Degree Phrase Raising in Relative Clauses[1]

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Abstract

In this paper I will argue that modal degree of amount relative clauses, as well as Spanish AP degree relative clauses are derived via overt DegP raising. I show that the two types of degree relative clauses discussed here are mirrored by two types of DegP that were proposed in Neelman, van de Koot & Doetjes (2004). This raises the possibility that the syntactic and semantic differences of the classes of degree relative constructions can be reduced to the type of lexical item that is raised out of the CP.

Keywords: degree phrase, relative clause, comparatives, amount relative, gradability

1. Two types of degree relativization

The paper will argue that relative clauses can be derived via overt raising of the Degree Phrase (DegP) out of the CP. I will concentrate on two types of degree relative clauses, modal degree of amount relatives (1) as first discussed in Heim (1987), and Spanish adjectival degree clauses (2) as discussed in Gutiérrez-Rexach (1999).[2]

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[2] This paper will not discuss the constructions classically assumed to be degree relative clauses following Carlson (1977), namely 'there' relatives and ACD relative clauses:

1. It would take us all year to drink the champagne that you spilled at the party

   A. the amount of champagne
   #B. the actual champagne

2. Juan no entendió lo hermosa que era la
   Juan not understood the-neut. beautiful-fem.sg. that was the-fem.sg.
   novella
   novel- fem.sg.
   'Juan did not understand how beautiful the novel was

   A. Juan did not understand the extent of the beauty of the novel'
   #B. Juan though the novel was not beautiful.

The derivation of both (1) and (2) involves DegP moving overtly out of its base position inside the CP. In Spec-CP DegP undergoes Maximization, in fashion similar to comparatives (von Stechov 1984). Unlike in comparatives, it will be shown that DegP raises out of CP, thus (1) and (2) differ from (3) below in two respects, (i) DegP raises overtly in relative clauses (ii) DegP raises out the CP to a position within the extended DP.

(i) John took the books that there were on the table

(ii) John too the books that he could

The first reason is space; secondly Herdan (2008) and McNally (2008) raise valid arguments as to why the semantics of the above constructions should be re-examined. I refer the reader to Herdan (2008) for an overview of the issues.

3. It would take me all year to drink as much beer as you spilled wine at the party

2. Degree Relative Clauses and Head Noun Raising

Grosu & Landman (1998) propose a derivation of degree relative clauses that assumes a DegP raising with the head noun to a CP peripheral position, and the head noun raising further out in fashion similar to Kayne (1994).

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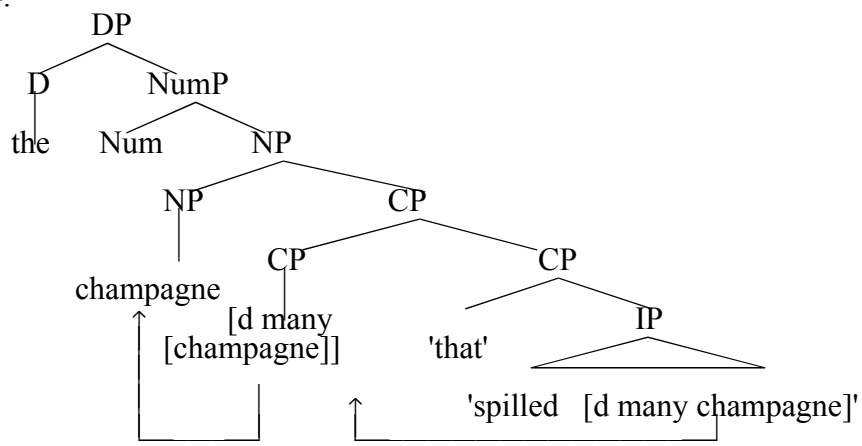

The derivation in (4) makes the prediction that a degree relative like (1) should be allowed to have an interpretation where the head noun is reconstructed inside the relative clause, as is the case with a head noun raising derivation (Sauerland 2003). This appears to be not the case.

5. At the morgue, it would take us just a day to get the creeps that a cemetery gives in a year. [3]

A. Literal meaning: creeps are items

#B. Idiom reading involving the degree of the amount of creeps.

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[3] It has to be noted that this idiom does lend itself to be relativized with give/get (Svenonius 2005).

(i) At the morgue I get the creeps that only a cemetery gives

Also when we eliminate the possibility of an amount reading by removing the modal *would* (see Heim 1987), we obtain a well formed relativized idiom:

(ii) At the morgue, it took us just a day to get the creeps that a cemetery gives in a year

The mechanism that makes the presence of the modal obligatory is not well understood, however, removing it does lead to a non-degree reading, even in the case of (1):

(iii) It took us a year to drink the champagne that you spilled

This can only mean retrieving the actual spilled champagne. The fact that (ii) is fine without a degree reading suggests that what is blocking a degree reading in (5) is degree relativization, not relativization per se, or an amount reading since the example below is fine:

(iv) I think that boy gave me more the creeps than the shooting itself

It has to be emphasized that the idiom and Condition-A contrasts are marginal for some, judgments vary depending on the speakers ability to get pure degree of amount readings and not identity of substance, or degree of type readings (more scary less scary creeps).

6. It would take/took us all year to paint the portraits of himself$_i$ that John$_i$ burned in a fit of paranoia

#A. Type of portrait

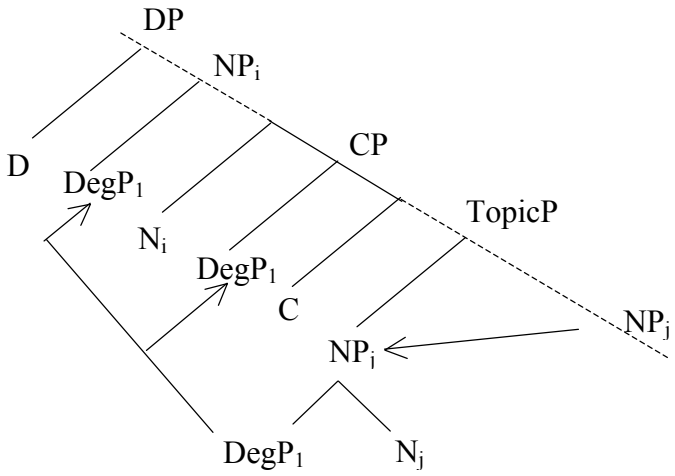
B. painting the actual burned canvas

#C. paint the amount of portraits.

The above examples indicate that classical head noun reconstruction tests point to a matching derivation (Lees 1960, Chomsky 1965, Munn 1994, Sauerland 1998) as opposed to head noun raising analysis adopted in Grosu & Landman 1998, based on the proposals of Kayne (1994). The proposal of this paper is that a modal degree relative clause like (1) is derived via head noun matching, which accounts for the lack of head noun reconstruction effects, and overt DegP raising form the internal NP to a position modifying the external NP.

7. Derivation of

It would take us all year to drink the champagne that you spilled at the party ($N_i = N_j =$ *champagne*)



The derivation involves DegP being generated in Spec-NP_j and raising with the whole NP to a Spec-Topic position in order to license subsequent ellipsis of the inner NP, making NP deletion under identity of form of Topic drop (Ross 1982, Huang 1984). Accounts that utilize a head noun raising derivation also assume that the head noun raises to a Spec-Topic position (Bianchi 1999, de Vries 2002). The difference between those accounts and the one proposed here is that, at least in modal degree relatives, the NP does not raise any further than Spec-Topic. This accounts for the head noun reconstruction data, a matching analysis predicts that the idiomatic reading is lost if there is no movement chain between the head noun and the idiom trace inside the relative clause (Vergnaud 1974). The same holds for Condition-A effects, if there is no movement relationship between head noun containing the reflexive and the trace position where the reflexive is bound by the subject then the construction is predicted to be ungrammatical. This proposal not only correctly predicts the head noun reconstruction facts in modal degree relative clauses, it also captures how they differ from comparatives.

3. Comparatives vs. relatives

In this paper I am arguing for a derivation of modal degree relative clauses that involves overt DegP raising via CP to a position modifying the external NP. The trigger for this movement is a non-interpretable {+REL} feature (Rizzi 1997) on CP. The need to check this feature forces DegP to raise in the syntax. This is not the case in comparative constructions where there is no {+REL} feature present that would trigger overt DegP raising. I argue that this difference in the

derivation of comparatives and modal degree relatives leads to different readings as far as scope is concerned. In the constructions below the quantifier *every* is in a different configuration in the comparative than in the relative as far as its relation to $DegP_{MAX}$ and DegP is concerned.

8. It would take me all year to drink the champagne that every guest spilled at the party

   #A. Amount of champagne drank = sum of the amount of spilled champagne by each individual guest

   #B. Amount of champagne drank= amount of spilled champagne by the guest who spilled the most

   C. Amount of champagne drank= amount of spilled champagne by any of the guests provided everyone spilled equal amounts

9. It would take me all year to drink as much champagne as every guest spilled beer at the party

   #A. Amount of champagne drank = sum of the amount of spilled beer by each individual guest

   B. Amount of champagne drank= amount of spilled beer by the guest who spilled the most

   C. Amount of champagne drank= amount of spilled beer by any of the guests provided everyone spilled equal amounts

The crucial contrast is in the A readings. The relative allows a collective reading, which is completely out for the comparative. On the other hand the comparative allows a distributive

reading, which is impossible for the relative. I argue that this is because *every* has wide scope over $DegP_{MAX}$ and DegP in the case of comparative (*every* > $DegP_{MAX}$ > DegP), but in the case of the relative $DegP_{MAX}$ scopes over *every*, which scopes over DegP ($DegP_{MAX}$ > *every* > DegP).

10. a. Comparative: *every* > $DegP_{MAX}$ > DegP

- possible: distributive reading
- impossible: collective reading

b. Relative: $DegP_{MAX}$ > *every* > DegP

- possible: marginally collective reading
- impossible: distributive reading

The scope reading for the comparative is the standard one, *every guest* has wise scope of the $DegP_{MAX}$ giving us the interpretation where we are talking about the person who spilled the most. Let me concentrate on what does a scope relationship like $DegP_{MAX}$ > *every* > DegP entail. DegP has the denotation of a set of degrees {D}. The operation Maximization takes the set of degrees {D} and on the basis of an established scale S returns the maximal degree $d_n \in \{D\}$.

This means that $DegP_{MAX}$ > *every* would mean that we are referring to an amount spilled by the guest who spilled the least since the maximal degree has to apply to every guest, including the one that spilled the least. However, this reading is unattested suggesting that the $DegP_{MAX}$ > *every* is not possible. On its own this would suggest that DegP does not overtly raise out of CP, and, at best it undergoes QR, like in comparative's and as proposed in Grosu & Landman (1998)

for constructions like (1). However, the unavailability of the reading where: *every* > $DegP_{MAX}$ attested for comparatives contradicts that.

The second part of this equation paints a different picture, in (10b) *every* > DegP, this scoping over a non-maximized set of degrees gives us the necessary scope for the collective reading. Let me argue that speakers allow for this reading since they exclude the $DegP_{MAX}$ > *every* which violates the Kennedy-Heim generalization prohibiting a DegP from scoping over a quantifier (see Kennedy 1997, Heim 2001).[4] This account predicts that a modal degree relative clasue will not have a distributive reading where: *every* > $DegP_{MAX}$ because of overt DegP raising. It also predicts that the collective reading will be marginal, since it basically involves reconciling a syntactic with semantic constraints.[5]

4. Two types of DegP

Let me return to the examples in (1,2) repeated here below.

11=1. It would take us all year to drink the champagne that you spilled at the party

12=2. Juan no entendió lo hermosa que era la novella
Juan not understood the-neut. beautiful-fem.sg. that was the-fem.sg. novel- fem.sg.

[4] It is beyond the scope of this paper to provide an account of the Kennedy-Heim constraint.

[5] It also opens the door for interesting speculation that scope and movement, overt or covert are not necessarily in a 1-1 correspondence.

'Juan did not understand how beautiful the novel was = Juan did not understand the extent of the beauty of the novel'

I have argued that (1) is derived via overt raising of DegP from a Spec-NP position inside the relative clause. Example (2) differs from (1) in that the gap in (2) appears to be an AP. Setting aside the issue whether there is a nominal head that the CP is modifying in (2), let me concentrate on the issue of what is being raised out of the CP. Modern Spanish requires that the AP is outside the CP, which strongly suggests that it has been raised from the gap position inside the CP. However, I have argued that a degree relative clause requires DegP raising. Examples like (2) have been argued to have a degree reading (Gutiérrez-Rexach 1999), what is being relativized is the degree of beauty (of the novel). The truth conditions of (2) can be fulfilled if Juan knew that the novel is beautiful, he just did not know it was *so* beautiful. Let me propose that we have DegP raising in (2) that obligatorily forces the AP to raise. How is this possible? Let me propose that the difference between (1) and (2) is in the nature of DegP. Neelman, van de Koot and Doetjes (2004) (NKD) argue that the grammar requires two kinds of Degree Phrases. One category, they call class-1 takes the XP it modifies as its complement, class-2 modifies a given XP by being in its Specifier.

13. Class-1 Class-2

NKD argue that there are no semantic differences between class-1 and class-2 and that the two classes are differentiated by their syntactic behavior. Not surprisingly class-2 DegP's can move independently of the XP they modify, whereas class1 cannot. Consider the following examples NKD gives for Dutch.

14. a. Ik acht hem [$_{DegP}$ te [$_{AP}$ afhankelijk van zijn vader]] om
I consider him too dependent on his father for
een eigen zaak te beginnen.
a own business to start

*b. Te$_i$ acht ik hem [$_{DegP}$ t$_i$ [$_{AP}$ afhankelijk van zijn vader]]
too consider I him dependent on his father
om een eigen zaak te beginnen.
for a own business to start

14. a. Ik acht hem [$_{AP}$ minder [$_{AP}$ afhankelijk van alcohol]] dan
I consider him less dependent on alcohol than
van andere drugs.
on other drugs

?b. Minder$_i$ acht ik hem [$_{AP}$ t$_i$ [$_{AP}$ afhankelijk van alcohol]] dan van
less consider I him dependent on alcohol than on
andere drugs.
other drugs

This taxonomy of DegP's allows me to argue that examples like (1) have a class-2 DegP, whereas examples like (2) involve a class-1 DegP. A class-1 DegP will necessarily move with its complement, in the case of (2), the AP.[6] On the other hand, a class-2 DegP has the option to raise without pied piping the phrase it modifies, the NP in the case of (1). What remains unaccounted is why pied piping is blocked altogether in modal degree relative clauses. If it was not, then we would observe head noun reconstruction effects and there should be no Condition-A violations and idiom relativization should be possible. The answer lies in the nature of Maximization operation. It takes a set of degrees {D} and returns the maximum degree contained in that set. In constructions like (2) the gradable adjective provides the scale for the degree phrase. Let me adopt a semantics following Rett (2008:3)

15. "- Gradable adjectives are type <e; <d; t>>, functions from individuals to sets of degrees (sets of degrees are also called 'scales')

- Scales are triples 〈D, $<_{\mathscr{A}}$, ψ〉 with D a set of points, $>_{\mathscr{A}}$ a total ordering on D, and ψ a dimension (e.g. 'height')

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[6] This was not always the case. As (Gutiérrez-Rexach 1999) points out, historically in 16th Century Spanish the AP stayed inside the CP. This suggests that a Class-2 DegP underwent a historical shift to a Class-1 DegP.

(i). todos los que la loauan no dezian la meytad de lo que ella era
all the-p1 that her praised not said the half of the-neut that she was
hermosa
beautiful

- Degrees d are therefore shorthand for triples $\langle d, <_{\mathscr{R}}, \psi \rangle$ with d a point on a scale D, $>_{\mathscr{R}}$ a total ordering on D, and ψ a dimension. " (Rett 2008:3)

If we adopt such a definition of degrees then Maximization of a DegP with an AP complement that serves as its dimension, is non problematic. Maximization selects the maximal degree along a dimension provided by the AP, in the case of (2) this dimension will be beauty. However, an NP with DegP in its Specifier will be argued not to be able to undergo Maximization. It can be argued that an NP is simply the wrong input for Maximization, what is required is a syntactic object where a DegP is in Spec-CP: {DegP, CP} and not {NP, CP}. Conversely, we can argue that Maximization will erroneously assume that the NP is the dimension for DegP. Since the noun *champagne* is not a gradable one (see Morzycki 2009) this will crash the input, because there is no scale to associate it with. [7] Either assumption allows us to rule out NP pied piping in examples like (1). Such an approach implies that in examples like (1) the dimension and scale are provided by the CP itself. This appears to give us the correct

[7] One indication that gradability of the NP plays a role comes from the fact that a degree of amount reading from idiom relativization with gradable nouns is more acceptable than with non-gradable type nouns. Compare the example below with (5) repeated here as (ii)

(i) It would take us all year to report on the headway you made in a week.

#(ii) At the morgue, it would take us just a day to get the creeps that a cemetery gives in a year

The noun *headway* has an inherent amount reading, for example if we modify it with the adjective like *big, enormous* we obtain an amount modification (*enormous headway = a large amount of headway)*, this is not so obvious with a noun like *creeps*, and is not the case with noun like *champagne*.

meaning since the dimension in (1) is: *spilled champagne*. The issue of whether a CP can be considered gradable is a separate matter. There is indication that CP's are more versatile in their semantic and syntactic roles that previously assumed (see Caponigro & Polinsky 2011, for an example of relative clause CPs play the role of indicatives). Another point indicating that this analysis might be on the right track is the observation that gradability is not solely restricted to gradable adjectives, or NP's, as research into gradable modals, VP and other categories has shown (see Lassiter 2011 for a review).

5. Determiner restrictions

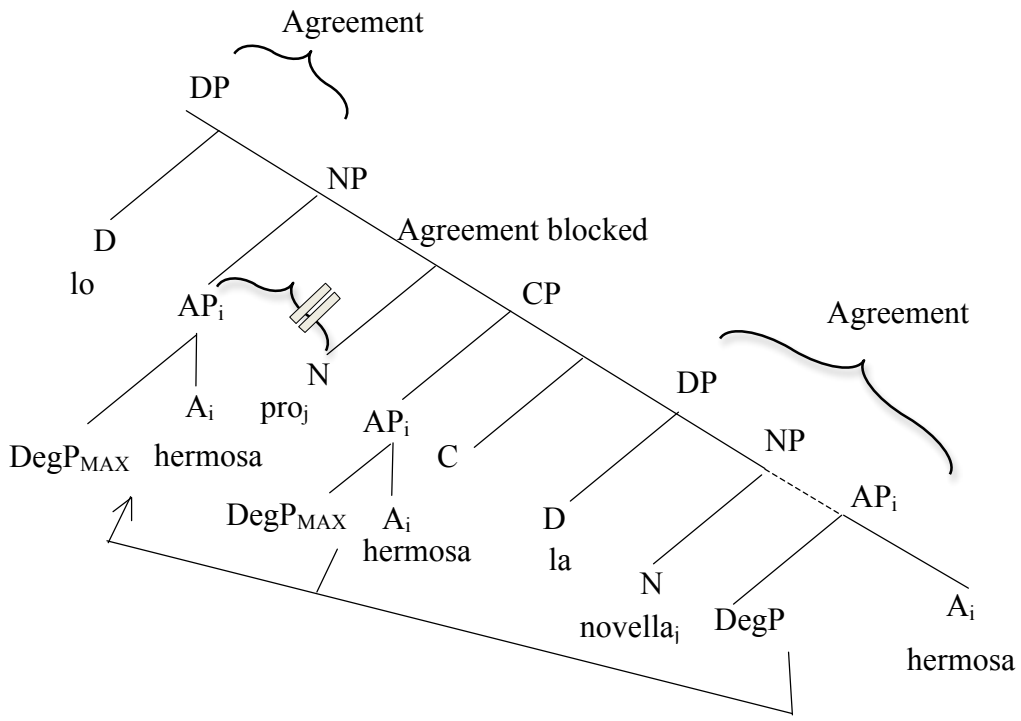
Starting with the work in Carlson (1977) it has been observed that structures classified as degree, or degree of amount relative clauses exhibit determiner restrictions. I will adopt the account proposed in Grosu & Landman (1998:146), namely that "the only determiners that preserve max into the quantification are the universals like *every* and definites like *the*. Hence, these are the only determiners that can head a DP with a degree relative." It has to be noted that although I reject Grosu & Landman's derivation of degree relatives, the restriction on determiners is compatible with my proposal since DegP is Maximized when it raises into the extended projection of the external head noun.

The example in (2) has another interesting property, namely that the there is lack of gender agreement between the Determiner and Adjective.

I will argue that this is a reflex on the restriction on multiple agreement, and a further argument that the DegP with AP raises from within the CP. Gutiérrez-Rexach (1999) proposes that the construction in (2) is headed by a null pronominal, this configuration triggers neuter agreement

with the determiner. The AP cannot agree with the null NP or the determiner since it has been raised as part of DegP and has undergone agreement with the internal DP.

16.



The analysis relies on the fact that he AP raises with its agreement features inert. I do not assume any specific agreement mechanism for inside the CP, it is not that important for our analysis. Predicative AP's agree with their subjects in Spanish, and the mechanism should be the same regardless if the CP is part of a relative clause or not. Crucially, once an AP participates in an agreement configuration, it cannot do so again.

6. Conclusion

In this paper I have argued that a certain type of degree relative clause is best analyzed as involving overt DegP raising. Evidence for such an approach comes from head noun reconstruction facts as well as asymmetries between degree relatives and comparatives as far as the interaction with scope bearing quantifiers like *every*. This work does not address classical amount/degree relative clauses discussed in Carlson (1977). This is because of two reasons. First of all, there are proposals in the literature McNally (2008) that 'there' relative clauses do not involve degree relativization, the same has been argued for ACD relatives (Herdan 2008), which would indicate that a semantic criterion of relativizing amounts does not yield a homogenous class of constructions. Second of all, discussion of possible forms of degree relativization is beyond the scope of this paper for reasons of space and because the primary goal of this paper is to show that relative clauses can be formed via overt DegP raising which gives rise to specific semantics and syntax. Having said that, I will try to tentatively speculate on how to go about and account for 'there' relatives, because I believe that the outlined here approach has the potential to capture the behavior of 'there' type relative clauses. Heim (1987) argues that the complementizer restriction on relative clauses stems from the fact that the gap position *e* in 'there' relative clauses (17a) is subject to the definiteness effect (Milsark 1974).

17. a. John took the books that/*which there were *e* on the table
    b. It would take us a year to drink the champagne that/*which you spilled *e* at the party

Setting aside the details of the individual proposals (see Heim 1987, Carlson 1977, Milsark 1974, and Grosu & Landman 1998 for an overview), the general observation, following Heim (1987) is that a *that* complementizer is possible in (17) since it is compatible with the gap being associated with degree variable, which counts as a weak DP, whereas the complementizer *which* is not compatible with a DegP gap because it requires a strong DP.[8] The crucial generalization for our discussion is that the relative marker restriction in a 'there' relative clause of the type in (17) points to a DegP trace. I have provided evidence why (17b) should be assumed to have a DegP raising account. In the same vein I would like to suggest that (17a) also involves DegP raising. However, unlike (17b) it involves a class-1 DegP phrase. This means that the whole extended NP projection, including AP and NumP slots (Cinque 2010, Zamparelli 2000), is moved with it. Obviously, this raises a whole set of questions concerning the syntax and semantics of such constructions. I will just mention two. First of all, such an approach where the NP is forced to raise should show in reconstruction effects. As observed by Sauerland (2003), 'there' relatives do not alleviate Condition-C effects:

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[8] Additional evidence that a complementizer relative marker is compatible with a DegP trace, whereas a relative pronoun one is not, comes from languages like Polish, or Russian, where equatives are possible with a complementizer but not with a relative pronoun (in the case of Polish this complementizer is restricted to relative clauses):

(i) W domu jest tyle piwa co/*które wina jest w pracy
At home is as-much beer that/which is wine at work
'At home there is as much beer as there is wine at work

This is on top of the existing regular equative marker that these languages employ.

18. *a. It would have taken us all year to read the letters for John$_i$ that he$_i$ expected there would be

b. It would have taken us all year to read the letters for John$_i$ that he$_i$ had burned after his girlfriend left

As far as the contrast between (18a), a 'there' relative and (18b), a modal degree relative, is valid, the analysis appears to be on the right track. A class-2 DegP cannot pied pipe an NP so there should be no Condition C violation, whereas a class-1 DegP raises with NP as its complement.[9] This is captured in the reconstruction facts.

The second point involves the interpretation of 'there' relative clauses. As pointed out in McNally (2008) and Herdan (2008), they do not have an identity of amount reading, but rather an identity of substance one that involves exhaustive reading of amount. Herdan (2008) proposes that 'there' relative clauses are generated via a covert superlative morpheme. Without discussing the details of her analysis, I suggest that a class-1 DegP raised together with its complement to Spec CP where it becomes Maximized achieves the same semantic effect that a null superlative morpheme would. In both cases, we select the maximal degree out of a set of degrees on a given scale on a defined dimension. In other words, if we take an expression like *the tallest person* the superlative can characterized as the maximal degree on a scale whose dimension is tallness. The issue remains where do w obtain the dimension information in 'there' relatives. We could argue that a null AP is present in (17a), or, as I will suggest, there is a NumP containing the plural that

[9] I skip the issue how Condition-C facts are captured in a matching derivation. For the sake of brevity, I adopt Sauerland (1998) by allowing Vehicle Change (Fiengo and May 1994) to apply to elided under identity NP's.

provides us with a dimension - a number one. That is why plurality is essential in (17a), otherwise wee need a superlative to maximize the DegP.

18. *a. It would take us a year to read the letter that he knew there would be in the safe

b. It would take us a year to read the letters that he knew there would be in the safe

c. It would take us a year to read the only letter that he knew there would be in the safe

Such an approach of 'there' relative clauses would make the similar to the Spanish construction in (2). Both involve class-1 DegP raising, the difference being that in Spanish the DegP has an AP complement, whereas 'there' relatives have a plural NP. However, in both cases we get a Maximality interpretation. In the Spanish example we have an exclamative AP - the novel was so beautiful, whereas in 'there' relatives we have an exhaustive interpretation of amount.

Finally, there is an unfortunate shortcoming of this paper in that there is no discussion of why modal degree relative clauses like (1) require a modal. McNally (2008) notes some exceptions, but in most cases removing the modal gives rise to an identity of substance reading. Again, for reasons of space, I can only offer speculation as to why this is the case. Modal amount relative clauses involve comparison, and yet are derived via just one instance of DegP. A possible account of this requirement comes from the analysis of modals in Kratzer (1981, 1986),

where she argues that that modals allow for quantification over possible worlds. One can speculate on the consequences the interaction between modal scope and the scope of the raised DegP. The aim would be to explore whether when DegP has scope over the modal it allows us to establish a comparison between degrees in two distinct possible worlds expressed by the prepositions in (1), namely: d_{w1}=amount spilled and d_{w2}= amount drank, and have a mapping where (1) is true iff d_{w1}= d_{w2}. In such a scenario, the DegP would need a modal in order to scope over it (but see Lassiter 2011 for an account where modals take a DegP as their modifier, and a semantics that does not require a possible worlds account). I leave this issue for future research.

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