Degree relative clauses in Spanish

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Abstract

This paper presents a syntax and semantics for Degree Neuter Relatives (DNRs) in Spanish, an unusual construction involving a relative clause seemingly headed by a gradable predicate and the neuter determiner *lo*. I propose an analysis of DNRs that avoids compositionality problems derived from sortal mismatches between degrees and entities. In addition, I suggest that despite the cross-linguistic rarity of DNRs, it is no coincidence that they are available in Spanish: the proposed analysis relies on aspects of the morphological inventory of Spanish that allows the language to construct degreedenoting Free Relatives headed by a definite article, and so DNRs should not be expected in languages lacking this ability.

Keywords: relative clauses; degree expressions; Spanish

1. Introduction

This paper discusses a form of quantity-oriented related clause construction, where the clause is superficially headed by a gradable predicate of any syntactic category and the neuter definite determiner *lo*.[1] Following Rivero (1981) and Ojeda (1982), I refer to these constructions as Degree Neuter Relatives (DNRs for short).

(1)   Pedro es   lo alto   que era   su   Padre
        Pedro be.3.SG *lo* tall.M.SG that was.3.SG his.M.SG father
        "Pedro is as tall as his father was"

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[1]   The precise nature of *lo* is debated in the literature. I do not take a stance on its best syntactic characterization, glossing it simply as *lo* throughout, assuming it is simply neutral (following e.g. Gil y Gaya 1964, Alarcos Llorach 1967 and Álvarez Martínez 1986). What is important is that the morpheme has definite semantics, which is something that all analyses take for granted (for discussion, see Bosque and Moreno 1990, Ojeda 1993 and Gutiérrez-Rexach 1999).

(2)   La   película   no fue   lo exitosa   que fue la
       the.F.SG movie.F.SG not was.3.SG *lo* successful.FM.SG that was the.F.SG
            novela
            novel.F.SG
       "The movie wasn't as successful as the novel"

DNRs uniformly give rise to a "degree" interpretation: (1) conveys that Pedro is tall to the same degree or extent that his father was; conversely (2) expresses that the movie was not successful to the same extent that the novel was successful. Due to their degree oriented interpretation, the consensus has long been that DNRs must be quantity denoting in "some capacity" (Plann 1980, Torrego 1988, Bosque and Moreno 1990). In this vein and drawing parallels with other constructions, such as comparatives and equatives, DNRs have later been modeled in formal semantic analyses as being of type *d* (Gutiérrez-Rexach 1999, 2014).[2] Summarizing these accounts, the resulting suggested interpretations for examples (1) and (2) above are the following:.

(3) $[[(1)]]$ = Pedro is *d*-tall (where *d* corresponds to the maximal degree *d'* such that Pedro is *d'*-tall).

(4) $[[(2)]]$ = It is not the case that the movie was *d*-successfull (where *d* corresponds to the maximal degree *d'* such that the novel was *d'*-successfull.

This paper focuses on two key questions about DNRs that so far have remained unanswered. The first one pertains the ability of the neuter definite determiner to combine directly with a gradable predicate. For comparison, counterparts of DNRs in English such as *Pedro is the tall that his father was* or *The movies wasn't the successful that the novel was* are always ungrammatical. Second, if DNRs denote maximal degrees, how does syntactic and semàntic composition work in tandem in order to allow them appear in predicate positions as in (1) and (2)? Notice that simple type-shifting mechanisms will not suffice for these cases since the kind of type mismatch we find is double: we not only must combine two expressions that are seemingly referential (a similar issue to what we observe in specificational copulative clauses), but they are different kinds of semantic entities altogether (of type *e* and *d*).

This paper presents a solution to these two aforementioned compositionality issues and along the way explains the availability of DNRs in Spanish, but not in languages like English. In a nutshell, *syntactically* DNRs are taken to be free relatives

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[2]   DNRs are at the surface level at least very similar to *lo-de* constructions in Spanish, illustrated in (i) (see Villalba & Bartra-Kaufmann 2010; their example):
(i)   Me sorprendió   lo caro   de la casa
       I.dat suprised.3.SG *lo* expensive of the house
       "It surprised me how expensive the house was"
Although a full comparison of DNRs to *lo-de* constructions would take us too far afield, see Bartra-Kaufmann & Villalba (2006) and Villalba & Bartra-Kaufmann (2010) for arguments that *lo-de* constructions also involve a degree quantificational structure, as we will argue later is the case for DNRs as well. I thank an anonymous reviewer for suggesting this connection to me.

which *semantically* denote maximal degrees serving the role of a Degree Phrase in a larger Adjectival Phrase, part of which is elided under identity. With these goals ahead, this paper is organized as follows. In section 2 I present some basic facts about the distribution of DNRs in Spanish that any comprehensive analysis must account for. In section 3 I argue in favor of a syntactic treatment of DNRs whereby, despite surface appearances, they are treated as a variety of free relatives. Then in section 4 I show that DNRs cannot denote just any expression of degree, but must instead denote maximal degrees, where maximality is contributed by the neuter determiner *lo*. Finally, section 5 argues that the composition puzzle can be resolved once we take into account the structural position of DNRs as occupying the Degree Phrase slot of an Adjectival Phrase, very much like other degree expressions such as *six feet* do in APs such as *six feet tall*. Finally, section 6 concludes and discusses the main implications of this approach.

2. Basic properties of DNRs

There are three main properties of DNRs that we aim to explain. The first one relates to their flexibility: DNRs are not only possible with adjectives, but in fact they can be formed using predicates that belong to a variety of syntactic categories, as long as they are gradable, including adverbs, nominal and even full Prepositiona Phrases, as shown below:

(5)   lo {rápidamente / *ayer}   que llegó
        lo rapidly   yesterday that arrived.3.SG
        "how {fast / *yesterday} she arrived

(6)   lo {niña /   *historia} que es   Lisa
        lo child.F.SG history   that is.3.SG Lisa
        "how {childish / *history} is Lisa

(7)   lo {en punto / *desde casa} que llegó
        lo on point / from home that arrived.3.SG
        "how {on time / *from home} she arrived

        In fact, any predicative phrase that is coercible into a gradable interpretation can be successfully used to form a DNR (Contreras 1973). This flexibility then indicates that restrictions in forming DNRs must be semantic, and not syntactic. Moreover, it indicates that DNRs cannot be subsumed under ordinary accounts of restrictive relative clauses, since these are not typically formed by displacing Adverbial Phrases or Prepositional Phrases.

        The second noteworthy property of DNRs is the obligatoriness of the relative clause. Failing to have an overt relative clause invariably leads to ungrammaticality:

(8)   lo alto   *(que era   su   Padre)
        lo tall.M.SG that was.3.SG his.M.SG father
        "how tall his father was"

(9)   lo exitosa *(que fue la novela)
       lo successful.FM.SG that was.3.SG the.F.SG novel.F.SG
       "how successful the novel was"

This property distinguishes DNRs from similar constructions such as definite adjective nominalizations, of the kind discusses in Villalba (2009):

(10)   *Juan es   lo alto de su padre
        Juan is.3.SG *lo* tall of his father
       Intended: "Juan is as tall as his dad"

Finally, the third important pattern pertains to the definite determiner itself. Here we find two aspects of DNRs that must be accounted for. First, DNRs can only be formed with the definite determiner, as no other determiner is able to form grammatical DNRs.

(11)   {lo / *esto / *mucho / *algo} exitosa   que fue
       lo   this   much   some successful.FM.SG that was.3.SG
       "how successful it was"

The agreement properties of the definite determiner are also particular to DNRs. In ordinary restrictive relative clauses in Spanish, definite articles must agree in number and gender with the head noun, as shown in (12) below. DNRs however do not abide by this requirement: they uniformly use *lo*, irrespective of the phi-features of the fronted predicate, as demonstrated by (13).

(12)   {las /   *la /   *el /   *los}   bonitas   fotos
       the.F.PL the.F.SG the.M.SG the.M.PL beautiful.F.PL photo.F.PL
       "the beautiful pictures"

(13)   {lo / *la}   exitosa   que fue   la   novela
        lo   the.F.SG successful.FM.SG that was.3.SG the.F.SG novel.F.SG
       "how successful the novel was"

In contrast, the predicate that is seemingly heading the relative clause must agree with material internal to the relative clause, suggesting that agreement is not altogether disrupted in these constructions.[3]

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[3]   A reviewer points out that in some Spanish dialects, naming varieties from the Caribbean, examples such as those in (i) are indeed possible:
(i)   lo bonita   que son   las   fotos
       lo beautiful.F.SG that be.3.SG the.F.PL photo.F.PL
       In (i) the agreement patterns reported above is disrupted, since agreement in now at least partially disrupted. They suggest that perhaps this might be due to the tendency in these dialects to elide word final -s in certain contexts, in which case we expect (i) but not (ii) below, with disruption of gender in addition to number agreement:
(ii)   lo bonito   que son   las   fotos
       lo beautiful.M.SG that be.3.SG the.F.PL photo.F.PL

(14)   lo {bonitas /   *bonita }   que son   las   fotos
       lo beautiful.F.PL beautiful.M.SG that be.3.SG the.F.PL photo.F.PL
       "how beautiful the pictures are"

These agreement patterns suggest a close relationship between the gradable predicate and the relative clause, in a manner that is categorically different from the relationship between *lo* and the rest of the DNR constructions. In the next section we capitalize on this categorical distinction to propose a syntactic configuration for DNRs.

3. The syntax of DNRs

This section argues that DNRs are free relatives, sharing properties with two other existing relative constructions in the language: *lo que* relative constructions and quantity denoting free relative constructions.

3.1 Varieties of free relatives in Spanish
The syntactic make-up of DNRs in Spanish depends on three specific properties of Spanish free relatives that are absent from other languages. Capitalizing on these properties thus not only allows to understand the properties of DNRs described on section 2, but also sheds light on the cross-linguistic rarity of these constructions. The first relevant property of free relatives in Spanish is the ability to form quantity denoting free relatives, formed with the quantity relative pronouns *cuan/cuanto*. These quantity free relatives have furthermore the ability to pied-pipe a predicate to the front of the relative clause.

(15)   Comió   cuantos   pepinos   quiso
       ate.3.SG how.much cucumbers wanted.3.SG
       "She ate as many cucumbers as she wanted"

(16)   Corrió   cuan   rápido fue   necesario
       run.3.SG how.much fast   was.3.SG required
       "She run as fast as it was required"

Note that this type of pied-piping is not typically observed in other languages (e.g. *I will eat how much food she makes*), which must usually resort to diferent types of relative pronouns, as in the case of *ever*-free relatives in English. A further important consideration with respect to Spanish free relatives is the possibility of forming them with an overt definite determiner. Free relatives in Spanish are ungrammatical with the relative pronoun *what* (*que* in the language).

This type of relative constructions must instead be formed by combining a CP with the definite article *lo* (Plann 1980, Brucart 1992, Arregi 1998, a.o.). Note too that this type of free relative clause constructions allow both an object level as well as a degree interpretation.

(17)   Comió   lo que quiso
         ate.3.SG *lo* that wanted.3.SG
         "She ate {what she wanted / as much as } she wanted"

Thus, Spanish has both the ability to form free relatives with overt definite determiners and to pied-pipe predicates that have degree- and quantity-oriented meanings. These constructions provide the tools that we can exploit to account for the syntactic structure of DNRs. For concreteness, assume a baseline syntactic analysis for free relatives in Spanish as in (18) below and compare with its English counterpart in (19) (following Jacobson 1995, Caponigro 2004, Arregi 1998, Ojea 2013, Gutierrez-Rexach 2014).

(18)   Spanish *lo que* free relative
         [DP lo [CP [DP Opwh]i [C[+REL] que [TP ...ti...]]]]

(19)   English free relative
         [DP D∅ [CP [DP what]i [C[+REL] ∅   [TP ...ti...]]]]

The structures are formally identical, differing only in the pieces that each language realizes overtly vs. covertly: Spanish shows overtly what English does covertly and vice-versa. The structures corresponding to Spanish quantity free relatives build on (18) above, with the crucial addition of the optionally pied-piped predicate that may be fronted together with the relative pronoun.

(20)   Nominal quantity free relative
         [DP D∅ [CP [DP cuanto (NP)]i [C[+REL] ∅ [TP ...ti...]]]]

(21)   Gradable quantity free relative
         [DP D∅ [CP [DP cuan   (GP)]i [C[+REL] ∅ [TP ...ti...]]]]

These structures capture the key properties of free relatives in Spanish, namely, the ability to form quantity free relatives, the ability to pied-pipe material with the moving *wh*-operator and the ability to form free relatives with an overt determiner. In the next section we show how with these pieces in place nothing else is required to account for the internal syntactic make-up of DNRs.

3.2 DNRs as free relatives
As foreshadowed earlier, we analyze DNRs are syntactically isomorphic to free relative constructions in Spanish. (22) below provides the general skeleton of DNRs, and (23) provides the particular case of example (1) above.

(22)   Spanish degree neuter free relative
         [DP lo [CP [DP Opwh Gradable Predicate]i [C[+REL] que [TP ...ti...]]]]

(23)   Syntactic structure of (1)
         [DP lo [CP [DP Opwh alto]i [C[+REL] que [TP su padre era ti]]]]

In this sense DNRs are not just superficially similar to free relatives, but they constitute one more instance of the same class of relative constructions. Like *lo que* free relatives, DNRs have an overt definite article, and like quantity free relatives with *cuan* and *cuanto* relative pronouns they involve a degree denoting *wh*-operator that pied-pipes a gradable predicate, albeit a covert one, so that only pied-piped material is visible on the specifier position of CP. The key differences between DNRs and quantity free relatives then amounts to the (c)overtness of the morphological pieces involved in their construction: what quantity free relatives do overtly, DNRs do covertly and vice-versa.[4]

A number of welcome results follow from this syntactic conception of DNRs. First, for obvious reasons the obligatoriness of the relative clause is no longer surprising and follows immediately. Second, the apparent syntactic flexibility of the superficial pied-piped material that gives the impression to act as the head of a relative clause is also explained, since it is not just the gradable predicate that is being displaced, but a full *wh*-phrase, guided by the presence of the familiar *wh* operator and a [+REL] feature on the head of the CP projection. And third, the agreement patterns are no longer surprising either: the predicate originates inside the CP and so it is expected to establish all agreement relations there. The neutre agreement on *lo* thus follows from the fact that, unlike with restrictive relative clauses, its sister is a CP that renders its domain opaque for agreement, and thus there is no nominal goal for D. Finally, the fact that these constructions use a combination of features that not available in other languages help us make sense of the relative cross-linguistics rarity of DNRs.

4. DNRs are definite degrees

Proposing that DNRs are in fact free relatives paves the way to a semàntic conception of DNRs as denoting definite descriptions of degrees (cf. Jacobson 1995, Caponigro 2004, a.o.). The basic assumptions that we need in order to obtain this result are rather standard: gradable predicates denote relations between degrees and properties, hence they are of type $<d,et>$, as in (24). For simplicity, I will assume that the gradable predicate is interpreted in-situ, combining first with the trace of the *wh* operator Op$_{wh}$ of type d. The final denotation of the CP then denotes a set of degrees d, as illustrated in (3) and (4) for the examples in (1) and (2); this is shown in (25). Finally, I take the definite determiner *lo* to have the semantics of a maximality operator (following Gutiérrez-Rexach 1996, 1999), shown in (26). The final denotation of the full DP is then shown in (27).

(24) $[[tall]] = \lambda d.\lambda x.tall(d, x)$

(25) $[[CP_{(23)}]] = [[[_{CP} \lambda d. \text{ his dad is d-tall}]]] = \lambda d.tall(d, \text{his-dad})$

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(26) $[[\text{lo}]] = \text{MAX} = \lambda N_{<d,t>} . \text{ɯn } [N(n) \ \& \ \forall n'[N(n') \rightarrow n' < n]]$

(27) $[[DP_{(23)}]] = [[D]]([[CP_{(23)}]])) = \text{MAX}(\lambda d.\text{tall}(d, \text{his-dad})$

  In this fashion, we keep the semantics parallel to the ordinary definite article and the overall semantics of DNRs close to other degree constructions as well as other free relative constructions.

5. Composing DNRs

So far, nothing we have said gets us out of the compositionality problem we noted earlier in the introduction: predicative positions with *e*-denoting subjects are not *d* type, and verbal predicates, including copulas of various sorts, do not typically take *d*-type arguments. As is, the composition between the subject of example (1) and its predicate, as analyzed above in (27), cannot proceed.

5.1 The Adjective Phrase
The proposal that we suggest in this paper solves the problem by arguing that DNRs must always be part of a larger Adjectival Phrase, similar to ordinary adjectives modified by measuring phrases, allowing them to appear in predicative positions like other ordinary adjectives without incurring into type-mismatches or type incongruences. Below in (28) we present the syntactic schema of such larger APs, and (29) shows the particular case of (1) for illustration.

(28)   [AP [DegP DNR]] [A alto]]

(29)   [AP [DegP [D lo] [CP [DP Opwh alto] [C' que [+REL] su padre era]]] [A ~~alto~~]]
          └──── *identity & deletion* ────┘

  The semantic task of a DNR within the larger Adjectival Phrase is identical to that of any Degree Phrase: it determines an extent that fills in the *d* variable of the gradable predicate yielding the set of individuals that possess the property of being *d*-much on some scale and dimension. This follows from the common assumption in the literature that expressions like *six feet* are names of degrees, projecting a *d*-denoting Degree Phrase. Thus, the meaning of a simple sentence like *Liz is six feet tall* can be represented as having the following syntactic structure:

(30)   [TP:t [DP:e Liz] [VP:<e,t> [V<et,et> is] [AP:<e,t> [DegP:d six feet] [A:<d,et> tall]]]]

  Constructions like these are readily interpretable according to the assumptions laid out above:

(31) $[[\text{six-feet tall}]] = [[\text{tall}]]([[\text{six-feet}]]) = \lambda x.\text{tall}(6",x)$

(32) $[[\text{Liz is six-feet tall}]] = \text{tall}(6",\text{Liz})$

In the case of DNRs, the role of the degree obtained from the free relative clause is also to measure the extent of the elided adjective, again by saturating its degree variable.

(33)   [TP:t [DP:e Pedro] [VP:<e,t> [V<et,et> es] [AP:<e,t> [DegP:d DNR] [A:<d,et> tall]]]]

There are two important things to notice about (33). The first one is that, this configuration sheds light on the determiner restriction we observed above, namely that DNRs can only be formed with the definite determiner: if DNRs require maximality, as suggested by their semantics and their syntactic role within the Adjective Phrase, the assuming that *lo* is interpreted as a maximality operator explains why other types of determiner/quantifiers are ruled out in these constructions.

5.2 Deletion operations
The second observation is that the analysis presented here requires a second copy of the gradable predicate that sits inside the relative clause. This second copy sits outside of the relative clause, acting as the main predicate of the full sentence. Evidence in favor of such assumption comes from the fact DNRs allow in fact spelling out the second, higher copy (see Bosque & Moreno 1990):

(34)   Pedro es   lo que era   su   padre de   alto
        Pedro be.3.SG *lo* that was.3.SG his.M.SG father of   tall.M.SG
        "Pedro is as tall as his father was"

This strategy is fully productive and applies to all DNRs. There is, moreover, no discernible difference in interpretation. The only noticeable difference is indeed syntactic, since in such DNRs the preposition *de* cannot be dispensed with, otherwise the resulting sentence would be ungrammatical. Interestingly, however, this is also the case in other types of measuring constructions that presumably lack a DP internal copy such as (35). This suggests that it is the highest copy in (36) below the one that is being pronounced, and not just a reconstructed CP-internal copy. The two constructions are thus isomorphic.

(35)   [AP [DegP dos metros] [A *(de) alto]]

(36)   [AP [DegP [D lo] [CP [DP Opwh alto] [C' que[+REL] su padre era]]] [A *(de) alto]]

The deletion operation that targets the higher CP-external copy of the gradable predicate is very reminiscent of Comparative Deletion (Kennedy 1999, Kennedy & Merchant 2000). In its simplest form, Comparative Deletion targets the second occurrence of the phrase introducing the object or *res* of a comparative construction. The overt realization of such second copies leads to ungrammaticality.

(37)   Jill wrote more books than Susan read books.

(38)   My sister drives as carefully as I drive carefully.

There are different flavors of Comparative Deletion. English shows a form of *weak* Comparative Deletion, an operation that is obligatory if and only if there is identity between the two objects of the comparison. That is, when it comes to Comparative Deletion in English, the object can only be deleted under identity, but if the two objects happen to be identical, then deletion is obligatory. The following examples illustrate the full paradigm: failing to delete under identity produces ungrammaticality, as in (39), whereas an interpretation where a non-identical object has been deleted yields unattested interpretations, as in (40). Thus, if the objects of the comparison are distinct, both must be overt, as shown in example (41).

(39)   *Jill wrote more books than Sue read books.

(40)   #Jill wrote more books than Sue read magazines.

(41)   Jill wrote more books than Sue read magazines.

Spanish differs from English in requiring a stronger variant of Comparative Deletion: a version where there is both (i) obligatory deletion under identity and (ii) obligatory identity (see e.g. Gutiérrez Ordóñez 1994 a.o.).

(42)   Compré   más libros de   los libros que compraste   tú.
         bought.1.SG more books than the book that bought.3.SG you
         "I bought more books than you bought"

(43) *... más libros de los libros que compraste tú.

(44) *... más libros de los cómics que compraste tú.

(45) #... más libros de los cómics que compraste tú.

The example in (42) shows that the only interpretation of the relative clause construction is that of an amount of books, in spite of the fact that there is no overt predicate *books* in the clause. The example in (43) shows that the predicate *books* cannot be overt, and examples (44) and (45) show in tandem that the object of the comparison must always be identical, and cannot differ neither overtly nor covertly. This is, in a nutshell, why this flavor of Comparative Deletion is regarded as being a stronger variant than the one we observe in English and other languages: when it comes Spanish, there must be both, identity and deletion.

I suggest that this type of strong deletion operations are working as well in the case of DNRs. For one, note that DNRs do not allow neither: (i) more than one overtly realized copy of the gradable predicate nor (ii) different gradable predicates. Below we reproduce the critical aspects of paradigm introduced above in (42)-(45) with DNRs.

(46)   *lo alta que era   la mesa de alta
          lo tall that was.3.SG the table of tall
          Intended: "how tall the table was"

(47)   *lo alta que era   la mesa de ancha
         lo tall that was.3.SG the table of wide
       Intended: "how tall the table was wide"

(48)   #lo que era la mesa ~~de ancha~~

       Example (46) shows that deletion is obligatory under indentity. Examples (47)
and (48) show that, in addition, identity is also obligatory. Note for instance that there
is nothing incongruent with the putative meaning of DNR like (47): it would simply
determine that the relevant measure along the dimension of width is that corresponding
to the degree *d* such that the table was *d*-tall. If predicated of, say a subject like *the
desk*, it would simply state that the desk is wide to the extent that the table is tall. There
is nothing incongruent about this meaning however, and yet DNRs of this form cannot
be generated, suggesting that Comparative Deletion must be at work. (Similar
observations would apply to (48) as well.)

       There is further evidence supporting the requirement that identity between the
two gradable predicates must be absolute. Since predicative adjectives in Spanish must
agree with their subjects, it is easy to create agreement mismatches between the two.
These mismatches however always lead to ungrammaticality. Consider for instance
(49): the matrix subject requires a M.SG gradable predicate and the embedded subject
requires a F.SG gradable predicate. There is no way to resolve this tension and both
versions are ill-formed. In contrast, a variant with a gradable predicate with the
idiosyncratic property of not agreeing with the subjects, as is the case of the loanword
cool, is perfectly grammatical.

(49)   Juan.F es   lo {*alto /   *alta /   cool} que es   Lisa.F
       Juan is.3.SG *lo*   tall.M.SG tall.F.SG cool that is.3.SG Lisa
       "Juas is as {tall / cool} as Lisa"

       The examples below complete the full paradigm: (50) shows that the relative
order of the subjects is irrelevant, and examples (51) and (52) show that the same state
of affairs holds also when the higher copy of the gradable predicate is overtly realized
and the embedded gradable predicate is elided.

(50)   Lisa.F es   lo {*alto /   *alta /   cool} que es   Juan.M
       Lisa is.3.SG *lo*   tall.M.SG tall.F.SG cool that is.3.SG Juan

(51)   Juan es lo que es Lisa de {*alto / *alta / cool}

(52)   Lisa es lo que es Juan de {*alto / *alta / cool}

5.3 Derivation
We now have all the tools required to provide a full interpretation to DNRs in Spanish:
the Adjectival Phrase argued for in this section allows both their correct syntactic

derivation and their correct semantic composition. We illustrate this example (53) and its corresponding derivation in (54) through (57):

(53)   [$_{TP}$ Pedro [$_{VP}$ es [$_{AP}$ [$_{DegP}$ lo [$_{CP}$ Op$_{wh}$ alto que era su   padre] [$_{A}$ ~~alto~~]]]]]
            Pedro   is   *lo*   tall that was his father   tall

(54)   [[CP]] = λd.λx.tall(d, x)

(55)   [[DegP]] = MAX(λd.tall(d, his-dad))
                = ιd [D(d) & ∀d'[D(d') → d' < d]]

(56)   [[VP]] = [[AP]] = λx.tall(MAX(λd.tall(d,his-dad)),x)
                    = λx.tall(ιd [tall(d,his-dad) &
                        ∀d'[tall(d',his-dad) → d' < d]],x)

(57)   [[TP]] = tall(MAX(λd.tall(d,his-dad)), Pedro)
                = tall(ιd [tall(d,his-dad) & ∀d'[tall(d',his-dad) → d' < d]],Pedro)

According to (57) Pedro is (at least) as tall as the maximun height of his dad. This is the right interpretation, since (53) is compatible with both weak and strong interpretations, just like other equative constructions.

6. Conclusions

We started of by asking some general questions regarding the syntactic make-up and the semantic composition of so-called Degree Neuter Constructions in Spanish. The first problem we encountered had to do with the fact a definite determiner is able to combine with a syntactically very heterogeneous group of gradable predicates. We saw that a natural explanation for the distribution of the determiner *lo* can be reached by simply assuming that it semantically contributes a maximality operator. The reason why it may then compose to with such complements is explained by the fact that, contrary to appearances, the determiner *lo* is not directly composing with a gradable predicate, but with a CP denoting a set of degrees, and thus the ordinary semantic properties of the definite determiner can be maintained.

The second hurdle we faced when composing DNRs had to do with the compositional processes involved in building DNRs with ordinary verbal predicates, since we argued they denote definite descriptions of degrees. The solution to this issue comes from the presence of a larger Adjective Phrase containing a higher copy of the gradable predicate, which nonetheless can independently take degree arguments. It is this larger Adjective Phrase that constitutes the main predicate of the sentence, thereby lifting all compositional burdens from the DNRs themselves. Thinking of DNRs this way accounts moreover for all their main properties: as Degree Phrases in the Specifier position of an Adjective Phrase, they must be of type *d* to saturate the degree variable of the higher, CP-external gradable predicate. The definite article together with the action of the familiar null *wh*-operator deliver this result. In addition, we now

understand why the definite determiner does not agree with what looks like the "head" of the relative clause: it is because the fronted gradable predicate is not in fact the head of a relative clause, it is instead pied-piped by a null *wh*-relative pronoun, akin to its overt counterparts in Spanish *cuan/cuanto*, and thus it is embedded inside a quantity *wh*-phrase, containing no overt nominal material, overt or otherwise, that can serve as goal for the determiner. Finally, the account also explains the extreme flexibility of DNRs. This flexibility is but a reflex of the flexibility we observe in free relative formation: if a given category can be move as part of a free relative construction, it can be expected to be able to form DNRs as well (module orthogonal semantics considerations, such as being gradable). If this analysis is on the right track, it provides a way to think about the crosslinguist distribution of DNRs as well, as it makes clear predictions: DNRs are expected, all else equal, in languages that can form free relatives with (i) an overt definite determiner and with (ii) quantity *wh*-words that can pied-pipe a predicate.

More generally, the analysis supports the view that definite free relatives require a determiner to semantically close a property, in line with e.g. Jacobson (1995), Caponigro (2004) and many others, be it overt or covert. In this sense, DNRs provide evidence for the expected convergence between definite determiners understood as iota-operators in the sense of e.g. Link (1983) and maximality operators (e.g. Rullmann 1995), which share the semantic task of extracting maxima out of an ordering of atoms in some domain, be it individuals, degrees, and perhaps more (Dayal 1996, Mendia 2017).

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References

Alarcos Llorach, Emilio. 1967. El artículo en español. In *To honor Roman Jakobson*, vol. 1, 18–24. Berlin: Mouton de Gruyter.

Álvarez Martínez, Miguel Ángel. 1986. *El artículo como entidad funcional en el español de hoy*. Madrid: Gredos.

Arregi, Karlos. 1998. Spanish el que relative clauses and the doubly-filled COMP filter. Manuscript, MIT.

Bartra-Kaufmann, Anna & Villalba, Xavier. 2006. Agreement and predicate inversion in Spanish DP. In J. Doetjes & P. González (Eds.), *Romance language and linguistic theory 2004*, 23–41. John Benjamins.

Bosque, Ignacio and Moreno, Juan Carlos. 1990. Las construcciones con lo y la denotación del neutro. *Lingüística, Revista de ALFAL*, 2(1):5–50.

Brucart, Josep María. 1992. Sobre el análisis de las construcciones enfáticas con artículo y cláusula de relativo. *Gramma-Temas*, 1:36–63.

Caponigro, Ivano. 2004. The semantic contribution of wh-words and type shifters: Evidence from free relatives crosslinguistically. In Young, R. B., (ed.), *Proceedings of SALT XIV*, 38–55. Ithaca, NY: Cornell University CLC Publications.

Carlson, Gregory. 1977. Amount relatives. *Language*, 53:520–542.

Contreras, Heles. 1973. Spanish non-anaphoric lo. *Linguistics*, 11:5–29.

Dayal, Veneeta. 1996. Locality in Wh-Quanti cation: Questions and Relative Clauses in Hindi. Dordrecht: Kluwer Academic Press.

Gil y Gaya, Samuel. 1964. *Curso superior de sintaxis española*. Barcelona: Bibliograf:

Grosu, Alexander and Landman, Fred. 1998. Strange relatives of the third kind. *Natural Language Semantics*, 6(2):125–170.

Gutiérrez Ordóñez, Salvador. 1994. *Estructuras comparativas*. Madrid: Arco Libros.

Gutiérrez-Rexach, Javier. 1996. The semantics of exclamatives. In Garret, E. and Lee, F., (eds.), *Syntax at sunset: UCLA working papers in Linguistics*. Los Angeles: Department of Linguistics, UCLA.

Gutiérrez-Rexach, Javier. 1999. The structure and interpretation of Spanish degree neuter constructions. *Lingua*, 109:35–63.

Gutiérrez-Rexach, Javier. 2014. *Interfaces and domains of quantification*. Ohio State University.

Hackl, Martin. 2000. *Comparative Quantifiers*. PhD thesis, MIT.

Herdan, Susan. 2008. *Degrees and Amounts in Relative Clauses*. PhD thesis, UConn.

Jacobson, Pauline. 1995. On the quantificational force of English free relatives. In Bach, E., Krazer, A., and Partee, B. H., (eds.), *Quantification in natural language*, 451–486. Kluwer.

Kennedy, Chris. 1999. *Projecting the Adjective: the Syntax and Semantics of Gradability and Comparison*. New York: Garland.

Kennedy, Chris and Merchant, Jason. 2000. Atributive comparative deletion. *Natural Language and Linguistic theory*, 18(1):89–146.

Link, Godehard. 1983. The logical analysis of plurals and mass terms. In Bauerle, R., Schwarze, C., and von Stechow, A., (eds.), *Meaning, use and interpretation of language*, 302–323. Berlin: De Gruyter.

Mendia, J. A. 2017. *Amount Relatives Redux*. PhD thesis, University of Massachusetts Amherst.

Ojea, Ana. 2013. A uniform account of headless relatives in Spanish. *Language sciences*, 40:200–211.

Ojeda, Almerindo. (1982). Degree relatives and the neuter article in Spanish. In *Chicago Linguistics Society 20*, 407–418. Chicago: University of Chicago Press.

Ojeda, Almerindo. 1993. *Linguistics individuals*. CSLI.

Plann, Susan. 1980. *Relative clauses in Spanish without overt antecedents and related constructions*. University Of California Press.

Rivero, María Luisa. 1981. Wh-movement in comparatives in Spanish. *Linguistic Symposium on Romance Languages*, 9:177–196.

Rullmann, Hotze. 1995. *Maximality in the semantics of wh-constructions*. PhD thesis, University of Massachusetts at Amherst.

Torrego, Esther. 1988. Operadores en las exclamativas con artículo determinado de valor cuantitativo. *NRFH*, 36(1):109–122.

Villalba, Xavier. 2009. Definite adjective nominalizations in Spanish. M.T. Espinal, M. Leonetti, L. McNally (eds.), *Proceedings of the IV Nereus International Workshop "Definiteness and DP Structure in Romance Languages"*. Arbeitspapier 124, Fachbereich Sprachwissenschaft, Universität Konstanz, 139-153.

Villalba, Xavier & Bartra-Kaufmann, Anna. 2010. Predicate focus fronting in the Spanish determiner phrase. *Lingua* 120, 4: 819-849.