# Entity-denoting amount relatives: The 'smoking gun'

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## 1 Background

Carlson (1977) drew attention to a class of entity-denoting non-appositive relatives in English, overtly characterized by a 'gap' in the existential *there* BE – XP context, as in (1a), which share a number of striking properties with degree-denoting relative constructions, as in (1b), in particular, properties that are not found with 'straightforward' restrictive relatives, as in (1c).

(1) a. [The three students (that/*who) there are __ in the office] arrived an hour ago.
b. [The 250 pounds (that/*which) you weigh __ ] endanger your health.
c. [The three students who __ are in the office] arrived an hour ago.

Two of these properties, as subsequently refined by Grosu and Landman (henceforth: GL) in Grosu & Landman (to appear), are language independent: i. The complex DP immediately containing the relative is felicitous with definite or universal, but not with existential import, and ii. two relatives not separated by comma intonation may not 'stack', nor may they coordinate with proper intersective import. iii. A third property is English specific, and is illustrated in (1): the relative clause may be introduced by *that* or ∅, but not by *who/which*.

These shared properties, the third in particular, as well as the well-known observation that entities in the existential context appear to be locally bound, and thus not obviously available for abstraction, led Carlson to the hypothesis that data like (1a) involve relativization/abstraction over degrees, in particular, degrees that 'modify' (i.e., measure) entities. This hypothesis gives rise to a *prima facie* puzzle, which Carlson did not solve, and for which Grosu & Landman (1998) offered a solution. The puzzle is: if abstraction targets degrees, how can the complex DP denote entities? GL's proposed solution was: abstraction at the relative CP level targets a variable over ordered pairs of degree and entities they measure, the resulting abstract is mapped by an operation of Maximalization to a singleton that contains only the pair consisting of the maximal entity and the maximal degree in the input abstract (if there is such a pair, the operation being undefined otherwise), and a subsequent operation called SUBSTANCE ensures that the complex NP translates as a singleton containing the maximal entity (in which the maximal degree is implicit). Grosu & Landman (to appear) explain in detail how the assumption of Maximalization can account for the language-independent properties i.-ii. indicated in the preceding paragraph.

Subsequently to Grosu & Landman (1998), a number of authors proposed alternative analyses of data like (1a), which were evaluated in Grosu & Landman (to appear: section 5), who argued that two of them, due to Herdan (2008) and McNally (2008), rely on incorrect *empirical* assumptions, and that a third, due to von Fintel (1999), is close to their analysis, but unnecessarily more complex.

This brief paper purports to be complementary to Grosu & Landman (to appear: section 5.3), which critiqued McNally's (2008) counter-proposal. We address here a *conceptual* objection raised by McNally with respect to GL's analysis, to the effect that it is puzzling, and presumably implausible, to assume that abstraction over degrees operates in a construction that denotes entities. We will argue, on the basis of data from Romanian, which have in fact been signaled in some earlier literature (e.g. Grosu, 2013; Kotek, 2013) that the kind of construction that McNally doubted the existence of is incontrovertibly found in at least one natural language, Romanian, and must thus be allowed by UG.

## 2 The facts of Romanian

In arguing against GL, McNally noted that while *who/which* are typed in English as relativizers of entities, null operators are un-typed, and may thus be used as relativizers not only of degrees, but also of kinds, properties, and, of course, entities. The inventory of Romanian relativizers is different, and includes, in addition to *care* 'who/which', an inflected set drawn from the interrogative paradigm and typed for degrees, its forms being *cât* 'how-much.MSG', *câtă* 'how-much.FSG', *câţi* 'how-many.MPL', and *câte* 'how-many.FPL'. Degree relative pronouns are the only option in the counterparts of English constructions like (1b), as illustrated in (2).

(2) [(Cele) 12 kilograme {*cât*/ *∅/ *pe *care* le} cântăreşte bagajul tău de
the 12 kilos how-much ACC which CL weighs luggage-the your of
mână] nu reprezintă o problemă.
hand not represent.3 a problem
'[*(The) 12 kilos {that, *which} your hand-luggage weighs] do not constitute a problem.'

Now, the degree pronouns of the kind used in (2) may also be used in entity-denoting DPs, thereby providing what we view as incontrovertible evidence for the existence in natural languages of the kind of construction deemed implausible by McNally. Before illustrating this state of affairs, we point to a property of Romanian grammar that makes it hard to illustrate exact Romanian counterparts of English data like (1a). Thus, Romanian lacks an overt dummy subject in existential constructions, so that the counterparts of the English constructions in (3a), (3b) are distinguished only by the pre- versus post-copular position of the italicized nominal.

(3) a. *Doi copii* (nu) sunt în cameră.
two children (not) are in room
'Two children are not in the room.'

b. (Nu) sunt *doi copii* în cameră.
(not) are two children in room
'There are(n't) *two children* in the room.'

A consequence of this state of affairs is that one cannot construct an unambiguous Romanian counterpart of (1a). To see this, consider (4), and note that the gap can in principle be either pre- or post-copular.

(4) [Cei zece soldaţi *câţi* (__) sunt (__) pe baricadă] au sosit acum o
the.MPL ten soldiers how-many are on barricade have arrived now one
oră.
hour
'The ten soldiers that (there) are on the barricade arrived an hour ago.'

This situation does not, however, prevent us from demonstrating the existence in Romanian of the kind of construction at issue. With respect to English, it was necessary to resort to the existential context because the null operator is in principle compatible with both a degree and an entity interpretation, and the existential context blocks the entity construal. In Romanian, however, the overt degree pronoun is unambiguous, and the existence of the relevant construction can be demonstrated regardless of the position of the gap. In fact, the existence of such constructions can be demonstrated with relatives that do not include a copular construction, as in (5). Note that the fluent English translation of this example, which uses a null operator, is analytically ambiguous in a way the Romanian sentence is not.

(5) [Cei zece studenţi *câţi* aşteaptă la uşă] îşi pierd răbdarea.
the.MPL ten students how-many wait at door REFL.DAT lose patience-the
'The ten students that are waiting outside are losing patience.'

The data in (4)-(5) show clearly that involvement of degrees in the relative-internal abstraction process is compatible with an entity-denotation for the complex DP, and thus constitute the 'smoking gun' alluded to in the title. Thus, McNally's conceptual objection to GL's analysis seems unjustified.

For completeness, we note that data like (4)-(5) do not overtly demonstrate that abstraction must target **pairs** of degrees and entities, since the entity member of the pair posited by GL is null, as in English. It is thus in principle possible to envisage an analysis that involves abstraction strictly over degrees, the entity-denotation of the complex DP being accounted for in some other way. Such an analysis was in fact proposed by von Fintel (1999) for English data like (1a), and could be extended to Romanian data like (4)-(5). For a critique of this analysis and argumentation that it is inferior to the one proposed by GL, see Grosu & Landman (to appear: section 5.2).

We will conclude this paper by showing that data like (4)-(5) exhibit the maximalization properties of data like (1a). Maximalization was inferred by GL on the basis of the two language-independent effects noted in the first paragraph of this paper, i.e., i. infelicity of existential force for the complex DP, and ii. unavailability of stacking or coordination with proper intersective import.

i. is illustrated with respect to both Romanian and English in (6). Note the contrast between the versions with *care* and *who*, which exhibit restrictive relatives, and the versions with *câţi* and *there*, which exhibit amount relatives.[1]

(6) În acest birou, sunt acum [doi studenţi *care*/ #*câţi* au fost aici şi ieri].
in this office are now two students which how-many have been here also yesterday
"In this office, there are now [two students {*who*, #*that there*} were here yesterday as well]."

Concerning property ii., consider (7) and (8).

(7) [Toţi turiştii *care* se aflau pe vapor la 3 pm (şi) *care* se aflau pe insulă
all tourists-the who REFL found on boat at 3 pm (and) who REFL found on island
la 2 pm] au ajuns târziu acasă.
at 2 pm have arrived late home
'[All the tourists *who* were on the boat at 3 pm (and) *who* were on the island at 2 pm] returned home late.'

(8) [Toţi turiştii *câţi* se aflau pe vapor la 3 pm #(şi) *câţi* se
all tourists-the how-many REFL found on boat at 3 pm (and) how-many REFL
aflau pe insulă la 2 pm] au ajuns târziu acasă.
found on island at 2 pm have arrived late home
'[All the tourists that *there* were on the boat at 3 pm #(and) that *there* were on the island at 2 pm] returned home late.'

Assume for both of them the following context: The individuals $a$, $b$ and $c$ were on the boat at 3 pm and the individuals $b$, $c$ and $d$ were on the island at 2 pm. In the reduced version of (7), if there is no comma between the relatives, both clauses are restrictive, and their construal is necessarily intersective, so that the complex DP denotes the sum $b \sqcup c$. In the full version of (7), this intersective construal is also available, along with one obtained by the union of the two relatives, in which case the complex DP denotes the sum $a \sqcup b \sqcup c \sqcup d$. In (8), on the other hand, where we have *câţi/there* clauses, intersective construals are excluded, with the

1 After this paper had gone to press, we realized that the deviance of the version of (6) with *câţi*, while real, is due not to indefiniteness *per se*, but to the fact that no students other than those whose presence is asserted are contextually taken into account. In (i), both versions are in principle felicitous, except that the reduced, but not the full one, is felicitous just in case the speaker assumes a context in which there are horses that Ion did not buy (so that a natural continuation might be *cei pe care nu i-a cumpărat Ion sunt din Libia* 'those that Ion didn't buy are from Libya').

(i) [(Cei) nouă cai câţi a cumpărat Ion] sunt din Arabia.
the nine horses how-many has bought Ion are from Arabia
'The nine horses that Ion bought are from Arabia.'

Importantly, the reduced version, despite its indefiniteness, exhibits maximality, since the following continuation is disallowed: *ceilalţi cai cumpăraţi de Ion sunt din Libia* 'the other horses Ion bought are from Libya'. This construction is of a type that does not exist in English. For detailed discussion of its properties, the interested reader is referred to Grosu & Giurgea (to appear), which is also dedicated to Josef Bayer on the occasion of his retirement.

result that the full version unambiguously denotes $a \sqcup b \sqcup c \sqcup d$, and the reduced version is infelicitous.

Summarizing the results of this paper, we have shown that entity-denoting complex DPs whose relatives make incontrovertible use of abstraction over degrees exist in at least one natural language, and that such degrees exhibit maximalization effects within the relative CP.

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