicitous, temporally-independent interpretation of the relative clause.

The relative clause in (15) can also be obtained from a raising structure, where the noun *fugitive* is interpreted internally to the relative clause as in (21), again based on the structures proposed by Hulsey and Sauerland (2006).

(21) a.



b. every λx. who the$_x$ fugitive is now in jail

However, the noun phrase that is interpreted inside the relative clause is definite, which means that, as before, it will be associated with an individual in its entire temporal extendedness. In that case, we expect to obtain a temporally-independent interpretation, just like in the matching analysis above.

The existence of a temporally-independent interpretation does not preclude the existence of a temporally-dependent one. Recall, however, that *there*-insertion relatives, as in (14), only show temporally-dependent interpretations. Given what we saw above, that strong NPs only receive temporally-independent interpretations, we can conclude that it is undesirable for *there*-relatives to contain a definite trace, either one of type <e>, as suggested by McNally (2006), or a complex definite, as proposed by Hulsey and Sauerland (2006) for restrictive relative clauses. The obligatoriness of a temporally-dependent interpretation is, however, compatible with the semantics for *there*-relatives I have argued for in chapter 2. There we are relativizing over individual-degree pairs, which I take to be weak, in line with Heim's assumption that an individual variable embedded in a degree expression does not cause the expression to be strong.

(22) [[EST-C] λn.λx.fugitives(x) & in jail(x) & |x|≥n]

If the noun phrase interpreted inside the relative clause is weak, we obtain a temporally-dependent interpretation along the lines of the interpretation of (12) above. First, the weak NP will be interpreted as hearer-new, therefore only the relevant stage of the individual is going to be considered, i.e. a slice of an individual that satisfies the property of being a fugitive. In order to interpret the relative clause this stage also needs to intersect with the property of being in jail. This leads to infelicity, as attested, because the property of being fugitive and being in jail cannot be predicated of the same stage of an individual so the intersection will come out empty.

5.5 The temporal interpretation of NPs in ACD relatives with amount readings

We have seen above that the temporal interpretation of NPs in *there*-relatives is different from that of NPs in restrictive relative clauses. The former are always interpreted as temporally dependent when they do not realize an existence-independent predicate, while the latter can always receive a temporally independent interpretation. I argue that this provides good evidence that *there*-relatives are special, contra McNally (2006), who argues that they are purely restrictive. Moreover, I show that if the relative clause internal copy of the relative head NP is realized as an indefinite noun phrase, we can explain, following Musan (1999), how the temporally-dependent interpretation arises.

In this section I will discuss the temporal interpretation of NPs in the ACD relatives that show amount readings. Recall that I have argued extensively in chapter 2 and chapter 3 that degree relativization in ACD relatives with amount readings does not yield the right amount interpretations. If this is the case, we expect that these relatives should pattern

in their temporal interpretation with restrictive relatives rather than with *there*-insertion relatives.

This is exactly what we find. Unlike (23), (24) can be interpreted as referring to former fugitives who have been captured, who Marv is planning to release now.

(23) I will release all the prisoners that there are in the prison now.

(24) Marv will release from this jail all the fugitives that he can.

The fact that (24) is grammatical despite the fact that the time of being a fugitive and the time of being in prison do not overlap suggests that a temporally independent interpretation is available here, just like in the case of restrictive relatives discussed in the previous section.

The other cases discussed in section 5.4 above pattern in the same way. Unlike the existential relatives, the ACD counterparts are not infelicitous, which shows that they do not impose temporal dependence on the relativized noun phrases. Crucially, all the relativized noun phrases can easily be interpreted as if they contained the word *former*.

(25) Jane continued to help in their new positions all the unemployed people that she could.

(26) Last year, Susan helped all the pregnant women she could to get back to their pre-pregnancy shape.

(27) Outside the building, Marv calmed down all the hostages that he could.

5.6 Summary

Musan (1995, 1999) argues against the proposal put forth in Enç (1981) that the temporal interpretations of noun phrases are always independent of the temporal interpretation of the clause. She observes that there are environments that generally force temporally dependent interpretations, *there*-insertion contexts being one such example.

The data from the temporal interpretation of noun phrases in relative clauses that have been traditionally grouped together under the term *amount relatives* argue against a uniform treatment. While *there*-relatives only allow a temporally dependent interpretation for the noun phrases that head them, ACD relatives with amount readings always allow temporally independent interpretations. This provides additional evidence in favor of the proposal I am defending in this dissertation, which is that the two types of relatives should receive different semantics.

CHAPTER 6

CONCLUSIONS

The purpose of this dissertation has been to shed some light on the properties of the class of relative clauses which Carlson (1977) called amount relatives. The reason why accounting for their properties has been so difficult is the fact that both the syntactic and the interpretational restrictions that have been treated as characteristics of this class of relatives are, in fact, not present across-the-board among Carlson's amount relatives. Despite this fact, the Carlson - Heim - Grosu and Landman tradition aimed to provide a uniform analysis of these relatives. The starting point of this dissertation is the idea that the differences between the various types of "amount relatives" should be taken at face value, and that the push for uniformity is only contributing confusion about the status of these relatives.

There has been one previous attempt, namely McNally's, to prove that the uniformity analysis is misguided. However, as I have shown in chapter 2, the facts do not point in the direction that McNally is taking, which is that *there*-relatives are restrictive relatives, while the other two types, which actually involve amounts in their interpretation, are amount (or degree) relatives. My proposal, which I presented in chapter 2, is that *there*-relatives crucially involve degree relativization, unlike ACD relatives, which, given their syntactic properties, cannot be assigned the same type of semantics. In particular, I have proposed that *there*-relatives contain a covert superlative morpheme which has the function of "absorbing" the degree variable and yielding the desired individual interepretation.

Regarding the interpretation of the ACD relatives, the contribution of this dissertation is not a specific semantics, but rather a detailed discussion of the various interpretational possibilities and of the difficulties involved in identifying a compositional semantics that

can predict all the relevant readings. In addition, in chapter 4 I provided cross-linguistic evidence that the relativizer restriction in some English ACD relatives, which was Carlson's initial motivation for a uniform semantics, is orthogonal to the issue of amount interpretation.

Chapter 5 contributes additional evidence from the temporal interpretation of noun phrases in relative clauses that *there*-relatives are special and do not pattern with restrictive relative clauses and with ACD relatives with amount readings.

Adopting the view that *there*-relatives and ACD relatives have different semantics has at least two advantages. First, it allows us to separate the issue of why there is no amount/degree interpretation in *there*-relatives from the issue of how to obtain an amount interpretation in ACD relatives (or modal relatives). This is an important result as the missing reading in the former group is *not* identical to the reading we need to account for in the latter group. Second, it gives us a way to explain why the relativizer restriction associated with ACD amount relatives in English is not universal. If indeed the relativizer restriction were linked to the need for degree relativization, on which obtaining an amount reading was assumed to depend on, the cross-linguistic data presented in chapter 4 would be quite surprising.

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