

### **Type-resolution in Relative Constructions: Competing Restrictive and Maximalizing Construals\***

This paper is a continuation to Grosu (to appear), with which it forms a two-part study and shares the main title; the specific topic of each paper is conveyed by the subtitles. The primary impetus for the study was provided by the theme of the Colloquium on Interface Strategies, Amsterdam, 24–26 September 1997, which had emerged from ideas put forward in Reuland (1996) and Reinhart (1983). The proposals were, essentially, that the existence of three distinct conditions in the Binding Theory (BT) is traceable to the fact that dependencies pre-encoded by the Computational System (CSYS) have precedence over dependencies established by interpretative operations of the syntax-semantics interface, and that the latter in turn have precedence over operations that rely on the knowledge base. The theme of the colloquium was an appeal to the participants to investigate whether comparable hierarchies of preferences are found in other domains, and if yes, in what form.

My two-part study set out to explore the ways in which semantic distinctions among subtypes of relative constructions are encoded prior to the syntax-semantics interface (assuming that they are). In Grosu (to appear a), I examined critically a number of past proposals which, in essence, either maintained that such distinctions are pre-encoded by the CSYS in some languages, but not in all (e.g., Kuno 1973, Chomsky 1975), or else took the stronger position that they are universally pre-encoded by the CSYS in a

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uniform way (e.g., Kayne 1994, Bianchi 1995). An important conclusion argued for in that paper was that the distinctions at issue — as well as other distinctions not addressed in the studies just mentioned, but argued for in Grosu and Landman (1998) (henceforth: GL) — are not illuminatingly, and in many cases, not even adequately pre-encoded by the (Merge or Move operations of the) CSYS. This critique was addressed both at attempts to capture the distinctions in UG and in the grammars of individual languages. It was further proposed that, until and unless it can be shown that the optimal approach to the pre-encoding of the distinctions at issue utilizes Merge and/or Move operations, a more prudent approach would be to express those distinctions by means of logical (sub)typing, which can be done either with distinctive 'interpretable' formal features in the sense of Chomsky (1995, Ch. 4), or with the kind of more precise logical types that are familiar from the model-theoretic literature; for specifics, the interested reader is referred to Grosu (to appear a). At the same, it was proposed that (at least) the Merge mechanism of the CSYS *sometimes* plays a role in the pre-encoding of certain properties of relative clause constructions, specifically, when these constructions are 'headed', but not, for instance, in matrix-adjoined correlatives. Whatever the subtype-specific nature of the semantic relation between a relative clause and (subelements of) the CP-external 'head', Merge ensures that the external elements related to CP in some semantically significant way (in particular, as antecedents, variable-binders, or E-type anaphors; see Grosu, to appear a, and below) are configurationally 'local' with respect to CP. — In this study, I propose to focus on aspects of interpretive operations of the syntax-semantics interface and/or of the knowledge base which block or license the assignment of a particular semantic subtype to a construction which is morphosyntactically and configurationally consistent with it. More explicitly, I propose to study in more detail than has so far been attempted the nature of the factors that affect the competition between restrictive and 'maximalizing' (see below) construals in 'headed' non-appositive relative constructions, and this, when the CP-internal 'gap' of relativization lies in syntactic contexts of certain kinds. The investigation is conducted on the basis of data from English, but the conclusions are applicable to all the languages in which comparable data exist (and these are numerous). Specifically, I propose to address a number of CP-internal contexts for the 'gap' of relativization which were studied in detail in Carlson (1977), where it was proposed that relativization 'out of' such contexts allows only (what GL called) maximalizing construals, but not restrictive ones. I argue that the exclusion of restrictive readings in such instances is due to the operation of (at least one of) three distinct factors, and that when none of these factors is operative, restrictive readings may emerge. In short, adapting a terminology that is familiar from the literature on presupposition, I will show that all the CP-internal contexts studied by Carlson (plus at least one he did not address) act not as 'plugs' for restrictive readings, but as 'filters.'

The remainder of this paper is organized as follows. In Section 1, I briefly characterize maximalizing relatives, drawing on GL. In Section 2, I examine the CP-internal contexts just referred to one by one, provide evidence of their filter status, and make specific proposals concerning the factors that determine such behaviour. In Section 3, I summarize the results of the investigation, and show their implications for the theme of the Colloquium.

## 1. Background

GL argue that the two-way semantic typology of relatives assumed in numerous earlier studies, in particular, the one that recognizes just restrictives and appositives, fails to do full justice to the variety of types found in the languages of the world, and propose that (at least) two additional types need to be recognized: maximalizing and existential relatives. For the purposes of what follows, we only need to concern ourselves with the distinction between restrictives and maximalizers. — For the sake of clarity, I wish to point out that certain syntactic constructions are invariably associated with a maximalizing construal, while other syntactic constructions can in principle support both construals. Correlatives of the kind found in Hindi and in various other languages belong in the former category,<sup>1</sup> externally- and internally-headed relative constructions of various languages belong in the latter; for detailed discussion and illustration of this point, see GL and pertinent references therein.

The view put forward in GL is that both restrictives and maximalizers are interpreted as properties (expressible as lambda-abstracts) at some stage of their semantic life. They differ, however, in the way the variable abstracted over gets quantifier-bound, as well as in a number of related respects. Thus, in restrictives, the variable is always quantifier-bound by a **clause-external** D once the clausal abstract has intersected with the set designated by a 'sortal' (or 'common noun') and/or the sets designated by other 'stacked' restrictive relatives, if such objects exist. In maximalizers, on the other hand, the variable gets quantifier-bound **clause-internally** through the application of an operator MAX to the clausal lambda-abstract; this operator appears to be 'concealed', in the sense that it has no structural reflex, overt or null. Importantly, MAX is applicable only to sets that exhibit a particular kind of internal structure, in particular, to sets of individuals ordered by the part-whole relation, or to sets of linearly ordered degrees, and its effect is to map such a set to its unique maximal member, if there is one; if none exists, MAX is undefined, with resulting infelicity (for detailed discussion of MAX in a variety of syntactic constructions, see Rullmann 1995 and references therein). The clause-external part of the 'construction' is interpreted as a sort of redundant E-type expression (with the

<sup>1</sup> In the introductory section of this paper, I referred the reader to Grosu (to appear a) for argumentation that various earlier attempts to capture the semantic distinctions among relative subtypes in terms of Merge/Move had been unsatisfactory either at the level of description or at the level of explanation. Correlatives fall in the latter category only, since — as noted in the text — the specific configurational properties of correlatives seem to be a sufficient condition for maximalizing semantics. At the same time, it is unclear that the latter can be **deduced** from the former. Thus, even if we grant that a restrictive construal may be excluded by assuming that the overt configuration, in which, note, the correlate fails to c-command the relative, also serves as input to the semantics, it is still not obvious why an appositive reading is also excluded. Actually, Kayne (1994) and Bianchi (1995) assigned to appositives LF representations that are strikingly similar to two overt configurations in which correlatives are attested, in particular, left-adjunction to the correlate and left-adjunction to the matrix clause; for critical discussion of these proposals, see Grosu (to appear a).

output of MAX as antecedent), with the proviso that a variety of pragmatic factors that have a 'relaxing' effect on the principles that govern E-type anaphora in **discourses** evince no such effects with respect to the kind of E-type anaphora that operates in **maximalizing relatives** (for illustration and discussion of this point, see Grosu, to appear b). As GL put it, maximalizing relatives are subject to the condition that the individual sums or degrees outputted by MAX's application to CP must be **preserved** in the meaning of the entire construction.

To illustrate the various points made in the preceding paragraph, consider the complex DP *the books that John read*, which is morphosyntactically consistent with both a restrictive and a maximalizing analysis (see Section 2.0). In either case, the relative clause begins its semantic life as the property  $\lambda x [Read(john, x)]$ . On a restrictive analysis, this property intersects with the property 'book', and application of *the* to the output of their intersection yields (the set of properties of) the unique (maximal) sum of individuals that are books and that John read. On a maximalizing analysis, any restriction on the variable must be available clause-internally **prior to** its binding by MAX; that is to say, the sortal, which is external in overt syntactic representation, must restrict a variable CP-internally. The meaning of CP is thus  $MAX[\lambda x [Book(x) \& Read(john, x)]]$ , that is, the unique maximal sum of individuals that are books and that John read. Skipping certain details in GL's analysis, CP compositionally and successively combines with subelements of the external material in such a way that the individual sum it designates is ultimately mapped either to itself or to the set of properties it has (these two possibilities are due to the fact that at least some DPs, in particular, definite ones, may in principle be construed either as individual sums or as generalized quantifiers). In either case, the value fixed by MAX, specifically, the atomic composition of the individual-sum that constitutes the designatum of CP, is preserved in the meaning of the entire construction.

As the reader has undoubtedly noticed, the two analyses assign exactly the same meaning in this particular case, and are thus not intuitively distinguishable. The two subtypes of relatives are, however, potentially distinguishable, and for (at least) the following two reasons: (A) Since in maximalizers there must be an E-type anaphoric relation (of a strict kind; see above) between the CP-external material and CP, only external expressions that necessarily preserve the value of MAX's output, and thus qualify as E-type anaphors, are admissible. What this means is that the external material may be definite or universally quantified, but not existentially quantified or quantified by such items as *most*, because the latter two operations do not necessarily convey precisely the value of MAX's output, and are thus not possible E-type expressions. No such restrictions exist in restrictives, since combining a restrictive relative with a common noun yields another (merely more complex) common noun; the range of permissible Ds is thus essentially the same as in simplex nominals. (B) Since a restrictive relative is a property, it may intersect not only with another property expressed by a sortal, but also with one expressed by another restrictive relative; accordingly, restrictive relatives may stack with intersecting import. In contrast, maximalizing relatives are individual sums, for which intersection is not defined. so that we may expect maximalizing relatives not

allowed by (A) and (B) under restrictive and maximalizing construals is **privative** (note that the options available to maximalizers are properly included in those available to restrictives), so that the predicted restrictions on maximalizing constructions are amenable to observation only if restrictive (and any other kinds of) readings are precluded, for some reason. We have already noted that correlatives are necessarily maximalizing constructions (for reasons that appear to be at least in part arbitrary; see footnote 1), and as predicted by (A)–(B), they allow only definite or universal correlates, and do not stack with intersective import (for illustration, see GL's examples (94) and (95) respectively). In the body of this paper, we will examine closely a number of factors that block restrictive readings for arguably non-arbitrary reasons, making it possible for (A)-type and (B)-type effects to emerge.

In general then, incompatibility with existential quantification and incompatibility with intersectively construed stacking may be viewed as diagnostics of a necessarily maximalizing construal. Conversely, compatibility with existential quantification and compatibility with intersectively construed stacking may be viewed as diagnostics of a restrictive construal in situations where an appositive construal is independently ruled out.

One final point bears emphasis in this introductory section. As noted earlier, a maximalizing construal implies a CP-internal interpretation of the sortal, since restricting functions need to be applied to a variable before the latter gets quantifier-bound (this state of affairs is, of course, consistent with a **redundant** CP-external construal of the sortal as part of the E-type expression). A restrictive construal, on the other hand, is in principle consistent with either an external or an internal interpretation of the sortal, since the result of combining the sortal with CP in either way is invariably a property, and thus an object to which an external D can apply.<sup>2</sup>

<sup>2</sup> To avoid possible confusion, I wish to stress that a sortal's CP-external or CP-internal position **in overt representation** is independent of whether it is **construed** externally or internally, as well as of whether CP has restrictive or maximalizing status. To illustrate, observe that the reflexive in (i) is ambiguously construable as bound by either *John* or *Bill*, which suggests that the **overtly external** sortal *picture of himself* may be construed either **externally** or **internally** (see Chomsky 1993 for discussion of comparable interrogative data).

(i) John admires the picture of himself that Bill showed him.

Additional examples of externally occurring and internally interpreted sortals will come up in subsequent sections of this paper.

As far as relatives with internally-positioned sortals in overt representation are concerned, GL argue that such constructions receive a maximalizing construal in some languages (e.g., Quechua, Japanese) and a restrictive construal in others (e.g., Lakhota, Mojave); their examples (92) and (93) exploit the diagnostics (A) and (B) respectively to support this claim (for additional discussion and illustration of this contrast, see Grosu, to appear c). What this means is that in languages of the former type, the internal sortal is necessarily construed internally, while in languages of the latter type, it may be construed externally. Williamson (1987) shows that the internal sortals of Lakhota (restrictive) relatives must in fact be construed externally, and this, because their scope is wider than that of certain propositional operators, such as negation and irrealis mood.

## 2. Competing restrictive/maximalizing construals in CP-internal contexts

### 2.1 *Introductory remarks*

Carlson (1977) focused on a kind of English 'headed' relatives that are clearly non-appositive, but which — he argued — differ from restrictives in a number of ways. English data were used for illustrative purposes, since many of Carlson's data have counterparts in other languages. In view of the fact that the meaning of these constructions involve cardinalities/amounts in certain ways, he dubbed them 'amount relatives'; Heim (1987), who refined his analysis, noted that kinds may also be involved in such constructions, and proposed 'degree' as a cover term for the union of cardinalities, amounts, and kinds. In what follows, I will use 'degree' with systematic ambiguity between Heim's broad sense and a narrower sense that designates only the union of cardinalities and amounts; hopefully, the intended sense will be clear in context.

Carlson pointed out that English 'headed' degree relatives differ morphosyntactically from restrictives in disallowing *wh*-pronouns;<sup>3</sup> both types admit *that*, or a null 'COMP area.' In view of the fact that the morphosyntactic options of degree relatives are properly included in those available to restrictives, morphosyntax cannot be used to tease out degree constructions (I note in passing that numerous languages do not have any morphosyntactic distinctions between the two types at all). Nonetheless, as Carlson showed, degree constructions can often be teased out by ensuring that the 'gap' of relativization occurs in certain types of contexts, which are listed in (1a–c) and (1e); the context in (1d), which Carlson, for some reason, missed, has been added to the list due to properties it shares with (1a–c).

- (1) a. Presentational contexts, e.g., *there are two cats in the room*
- b. Contexts of cardinality, e.g., *the movie lasted a long time/three hours.*
- c. Abstract (possibly idiomatic) mass nouns with scale import, e.g., *he exhibited great courage/made considerable headway*
- d. Predicative nouns, e.g., *he is a doctor*
- e. Contexts properly included in an 'antecedent contained' VP-Deletion site, e.g., *he ate everything he could -*

In short, there is abundant evidence that the overt position of a sortal does not necessarily correlate with its position in the input to the semantics.

<sup>3</sup> I do not know of particularly profound reasons for this state of affairs. Carlson (1977) points out that comparatives, which also crucially involve degrees, do not exhibit *wh*-forms in Standard English. At the same time, degree constructions are not generally incompatible with *wh*-forms in English, as shown by the interrogative and the free relative in (i) and (ii) respectively.

- (i) How fast can you run?
- (ii) I can run however fast you run.

Thus, until proof to the contrary, I view the incompatibility of *wh*-forms with maximalizing relatives in English as a useful test for identifying restrictives in this language, and nothing more.

Under such circumstances, the effects (A) and (B) of Section 1 frequently show up, pointing to a maximalizing construal. However, contrary to what Carlson assumed, such effects do not invariably show up in such contexts. This fact was already demonstrated in Grosu and Landman (1996) (henceforth: GL 96) with respect to the context (1e), which stands somewhat apart from (1a)–(1d) in that it does not necessarily involve **degree** relatives. The contexts (1a)–(1d) do, however, require degree relatives (for reasons that will be made clear below), and if it can be shown that these contexts sometimes allow restrictive readings, it will follow that **degree relatives are not necessarily maximalizing relatives**. To the best of my knowledge, this generalization has not been proposed and/or defended in print anywhere so far (in any event, it was not pointed out in GL). One of the two major goals of this paper is to demonstrate that this generalization holds. The remaining goal is to achieve insight into the factors that cause the contexts in (1) to sometimes act as plugs, and sometimes, as holes.

In what follows, I address the contexts in (1) one by one, noting circumstances under which the effects (A)–(B) are manifested and circumstances under which they are not, and proposing characterizations of the factors that block restrictive readings under specific circumstances.

## 2.2 *The presentational there be — XP context*

Effect (A) is illustrated by (2a).<sup>4</sup> Observe that the restrictions in (2a) are not found in (2b), where the ‘gap’ of relativization occupies an ‘ordinary’ argument position (in particular, the subject position). (3) shows that the felicitous versions of (2a) become infelicitous in the presence of a *wh*-form, and (4) illustrates effect (B).

- (2) a. {The (three), those, all the, every, both, #several, #some, #three, #(a) few, #many, #most}student(s) that there were/was — - at the party left early.  
 b. {The (three), those, all the, every, both, several, some, three, (a) few, many, most}student(s) who — - attended the party left early.
- (3) #{The (three), those, all the, every, both}student(s) who there were/was — - at the party left early.
- (4) The three students that there were at the party (#that there had (also) been at the concert) looked upset.

While Carlson did not, in my view, shed much light on why the effects (A)–(B) should arise, he and Heim (1987) did provide a convincing account of the fact that relativization

<sup>4</sup> It needs to be pointed out that some of the infelicitous versions of (2a) and comparable data improve appreciably for some speakers if the determiner/numeral receives contrastive stress, presumably because this encourages a partitive construal such that *three students*, for example, acquires the import of *three of the students*. Note that, under these circumstances, the constraint (A) imposed on maximalizers is satisfied by the definite complement *the students*. One must thus guard against reading the versions marked with ‘#’ as partitives (Carlson 1977, footnote 17, makes a similar point).

'out of' the presentational context is not freely available (Heim points out that appositive relativization is also blocked in this context, as illustrated by the data in (5), which parallel those in (2)).

- (5) a. #The three students in question, who, incidentally, there {are, aren't} now in the room, have threatened me repeatedly.  
b. The three students in question, who, incidentally, {are, aren't} now in the room, have threatened me repeatedly.

Heim's account, in particular, runs essentially as follows: The (purported) construal of data like (3) and (5) necessarily involves an individual variable which needs to undergo, respectively, abstraction with clausal scope and co-valuation with extra-clausal scope. The presentational context, as has often been observed in the literature, requires that an individual variable it contains be bound by a (typically, but not necessarily, existential) operator with scope no wider than the minimal IP that includes the context (I briefly return to this point in Section 2.2); note that (6a), which violates this requirement, is decidedly infelicitous. Since in (3) and (5a), the only individual variable that can conceivably be involved in relativization lies within the presentational context, no well-formed output is available, because the individual variable is independently (and existentially) bound within the context, and vacuous relativization is — one may presume — not tolerated in natural languages. The fact that (2a) has a number of well-formed versions is due to the fact that abstraction with clausal scope has applied not to the individual variable, but rather to a degree variable that functions as a 'modifier' of the individual one. This state of affairs appears not to conflict with the requirements of the presentational context, since, as Carlson observed, data like (6c) are fine, in sharp contrast to data like (6b), which differ minimally from (6a) in that the definite anaphor occurs in the presentational context, rather than in subject position; note that the italicized expression in (6c) is naturally construable as anaphoric to some number that was mentioned in earlier discourse.

- (6) a. As for {John and Mary, two individuals we both know},  
*they* were (definitely) present at last night's party.  
b. #As for {John and Mary, two individuals we both know},  
there was (definitely) *them* at last night's party.  
c. There are (exactly) *that many* books on my desk.

Building on these insights, GL pointed out that data like the felicitous versions of (2a) cannot receive a restrictive analysis for the following reasons: within CP, only the degree variable is available for abstraction, since the individual variable is existentially bound. But the complex DP designates individuals, not numbers; for example, the version with *the three students* designates a unique group of three individuals that have the 'student' property and — most importantly — were present at the party; that is to say, the set of individuals defined within and without CP must have **the same membership**. Now, this particular effect cannot be derived by intersecting (perhaps vacuously) the two sets just referred to because the set defined within CP is, as noted already, existentially bound, and thus not available for intersection. Neither can the intuitively perceived meaning be



obtained by intersecting the **property of individuals** designated by the sortal (*three students*) with the **property of degrees** designated by CP, since their intersection is necessarily null, and would thus give the wrong meaning. In short, the quantifier-bound status of the internal variable and the resulting '**sortal mismatch**' between the sets defined within CP and by the sortal jointly exclude a restrictive construal.

At the same time, GL also argued that this kind of sortal mismatch is not incompatible with a maximalizing analysis, which essentially requires an E-type relation between CP and the CP-external part of the complex DP. The basic idea is that the meaning of CP following application of MAX is not just a (unique maximal) degree, but a degree of something, in particular, of a sum of individuals restricted by the sortal, as shown in (7).

(7)  $\lambda d. \exists x. \text{STUDENT}(x) \ \& \ \text{DEGREE}(x) = d \ \& \ \text{AT-THE-PARTY}(x)$

GL propose that, under these circumstances, not just the degree, but the correlated individual-sum as well can serve as antecedent of an anaphor. Suggestive supporting evidence is provided by the kind of E-type anaphoric options that are available in discourse. Thus, observe that both (8b) and (8c) are coherent continuations to (8a).

- (8) a. *A large number of customers* visited our shop today.  
b. *That number of customers* had rarely been seen here before.  
c. *{Those customers, they}* looked rather somber.

In (8b), the anaphoric reference is just to the maximal **number of customers** defined by (8a), but not to the individuals themselves (in all probability, at least some of the customers that showed up 'today' were different individuals from those that visited the shop on earlier occasions). In (8c), on the other hand, the anaphoric reference is to the maximal **sum of actual customers** defined by (8a); observe that, in this case, both the atomic composition **and** the cardinality of that sum are preserved in the meaning of the anaphor. — Simply put, GL's point was that the kind of flexibility in the choice of an antecedent that has just been demonstrated with respect to discourse E-type anaphora is also available in maximalizing relative clause constructions, and that the felicitous versions of (2a) avail themselves of the kind of option illustrated by the conjunction of (8a) and (8c). Space limitations prevent a full presentation of GL's theory here, but the informal account just offered has hopefully made the basic ideas clear.

Having taken care of the felicitous versions of (2a), let us now turn to a different kind of data that were pointed out in Heim (1987), and which constitute the counterpart in relative clause constructions of the kind of discourse anaphoric option illustrated by the conjunction of (8a) and (8b). Thus, consider the examples in (9).

- (9) a. Israel would need a century to recruit [the (number of) soldiers that the Chinese paraded last May Day].  
b. We will need a lifetime to drink [the (amount of) champaign that they spilled last night].

While the reduced versions of these sentences may certainly have pragmatically odd readings on which Israel contemplates recruiting the very soldiers that the Chinese paraded and 'we' contemplate drinking the actual body of champaign that was spilled,

they also have more sensible readings on which the bracketed complex DPs designate only a comparable number of soldiers and a comparable amount of champagne, but no soldiers or body of liquid in particular. The full versions of (9a–b), whose sortals explicitly designate cardinalities/amounts rather than individuals, have only the sensible readings. — For completeness, I note that the reduced versions of the complex DPs in (9a–b), in which expressions of cardinalities/amounts are not explicitly present, do not freely allow readings that fail to assume identity of individuals/substance between what is defined within and without CP; for example, *today, I spent two hours drinking the champagne that they spilled last night* cannot have what I called above a ‘sensible reading.’ Similarly, readings of this kind are not available to the felicitous versions of (2a). As GL remarked, the kind of contextual factors that license such readings are hard to pin down and not very well understood at the moment, and I will not attempt to shed more light on them here.

Observe that constructions with the properties of the data in (9) also arise when the ‘gap’ of relativization lies in the presentational context:

- (10) a. Israel would need a century to recruit [the (number of) soldiers that there were — in the Chinese army during the Korean War].  
 b. We will need a lifetime to drink [the (amount of) champagne that there was — in this vat this morning].

For ease of reference, let us dub the readings that do not involve identity of individuals/substance ‘identity-of-degree readings.’ Are such readings obtainable through a restrictive analysis? Application of diagnostic (A) yields data like the following, which constitute *prima facie* evidence for a negative answer.

- (11) a. (#)Israel would need a century to recruit {some, many, a million} soldiers that the Chinese paraded last May Day.  
 b. (#)We will need a century to drink {some, much, a ton of} champagne that they spilled last night.  
 c. #Israel would need a century to recruit {some, many, a million} soldiers that there were in the Chinese army during the Korean War.  
 d. #We will need a lifetime to drink {some, much, a ton of} champagne that there was in this vat this morning.

All the data in (11), where the complex DPs are existentially quantified, are infelicitous on identity-of-degree readings. On identity-of-individuals/substance readings, (11c–d) are infelicitous for the same reason that the comparable versions of (2a) are. (11a) and (11b), on the other hand, are possible in appropriate contexts; for example, (11a) can mean that some/many/a million specific Chinese soldiers are likely to resist Israeli attempts to recruit them for up to a century. — Application of diagnostic (B) points to the same conclusion; thus, note that adding a second relative with the ‘gap’ in the presentational context to, say, (10b) results in infelicity:

- (12) We will need a lifetime to drink the (amount of) champagne that there was — in this vat this morning (#that there was — in that vat yesterday).

Thus, the facts in (11)–(12) lead us to the conclusion that the kind of data brought up by Heim (op. cit.) can only have a maximalizing analysis.

The question we need to ask next is why this state of affairs arises. In view of the fact that identity/non-identity between the sets of individuals/bodies of substance defined within and without CP is irrelevant here, our inability to intersect the two sets/bodies should not matter. Furthermore, sets of degrees are certainly definable both within and without CP; for example, in (10a), we may define the set of numbers of soldiers that were enrolled in the Chinese army during the Korean War and the set of numbers of soldiers that Israel contemplates recruiting. These sets are certainly not sortally mismatched, since their membership consists of degrees whose intersection need not be null,<sup>5</sup> and the impossibility of a restrictive reading (brought out by the application of the

<sup>5</sup> A referee for this paper reports that (s)he fails to see a difference in sortal (mis)matching between data like (2a) and data like (10), and this, because (10a), even on its full version, is about recruiting **soldiers**, rather than **abstract numbers**, and (10b) (on both versions) is about drinking **wine**, rather than **abstract amounts**; accordingly, reasons the referee, we seem to have a sortal mismatch in such data as well, and therefore to need a theory-external criterion by which to decide whether some expression denotes numbers/amounts or individuals/substance.

The referee's observation that the complex DPs in (10), and in particular, those in the **full versions** (whose sortal is headed by an expression of cardinality/amount) nonetheless designates individuals is certainly correct, and touches on an important aspect of language. Nonetheless, this fact is orthogonal to the sortal/type mismatch issue, and is in fact independent of whether DPs do or do not include relative clauses.

Observe that simplex DPs with a cardinality-/amount-designating sortal may occur in contexts that require individuals, and, conversely, simplex DPs with an individual-designating sortal may occur in contexts that require a number. Thus, in addition to the 'well-behaved' data in (ia) and (iia), we have 'surprising' data like (ib) and (iib).

- (i) a. Name **a number of books** that exceeds thirty-one.
- b. There is **a (large) number of books** on the table.
- (ii) a. **The spectators** looked upset by the performance.
- b. **The spectators** exceeded the permitted number of 2000.

Exactly how data like the (b) subcases need to be formally handled is an issue that goes beyond the scope of this paper, but a plausible possibility would be to allow the semantics to depart from strict compositionality and to assign to the boldfaced nominal in (ib) the meaning that is compositionally obtainable from *books in a large number*, and to the one in (iib), the compositionally obtainable meaning of *the number of spectators*. Under such an approach, the full versions of (10) do not involve sortal mismatch, since the sortal that purports to intersect with the relative is *number/amount*, not *soldiers/champaign*. That there is no sortal mismatch in such cases is in fact shown further down in the text by the otherwise comparable constructions in (18b,d) and (19)–(21), whose restrictive status indicates that intersection **actually** takes place in them. In contrast, sortal mismatch is unavoidable in cases like (2a), where the sortal that purports to intersect with the relative can only be *student*.

In sum, the sortal/type mismatch issue is independent of the kind of designata that the context 'forces' on complex DPs. As for the theory-external criterion required by the referee, it seems to be straightforwardly provided by the (intuitively apprehendable) contrast between identity-of-

diagnostics (A)–(B)) must be attributed to different causes.

We can gain some insight into the nature of such causes by considering constructions without relative clauses in which sets of linearly ordered degrees are relevant. Consider first the dialogue in (13).

- (13) A: John ran **twelve miles** today.  
B: **This** is exactly what I ran.

While it is undeniable that in running twelve miles, John has also run, for example, seven miles, B's claim is untrue if the maximal distance he covered was seven miles. Apparently, the less than maximal distances run by John are unavailable for anaphoric reference. Putting this somewhat differently, MAX seems to automatically apply to a set of linearly ordered degrees that is implicationally defined by a mention of a maximal value.

A similar situation is detectable in comparative/equative constructions, as can be appreciated by examining the (im)possible construals of (14).

- (14) John has run {at least, exactly} as far as Mary has.

Assume that Mary has covered a total distance of five miles. While in so doing she has evidently also covered three miles, (14) is false if John has run no more than three miles. Thus, the standard of comparison cannot be just any degree in the implied set, rather, the standard has to be unique, and it is obtained by applying MAX to the set of degrees (von Stechow 1984, Rullmann 1995).

The two situations we have just discussed point to the conclusion that the application of MAX to a set of linearly ordered degrees is automatic. If so, the failure of data like (10) to admit a restrictive analysis follows from the fact that a degree is one logical type lower than a set of degrees (it has the same rank as individuals), and the two kinds of object cannot intersect. That is to say, in addition to **sortal** mismatch, there is a second factor that blocks restrictive readings, in particular, (logical) **type** mismatch.

In the identity-of-degree readings that we have dealt with so far, the set of degrees that served as (potential) argument of MAX was defined with respect to **a single situation**. For example, in (10b), the relevant set is the set of amounts of wine that were in the vat **this morning**. What happens when there is a plurality of situations, each with its own associated set of degrees that includes a unique maximal member? GL discussed a case in point, which concerned data like those in (15).

- (15) a. John is two inches taller than any girl in the class.  
b. John is as tall as any girl in the class.

Echoing von Stechow (1984), GL pointed out that such sentences make perfect sense in situations where the girls are of different heights, and that in such situations, they have a natural reading which implies that John is taller than/as tall as **the tallest girl**. From this uncontroversially true fact, they proposed to derive the conclusion that a unique standard for comparison (which we take to be an uncontroversial necessary condition for

individuals/substance and identity-of-degrees readings.

a successful comparison) can be derived through application of MAX even in situations of this type. GL did not go into additional details, but note that there are (at least) two ways in which the unique maximal degree that serves as standard for comparison can be derived: (a) one can first form the set of all the degrees possessed by all the girls, that is to say, the nondenumerably infinite set that contains all the real-number values between 0 and  $n$ ,  $n$  = the maximal height of the tallest girl, that is,  $\{h_0, \dots, h_n\}$ , and then apply MAX to it, or (b) one can first apply MAX separately to each single set of degrees associated with some single girl, then form the set  $\{h_1, h_2, \dots, h_n\}$ ,  $h_i$  = the maximal height of some girl, and finally reapply MAX to this set. The output of either procedure is  $h_n$ .

There was, however, a flaw in GL's reasoning, which is brought out by a consideration of the data in (16):

- (16) a. John is exactly two inches taller than any girl in the class.  
b. John is exactly as tall as any girl in the class.

Such data can be sensically used only if the girls are all of equal height, and this is unexpected under either (a) or (b) above. I submit that the conjunction of (15) and (16) points to the following solution: On the one hand, the quantified expression *any girl in the class* takes wide scope, distributing over the matrix, and on the other hand, the expressions *two inches taller than/as tall as* in (15) receive an 'at least' interpretation. Under this assumption, (15)–(16) are construed as *for any girl in the class  $x$ , John is {at least, exactly} {two inches taller than, as tall as} x*. The combination of wide scope with an 'at least' construal thus straightforwardly accounts for the felicitous use of (15) in situations where not all the girls have the same height, and avoids any resort to either (a) or (b), both of which make the incorrect prediction that (16) can be felicitously used when the girls have different heights (as noted above). I thus propose to assume the correctness of the analysis just outlined.

Having argued against (a) and (b) in relation to comparatives, let us now turn to a consideration of identity-of-degree relative clause constructions in which the relative CP defines a plurality of situations, and where (a) and (b) are thus potentially relevant.

- (17) a. In this shop, there is now the ?(single) number of customers that there has never been in it before.  
b. In this vat, there is now the ?(single) amount of wine that there has never been in it before.

The reduced versions are usually perceived as somewhat strange, presumably because the addressee needs to contribute the implausible assumption that every number/amount of customers/wine has been in the shop/vat before, except for the one that is in it at the moment. The full versions are fully acceptable because they make the assumption in question explicit. Importantly, these data are not felicitous under the assumption that more than one number/amount has failed to be in the shop/vat before, and that the number/amount currently in the shop/vat is merely the greatest of those. The absence of such a construal is surprising if (a) or (b) are available procedures, and points to the conclusion that neither procedure is in fact available, thus reinforcing the conclusion reached above on the basis of comparatives.

Let us now consider more closely the procedure (b) with respect to relatives. Recall that this procedure consists of three steps, namely: (i) separate application of MAX to sets of degrees associated with single situations, (ii) set formation over the outputs resulting from stage (i), and (iii) re-application of MAX to the set that results from step (ii). The first step is unobjectionable, it in fact constitutes the null hypothesis, given the automatic application of MAX when a single situation is relevant. The second step is also in principle unobjectionable, and if we assume (for the moment without support) that it is in fact allowed, the third step emerges as the one responsible for the failure of the entire procedure to apply. Now, there is evidence that both of the first two steps are legitimate. Note that, if they are, we may expect the set formed at stage (ii) to be intersectable with some set of degrees formed in the CP-external part of the complex DP, with the result that existential quantification over the output of intersection ought to be felicitous; that is to say, **a restrictive construal with the gap of relativization in the presentational context ought to be possible**. The data in (18b) and (18d), which contrast sharply in acceptability with (18a) and (18c), confirm this prediction.

- (18) a. \*In this shop, there is now a number of customers that there was in it yesterday (as well).  
 b. In this shop, there is now a number of customers that there has never been in it before.  
 c. \*In this vat, there is now an amount of wine that there was in it yesterday (as well).  
 d. In this vat, there is now an amount of wine that there has never been in it before.

Additional data that illustrate the possibility of existential quantification under the circumstances at issue are provided in (19)–(21).

- (19) a. In this shop, there is now a number of customers that there has often been in it before.  
 b. In this vat, there is now an amount of wine that there has often been in it before.
- (20) a. A warmth I never thought there could ever be in her voice was clearly audible tonight.  
 b. She spoke to me with a warmth that I never thought there could ever be in her voice.
- (21) a. A warmth I often hoped there would be in her voice some day was clearly audible tonight.  
 b. She spoke to me with a warmth that I often hoped there would be in her voice some day.

(19) illustrates the possibility of defining a multiplicity of situations in the relative without resorting to negation, and has been added with an eye on things to come in Section 2.5. (20)–(21) are parallel to (18)–(19), and differ from them in failing to explicitly mention numbers/amounts.

The analysis proposed above in relation to (18b,d) and (19)–(21), which assumes set formation over MAX outputs, raises the question of why this same analysis cannot salvage (18a,c). That is to say, one may wonder why singleton set formation does not apply to a single degree, with subsequent felicitous existential quantification (I am grateful to Veneeta Dayal for drawing my attention to this potential problem). I suggest that singleton set formation is excluded by a plausible economy principle that disallows operations which make no difference to semantic interpretation (cf. Chomsky 1995, Ch. 4). Observe that the result of applying existential quantification to a singleton set is indistinguishable from the result of applying a definiteness operator to it (for a similar point made with respect to somewhat different data, see GL, Section 2.5). It thus seems reasonable to expect set formation to apply only to a plurality of degrees.

Taking stock of what has been established in this section, constructions with the gap in the presentational context may not receive a restrictive analysis when CP and the external sortal are either sortally mismatched or mismatched in logical type. A type mismatch may be circumvented by forming a set out of a sum of maximal degrees, thus making a restrictive analysis possible. This last result vindicates — insofar as context (1a) is concerned — the thesis enunciated at the beginning of this paper, namely, that the Carlsonian contexts are **filters** for restrictive construals.

For completeness, let us consider a situation which does not involve type mismatch, but which does involve sortal mismatch.

(22) #In this shop, there are now {some, many, three} (specific) customers that there have {never, often) been in it before.

Given the multiplicity of situations defined by the relative, CP may define a set of degrees. Outside CP, however, only a set of individuals is available, since the complex DP designates (a set of properties of) individuals, not numbers. There is thus sortal mismatch, and the result is expectedly infelicitous (with the proviso of fn. 4).

### 2.3 Contexts of cardinality

In this section and the next two, we will be concerned with contexts (1b–d), which share important properties with the presentational context of the preceding section, while at the same time differing from it in certain ways, both with respect to the details of analysis and with respect to the exact ways in which relativization is affected. The precise analysis of these various contexts falls beyond the scope of this paper. My principal concern in this section and the following two is to bring out certain features that are shared by all these contexts and that constrain relativization in comparable ways. — The facts addressed in this section were discussed in Carlson's Section 2.5, those of the next section, in Carlson's sections 2.6, 2.7 and 3, and those of Section 2.4 were not discussed by Carlson at all.

The context (1b) needs to be filled by a measure phrase of some kind. Such phrases may be imprecise, e.g., the boldfaced phrase in *the movie lasted a long time*, or precise, in which case they typically consist of an abstract count noun that designates a measure unit with reference to some linear scale, and a cardinality marker that indicates the

number of times that the unit needs to be appealed to to measure the size of something; the latter option is illustrated by the boldfaced phrases in *the movie lasted **three hours***, *the road went on for **twenty miles***, and *John weighs **a hundred kilos***, which specify, respectively, the duration of the movie, the length of the road, and John's weight.

Carlson observes that the contexts (1a–c) exhibit the so called 'indefiniteness effects', and as we shall see, this is also true of context (1d). From our perspective, indefiniteness effects are of interest to the extent that they are indicative of a need for the variable restricted by a sortal to be 'used up' locally, in particular, within its minimal containing IP (for quantifier binding, abstraction *cum* application to an argument, etc.), which makes it unavailable for abstraction with relative CP scope.

That the individual variable needs to be locally used up can be appreciated with respect to both context (1a) and context (1b). Thus, consider (23a–b).

- (23) a. There are/is {three, many, (a) few, several, #these, #most, #all (the), #every, the \*(expected) three} stories/story in this book.  
b. The movie lasted {three, many, (a) few, several, #these, #most, #all (the), #every, the #(expected) three} hour(s).

As is exceedingly well-known from the literature, the context (1a) typically admits indefinite expressions with narrow-scope existential construals, D-linked indefinites being infelicitous (on this, see, for example, Heim 1987). As is also well-known from the literature (and illustrated in (23a)), strong nominals, such as universals and definites, are typically unacceptable, except under special circumstances, in particular, when they allow a 'list' construal or when they arguably bind a modifying degree/kind variable. The latter situation is illustrated by the version of (23a) with *the expected three hours*, where expectation concerns not the identity of the stories, but their cardinality. I note in passing that if such expressions are assigned the non-compositional construal 'hours with the expected cardinality of three' (see footnote 5), and if other (apparent) violations of the indefiniteness requirement can also be analyzed in ways that involve existential binding of the individual variable,<sup>6</sup> it may well be that the quotes that are typically used in mentions of indefiniteness effects will turn out to be discardable.

Concerning the context (1b), there are facts which suggest that the measure phrases are functions applied to the verb, much as post-copular predicates and specificational phrases are applied to a subject. In particular, the force of the boldfaced phrases in (24a) is arguably comparable to that of the boldfaced phrases in (24b).

- (24) a. The movie lasted {**a long time, three hours**}.  
b. The duration of the movie was {**long, three hours**}.

<sup>6</sup> The prospects look to me encouraging. For example, list construals like *there was John and Mary at the party* or *there were the following people at the party*, and data with universally bound expressions, such as *there is every reason to reject your proposal*, may conceivably be analyzed as 'there was an individual sum that included the atoms John and Mary at the party', 'there were people making up the following individual sum at the party' and 'there are reasons of every conceivable/relevant kind for rejecting your proposal' respectively.



It is uncontroversial that predicates are scopeless, and that the variable they include is used up by abstraction and application to an argument (see, for example, Partee 1987). As for specificational phrases, they also appear to be scopeless, as suggested by the contrast in (25).

(25) Do you see that guy over there? {He is Bill Clinton, #Bill Clinton is he/him}.

It thus seems reasonable that whatever variable there is within the measure phrase gets used up locally. At the same time, just as in the case of the context (1a), a modifying degree variable remains available for operations with CP-scope, as indicated by the acceptability of *the movie lasted {that long, that many hours}* (cf. (6c)). The comparable scope properties of the individual and degree variables in contexts (1a) and (1b) induce entirely parallel indefiniteness effects, as can be seen by comparing (23a) and (23b).

What has just been said induces the expectation that relativization 'out of' contexts of type (1b) should exhibit effects comparable to those noted in relation to the context (1a). This expectation is confirmed by (26) and (27), which exhibit (A)-type effects.

- (26) a. {The (three), those, every, #some, #several, #(a) few, #most} hour(s) that the movie lasted — bored me to death.  
b. {The (twenty), those, all the, every, #twenty, #several, #a (few), #most} mile(s) that the road went on for — past Dry Gulch {was tough, were tough ones} indeed.  
c. {The (twenty), those, all the, every, #several, #twenty, #many, #most} kilo(s) that Max weighs — in excess of dietiticians' recommendations look extremely ugly on him.
- (27) a. John's movie lasted (precisely){the number of, the five, #a number of, #five, #some, #many} hours that Bill's movie lasted.  
b. The main road went on for (precisely){the number of, the twenty, #a number of, #twenty, #some, #many} miles that the secondary road went on for.  
c. John weighs (precisely){the number of, the ninety-two, #a number of, #ninety-two, #some, #many} kilos that Bill weighs.

Observe that (26) and (27) differ from each other in a way that is strikingly similar to the way in which (2a) and (10) do. Thus, while in (27), the matrix and the relatives must be matched only with respect to the **values conveyed** by the measure phrases, but not with respect to the abstract or concrete **objects** that these values apply to, in (26), both the measure values **and** the measured objects defined in the matrix and in the relative must match. For example, note that the relatives in the (b) subcases imply that there is a particular **stretch of road** with a certain length. But while in (27b), this stretch of road is different from the one defined in the matrix, in (26b), it is precisely the stretch of road that starts at Dry Gulch that is claimed to be tough. In short, (26) appears to require identity of individuals/substance and (27), identity of degrees, and by the criterion proposed in footnote 5, we may conclude that the (A)-type effects in (26)–(27) are due to sortal and type mismatch respectively.

The parallelism between (26)–(27) and (2a)–(10) notwithstanding, there is an interesting difference between the two sets of data. The situation illustrated by (26)–(27) is the

converse of the one illustrated by (2a)–(10) in the following sense: In the former case, the analysis of identity-of-individuals/substance readings is a straightforward matter (see GL and Section 1 of this paper), while that of identity-of-degree involves various complexities, in particular, the apparent need to appeal to non-compositional operations in order to account for the fact that such constructions may be construed as designating individuals (see footnote 5); in the latter case, the opposite state of affairs arguably holds. Thus, the complex DPs in (27), which involve identity of degrees, occur precisely in contexts of type (1b), a straightforward situation. In contrast, the complex DPs in (26a–c) designate individuals of some sort, in particular, a specific time period corresponding to a movie-showing event, a road stretch, and certain protruberances on Max's body. The problem raised by this construal is that such individuals do not seem to correspond directly to any material in the relative clause, and certainly not to material covertly 'reconstructible' into the gap. It thus seems that some non-compositional semantic operation — which I will not attempt to define here — is needed for the relative clause. In short, while the context (1a) raises complexities that concern the complex DP in identity-of-degree situations, the context (1b) raises complexities that concern the relative clause in identity-of-individuals/substance situations.

In concluding this section, I wish to note that identity-of-degree readings that involve a plurality of situations in the relative clause allow the formation of **restrictive** constructions, as shown in (28)–(29) (cf. with (18)–(19) and (20)–(21)).

- (28) a. A number of hours that I never thought a movie could last had to pass before I could go back to bed.  
 b. The movie lasted a number of hours that I never thought a movie could last.  
 c. A number of kilos that no human ought to weigh was reported by John after his latest check-up.  
 d. John weighs a number of kilos that no human ought to weigh.
- (29) a. The movie lasted a number of hours that psychological dramas often last.  
 b. John weighs a number of kilos that a member of the 'fat is beautiful' society has every right to weigh.

In conclusion, *modulo* the 'twist' noted two paragraphs earlier, relativization contexts of type (1b) behave just like contexts of type (1a) in blocking restrictive constructions under sortal and type mismatch, and in allowing them when neither of these two factors is operative.

#### 2.4 *Abstract mass nouns*

As noted at the beginning of the preceding section, Carlson devotes three sections to a discussion of contexts of type (1c), which allow abstract, and sometimes covert, mass nouns that designate an abstract scale, and which, just like contexts (1a–b), exhibit 'indefiniteness effects.' The contexts in question correspond to the nominal in such collocations as *show/exhibit courage/interest*, to the covert abstract nominal modified by

*a lot in see a lot of someone*,<sup>7</sup> and to the nominal in such idioms as *make headway*. I illustrate in (30) the existence of indefiniteness effects in these contexts, as well as the apparent suppression of the effects in cases where a strong D arguably binds a degree/kind variable (see the versions with *expected*).

- (30) a. John exhibited {a lot of, much, little, #(all) the, the expected (kind of)} courage.  
 b. John has seen {a lot, much, some, #all, #most} of Alice recently.  
 c. John made {a lot of, considerable, much, little, #(all) the, the expected (kind of)} headway.

The striking parallelism between the effects in (30) and those in (23) creates a strong presumption that the cause of the former also lies in the fact that the variable restricted by the sortal needs to be locally used up in some way. I will not attempt to make concrete proposals in this connection, but I do wish to point to the possibility that the presumed state of affairs is traceable to the fact that the nouns *courage*, *headway*, and the null nominal in (30b) (which means essentially 'presence/visits'; see footnote 7) designate properties of to the designatum of a local DP; thus, the courage in (30a) is **John's** courage, the headway (i.e., progress) in (30c) is **John's** progress, and the 'presence' in (30b) is **Alice's** presence. I find this state of affairs strongly reminiscent of existential constructions with *have*, which involve narrow-scope existential binding, exhibit comparable 'possession' relations, and exhibit indefiniteness effects (e.g., *I have [two, the two \*(expected)] agents in your organization*).

Whatever the correct analysis of the contexts under consideration, note that relativization 'out of' them induces (A)-type effects:

- (31) a. {The, #some, #much} (kind of) courage that John exhibited in that difficult situation was unexpected.  
 b. In that difficult situation, John exhibited {all the, the (kind of) #some, #much} courage that his brother (also) showed.
- (32) Ted saw {all, everything, that much, #some, #much, #a lot} of Alice that he wanted to see.
- (33) a. {(All) the, the (kind of), that, #some, #much, #most, #little} headway that John made was unexpected.  
 b. On this specific project, John made {all the, the (kind of), #some, #much} headway that his co-worker (also) made.

Do the complex DPs in (31)–(33) exhibit identity-of-substance or identity-of-degree effects? I find it hard to conceive of (non-)identity of substance in such cases, because the designata of the abstract nouns at issue do not seem to be instantiatable in distinguishable bodies of substance. Thus, while it certainly makes sense to ask whether the wine that filled two glasses at two different times was or was not the same body of wine,

<sup>7</sup> As Carlson notes, the designatum of the covert nominal that is of interest here is not Alice's body, but rather something like Alice's presence, so that *see a lot of Alice* is understood just like *see Alice frequently*.

it does not seem to make much sense to ask whether the courage demonstrated by John and Bill was or was not the same 'body of courage.' To be sure, sentences like *John and Bill demonstrated the same courage in the face of adversity* are fine, but sameness can only apply to the **extent** of the courage. I thus conclude that the contexts in (1c) allow only identity-of-degree readings. Consequently, the effects in (30) need to be attributed to type mismatch.

Finally, note that when the relative clause is construable as defining a plurality of situations each with a unique maximal degree, existentially quantified DPs, and thus, restrictive construals, become possible.

- (34) In that difficult situation, John exhibited a (kind of) courage that his brother {never, often} showed.
- (35) #Lately, Ted has seen an amount of Alice that he had {not expected, often prayed to be able} to see.<sup>8</sup>
- (36) On this project, John made a (kind of) headway that {none of his co-workers, many of his co-workers also} managed to make.<sup>9</sup>

In short, *modulo* the impossibility of identity-of-substance readings, the context (1c) affects relativization in essentially the same way as the contexts (1a–b). In particular, it constitutes a filter for restrictive construals, not a plug.

## 2.5 *Predicative nominals*

There is one additional context for nouns that resists wide scope for the individual variable they restrict, and which Carlson omitted to mention: that of postcopular predicative nouns. Since these are standard predicates, their applicability to a local argument and their scopelessness need no argument (as observed in Section 2.2.). For completeness, I provide below some data that support this point.

- (37) a. John is **a spy**.  
 b. John is **the spy**.  
 c. John is **the director (of this institution)**.  
 d. John is {**everything, most things**} #(that a woman looks for in a husband).

While the boldface nominal in (37a) is certainly construable as a predicate, the one in (37b) is only construable (at least, in 'non-exotic' contexts) as a referential nominal

<sup>8</sup> It appears to be a fact about the lexicon of English that 'an amount of Alice' (in the sense of the extent of Alice's exposure to the presence of the speaker; see footnote 7) is infelicitous. I have nonetheless provided the example in (35) because I feel its infelicity is different in kind from that of the deviant versions of (32).

<sup>9</sup> Another lexical idiosyncrasy (reminiscent of the one noted in footnote 8), is that *degree* or *amount* may not be substituted for *kind* in this context, even though the 'kinds of headway' under consideration are easily construable as belonging to a linear scale (comparable remarks apply to the versions of (30) with *kind*).

equated with and specifying the subject. (37a–b) all by themselves may create the impression of a genuine indefiniteness effect, but consideration of (37c–d) shows that this impression is mistaken, just as in previously considered cases. The reason for the non-predicative status of (37b) is that definite DPs with unmodified non-relational nouns are normally interpreted as referential and D-linked. In contrast, the boldfaced definite nominal in (37c) is construable predicatively because *director* is a relational noun, and is thus construable as 'linked' to whatever one is a director of; these remarks apply to the reduced version of (37c) as well, presumably because the relational nature of the noun makes it easy to think of a suitable implicit argument. — Concerning the data in (37d), the reduced versions are infelicitous for the following reason: The post-copular noun is non-relational, and in the absence of a specifically indicated local dependency (as, for example, in the full versions), quantification is taken to apply to a D-linked set; a predicative construal is thus excluded. Since the specific type of quantification precludes referential status for the boldfaced DPs, an equative/specificational reading is also excluded. There are thus no felicitous readings. As already hinted at, the full versions of (37d) are felicitous predicative constructions because it is the relative clause, rather than the prior context, that provides a set for quantification; in particular,  $\lambda x$  [*a woman looks for x in a husband*].

The possibility of relativizing out of predicative contexts was noted in Ross (1967, Section 6.1.1.6.), and, as shown in (38), it is subject to (A)-type effects.

- (38) a. Maxwell isn't {half, quite} {the, #a} (kind of) doctor that his father was —.  
 b. Maxwell is {almost, twice} {the, #a} (kind of) doctor that his father was —.

Since the individual variable of a predicate is used up in the application of the predicate to an argument, the only way to turn the relative clause into a property is by abstracting over a modifying degree/kind variable, which yields for the relatives in (38) a representation like  $\lambda d$  [*his father was d much of a doctor*] or  $\lambda k$  [*his father was a doctor of kind k*]. Just as in the case of the abstract nouns considered in the two preceding sections, a sortal mismatch seems difficult to conceive of, and I assume that the deviance of the indefinite versions is due to type mismatch. Observe that when the relative defines a plurality of situations each with its own unique degree, existential quantification, and thus restrictive construals, become possible:

- (39) Maxwell is now a kind of doctor that {few people thought he would ever be, his father almost managed to be}.<sup>10</sup>

We thus see that context (1d) is also a filter for restrictive construals, just like the contexts (1a)–(1c).

<sup>10</sup> In contrast to the comparable data with abstract mass nouns, such as (20)–(21), (31) and (33), (36) is not very good if *kind of* is suppressed. I conjecture this is a consequence of the fact that, with a mass noun, the countable indefinite article *a* is transparently intended for an implicit degree, while with a noun like *doctor*, such an intent is potentially masked by the fact that the nominal expression may serve a purely predicative role (as in *John is a doctor*).

## 2.6 Antecedent contained VP Deletion sites

The last Carlsonian context we will consider stands somewhat apart from those we have discussed so far, and reveals the operation of a third factor capable of inducing (A)-type effects. We will approach the issue via data like those in (20)–(21). Such data were in fact pointed out in a rather different context by Perlmutter (1970), cited in Jackendoff (1977). The latter provides the paradigm in (40), and takes it to show that ‘the proper article is dependent on the content of the relative clause.’

- (40) a. She greeted me with {the, #a}warmth I expected.  
b. She greeted me with {#the, a}warmth I hadn’t expected.

Jackendoff does not further elaborate on what it is in the content of the relative clause that forces specific choices of external articles. (40a) and (40b) form a minimal pair in being superficially distinct only in the affirmative/negative status of their relative clauses. This may conceivably lead to the hypothesis that the difference in felicity between the indefinite versions<sup>11</sup> is directly attributable to this superficial distinction. We have already provided data which clearly show that such a hypothesis is on the wrong track (see (19) and (21)). In the particular case of the indefinite version of (40a), note that there are no grounds for attributing its infelicity to type mismatch, since the degree of warmth that one expects of another person need not in principle be unique (one may expect it to fall within a range). This point is confirmed by the fact (40a) can be fully ‘repaired’ by adding an extra item of a particular kind, as shown in (41), which differs from (40a) only in the presence of one of the boldfaced items.<sup>12</sup>

- (41) She greeted me with a warmth that I had {**fully, definitely**} expected.

What we need to do then is to clarify what the contribution of such items to the felicity of (41) is. I believe this will be relatively easy once we understand what happens in the Carlsonian context (1e), and provided we also keep in mind some of the results of earlier sections of this paper. We now turn to context (1e).

Carlson (Section 2.4.) brought up data like (42a), which, as can easily be seen, exhibit (A)-type effects. He did not volunteer any explanation for this state of affairs, but

<sup>11</sup> The contrast between the definite versions of (40a) and (40b) is not directly relevant to our concerns. I believe it is traceable to the fact that the latter requires a more elaborate context of utterance than the former, and that the needed context is relatively opaque in out-of-the-blue situations. Specifically, (40a) may be uttered in situations where the speaker expected to be greeted with a specific degree of warmth (a possible, albeit not necessary assumption). (40b), on the other hand, may only be uttered in a situation where the speaker expected to be received with any of the imaginable degrees of warmth except one, decidedly a less standard expectation. Nonetheless, the definite version of (40b) can be ‘repaired’ by lexical manipulation, as illustrated in (i).

(i) Mary greeted John with the one kind of warmth he hadn’t expected: she {offered to pay all the debts he ever made, banged him over the head with a broomstick}.

<sup>12</sup> These items have been boldfaced with ‘malice aforethought’; on the intended import of boldfacing, see the discussion of (43) below in the text.

pointed out that the 'gap' of relativization is here a proper subpart of a VP-Deletion site that is moreover 'antecedent-contained', pointing thereby to the possibility that this state of affairs may be in some way responsible for the observed contrasts. Carlson did not provide minimally different data without VP-Deletion, but (42b), especially with sentence stress on the boldfaced item, does seem to be more acceptable.

- (42) a. Marv put in his trunk {every, all the, #some, #three} object(s) he could.  
b. ?Marv put in his trunk {some, three} objects that he could **put** there.

I propose to show, however, that antecedent-contained VP-Deletion is only indirectly related to the (A)-type effects in (42a), much as the affirmative/negative distinction is only indirectly responsible for the facts in (41) (see the last paragraph of this section).

The account that follows is a compacted version of proposals and arguments put forward in GL 96. GL 96 pointed out that data like the infelicitous versions of (42a) can be 'repaired' through a variety of lexical manipulations under preservation of the antecedent-contained VP-Deletion context. Supporting data are provided in (43).

- (43) a. Bob kissed three girls that his brother {**didn't**, **also** did}.  
b. Bob refused to kiss three girls that his brother once **did**.  
c. Bob carried upstairs three objects that his brother had been **unable** to.  
d. Being older now, Bob finds it hard to carry upstairs certain objects that he once **effortlessly** could.

Observe that the gap of relativization is invariably included in an antecedent-contained VP-Deletion site, and that while some of the relatives include negative items, not all of them do; in particular, (43a) with *also* and (43b) do not (in the latter, the boldfaced auxiliary must be contrastively stressed, for reasons to which I turn directly). GL 96 argued that the salvaging factor is that the relative clauses contain an item that naturally attracts sentence or contrastive stress, and this, because such stress can signal a focus of new information; the relevant stressable items in (43) are boldfaced. A brief summary of the role that GL 96 attributed to focus is provided below.

GL 96 argued that, due to a 'conspiracy' of lexical, prosodic, and pragmatic factors, the infelicitous versions of (42a) do not include a naturally stressable item. Next, they argued that the fundamental semantic distinction between restrictives and maximalizers, namely, the fact that their CP-internal variable is, respectively, externally and internally quantifier-bound, has certain consequences for their 'informational' properties. In particular, a restrictive clause must, and a maximalizing clause does not need to, be informationally partitioned into a predictable topic (the externally bound variable) and a comment (the remainder of the clause). Suggestive support for this proposal is provided by the observation that the *wh*-pronouns of restrictive clauses, which are arguably surface reflexes of the CP-internal variable, may not be stressed even under pragmatically plausible contrast, as shown in (44a). The plausibility of this claim is reinforced by the observation that appositive relatives, whose internal variable is also assigned a value CP-externally, also disallow stress on their *wh*-pronouns (see (44b)), and it is further reinforced by the observation that the *wh*-phrases of free relatives (which have maximalizing semantics; see GL, Section 3) may carry contrastive stress (see (44c)).

- (44) a. This is the boy whose **mother** we saw, and this is the boy {whose **father**, #**whom**} we saw.  
 b. This is Bob, whose **mother** we saw, and this is Jack, {whose **father**, #**whom**} we saw.  
 c. She wasn't staring at **what** I brought along, but at **whom** I brought along.

Now, if the non-topical part of a relative fails to contain a focus, it constitutes an uninformative comment, and this state of affairs results in infelicity.

We may now return to the distinction in felicity between the indefinite version of (40a) and (41). The infelicity of the indefinite version of (40a) cannot be fully reduced to that of the indefinite versions of (42a) because the full verb *expect*, unlike the modal *could*, is presumably a carrier of lexical stress and thus a possible target of neutral sentence stress (in the sense of Cinque 1993). Still, due to its particular semantics, *expect* is not a natural target for implied focus contrast, and the indefinite version of (40a) thus does not make it sufficiently salient that more than one degree of warmth is relevant in the context of utterance; if so, the marginality of this example is plausibly attributable to type mismatch. In (41), on the other hand, the focused items implicitly point to degrees of warmth that were not fully/definitely expected, and this makes salient the existence of several possible situations with distinct degrees of warmth, thus eliminating type mismatch. I note that a comparable result can be achieved by introducing an implied affirmative/negative contrast, as in (45a), or by replacing *expect* with *surprise*, which implies that a different situation was expected, as in (45b).

- (45) a. She greeted me with a warmth that I **did** expect.  
 b. She greeted me with a warmth that **surprised** me.

I also note that in Romanian, where an affirmation is contrasted with its negation by stressing the verb (rather than by means of an auxiliary like *do*), the counterpart of the indefinite version of (40a) with contrastive stress on the verb is as good as (45a). Finally, the distinction in felicity between the indefinite versions of (40a) and (40b) is plausibly attributable to the fact that negation is a natural implied focus of affirmative/negative contrast, and is thus in effect the counterpart of the auxiliary in (45a). — In short, the problem raised by the contrast between the indefinite versions of (40a) and (40b) yields to an analysis that jointly relies on the blocking role of type mismatch and on the licensing role of focus.

### 3. Summary and conclusions

Having shown in Section 2 that all the CP-internal contexts for relativization that were addressed are no more than filters for restrictive construals, let us now take stock of the results we have achieved, and ask where such results stand in relation to the theme of the Colloquium on Interface Strategies.

In Grosu (to appear a), it was argued that the semantic subtypes of relatives are not in general pre-encoded by the CSYS; at most, choices of specific subtypes may be 'forced',



on a language-specific basis, by a variety of morphosyntactic and/or configurational properties. This paper has addressed a situation which, insofar as the relative CP as a whole is concerned, is morphosyntactically and configurationally ambiguous between a restrictive and a maximalizing construal. More specifically, it has addressed the claim, made in Carlson 1977, that special choices of local context for the CP-internal 'gap' of relativization can effect resolution in favour of the maximalizing type. As far as I can tell, such contexts have the same effects in other languages in which they are found, and it thus makes sense to ask whether they amount to an encoding of the maximalization subtype, and if yes, whether the encoding is effected by the CSYS.

The answer that emerges from this study is a clear no to both questions, and this, because none of the contexts at issue **ensures** a maximalizing construal. At the same time, some of these contexts do encode something, but what they encode is not a relative subtype. Rather, the contexts discussed in sections 2.1–2.4. force the relative clause to be a **degree relative**, that is to say, a relative in which abstraction applies to degrees. This follows from the shared property of incompatibility with wide scope and D-linking, which rules out abstraction over individuals and leaves abstraction over degrees as the only possibility. However, degree relatives do not, contrary to what Carlson, Heim and GL assumed, stand in a relation of proper inclusion to maximalizing relatives, but rather in a relation of proper intersection. Whether they receive a restrictive or a maximalizing construal depends not on the Carlsonian contexts under consideration *per se*, but on the following blocking/licensing factors:

- (A) Intersection is undefined for sets that are sortally mismatched.
- (B) The operation of MAX is automatic for an implicationally defined set of degrees that pertains to a single situation. When MAX applies in multiple situations, its multiple outputs may be type-lifted by set formation, and the resulting set is **not** a target for re-application of MAX.

As for the context in 2.5., it does not encode or force anything, as far as I can tell. What it does is remove certain potential foci from relative clauses, and this increases the likelihood that restrictive readings will be excluded by the following general principle:

- (C) Comments must be informative.

In short, type-resolution is carried out by a combination of factors. The Carlsonian contexts may be counted among these factors, provided it is recognized that their role is an indirect one, and that the explanatory credit devolves first and foremost on the general principles (A)–(C).

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