

# An Indefinite Amount Relative: Evidence from Romanian

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## 1 Introduction

In this talk I will give an overview of the properties of two kinds of MP-headed amount relatives in Romanian, like the ones in (1) below. Along the way I hope to:

- Survey some peculiarities of the data
- Propose an analysis for (at least part of) the data
- Convince you that the data raises interesting theoretical issues
- Suggest ways of thinking about some of these issues

- (1) a. [Cele nouă kilograme **cât** cântărește \_\_ bagaju-l tău de mâină] nu te vor  
the nine kilos how-much weighs luggage-the your of hand not Cl will  
împiedica să te urci în avion.  
prevent Subjunctive Cl climb in plane  
b. [Nouă kilograme **cât** cântărește \_\_ bagajul tău de mâină] nu te vor  
nine kilos how-much weighs luggage-the your of hand not Cl will  
împiedica să te urci în avion.  
prevent Subjunctive Cl climb in plane  
(2) [The nine kilos that your luggage weighs \_\_] won't prevent you from boarding the plane.

(2) is a rough approximation of the translation of both (1)a, which I will call the definite version of the amount relative, and (1)b, which I will call the indefinite version of the amount relative.

## 2 Amount Relatives

A number of researches (e.g., Carlson 1977, Heim 1987, Grosu&Landman 1998) have argued for a distinct third class of relative clause, in addition to the traditional restrictive and appositive relatives. Amount relatives share a number of exceptional syntactic and semantic properties, differentiating them from ordinary restrictive relatives:

*They show restrictions in the relativizers they allow.*

For example, (3) is grammatical with *that* or the empty relativizer, but it is bad with *which*.

- (3) John stole everything {\*which, that, Ø} there was in Mary's bag.  
(cf. *John stole everything {which, that, Ø} Mary had in her bag.*

*They show restrictions in the determiners they can combine with.*

For example, (4) only allows determiners with maximal interpretations like *every*, *all* and *the*.

- (4) John stole {everything, {the, \*some, \*four} watches} there was/were in Mary's bag.  
 (cf. *John stole {everything, {some, four, the} watches} which was/were in Mary's bag.*)

*They don't allow stacking.*

For example, in (5) it's not possible to associate in a non-conjoined manner the same head with two amount relatives.

- (5) \*The books that there are in my bag that there were on the table.  
 (cf. *The books that there are in my bag that were on the table*)

*They sometimes display an ambiguity between a substance reading and a quantity reading.*  
 Example (6) has an substance reading in which Marv took with him every (relevant) book that was of an appropriately small size, and a quantity reading in which Marv took with him as many books as he could fit in his bag.

- (6) Marv took with him every book that he could fit in his bag.

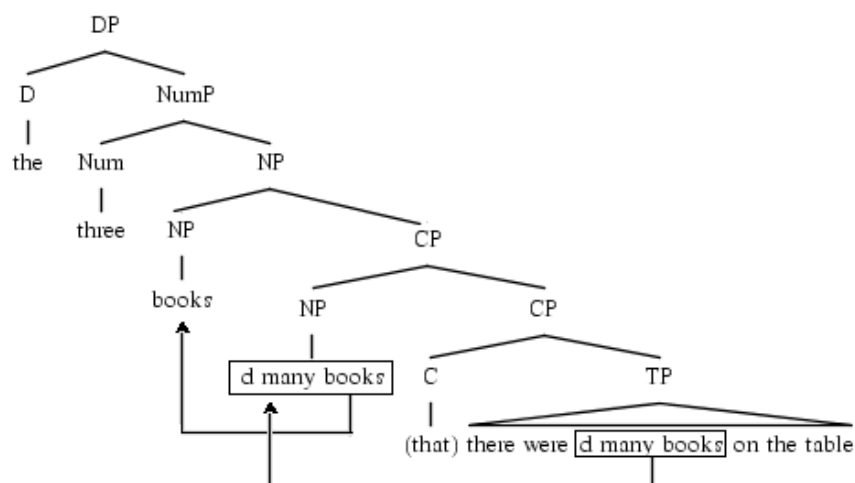
Carlson, Heim and Grosu&Landman suggest analyses in which amount relatives are formed by:

- (a) Movement of a null degree phrase [*d-many X*] to Spec,CP,
- (b) Deletion in situ, under identity of sense with material within the external head, of the remainder of the material in the gap position of the relative clause, and
- (c) Application of a *maximalization* operation, which has the effect of mapping the set denoted by the clause to the (singleton) maximal degree in that set.

The head noun is interpreted CP-internally. The featural content of the maximal projection (the DP) is determined by its head. The syntax of the relative in (7) is given in (8) below:

- (7) (Marv took with him) the three books that there were on the table

(8)



### 3 Amount Relatives in Romanian

Romanian has two possible relativizing morphemes, both of which are *wh*-words.

- *Care* ('which') can modify relatives headed by entities.
  - *Cât* ('how much') can only modify measures and is inapplicable to ordinary individuals.
- Care* has one fixed form, while *cât* inflects for number and gender.

#### MP-Headed Relatives:

*English-type languages* (these include French, Hebrew, Bulgarian, Turkish, and many others) have the amount relative construction in (9) available to them:

- (9) [The nine kilos that your luggage weighs \_\_\_] won't prevent you from boarding the plane.

*Romanian-type languages* (so far these include only Romanian and Albanian) have both the definite construction parallel to (9) (= (10)a) and an indefinite relative construction in (10)b, which is ungrammatical in English-type languages.

- (10) a. [Cele nouă kilograme **cât** cântărește \_\_\_ bagaju-l tău de mână] nu te vor  
the nine kilos how-much weighs luggage-the your of hand not Cl will  
împiedica să te urci în avion.  
prevent Subjunctive Cl climb in plane  
'The 9kg, which are as many as you luggage weighs, will not prevent you from  
boarding the plane'
- b. [Nouă kilograme **cât** cântărește \_\_\_ bagajul tău de mână] nu te vor  
nine kilos how-much weighs luggage-the your of hand not Cl will  
împiedica să te urci în avion.  
prevent Subjunctive Cl climb in plane  
'9kg, which are as many as you luggage weighs, will not prevent you from  
boarding the plane'

The definite and indefinite constructions are differentiated by two properties:

- **Quantity /substance ambiguity:** definite amount relatives can have both a quantity reading. The indefinite relative can only have a quantity reading.<sup>1</sup>

- (11) [\*(Cele) cinci mile **cât** se întinde drumu-l dintre MIT și Harvard  
the five miles how.much refl. stretches road-the between MIT and Harvard  
sînt pline de hârtoape  
are full of potholes  
'The 5 miles that the road stretches between MIT and Harvard are full of potholes']

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<sup>1</sup> This fact requires further testing and will not be fully addressed in this handout. It seems not to hold for speakers who only accept the relatives in (11) as appositives, who *can* have a substance reading in the indefinite version (Donca Steriade, p.c.).

- **Conditions of use:** the definite construction is used when the fact that your luggage weighs 9kg is known in the context, or *presupposed*. In the indefinite construction fact that your luggage weighs 9kg *is part of the assertion*.

The test that works best here is the *Hey Wait a Minute!* test (von Stechow, 2004). In response to the speaker's utterance of  $\phi$ , the hearer can respond: *Hey wait a minute! I didn't know X!* if and only if  $\phi$  presupposes X.

- (12) A: John's dog doesn't like to play.  
B: Hey wait a minute! I didn't know John has a dog.
- (13) A: John doesn't have a German Shepherd.  
B: # Hey wait a minute! I didn't know John has a dog!

- Possible responses to the claims in both versions of (10):  
Disputing the matrix-assertion (expect: bad for both constructions)

- (14) Hey wait a minute! I didn't know it won't prevent you from boarding the plane!

Disputing the fact in the relative clause (expect: presupposed-good, asserted-bad)

- (15) Hey wait a minute! I didn't know it weighs 9 kg!

- Results:  
→ (14) is infelicitous as a response to both the definite and indefinite versions of (10).  
→ (15) is infelicitous for the indefinite relative, but perfectly fine for the definite version.
- Conclusion: we have a presupposition in (10)a but not in (10)b.

To summarize the facts about the definite and indefinite MP-headed relatives,

	the bag weighs 9kg	'won't prevent you...'	the bag can weigh more than 9kg	substance reading
Definite (10)a	presupposed	asserted	No	Yes
Indefinite (10)b	asserted	asserted	No	No

## Entity-Headed Relatives

Entity-headed relatives can be modified by both of the relativizers *care* and *cât*:

- (16) a. [Cei nouă cai pe **care** i-a cumpărat Ion] sunt din Arabia.  
the 9 horses Acc which Cl.Pl.M.Acc-has bought Ion are from Arabia  
'The nine horses that John bought are from Arabia'
- b. [Nouă cai pe **care** i-a cumpărat Ion] sunt din Arabia.  
9 horses Acc which Cl.Pl.M.Acc-has bought Ion are from Arabia  
'Nine horses that John bought are from Arabia'

- (17) a. [Cei nouă cai **câți** a cumpărat Ion] sunt din Arabia.  
the 9 horses how.many.M.Pl has bought Ion are from Arabia  
'The nine horses, which are as many as John bought, are from Arabia'  
b. [Nouă cai **câți** a cumpărat Ion] sunt din Arabia.  
9 horses how.many.M.Pl has bought Ion are from Arabia  
'Nine horses, which are as many as John bought, John bought are from Arabia'

Applying similar tests to these examples, we get the following results:

- The definite article carries with it a uniqueness presupposition. It is infelicitous to continue (16)a and (17)a with (18).  
→ (16)b does not impose a uniqueness presupposition. It's possible to continue with (18).  
→ *Unexpectedly, it is impossible to continue (17)b with (18).* Rather, (17) refers to the totality of horses bought by John, despite the lack of a definite article.  
(18) *The other horses John bought are from Libya*

To summarize the facts about the definite and indefinite MP-headed relatives,

	John bought 9 horses	They are from Arabia	There can be more than 9 horses that John bought
Definite (16)(16) a	presupposed	asserted	No
Indefinite (16)b	asserted	asserted	Yes
Definite (17)a	presupposed	asserted	No
Indefinite (17)b	asserted	asserted	No

#### 4 An analysis

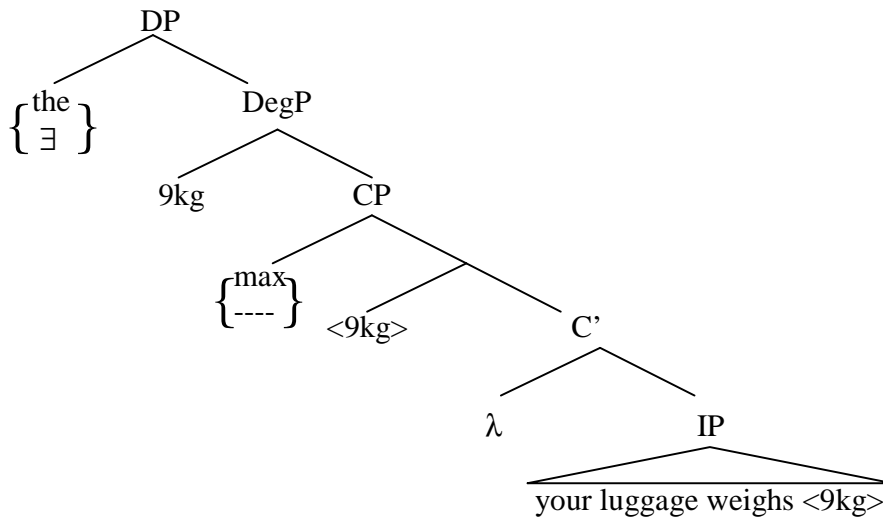
Following Bhatt (2002) and others, I assume that amount relatives contain a relative-internal representation of the external head. For convenience, I assume a matching analysis of amount relatives, though nothing hinges on this assumption.

To account for the uniform behavior of (10)b and (17)b, differentiating it from (16)b, I propose:

- *Care* triggers *abstraction*.  
→ *Cât* triggers both *abstraction* and *maximalization*.

→ *This attributes maximality and existence to different elements in the clause. The maximality reading of cât-relatives is independent of its definiteness. It's possible to have one, but not the other.*

(19)



For simplicity, I assume:

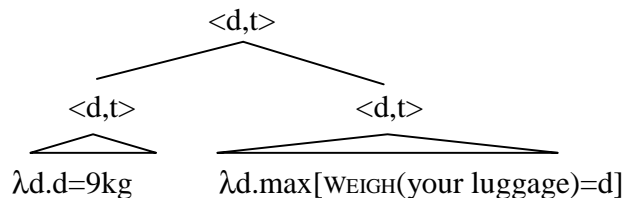
(20)  $\llbracket \text{weigh} \rrbracket = \lambda x. \lambda d. \text{WEIGH}(x)=d$

(21)  $\llbracket \text{that your luggage weighs} \rrbracket = \max(\lambda d. \text{WEIGH}(\text{your luggage})=d)$

(22)  $\llbracket 9\text{kg} \rrbracket = \lambda d. d=9\text{kg}$

Above the CP level we are combining two singleton sets using Predicate Modification.

(23)



→ We are combining two singleton sets; the resulting set will have at most one member.

→ Using the definite article - we presuppose that the set is not empty.

→ Using an indefinite version - we allow for the possibility that the set is empty.

→ *The existence or lack of a definite article thus predicts the presupposition facts of the definite vs. indefinite constructions.*

### Deriving the different readings:

- Current judgments are contradictory
- Following the ones which claim to disallow a substance reading in the indefinite relative, I propose an analysis which charges the definite article with creating that reading.

### The definite amount relative: quantity reading

Concentrating on the definite version of the amount relative, the next step is to combine the singleton set in (23) with the definite article. For that, we require a new entry for  $\llbracket \text{the} \rrbracket$ :

$$(24) \quad \llbracket \text{the} \rrbracket_{\langle \langle d, t \rangle, d \rangle} = \lambda f_{\langle d, t \rangle} : \text{there is a contextually salient } d: f(d)=1 . \\ \text{the maximal } d \text{ in the context s.t. } f(d)=1$$

This will return an entity of type  $d$ , which the matrix VP can take as its argument, returning a truth value. We thus end up with the quantity reading of the definite amount relative.

### The definite amount relative: substance reading

In order to derive the substance reading of the amount relative, we need an operation that will shift the denotation of the whole DP from a type  $d$  to a type  $e$ . If we take the facts about the quantity/substance ambiguity to hold, it is convenient to give the responsibility of shifting to the definite article itself. I thus offer the entry in (25):

$$(25) \quad \llbracket \text{the} \rrbracket_{\langle \langle d, t \rangle, e \rangle} = \lambda f_{\langle d, t \rangle} : \text{there is a contextually salient } d: f(d)=1 . \\ \text{the contextually unique } x \text{ such that: } x \text{ measures } d$$

The entity of type  $e$  that (25) returns can combine with the matrix VP, returning a truth value.

*→ If the definite article is responsible for creating the substance reading, then no such reading is predicted to be available to the indefinite version of the amount relative.*

### The indefinite amount relative

Turning to the indefinite amount relative, we left the derivation at the point of intersecting the relative clause with the head noun, yielding a set of type  $\langle d, t \rangle$  (see (23)). For the derivation to proceed, we need to be able to refer to an entity that can combine with the matrix predicate.

The most reasonable way to do that is through existential closure. This operation will return the degree such that it equals 9kg and is the weight of your luggage, which can combine with the matrix predicate and return a truth value.

## 5 Some thoughts and predictions

### How we escape Maximize Presupposition

→ Maximize Presupposition (Heim 1991) blocks the use of the indefinite determiner when the maximalization presupposition associated with the definite determiner is satisfied.

→ This is the logic that normally explains the ungrammaticality of sentences like (27),

(26) #A president of the United States lives in the White House

→ Following the argumentation in this paper, it is clear why it is possible to use an indefinite in amount relatives such as the ones discussed in this handout. The maximality conveyed by the relative clause is introduced by the relativizer *cât*. *Existence is independent of maximality*: the property in the relative clause (e.g., that the luggage weighs 9kg) is free to be either asserted or presupposed in the context.

→ *Why can't English amount relatives (which are analyzed using a max operation) have an indefinite variant similar to that of Romanian?* Why can't (27) assert that there were exactly 3 books on the table, and I took them?

(27) #I took with me three books that there were on the table.

### Existential amount relatives?

Many researchers have argued that only determiners that preserve maximality into the quantification can combine with amount relatives (see Grosu&Landman:146 for argumentation).

→ The existential closure I propose contradicts this generalization.

One possible way to avoid this is to assume a covert *iota* operation instead of existential closure at the DP level of the indefinite relative. However, it has two problems: explaining the presupposition facts, and the correlation of the availability of a substance reading and the presence of the definite article. I conclude that existential closure is the better option.

→ *A possible way to proceed:*

Perhaps there is a connection between the availability of an indefinite amount relative in Romanian and the fact maximalization is overt in that language.

Maximalization in English-like amount relatives is introduced by the operator that heads the DP (the definite article or the quantifier), not by a covert MAX operator inside the clause.



### What are substance readings anyway? (on using context saliency to pick referents)

→ Definites give some leeway to the interpretation of referring expressions: Shifted reference. For example, a waiter can say (28) to the cook at a restaurant:

(28) The ham sandwich is getting upset.

There are sentences in which it seems that we are picking out an individual that has a certain degree. *In these sentences, the measure phrase has to be somehow modified, suggesting that the referent is contextually chosen and must be somehow identified* (based on Heim, p.c.):

(29) The two miles that the road stretches between MIT and Harvard are full of potholes

(30) Those two miles are full of potholes

(31) The first mile is the hardest to run

(32) The last year of graduate school is the busiest

(33) #The two miles are full of potholes

We can also use such phrases to denote something other than an entity (David Pesetsky, p.c.):

(34) The 60 miles we flew were full of birch trees

(35) The 10 pounds you lost are glorious

(36) The 2 miles I drove home after dropping him off at the airport were melancholy

The notions of *path*, *process*, *achievement*, *fact* all become relevant.

→ *The substance reading is part of a larger family of reference shifts that occur in this context. How substance readings should be analyzed is part of a larger question of how sentences refer to entities like the ones mentioned above.*

→ Possibly related:

(37) London is so unhappy, ugly and corrupt that it should be destroyed and rebuilt 100 miles away (Chomsky 1992)

My current entry for `[[the]]` of type `<<d,t>,e>` relies on context saliency to pick the relevant individual to which the matrix predicate applies. However, it seems possible to construct scenarios that are potential problems for such an approach (Danny Fox, p.c.):

(38) The cupboard measures 20 inches in width and 20 inches in length. The 20 inches that the cupboard measures in width are a problem (because it doesn't fit in the hallway).

→ Both 20 inches in width and 20 inches in length are salient in this context. It is not clear what will force us to consistently choose one over the other. My current entry (wrongly) predicts presupposition failure in this case.

## 6 Conclusion

- Romanian has a definite and an indefinite variant of amount relatives.
- The relativizer *cât* has a function of maximalization.
- Separating existence from maximalization explains the facts about the indefinite *cât*-relatives' maximal interpretation, as opposed to the indefinite interpretation of *care*-relatives.
- The presence of lack of a definite article accounts for the presupposition facts.
- The analysis I propose raises a question about the effect of Maximize Presupposition on English amount relatives
- Substance readings must be a subject of further work.

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