

# On *wh*-exclamatives and gradability: An argument from Romance<sup>1</sup>

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This paper discusses a type of *wh*-exclamative whose *wh*-component and degree component do not seem to go hand in hand. These are *wh*-exclamatives in Catalan whose moved *wh*-phrase is headed by the determiner *quin* ‘what, which’, and whose NP contains an optional DegP headed by *tan* ‘so’ or *més* ‘more’. By taking a closer look at these *wh*-exclamatives, we will be able to contribute to the debate on the role of gradability and of the *wh*-component in the semantics of *wh*-exclamatives. My claim is that the DegP in these *wh*-exclamatives leaves behind a degree variable that is ultimately bound by an expressive speech act operator. Following Castroviejo (2006) and building on Rett (2009), I adhere to the claim that *wh*-exclamatives in Catalan are necessarily scalar as a requirement of the expressive operator. Moreover, as a downward-monotonic operator, I show that it licenses upward-directed inferences, which ensures that *wh*-exclamatives express unexpectedness toward a high degree.

KEYWORDS: compositionality, expressive speech act, gradability, intensification, monotonicity, Romance, *wh*-exclamatives

## 1. INTRODUCTION

The purpose of this paper is to provide a semantic analysis of an exclamative type in Romance (exemplified here for Catalan) that realizes *wh*- and degree components as separate components. In particular, it is concerned with sentences such as (1) in Catalan, which involve *wh*-movement of a DP *wh*-phrase and include a DegP headed by *tan* ‘so’ or *més* ‘more’ that surfaces as a modifier of the NP selected by the *wh*-word.<sup>2</sup>

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[2] Throughout the paper, I adhere to the Leipzig Glossing Rules for the rendering of glosses in examples.

- (1) [<sub>whP</sub> Quin pastís [<sub>DegP</sub> [<sub>Deg'</sub> [<sub>Deg</sub> tan/més] [<sub>AdjP</sub> bo]]]]<sub>i</sub> que ha  
 what cake so/more good that has  
 preparat  $t_i$  en Ferran!  
 prepared the Ferran  
 ‘What a tasty cake Ferran prepared!’

The interest of such sentences (henceforth, *quin*-exclamatives) relies on the fact that, here, the *wh*- and the degree components are independent and both overt (*quin* on the one hand and *tan/més* on the other hand). Exploring the compositional semantics of these constructions can thus answer relevant questions regarding the semantics of exclamatives cross-linguistically as well as concerning the core meaning of ‘exclamativity.’ In particular, while these data from Romance have been previously used as an argument for treating *wh*-exclamatives as degree constructions (Castroviejo 2006, Rett 2008), taking the compositionality of this construction into serious scrutiny can shed some light on how the *wh*- and the degree components interact in the well formedness of *wh*-exclamatives in Romance. This discussion may hopefully also raise interesting questions concerning the semantics of exclamatives across languages.

The goals of the present paper are the following: First, I want to propose a denotation of *quin*-exclamatives that is compatible with a degree approach to *wh*-exclamatives, where the role of the degree and the *wh*-components are clarified. Second, I want to provide arguments that show that the DegP headed by *tan/més* ‘so’/‘more’ is crucial (and not trivial) in licensing *wh*-exclamatives, since, unlike the (null) positive morpheme *pos*, *tan/més* do not existentially bind a standard degree contextually determined through averaging over a comparison class of individuals. Third, I would like to present a compositional analysis that is compatible with other theories of *wh*-exclamatives and that fits in a typology of *wh*-exclamatives across languages. Ultimately, my purpose is to identify the *locus* of scalarity in a type of *wh*-exclamative that is not a prototype of degree construction, and provide data that bears on the relation between gradability and exclamativity more generally.

My claims are summarized below:

- *Quin*-exclamatives denote an open proposition which contains a free degree variable, eventually bound by an expressive force operator, EXP-OP<sub>wh</sub>.
- The fact that the first argument of the degree quantifier *tan* ‘so’ or *més* ‘more’ is a contextually salient degree guarantees that it is ultimately bound by EXP-OP<sub>wh</sub>.
- EXP-OP<sub>wh</sub> conveys that there is a degree  $d$  such that the speaker did not expect some individual to hold a property to degree  $d$ . Moreover, EXP-OP licenses upward-directed inferences, which ensures the entailment that the degree held by the individual is high.
- To explain why only a subset of *wh*-words can introduce *wh*-exclamatives, I rely on a restriction of EXP-OP<sub>wh</sub> on the type of argument it can take (a function from degrees to truth values).

In the next section, I present the relevant properties of *quin*-exclamatives, both from a syntactic and semantic perspective, with a focus on the contribution of the DegP headed by *tan/més*. I proceed by presenting a previous analysis of *quin*-exclamatives and by motivating why a novel analysis is in order (Section 3). The defended analysis is spelled out in Section 4. In Section 4.1, I provide the necessary background from Rett (2009) and Rett (2011) to correctly parse the analysis. In Section 4.2, I focus on how the *tan/més*-headed DegP composes with the head noun and compare this outcome with a potential composition of the noun with a *pos*-headed DegP. Section 4.3 shows how a degree property can be obtained from a *quin*-clause. The analysis concludes in Section 4.4, where I propose a simpler analysis for the expressive operator that can derive the high degree inferences in a *quin*-exclamative. Section 5 evaluates this analysis in view of alternative theories. As a corollary, Section 6 discusses the consequences this analysis has for *quin*-exclamatives whose DegP headed by *tan/més* is not present. Section 7 zooms out and concludes.

## 2. *Quin*-EXCLAMATIVES IN CATALAN

In this section I flesh out the set of data that the defended analysis attempts to account for. These are *wh*-exclamatives introduced by the *wh*-word *quin* ‘what/which’, which I call *quin*-exclamatives, (2).<sup>3</sup>

- (2) *Quin cotxe (que) s’ha comprat en Joan!*  
 what car that self.has bought the John  
 ‘What a car John bought!’

### 2.1 Syntactic properties of the ‘*quin*’-clause

*Quin* is a *wh*-determiner; as such, it takes a noun phrase as its complement. Therefore, *quin* cannot select an adjective or an adverb, as shown in (3).

- (3) (a) \**Quin alt (que) és el teu cosí!*  
 what tall that is the your cousin  
**intended:** ‘How tall your cousin is!’  
 (b) \**Quin ràpid que corre el teu cotxe!*  
 what fast that runs the your car  
**intended:** ‘How fast your car runs!’

Other *wh*-words that can head *wh*-exclamatives in Catalan include *que* (‘how’), which combines with an adjective and quantifies over degrees, (4), and *quant* (‘how much/many’), which combines with a noun phrase and quantifies over amounts of individuals, (5).

[3] Throughout, I translate *quin* as ‘what’ instead of ‘which’ to prevent the reader from being led to think that *quin* in *wh*-exclamatives can have a partitive or D-Linked interpretation.

- (4) Que interessant (que) va ser la xerrada!  
 how interesting that was the talk  
 ‘How interesting the talk was!’
- (5) Quanta gent (que) va anar al concert!  
 how many people that went to the concert  
 ‘How many people went to the concert!’

*Quin* also heads *wh*-interrogatives in Catalan, as shown in (6). The main syntactic difference with a *quin*-exclamative is that the *quin*-phrase in the latter can be followed by the complementizer *que* ‘that’, which is impossible in *quin*-interrogatives.<sup>4</sup>

- (6) Quin cotxe (\*que) s’ha comprat en Joan?  
 what car that self.has bought the John  
 ‘What car did John buy?’

Indeed, the sentence in (6) is a request to provide an answer as to the identity or the type of car that John got (e.g. this or that car, or a sports or a family car). It is not felicitously used to inquire about the degree of some contextually salient property (e.g. the car’s speed). Assuming that *quin* is the same lexical item in both *wh*-exclamatives and *wh*-interrogatives, it is not obvious how scalarity is conveyed in this particular type of *wh*-exclamative. Providing an answer to this, in a nutshell, the goal of this paper.

Other Romance languages, such as Spanish, also include this type of *wh*-exclamative in their inventory. However, in Spanish, there is no overt distinction between the *wh*-specifier of a DegP *wh*-exclamative and a DP *wh*-exclamative, which in both cases surfaces as *qué*, as shown in (7).

- (7) (a) ¡Qué coche (que) se ha comprado Juan! (cf. with (2))  
 what car that self has bought John  
 ‘What a car John bought!’
- (b) ¡Qué interesante (que) fue la charla! (cf. with (4))  
 how interesting that was the talk  
 ‘How interesting the talk was!’

I am hence using Catalan *quin*-exclamatives because they transparently show that there is a *wh*-determiner, namely *quin* ‘what, which’, that does not select a gradable adjective, but a noun phrase.

Two final cross-linguistic remarks are in order. First, let us take a look at the inventory of *wh*-words that may not head *wh*-exclamatives in Catalan, (8).

[4] To avoid getting lost in details, here I will not carry out an exhaustive comparison between *quin*-exclamatives and *quin*-interrogatives. I will not have anything to say about the presence of the complementizer, which I assume has to do with issues related to the fine-grained syntax of the left periphery, e.g. along the lines of Demonte & Fernández-Soriano (2009), but which does not have any effect in interpretation.

- (8) (a) \*Qui ha vingut a la festa!  
 who has come to the party  
 (b) \*Què has menjat per sopar!  
 what have.2SG eaten for dinner  
 (c) \*On has anat de vacances!  
 where have.2SG gone of holidays

As noted in Castroviejo (2006) for Catalan, interrogative *wh*-words (in contrast to phrases) cannot head a *wh*-exclamative unless the *wh*-word is the degree head *com* ‘how’ or *quant* ‘how much’. This is not the case in other languages, as pointed out in Chernilovskaya & Nouwen (2012), Nouwen & Chernilovskaya (2015).

Another relevant cross-linguistic difference regards embedding. While it has been shown in the seminal works on exclamatives (Elliott 1974, Grimshaw 1979) that *wh*-exclamatives only embed under factive predicates, (9), *quin*-exclamatives sometimes do not sound very natural when embedded under factive predicates whose only argument is the *wh*-clause (Castroviejo 2006, Gutiérrez-Rexach & Andueza 2016) or else they are less felicitous than in other languages, (10).<sup>5</sup>

- (9) (a) It’s amazing what a fool he is.  
 (b) I’m surprised at what a large house he lives in.  
 (c) \*John will ask what a fool he is.  
 (d) \*I wonder what a large house he lives in.

(Grimshaw 1979: 281)

[5] As pointed out in Castroviejo (2006), *quin*-exclamatives can embed under two types of predicates without problem. One is object-embedding predicates, such as *No et creuries mai* ‘you would never believe’, (i).

- (i) No et creuries mai quin actor tan/més famós m’he trobat  
 NEG you believe.COND.2SG never what actor so more famous me have.1SG found  
 al metro.  
 at the subway  
 ‘You would never believe what a famous actor I ran into in the subway.’

The other type constitutes a group of forms of perception verbs, such as imperative *mira* ‘look’ and future *ja veuràs* ‘you’ll see’, (ii).

- (ii) (a) Mira quin cotxe tan/ més ràpid que s’ha comprat en Joan!  
 look what car so more fast that self.has bought the John  
 ‘Look what a fast car John bought!’  
 (b) Ja veuràs quin cotxe tan/ més ràpid que es comprarà en  
 already look.FUT.2SG what car so more fast that self buy.FUT.3SG the  
 Joan!  
 John  
 ‘You’ll see what a fast car John will buy!’

Accounting for any of the two kinds of embeddings is out of the scope of this paper.

- (10) (a) \*És increïble quin idiota que he conegut.  
is incredible what idiot that have.1SG met
- (b) \*Em sorprèn en quina casa tan/ més gran que viu.  
me surprises in what house so more large that lives

The natural way of expressing (10a) and (10b) in Catalan is by means of a *how*-clause, (11a) or a complex definite DP (a concealed exclamation, in Grimshaw's (1979) terms), (11b).

- (11) (a) És increïble com és de beneit.  
is incredible how is of silly  
'It's amazing how stupid he is.'
- (b) Em sorprèn l'enorme casa en què viu.  
me surprises the enormous house in which lives  
'It's incredible the large house s/he lives in.'

## 2.2 Semantic properties of 'quin'-exclamatives

Building on Rett's (2011) *degree restriction*, it can be shown that *quin*-exclamatives must be uttered to convey unexpectedness toward the high degree of a property held by some individual. This restriction says that only those *wh*-phrases that can range over degrees can introduce a *wh*-exclamative. In other words, both *how* and *what* in (12) range over degrees.

- (12) (a) How short John is!  
(b) What (delicious) desserts John bakes!

To prove this degree restriction, Rett proposes two scenarios, one which is only compatible with the degree restriction, and another one which is compatible with mere counter-expectation. Let us take (12b) as an example. Rett's (2011: 418) scenario is as follows:

Imagine Mary was told that John would bake a pumpkin pie and a crème brûlée, but she sees that he instead baked a chocolate cake and a blueberry cobbler. Suppose further that Mary had no assumptions about how these desserts relate to each other; she didn't, for instance, think that the second group of desserts are more exotic or challenging than the first.

In such a scenario, the sentence in (12b) would be infelicitous. Alternatively, it would be felicitous if 'it is used to exclaim that the desserts John baked instantiate some gradable property to a degree higher than the speaker expected' (Rett 2011: 418).

Let us now turn to a *quin*-exclamative example such as (2), repeated below for convenience.

- (13) Quin cotxe (que) s'ha comprat en Joan!  
what car that self.has bought the John  
'What a car John bought!'

The sentence (13) can be felicitously uttered if the speaker becomes acquainted with a car Joan bought, which she finds remarkable because of some gradable property that is held to a higher than expected degree (e.g. the car is very big, shiny, fast, or new). We can prove the claim that *quin*-exclamatives do not merely express counter-expectation – and thus observe Rett’s degree restriction – by adding that (13) cannot be felicitously uttered if the speaker expected Joan to buy a BMW instead of an Audi (note that we mention two top range brands, so it is clear that the surprise should be exclusively based on the difference in identity, rather than properties associated with each brand).

While it observes the degree restriction, a *quin*-exclamative cannot be felicitously used when the speaker expected a smaller amount of individuals to participate in an event or to hold some state, as shown in the following example:

(14) A: 100.000 supporters followed the game on the stadium.

B: #Quina gent!  
what people

**intended:** ‘How/So many people!’

To convey this content, the *wh*-word *quant*- ‘how much/many’ followed by a noun phrase can be used, as shown in (5) above, repeated below for convenience.

(15) Quanta gent (que) va anar al concert!

how many people that went to the concert

‘How many people went to the concert!’

(15) conveys that the speaker is overwhelmed at the large amount of people who attended the concert.

The main thesis in Castroviejo (2006) and Castroviejo (2007) is that *wh*-exclamatives in Catalan should be analyzed as a degree construction. This is basically motivated on two related facts. First, the subset of the inventory of *wh*-words that range over degrees can head *wh*-exclamatives (on this see also Rett’s (2011) degree restriction above). Second, even those *wh*-words that seem to range over individuals, namely *quin*, can have a separate overt degree phrase headed by *tan* ‘so’ or *més* ‘more’,<sup>6</sup> which select for degree properties. In this section, we focus on this last piece of data, illustrated below.

(16) Quin cotxe tan/ més llampant (que) s’ha comprat la Laia!

what car so more flashy that self.has bought the Laia

‘What a flashy car Laia bought!’

By mode of comparison, note that the adjective *llampant* ‘flashy’ follows *tan/més*, which, in turn, follows the noun *cotxe* ‘car’, while in English, *flashy* precedes the noun and follows *a*.

[6] But see Section 6 for a few exceptions.

As observed in Brucart & Rigau (2002) and Castroviejo (2006) a.o., adjectives (introduced by *tan* ‘so’ or *més* ‘more’) in *quin*-exclamatives must be gradable. Note that in (17), the relational adjective *esportiu* ‘sports’ is unacceptable.

- (17) Quin cotxe tan/ més {bonic/ ràpid/ modern/ \*esportiu} (que)  
 what car so more beautiful fast modern sports that  
 s’ha comprat en Joan!  
 self.has bought the John  
 ‘What a beautiful/ fast/ modern/ sports car John bought!’

As a matter of fact, the *quin*-phrase in a *wh*-exclamative cannot contain an overt gradable adjective unless it is preceded by *més* ‘more’ or *tan* ‘so’. That is, a sentence like (18) is only possible in a context where the speaker did not expect John’s fast car to have a contextually salient degree property to a particularly high degree (e.g. John’s fast car is extremely beautiful, modern or shiny).

- (18) ??Quin cotxe ràpid que s’ha comprat en Joan!  
 what car fast that self.has bought the John

If, in certain contexts, potential gradable properties for fast cars as a type of entity are easily accessible, then the sentence is acceptable. Imagine fast cars as a kind have properties that can be readily retrieved by speakers, for instance, beauty. Then (18) would sound acceptable, as a covert form of a sentence such as (19).

- (19) Quin cotxe ràpid tan/ més bonic que s’ha comprat en Joan!  
 what car fast so more beautiful that self.has bought the John  
 ‘What a beautiful fast car John bought!’

The borne out prediction is that the position of *ràpid* ‘fast’ in (19) can be occupied by a non-gradable adjective, such as *polonès* ‘Polish’ in (20).

- (20) Quin actor polonès tan/ més guapo!  
 what actor Polish so more handsome  
 ‘What a handsome Polish actor!’

As in the previous example, here the speaker expresses her amazement toward the degree of handsomeness of some Polish actor. It is not the case that she is surprised or admired at how Polish the actor is (the ethnic adjective is not coerced into being gradable). The sentence would be felicitous in a scenario where the speaker finds some specific actor more handsome than she expected. The reason why the set of actors is narrowed down to Polish ones has to serve some contrastive purpose. For instance, because the speaker wants to clarify that he is Polish and unexpectedly handsome given a set of international actors, or because he is unexpectedly handsome for a Polish actor (where the non-gradable adjective would make the comparison class explicit, cf. Klein 1980, Kennedy 2007b).

Again, as in (18), the *tan/més*-phrase can be omitted only under the condition that it can be easily retrieved why the speaker would be admired at a certain Polish actor (because he is very handsome, very professional, very tall, very rich, etc.).



2.3 ‘*Més*’ and ‘*tan*’ beyond ‘*quin*’-exclamatives

Before moving on to the previous and current analyses, let us complete the description of *quin*-exclamatives by adding relevant information about *tan* ‘so’ and *més* ‘more’, which precede the gradable adjective in a *quin*-exclamative. Up to this point, I have been glossing *tan* and *més* as ‘so’ and ‘more’, respectively. However, these degree expressions do not surface in the English translations. It should be pointed out that, while *tan* and *més* are interchangeable in the context of *quin*-exclamatives, this is not so in most contexts. More specifically, *tan* is the degree expression occurring in equative comparatives, (21a), and result clause constructions, (21b), whereas *més* is the comparative morpheme in superiority comparatives, (22).

- (21) (a) En Pep és tan alt com en Guillem.  
the Pep is so tall like the Guillem  
‘Pep is as tall as Guillem.’
- (b) En Pep és tan alt que no passa per la porta.  
the Pep is so tall that NEG passes through the door  
‘Pep is so tall that he cannot pass through the door.’
- (22) En Pep és més alt que en Guillem.  
the Pep is more tall that the Guillem  
‘Pep is taller than Guillem.’

As shown in e.g. Castroviejo (2007: 138), *tan* ‘so’ needs to combine with a gradable adjective (and hence the unacceptability of the sentences with a non-gradable adjective like *quadrilàter* ‘quadrilateral’), just like in *quin*-exclamatives, (23). The same holds for *més* ‘more’.

- (23) (a) \*Quin triangle tan equilàter!  
what triangle so equilateral  
**intended** ‘\*What an equilateral triangle!’
- (b) \*Aquest triangle és tan equilàter com l’altre.  
this triangle is so equilateral like the other  
**intended** ‘\*This triangle is as equilateral as the other one.’
- (c) \*Aquest triangle és tan equilàter que el puc dibuixar amb  
this triangle is so equilateral that it can.1SG draw with  
el regle.  
the ruler  
**intended** ‘\*This triangle is so equilateral that I can draw it with my ruler.’

Such facts led Castroviejo (2006, 2007) to assume that *tan* ‘so’ and *més* ‘more’ are degree expressions that select a gradable adjective across these different constructions. Roughly – I defer the specifics of the proposal to Section 3 – these works assume that *tan* ‘so’ and *més* ‘more’ combine with a gradable adjective

and establish a  $\geq$  or  $>$  relation, respectively, between two degrees. For ease of comparison with other proposals, here I assume the classical denotations for the comparative and the equative morphemes as degree quantifiers (i.e. as relations between sets of degree properties), following Bresnan (1973), Heim (2000) and many others after her, (24).<sup>7</sup> (21b) can be more perspicuously expressed as (25a), and (22) as (25b).<sup>8,9</sup>

- (24) (a)  $[[\text{tan}]] = \lambda D_{(d,t)} \lambda D'_{(d,t)}. \text{MAX}(D') \geq \text{MAX}(D)$   
 (b)  $[[\text{més}]] = \lambda D_{(d,t)} \lambda D'_{(d,t)}. \text{MAX}(D') > \text{MAX}(D)$ ,  
 where  $\text{MAX}(D) = \text{id}[d \in D \wedge \forall d' \neq d \in D[d' < d]]$
- (25) (a)  $\text{MAX}(\lambda d'. \text{tall}(d')(\mathbf{p})) \geq \text{MAX}(\lambda d. \text{tall}(d)(\mathbf{g}))$   
 (b)  $\text{MAX}(\lambda d'. \text{tall}(d')(\mathbf{p})) > \text{MAX}(\lambda d. \text{tall}(d)(\mathbf{g}))$

Since *tan* ‘so’ and *més* ‘more’ express different relations between degrees, the immediate question arises, how come they are interchangeable when they appear within the *quin*-phrase of a *quin*-exclamative? I will address this question in Section 4.4. Before that, let us mention that there is, in fact, another context besides *quin*-exclamatives in which *tan* and *més* do not seem to make a noticeably different contribution, namely sentences in which there is no overt standard of comparison (an *as*-, *that*- or *than*- clause or phrase) and a special intonation contour is used, which I translate with an exclamation mark, (26). Informally, this contour describes a truncated continuation,<sup>10</sup> so it has the shape of a rising contour.<sup>11,12</sup>

- (26) En Pep és tan/ més alt!  
 the Pep is so more tall  
 ‘Pep is so tall!’

Castroviejo (2008) states that such truncated sentences are felicitously uttered by a speaker who is so emotional at the high degree of a certain property held

[7] To be fair, following Rett (2019), the *tan*-construction should be analyzed as an instance of demonstrative explicit equative, whereby *tan* is analyzed as a degree demonstrative. However, since nothing in the present analysis hinges on this, and to enforce the parallelism with the comparative morpheme, I will ignore this (otherwise relevant) difference.

[8] For reasons of space, I cannot delve into the semantics of comparative and equative constructions. I address the interested reader to Seuren (1984), von Stechow (1984), Heim (1985), Kennedy (1999), Schwarzschild (2008), and Rett (2013), a.m.o.

[9] I ignore the semantics of result clause constructions altogether for the sake of brevity. I refer the reader to Meier (2003), Burnett (2010) and Castroviejo (2011) for some ideas on how to understand them.

[10] Gérard (1980: 3), as reported in Burnett (2010: 382), calls such sentences in French, *enoncé tronqué* ‘truncated sentence’.

[11] In particular, in Catalan, this contour consists in a rising accent aligned with the degree head followed by a low accent on the last stressed syllable in the sentence which precedes a high boundary tone indicating continuation. I am grateful to Maria del Mar Vanrell (p.c.) for providing this characterization.

[12] Additionally, there is an optional progressive ascent of the pitch throughout the entire sentence. See e.g. Prieto (2002: 420).

by some individual, she cannot describe the standard of comparison. In other varieties, such as Québec French, an apparently similar structure is possible, according to Burnett (2010). She calls these sentences *gradation exclamatives*, illustrated below:

- (27) J'ai vu un film ASSEZ bon!  
 1SG-have seen a film ENOUGH good  
 'I saw such a good movie!'

As argued for by Burnett, the semantics of the degree word *assez* 'enough' in Québec French is neutralized and limited to the expression of extreme degree when emphatic prosody applies to the degree word (as expressed by upper-case letters). It should be noted that the option of neutralizing the lexical meaning of the equivalent of *assez* 'too' in Catalan is not available, even in the presence of an emphatic prosody. Among the inventory of degree words in Catalan, only the ones for *so* and *more* are available both in *quin*-exclamatives and these truncated constructions.

To wrap up, *tan* 'so' and *més* 'more' are degree quantifiers that describe relations between sets of degrees. In particular, they assert the  $\geq$  and  $>$  relation, respectively, between the maximal degrees in such sets. This said, we have identified two contexts in which the different relation,  $\geq$  vs.  $>$ , which elsewhere distinguishes equative from superiority comparative constructions, does not seem relevant. One construction is *quin*-exclamatives and the other one is truncated degree constructions with an exclamatory prosody.

#### 2.4 *Interim summary*

Summing up, the properties that characterize *quin*-exclamatives and must be accounted for are the following, in a nutshell:

- Syntactically, *quin*-exclamatives are *wh*-clauses introduced by a *wh*-determiner that selects a noun phrase and which can have an overt complementizer *que* 'that'. Moreover, the head noun can be modified by a degree phrase headed by degree quantifiers *tan* 'so' or *més* 'more'.
- Semantically, they observe Rett's (2011) 'degree restriction'. More specifically, whenever the degree phrase headed by *tan* or *més* is overt, the speaker felicitously utters a *quin*-exclamative if she did not expect someone or something to hold the property denoted by the adjective preceded by *tan/més* to such a high degree. In the absence of the overt degree quantifier, even in the presence of an overt gradable adjective, the degree restriction forces the speaker to express unexpectedness toward the fact that someone or something holds some contextually salient property to a high degree.
- *Tan* 'so' and *més* 'more' are also the degree quantifiers that head equative and superiority constructions, respectively. While they convey different degree relations in such constructions, they are interchangeable in *quin*-exclamatives.

*Quin*-exclamatives are very similar to English *what*-exclamatives except for their building blocks, notably, the gradable property the speaker is surprised about has to be preceded in *quin*-exclamatives by degree quantifiers *tan* or *més*, which head a DegP that combines with the head noun, while in English a bare gradable adjective modifies the head noun after the *wh*-word *what* has moved leaving a degree-denoting trace behind (Rett 2011). The goal of this paper is to explore the compositional consequences of this difference.

In what follows, we will take into account the laid-out properties of *quin*-exclamatives to critically assess Castroviejo's (2006) previous analysis.

### 3. A PREVIOUS ACCOUNT OF *quin*-EXCLAMATIVES

Castroviejo (2006) is concerned with the semantics and pragmatics of *wh*-exclamatives in Catalan, including *quin*-exclamatives. One of the main points in Castroviejo (2006) is to argue against a question approach to *wh*-exclamatives. Specifically, a degree approach is presented as an alternative to the question approach to *wh*-exclamatives as defended in Gutiérrez-Rexach (1996) or Zanuttini & Portner (2003) (to be elaborated on in Section 5.1).

In this account, the degree word *tan* 'so' (called *so-tan* to be told apart from *as-tan*) is given a central role. In this proposal, inspired by Kennedy's (1999) analysis of degree expressions, gradable adjectives G denote measure functions from objects to degrees (of type  $\langle e, d \rangle$ ), and degree morphemes specify a relation which holds between two degrees, a reference degree and a standard degree, as shown in (28). In particular, the reference degree corresponds to the degree of G-ness that issues from applying the gradable adjective G to the individual, and the standard degree is either saturated through a phrasal/clausal complement (as in the case of the comparative) or it is contextually supplied through a function from contexts to degrees (as in the case of the positive construction).

$$(28) \text{ Deg} = \lambda g_{\langle e, d \rangle} \lambda d \lambda x [\mathbf{R}(g(x))(d)] \quad (\text{From Kennedy (1997: 153)})$$

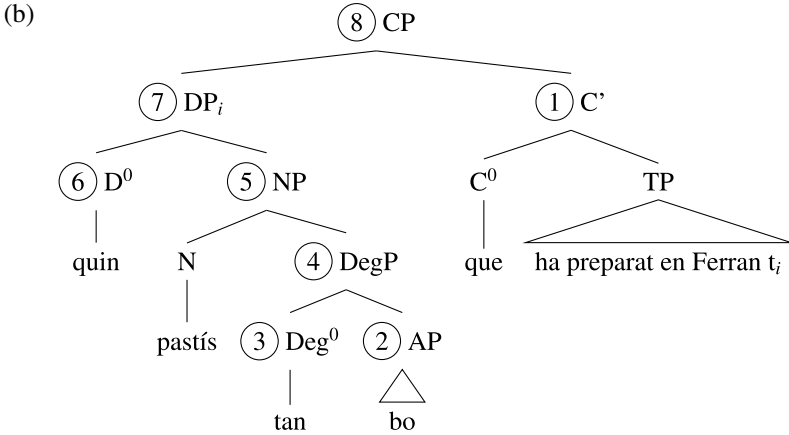
The denotations for *so-tan* and *més* are the following (adapted from Castroviejo (2006: 106, 137)):

- (29) (a)  $[[\text{so-tan}]] = \lambda g_{\langle e, d \rangle} \lambda x [\text{AS}(g(x))(d_i)]$   
 Where the value of  $i$  is given by the context and it is always high.
- (b)  $[[\text{AS}(d_R)(d_S)]] = 1$  iff  $d_R \geq d_S$  (Kennedy 1997: 176)
- (30) (a)  $[[\text{més}_{exc}]] = \lambda g_{\langle e, d \rangle} \lambda x [\text{MORE}(g(x))(d_i)]$   
 Where the value of  $i$  is given by the context and it is always high.
- (b)  $[[\text{MORE}(d_R)(d_S)]] = 1$  iff  $d_R > d_S$  (Kennedy 1997: 176)

It follows from this analysis that *so-tan* expresses the relation conveyed by an equative morpheme ( $\geq$ ), while *més* expresses the relation conveyed by the superiority comparative morpheme ( $>$ ). However, note that, in both cases, these denotations are for *ad hoc* degree expressions that occur in *wh*-exclamatives. That is why the standard degree is already fixed as a free variable with a high value.

In (31) and (32), there is an example of semantic derivation of a *quin*-exclamative (adapted from Castroviejo (2006: 142)):

- (31) (a) *Quin pastís tan bo que ha preparat en Ferran!*  
 what cake so good that has prepared the Ferran  
 ‘What a delicious cake Ferran made!’



- (32) (a)  $\llbracket \textcircled{1} \rrbracket = \lambda x. \mathbf{prepared}(f)(x)$   
 (b)  $\llbracket \textcircled{2} \rrbracket = \lambda x. \mathbf{tasty}(x)$   
 (c)  $\llbracket \textcircled{3} \rrbracket = \lambda g_{(e,d)} \lambda x. \mathbf{AS}(g(x))(d_i)$   
 (d)  $\llbracket \textcircled{4} \rrbracket = \lambda x. \mathbf{AS}(\mathbf{tasty}(x))(d_i)$   
 (e)  $\llbracket \textcircled{5} \rrbracket = \lambda x [\mathbf{cake}(x) \wedge \mathbf{AS}(\mathbf{tasty}(x))(d_i)]$   
 (f)  $\llbracket \textcircled{6} \rrbracket = \lambda P_{(e,t)} \lambda Q_{(e,t)}. \exists x [P(x) \wedge Q(x)]$   
 (g)  $\llbracket \textcircled{7} \rrbracket = \lambda Q_{(e,t)}. \exists x [\mathbf{cake}(x) \wedge \mathbf{AS}(\mathbf{tasty}(x))(d_i) \wedge Q(x)]$   
 (h)  $\llbracket \textcircled{8} \rrbracket = \exists x [\mathbf{cake}(x) \wedge \mathbf{AS}(\mathbf{tasty}(x))(d_i) \wedge \mathbf{prepared}(f)(x)]$

At the very end of the derivation, in ⑧, the result that obtains is the descriptive meaning of a *quin*-exclamative, which amounts to the proposition that there is a cake Ferran prepared which is tasty to a high degree taken from context.

This is not an asserted content, though. It is also argued that this descriptive meaning has the status of a fact (in the sense of Ginzburg & Sag (2001)). As such, the descriptive meaning of a *wh*-exclamative is not apt for updating the Common Ground with new information. So, what the speaker contributes is something else, namely her attitude toward the fact that some individual holds a gradable property to at least a standard degree that is high; this builds on Katz’s (2005) notion of ‘attitude toward a degree’, which he invokes to analyze evaluative adjectival

adverbs such as *surprisingly* in *surprisingly tall*. This idea, which is vaguely reminiscent of the two-tier system between at-issue meaning and Conventional Implicature proposed in Potts (2005),<sup>13</sup> is worded as in (33) (where the individual variable is expected to be bound by the existential quantifier at the descriptive tier).

(33) Speaker's contribution in (32):

The speaker shows an attitude toward  $\wedge[\text{AS}(\text{tasty}(x))(d_i)]$ .

(Adapted from Castroviejo (2006: 166))

This analysis is unsatisfactory on various grounds. First and foremost, in the attempt to argue in favor of a degree account, the contribution of the *wh*-component is ignored. Observe, for instance, that the *wh*-determiner *quin* is given the same denotation as a generalized quantifier.

The second obvious drawback of this approach is the lack of compositionality. The proposal is not tight enough to derive the discourse contribution of this clause type on the basis of its syntactic and semantic properties. This idea of an attitude toward a degree, as applied to *wh*-exclamatives, is too loose and not integrated as part of the semantic derivation. This goes together with the inconvenience of calling the descriptive content of *wh*-exclamatives a fact, but not explaining what facts are in terms of semantic types. Also, one may wonder why these exclamatives cannot easily embed under factive predicates if they denote facts or how they end up denoting facts, more generally.

Finally, while the degree component plays an important role in this account, two main issues arise. For one, nothing is said about why the degree words *tan* and *més* (and not others) are necessary to express unexpectedness toward a degree of the property expressed by the overt adjective. Second, an *ad hoc* denotation is proposed for *so-tan* and *més<sub>exc</sub>*, which makes them idiosyncratic degree morphemes, not in the line of the template presented in (28).

For all these reasons, a novel analysis is needed, which compositionally explains both the distribution and the semantic contribution of *quin*-exclamatives.

#### 4. ANALYSIS

Here, I make the assumption that *quin*-exclamatives have an interrogative denotation, and follow Rett (2008, 2009, 2011) in adopting a property denotation (rather than a set of propositions) as the contribution of the *wh*-component. Further, I follow Rett in assuming that an expressive illocutionary operator is the trigger of the exclamative force that translates the speaker's unexpectedness. To account for the Catalan facts, I first discuss the role played by the DegP headed by *tan / més* ('so / more') to ensure that the standard degree remains a free variable, different from the contextually determined standard calculated on the basis of a comparison class, as would be expected from an analysis of

[13] See Castroviejo (2008, 2010) for further developments.

the positive construction (Section 4.2). Second, I concentrate on the *wh*-clause denotation (Section 4.3), and last on the lexical semantics of the expressive operator (Section 4.4). Section 4.5 wraps up.

#### 4.1 Background: A degree property and an expressive illocutionary operator

As mentioned in Section 2.2, Rett (2009) proposes a Degree Restriction that *wh*-exclamatives in English observe, according to which exclamatives can only receive degree interpretations. A direct consequence of this restriction is that only *wh*-words that range over degrees can head a *wh*-exclamative in English. This translates in the semantics as the need for the *wh*-clause to denote a degree property (of type  $\langle d, \langle s, t \rangle \rangle$ ). In proposing this, Rett adopts another semantics that had already been proposed for certain *wh*-clauses (free relatives in Jacobson 1995 and Portner & Zanuttini 2005, and questions in Groenendijk & Stokhof 1988). Hence, this analysis takes into account the *wh*-component in *wh*-exclamatives.

In addition to this, this degree property feeds an illocutionary force operator Rett (2009) names *Degree E-force* (but see also Gutiérrez-Rexach 1996 for an EXCL operator, and Castroviejo (2010) and Grosz (2012) for similar ideas), which is a function whose domain is a degree property and its range, an expressive speech act that introduces the notion of unexpectedness, here viewed as the expression of expectation contravention, as shown in (34).<sup>14</sup>

- (34) DEGREE E-FORCE( $D_{\langle d, \langle s, t \rangle \rangle}$ ) is expressively correct in context *C* iff *D* is salient in *C* and  $\exists d, d > s$  [the speaker in *C* is surprised that  $\lambda w.D(d)$  in *w*] (Rett 2009: 610)

The interpretive effect of applying the Degree E-Force operator to a *wh*-exclamative denotation is the proposition that the speaker is surprised that a specific (high) degree holds of a contextually salient degree property. Importantly, this is not an asserted proposition, so it cannot be true or false, but rather it has to be considered expressively (in)correct, in the sense of Kaplan (1999).

Later on, in Rett (2011) a full-fledged semantic derivation is provided that shows step by step how a degree property is obtained through the semantics of *what*, (35), and the composition of a *what*-exclamative, (36).<sup>15</sup>

[14] This force operator is different from her Proposition E-Force operator in that the latter selects for propositions, and is used to derive the interpretation of what she calls 'proposition exclamations' such as *Sue wore orange shoes!*. As will be mentioned in Section 5.2, later on, in Rett (2011), a single expressive operator is proposed to account for *wh*-exclamatives and proposition exclamations.

[15] Bear in mind that Rett assumes gradable adjectives *G* denote relations between individuals and degrees (of type  $\langle d, \langle e, t \rangle \rangle$ ), as is common practice. This is the analysis adopted in the present proposal.

(35)  $[[\text{what}]] = \lambda P_{\langle \tau, t \rangle} \lambda x_{\langle \tau \rangle} . P(x)$  (For any type  $\tau$ )

(36) (a) What delicious desserts John baked!

(b)  $[ [\text{what}]_j [ [ t_{j(d)} \text{ delicious desserts} ]_i \text{ John baked } t_{i(x)} ] ]$

(c)  $\lambda d . \lambda x [\mathbf{baked}(j, x) \wedge \mathbf{desserts}(x) \wedge \mathbf{delicious}(x, d)]$   
 $\rightsquigarrow \exists_{closure} \lambda d . \exists x [\mathbf{baked}(j, x) \wedge \mathbf{desserts}(x) \wedge \mathbf{delicious}(x, d)]$

Note that, at the end of the derivation, when the two variables,  $x$  and  $d$ , are lambda-bound, the individual argument undergoes existential closure. Note, too, that *delicious desserts* has combined through Predicate Modification (i.e. intersection) once *what* has moved leaving a trace behind of type  $d$ .

This theory manages to restrict *wh*-exclamatives to those *wh*-clauses that can denote a degree property, and it also makes a compositional proposal as to why they are not assertions, but rather expressive acts. These are components that I will implement in the analysis of *quin*-exclamatives with slight modifications. But before we get there, I will consider the semantics of the degree and the *wh*-components of *quin*-exclamatives separately.

#### 4.2 The degree component

In this subsection I show that there are two ways in which adjectives can combine with the noun selected by *quin*, depending on whether they first combine with the positive *pos* morpheme (as in Cresswell 1976, von Stechow 1984, Kennedy 1999, and many others after them) or with *tan/més*. To do so, I go back to some of the properties laid out in Section 2. Let us start with a basic example:

(37) Quin cotxe tan/ més llampant que s'ha comprat la Laia!  
 what car so more flashy that self.has bought the Laia  
 'What a flashy car Laia bought!'

Remember that the gradable adjective is at first blush marginal without the degree head, (38a), unless the speaker wants to convey an interpretation compatible with an additional DegP headed by *més/tan*, (38b).

(38) (a) ?Quin cotxe llampant que s'ha comprat la Laia!  
 what car flashy that self.has bought the Laia  
 (b) Quin cotxe llampant tan/ més bonic que s'ha comprat la  
 what car flashy so more pretty that self.has bought the  
 Laia!  
 Laia  
 'What a beautiful flashy car Laia bought!'

The sentence in (38b) is used to exclaim that the flashy car Laia bought instantiates beauty to a degree higher than the speaker expected. It is not used to exclaim that the car Laia bought instantiates flashiness or flashiness and beauty to a degree higher than the speaker expected. Thus, to make sense of example (38a),



which does not include the degree phrase headed by *tan/més* ‘so/more’, the addressee needs to retrieve some salient gradable property that a certain flashy car instantiates to a degree higher than the speaker expected. If it is not easily retrievable which gradable property such a subset of objects (i.e. flashy cars) may have, the sentence sounds unnatural.

Consider again the Catalan sentence in (39) and the English translation, paying attention to the ordering of the adjectives. The key difference is that the adjective that immediately precedes the noun need not be gradable, while the adjective whose high degree the speaker did not expect needs to be gradable. This is granted in Catalan, because *tan* and *més* are degree quantifiers, which take sets of degrees as arguments.

- (39) Quin actor polonès tan/ més guapo!  
 what actor Polish so more handsome  
 ‘What a handsome Polish actor!’

To be slightly less informal, the NP *actor polonès* ‘Polish actor’ denotes the (characteristic function of the) set of individuals that are actors and Polish, (40), and *cotxe llampant*, the set of cars that are flashy (to a contextually determined standard degree), (41).<sup>16</sup>

$$(40) \quad [[[_{NP} \text{ Polish actor}]]] = \lambda x. \mathbf{actor}(x) \wedge \mathbf{polish}(x)$$

$$(41) \quad (a) \quad [[[_{Deg} \text{ pos}]]] = \lambda g_{\langle d, \langle e, t \rangle \rangle} \lambda x. \exists d [\mathbf{standard}(d)(g)(\mathbf{C}) \wedge g(d)(x)]$$

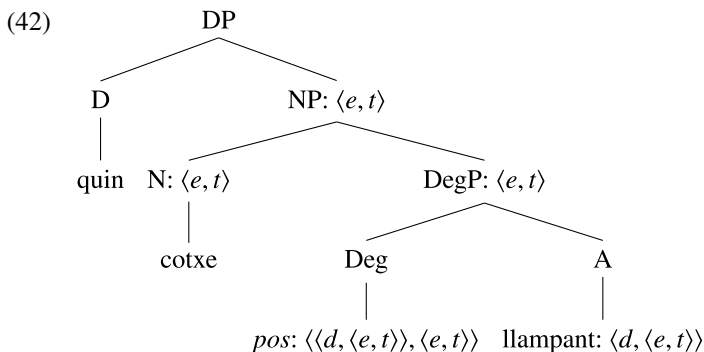
(Kennedy & McNally 2005: 350)

$$(b) \quad [[\text{flashy}]] = \lambda d \lambda x. \mathbf{flashy}(d)(x)$$

$$(c) \quad [[[[[_{DegP} \text{ pos} \text{ flashy} ] [_N \text{ car} ] ]]]] = \lambda x. \exists d [\mathbf{car}(x) \wedge \mathbf{standard}(d)(\mathbf{flashy})(\mathbf{C}) \wedge \mathbf{flashy}(d)(x)]$$

That is, if the gradable adjective (of type  $\langle d, \langle e, t \rangle \rangle$ ) has to modify the head noun, we have to assume that it first merges with the positive morpheme *pos* to yield a property of individuals that can intersect with the head noun denotation (via e.g. Heim and Kratzer’s (1998) Predicate Modification), as shown in (42).

[16] To introduce the contextually determined standard, I make use of the widely accepted – even if also controversial – positive ‘*pos*’ morpheme, which introduces the notion of a standard that is calculated on the basis of a comparison class of individuals.



Note that, before merging with *quin* ‘what’, the NP *cotxe llampant* ‘flashy car’ has the same type as *actor polonès* ‘Polish actor.’ That is, staying in an extensional semantics, we are left out with (the characteristic function of) a set of individuals. The degree argument of the adjective has been bound by the existential quantifier introduced by *pos*, so the DegP does not have any degree argument left to be bound by, e.g. an expressive operator. In other words, as we will see shortly, given this kind of composition between the DegP and the head noun, the sentence cannot be used to exclaim that the car Laia bought is flashier than the speaker expected.

Moving now to the composition of the noun with a DegP headed by *tan/més*, I propose that the existence of these degree quantifiers prevents the adjective from combining with *pos*. In the following, I spell out my assumptions regarding the denotation of these degree heads, and then I propose a semantic derivation.

In Section 2.3, it was shown that *tan* ‘so’ and *més* ‘more’ occur beyond the domain of *quin*-exclamatives. In an attempt to overcome one of the undesirable results of Castroviejo’s (2006) proposal, here I assume a denotation for the two degree quantifiers that is viable for comparatives and equatives, as well as for *quin*-exclamatives. I repeat them below for convenience.

- (43) (a)  $[[\text{tan}]] = \lambda D_{\langle d, t \rangle} \lambda D'_{\langle d, t \rangle} \text{MAX}(D') \geq \text{MAX}(D)$   
 (b)  $[[\text{més}]] = \lambda D_{\langle d, t \rangle} \lambda D'_{\langle d, t \rangle} \text{MAX}(D') > \text{MAX}(D)$ ,  
 where  $\text{MAX}(D) = \iota d[d \in D \wedge \forall d' \neq d \in D[d' < d]]$

It was pointed out in Section 3 that AS gives rise to the  $\geq$  relation between reference and standard degree, whereas MORE yields the  $>$  relation. Unlike in Castroviejo (2006), I do not see the need to stipulate that *tan* and *més* have a specific denotation in the context of *quin*-exclamatives or to lexically specify that the standard degree is a salient high degree. Instead, I assume that the standard degree is an argument that can be provided either by a phrasal/clausal complement or context; and this latter option becomes available only when the degree is salient. An argument in favor of this idea comes from the fact that, if the standard degree of *tan / més* is grammatically encoded in the *quin*-exclamative, then the sentence is unacceptable, as shown in (44).

- (44) (a) Quin cotxe tan llampant (\*que enlluerna) que s’ha comprat  
 what car so flashy that blinds that self.has bought  
 la Laia!  
 the Laia  
**intended:** ‘\*What a car so flashy that it blinds that Laia has bought!’
- (b) Quin cotxe més llampant (\*que el groc) que s’ha comprat  
 what car more flashy that the yellow that self.has bought  
 la Laia!  
 the Laia  
**intended:** ‘\*What a flashier than color yellow car Laia bought!’

Since in the case of *quin*-exclamatives the standard is not pronounced as a phrasal/clausal complement, I will follow Heim (2000) in the denotation of examples such as (45) in assuming that the first argument of the degree head can rigidly denote a degree.

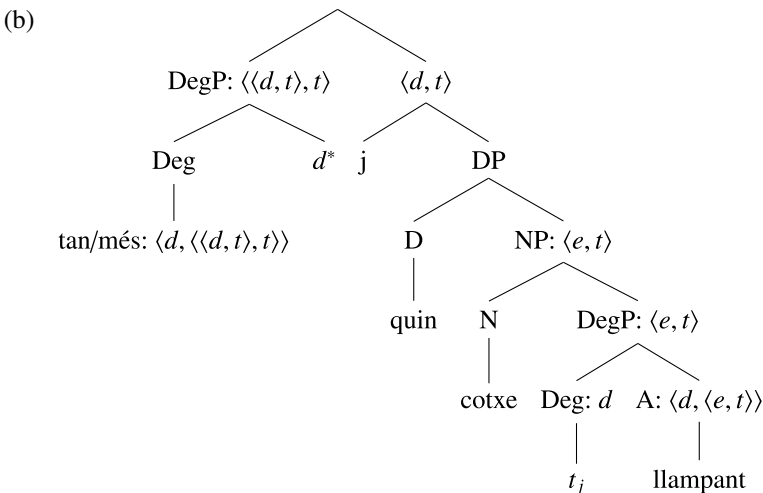
(45)  $[[\text{-er than exactly one foot}]] = \lambda P_{\langle d,t \rangle} . \text{MAX}(P) > 1'$

This is the same idea adopted by Burnett (2010) in her denotation for Québec French *tellement . . . que* (‘so . . . that’), as laid out in (46) below.

(46)  $[[\text{tellement . . . que}]]^{M,\alpha} = \lambda d'_d \lambda P_{\langle d,t \rangle} . \text{MAX}(P) \geq d'$  and  $d' = \text{MIN}(\{d : \text{it is required for } P(d) = 1\})$

Returning now to the semantic composition of a noun which merges with a *tan/més*-headed DegP, I claim that the derivation of the *quin*-phrase in (47a) is as in (47b).

- (47) (a) Quin cotxe tan/ més llampant que s’ha comprat la Laia!  
 what car so more flashy that self.has bought the Laia  
 ‘What a flashy car Laia bought!’



As it will be argued for in the next subsection, in (47b), the degree quantifier first combines with a standard (called  $d^*$ ), which is taken from context, and then moves to adjoin to the CP leaving a trace of type  $d$  behind, as is characteristically done in cases of Quantifier Raising. Hence, the derivation of the *wh*-phrase proceeds with a free degree variable until it is lambda-bound through predicate abstraction. The resulting degree predicate is the second argument of the degree quantifier. Once they have merged, at the very end of the derivation, the standard  $d^*$  remains a free variable. By contrast, in (42), the adjective *llampant* ‘flashy’ has had its degree variable bound by the existential quantifier introduced by *pos*; in fact, *cotxe llampant* ‘flashy car’ denotes a function from individuals to truth values that is true only if these individuals are cars whose flashiness meets a standard degree calculated from a comparison class of similar individuals. So, the denotation of the NP does not include a free degree variable waiting to be eventually bound by a force operator.

Equipped with these denotations, we can go back to the semantic composition of the *quin*-exclamative.

#### 4.3 *The wh-component*

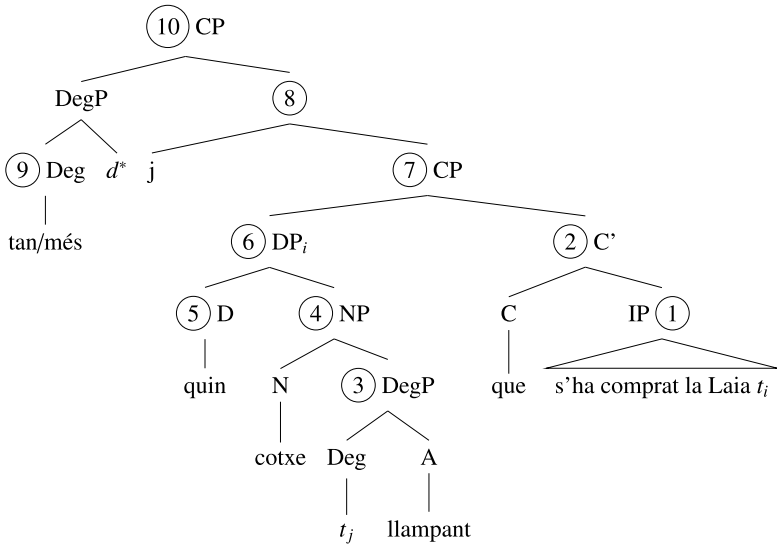
As has been motivated in Section 2.2, *quin*-exclamatives are sensitive to Rett’s (2009, 2011) Degree Restriction. In Section 4.1, I adopted Rett’s translation of this restriction into the denotation of *wh*-exclamatives as degree properties. In what follows, I intend to show how a degree property can obtain from a *quin*-exclamative with a focus on the role of *tan* and *més* in making this possible.

As pointed out in Section 4.2, the key component in the derivation of a *quin*-exclamative is that the gradable adjective does not combine with *pos*. Instead, a degree quantifier is present, whose trace is left as a free degree variable until the very end of the derivation. The present proposal is that it is eventually existentially bound by an expressive operator, as in Rett (2009) (on this see also Section 4.4).

Let us start with a step-by-step derivation of example (48).

- (48) *Quin cotxe tan/ més llampant que s’ha comprat la Laia!*  
 what car so more flashy that self.has bought the Laia  
 ‘What a flashy car Laia bought!’

(49)



- (50) (a)  $[[\textcircled{1}]] = \mathbf{bought}(x)(\mathbf{I})$   
 (b)  $[[\textcircled{2}]] = \lambda x. \mathbf{bought}(x)(\mathbf{I})$   
 (c)  $[[\textcircled{3}]] = \lambda x. \mathbf{flashy}(d)(x)$   
 (d)  $[[\textcircled{4}]] = \lambda x. \mathbf{car}(x) \wedge \mathbf{flashy}(d)(x)$   
 (e)  $[[\textcircled{5}]] = \lambda P \lambda x. P(x)$   
 (f)  $[[\textcircled{6}]] = \lambda x. \mathbf{car}(x) \wedge \mathbf{flashy}(d)(x)$   
 (g)  $[[\textcircled{7}]] = \lambda x. \mathbf{car}(x) \wedge \mathbf{flashy}(d)(x) \wedge \mathbf{bought}(x)(\mathbf{I})$   
 $\rightsquigarrow \exists \text{closure } \exists x[\mathbf{car}(x) \wedge \mathbf{flashy}(d)(x) \wedge \mathbf{bought}(x)(\mathbf{I})]$   
 (h)  $[[\textcircled{8}]] = \lambda d. \exists x[\mathbf{car}(x) \wedge \mathbf{flashy}(d)(x) \wedge \mathbf{bought}(x)(\mathbf{I})]$   
 (i)  $[[\textcircled{9}]] = \lambda d_d \lambda D_{(d,t)}. \text{MAX}(D) \geq / > d$   
 (j)  $[[\textcircled{10}]] = \text{MAX}(\lambda d. \exists x[\mathbf{car}(x) \wedge \mathbf{flashy}(d)(x) \wedge \mathbf{bought}(x)(\mathbf{I})])$   
 $\geq / > d^*$

Starting from the bottom, as shown in ① and ②, from a semantic point of view, the *que*-clause is analyzed along the same lines as a relative clause and, thus, as involving predicate abstraction over an individual variable. Since *tan/més* have been analyzed as degree quantifiers, they leave a degree-denoting trace and adjoin to CP. As a result, the gradable adjective combines with a degree and the output is a predicate of individuals (③), which intersects with the head noun denotation yielding a more restricted predicate of individuals (④). Unlike Castroviejo (2006), I am not analyzing *quin* as a generalized quantifier, but rather as a function from properties to properties, with the aim of obtaining a predicate of individuals, in line with Rett (2011) (cf. Section 4.1). As proposed by Rett, I assume that the individual argument undergoes existential closure. However, unlike English *wh*-exclamatives in Rett's paper, here there is no lambda-bound degree variable.

As shown in (8), the Quantifier Raising of the degree quantifier involves degree abstraction, so the free degree variable within the CP gets lambda-bound. This is the second argument of the degree quantifier, whose first argument is a salient degree in context. So, even in (10), when all the functions have been saturated, the output is an open proposition. The fact that the standard degree is treated as a contextually supplied variable permits that  $d^*$  remain free until, as we will see in Section 4.4, it is bound by an expressive force operator.

Here, I follow the lead in Burnett (2010), who emphasizes the equivalence between an open proposition with a free degree variable and a degree property. As mentioned in Section 2.3, she studies *gradation exclamatives*, as illustrated in (51).

- (51) J'ai vu un film ASSEZ bon!  
 1SG-have seen a film ENOUGH good  
 'I saw such a good movie!'

In her analysis, where she claims that gradation exclamatives denote a degree property that feeds Rett's (2009) DEGREE E-FORCE operator, she argues that the standard degree of these constructions is recoverable from context. At the end of the derivation, a denotation for (51) would be as in (52).

- (52)  $\lambda w. \text{MAX}(\{d : \text{I saw a } d\text{-good movie}\}) \geq \alpha(d')$  in  $w$ .  
 Burnett (2010: 384)

Since the value of the degree variable is taken from context, it depends on an assignment function  $\alpha$ . Thus, an assertion of (52) will be true or false depending on the value of the degree argument provided by  $\alpha$ . This, Burnett argues, makes (52) equivalent to (53).

- (53)  $\lambda d' \lambda w. \text{max}(\{d : \text{I saw a } d\text{-good movie}\}) \geq d'$  in  $w$ .  
 Burnett (2010: 384)

Likewise, for the case of *quin*-exclamatives, which at the end of the derivation denote an open proposition, I want to assume that this denotation is equivalent to a degree property. That is – and sticking to extensions for simplicity – the output obtained in (50) (10) is equivalent to (54).

- (54)  $\lambda d' . \text{MAX}(\lambda d. \exists x[\text{car}(x) \wedge \text{flashy}(d)(x) \wedge \text{bought}(x)(\text{I})]) \geq / > d'$

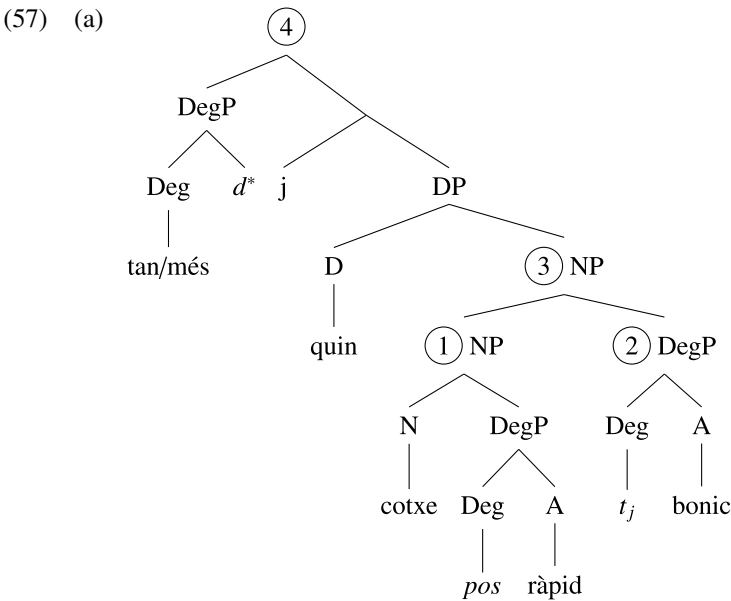
Recall from Sections 2.2 and 4.2 that the gradable property the *quin*-exclamative is about has to be preceded by degree quantifiers *tan* and *més*. If, on the other hand, *pos* occupies the position of the degree head, the degree interpretation of the exclamative has to concern a contextually supplied gradable property (on this, see Section 6). I repeat below the relevant example for the sake of convenience.

- (55) ??Quin cotxe ràpid que s'ha comprat en Joan!  
 what car fast that self.has bought the John

As noted before, a speaker cannot felicitously utter (55) if she becomes acquainted with a car Joan bought and she expresses surprise because she did not expect that Joan bought a car that can run at such a high speed. Instead, the only way to turn this sentence felicitous is by recovering a gradable property from context that fast cars can have to a high degree. (56) would be such a case.

- (56) Quin cotxe ràpid tan/ més bonic que s'ha comprat en Joan!  
 what car fast so more beautiful that self.has bought the John  
 'What a beautiful fast car John bought!'

Here the speaker is surprised that the fast car Joan bought has such a high degree of beauty. In the present analysis, this is the expected result, because the semantic derivation would proceed as follows:



- (b) (i)  $[[\textcircled{1}]] = \lambda x. \exists d [\mathbf{car}(x) \wedge \mathbf{standard}(d)(\mathbf{fast})(C) \wedge \mathbf{fast}(d)(x)]$   
 (ii)  $[[\textcircled{2}]] = \lambda y. \mathbf{beautiful}(d)(y)$   
 (iii)  $[[\textcircled{3}]] = \lambda x. \exists d' [\mathbf{car}(x) \wedge \mathbf{standard}(d')(\mathbf{fast})(C) \wedge \mathbf{fast}(d')(x) \wedge \mathbf{beautiful}(d)(x)]$   
 (iv)  $[[\textcircled{4}]] = \mathbf{MAX}(\lambda d. \exists x \exists d' [\mathbf{car}(x) \wedge \mathbf{standard}(d')(\mathbf{fast})(C) \wedge \mathbf{fast}(d')(x) \wedge \mathbf{beautiful}(d)(x)] \geq / > d^*)$

What is important to note from this derivation is that the variable that remains unbound at this point of the derivation is not the degree of fastness of the car (which is specified to hold to at least a contextual standard determined through a comparison class of individuals), but rather the threshold met or exceeded by the degree to which the car is beautiful. As argued for above, the open proposition that

obtains at the very end of the derivation is equivalent to a function from degrees to truth values (i.e. a degree property), which feeds the expressive operator, to which we now turn.

#### 4.4 *An expressive operator*

Along with Rett (2009) and Castroviejo (2010), I assume there is an expressive force operator which contributes non-at-issue content,<sup>17</sup> and which can apply to either the denotation of a declarative clause, (58a), or a *wh*-clause, (58b).

- (58) (a) La Laia s'ha comprat un Honda!  
 'Laia bought a Honda!'  
 (b) Quin cotxe tan llampant que s'ha comprat la Laia!  
 'What a flashy car Laia bought!'

Regarding the lexical semantics of this operator, which I call EXP-OP, I side with Rett (2011) in encoding the emotion expressed as the speaker's unexpect-edness. However, I follow Rett (2009) in proposing two different lexical entries, one for propositional exclamations, where the speaker conveys that she did not expect the proposition denoted by the declarative cause to be true, (59), and one for *wh*-exclamatives, where the speaker conveys that there is a degree she did not expect the *wh*-clause denotation to apply to, (60).

- (59)  $[[\text{EXP-OP}]](p) = S_C$  did not expect that  $p$ .  
 (60)  $[[\text{EXP-OP}_{wh}]](D) = \exists d[S_C$  did not expect  $D(d)$ ].

As I have argued at the end of Section 4.3, the denotation of a *quin*-exclamative is an open proposition containing a free degree variable, which is equivalent to a degree property (type  $\langle d, t \rangle$ ). Given the proposed semantics for EXP-OP<sub>wh</sub>, when the *quin*-clause contains an unbound degree argument, this variable ends up being bound by the existential quantifier introduced by the expressive operator. This way, the (expressive) content conveyed is the existence of a degree  $d$  (corresponding to the standard degree of *tan* or *més*) such that the speaker did not expect that a subject would have a certain property to degree  $d$ .

Let us go back to the flashy car example in (48), repeated in (61), to spell out the final output.

- (61) Quin cotxe tan/ més llampant que s'ha comprat la Laia!  
 what car so more flashy that self.has bought the Laia  
 'What a flashy car Laia bought!'

[17] I do not want to commit myself to further specifying which kind of non-assertive update this is. For the purposes of this paper, I remain agnostic as to how to model the particular update *wh*-exclamatives perform. For instance, it should be compatible with Murray's (2014) claim that illocutionary force operators do not make the same semantic contribution as e.g. evidentials and parentheticals, but rather structure the Common Ground.



At the end of the derivation, the *quin*-clause denotes an open proposition of the following form: there is a car Laia bought whose degree of flashiness meets or exceeds a threshold degree that is retrieved from context. Since this degree receives a value through an assignment function, its truth value depends on the value of this degree, so the open proposition is equivalent to a function from degrees to truth values (cf. Section 4.3). Hence, the *quin*-clause denotation can feed EXP-OP<sub>wh</sub>. The final output is the expression that there is a degree *d* such that the speaker did not expect Laia to buy a car that is flashy to *d*.

This said, remember that in previous descriptive paraphrases, we would characterize a sentence such as (61) as conveying that the speaker did not expect the *high* degree of flashiness of some car. However, we have not introduced this bit of content in the aforementioned paraphrase. Does it follow from anything that has been discussed in the present proposal?

Bear in mind that the *quin*-exclamative in (61) is not felicitous in a context in which the car is less flashy than expected or has a funny degree of flashiness (if flashiness had a conventionalized system of measurement, it could have a weird number thereof, for instance). What the sentence conveys is that the actual degree of flashiness is unexpected and, starting from here, so would all the higher degrees. What Rett (2009) does is state that *d* exceeds a contextual standard in the sense of Kennedy (2007a) (i.e. based on a comparison class of individuals, as yielded by the function **standard**). I, on the other hand, attempt to show that the expressive operator’s logical properties are responsible for this output.

More specifically, building on Nouwen (2005, 2011), I assume that unexpect-edness licenses upward-directed inferences in such a way that it behaves like a downward-monotonicity operator (Nouwen 2005).<sup>18</sup> That is, for any two potential competitor propositions that address the same Question under Discussion (QUD in the sense of Roberts 1996), *q*, *r*, if *r* is unexpected and entails *q*, it follows that *q* will also be unexpected (and thus potentially yielding the expression of an emotion). This is represented in (62).

$$(62) \quad \forall q, r \in \text{QUD} [r \text{ is unexpected} \wedge q \subseteq r \rightarrow q \text{ is unexpected}]$$

Let us go back to imagining that there are different degrees of flashiness on a conventional scale, so we can think of *d*<sub>1</sub>, *d*<sub>2</sub>, *d*<sub>3</sub>, . . . *d*<sub>*n*</sub> degrees of flashiness. As shown by e.g. Heim (2000), Nouwen (2005), gradable adjectives are upward monotonic (i.e. they license downward-directed inferences).<sup>19</sup> So, if Laia’s car is *d*<sub>3</sub>-flashy and *d*<sub>3</sub> > *d*<sub>2</sub> > *d*<sub>1</sub>, then, Laia’s car is also *d*<sub>2</sub>- and *d*<sub>1</sub>-flashy. Importantly, when EXP-OP applies to the degree property, the sense of the entailment is

[18] (i) *P* is MON↓ iff  $p \rightarrow p' \Rightarrow P(p') \rightarrow P(p)$  (Nouwen 2005: 169)

[19] (i) A function *f* of type  $\langle d, et \rangle$  is monotone iff  $\forall x \forall d \forall d' [f(d)(x) = 1 \wedge d' < d \rightarrow f(d')(d) = 1]$  (Heim 2000: 216)

(ii) *P* is MON↑ iff  $p \rightarrow p' \Rightarrow P(p) \rightarrow P(p')$  (Nouwen 2005: 169)

reversed. So, if the speaker did not expect Laia to have a  $d_2$ -flashy car, this entails that she would not have expected Laia to have a  $d_3$ -flashy car (or any higher degree). That is, all the propositions that include a higher degree entail the ones including a lower degree. Therefore, unexpectedness follows for all the propositions that entail the one conveyed by the *quin*-exclamative once the degree argument is bound.

This monotonicity inference – which ensures that for any higher value of  $d$  (however flashier the car may be), it holds that the proposition that the car is  $d$ -flashy is unexpected – is reminiscent of Nouwen's (2005) work on evaluative adverbs such as *surprisingly* in *surprisingly tall*. Here, too, evaluativity is tied with the higher values of a gradable predicate, not the lower or regular ones. The expression of unexpectedness is not directed toward a particular degree, either, but a set of degrees starting from a higher one, according to the speaker.

Viewed this way, there is no need to place any constraints that the threshold reached by the car's flashiness must exceed a standard as introduced e.g. by *pos* (this would be similar to the road taken by Rett (2009) in her DEGREE E-FORCE operator). Rather, the threshold in this approach corresponds to a degree that is unexpected to the speaker, and monotonicity ensures that unexpectedness is caused by a high degree (not low, not freakish).

Before concluding, let us go back to the question raised in Section 2.3 as to why both *tan* and *més* are interchangeable in certain contexts. It has been shown that these degree heads have different interpretations but are used interchangeably in *quin*-exclamatives and in truncated sentences with an exclamatory intonation revealing an emotional speaker, repeated below for convenience.

- (63) En Pep és tan/ més alt!  
 the Pep is so more tall  
 'Pep is so tall!'

My take is that, in both constructions, the degree that is met or exceeded is an extreme degree in the sense of Morzycki (2012), i.e. one that goes beyond the salient range of values. In his own terms, the degree that is reached has gone "off the scale" of contextually provided degrees.' Morzycki uses this metaphor to represent the denotation of extreme adjectives such as *gigantic*, which builds on degrees of tallness that go beyond a so-called 'perspectival scale'. In fact, the essential difference between *big* and *gigantic* is that the degree of bigness is in the perspectival scale in the former case, while it goes beyond the maximum of the perspectival scale in the latter. One of the puzzles that his theory addresses is the oddness of extreme adjectives in a comparative structure, as shown in (64).

- (64) ?Godzilla is more gigantic than Mothra. (Morzycki 2012: 5)

In a few words – I will come back to this in Section 6 – the oddness of the sentence, viewed as a pragmatic rather than a semantic issue, has to do with attempting a comparison between two degrees that are not salient (because they are way above the perspectival scale). Coming back to the interchangeability of

*tan* and *més* in certain contexts, we can assume that the degree that is met, which is an unexpectedly high standard, has similar properties as a non-salient degree, in the sense that the speaker did not conceive of some subject reaching such a high value. Given such an extreme measure, the distinction between  $\geq$  and  $>$  is too subtle to be distinguished.<sup>20</sup>

#### 4.5 Summary

In this proposal, *quin*-exclamatives convey that the speaker did not expect a property to hold of some individual to such a high degree. Unlike in Castroviejo's (2006) analysis, here the *wh*-component is not ignored from the point of view of the semantic derivation. Following Rett (2008, 2009, 2011), I treat the *quin*-clause as a degree property. A second improvement with respect to the previous proposal for *quin*-exclamatives is the full integration of the analysis of the degree expressions *tan* 'so' and *més* 'more' into the semantic derivation of the degree property; that is, I have not used an *ad hoc* denotation for the degree heads in this specific context, and I have been able to highlight the differences between the inclusion of *pos* and the inclusion of *tan/més*. Finally, I have replaced the notion of *attitude toward a degree*, which was not derived on syntactic or semantic grounds, with the unexpectedness conveyed through an expressive force operator.

Summing up, I follow Rett (2008, 2009, 2011) in two important respects: First, *wh*-exclamatives are triggered by an expressive speech act operator. In fact, EXP-OP<sub>wh</sub> is a simplification of Rett's (2009) DEGREE E-FORCE. Second, *quin*-exclamatives are necessarily gradable in the sense that they are felicitous only when the speaker did not expect that the subject held a gradable property to a contextually salient degree. How to yield this result is not straightforward, though, because Catalan *quin*-clauses do not seem to range over degrees in contexts other than exclamatives. At the same time, *quin*-exclamatives do obey the Degree Restriction. I have thus proposed a technical implementation that yields an open

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[20] An anonymous reviewer points out that extreme degrees are lexicalized in extreme adjectives like *brilliant*, but the equative, (ia), and the comparative, (ib), nevertheless have distinct truth-conditional meanings.

- (i) (a) John is as brilliant as Mary.
- (b) John is more brilliant than Mary.

This being true, Morzycki (2012) calls 'lexically extreme adjectives' those that can be modified by *downright* and *flat-out*, but not by *very*, that is *gigantic*, *gorgeous*, *fantastic*. As shown above, he also notes that such adjectives are marginal with the comparative. Pending further research, a plausible explanation for the acceptability of (ib) could be that *brilliant* is not a lexically extreme adjective. Now, does this minimal pair contradict the idea that reaching or exceeding an extreme degree is not truth-conditionally relevant? I believe that under the definition of an extreme degree as a degree that exceeds a contextual maximum of salient degrees, it does follow that the strict and partial orders do not make a relevant difference. What matters for our purposes is that *tan* and *més* in the truncated cases are equally alike or different than in *quin*-exclamatives.

proposition with a free degree variable at the end of the derivation of the *quin*-clause. The idea that *wh*-exclamatives denote high degree is ensured thanks to a monotonicity condition on EXP-OP, which licenses upward-directed inferences.

The analysis I have proposed is based on the main claim that whenever there is no DegP headed by *tan* ‘so’ or *més* ‘more’ preceding the gradable adjective, composition introduces the null morpheme *pos* turning the gradable predicate into a predicate of individuals. At the end of the derivation there is no degree variable to be bound by the exclamative operator, so this kind of *quin*-clause cannot be a good fit for the expressive speech act operator, EXP-OP. By contrast, *tan* and *més* are analyzed as degree quantifiers whose standard, a degree retrieved from context, ends up as a free variable that is ultimately bound by EXP-OP<sub>*wh*</sub>.

In the following section, I evaluate the adequacy of alternative theories to account for the facts presented here (Section 5). In Section 6 I discuss the potential generalization of this proposal to DegP-less *quin*-exclamatives and the rest of possible *quin*-exclamatives in Catalan.

## 5. OTHER PROPOSALS FOR THE SEMANTICS OF *wh*-EXCLAMATIVES

In this section, I review three semantic analyses of *wh*-exclamatives with the attempt to show that they pose problems to account for the facts just presented. The parameters of these proposals revolve around two main issues: the semantics of the *wh*-component, and how to formally derive the idiosyncratic meaning conveyed by exclamatives.

### 5.1 *Zanuttini & Portner (2003)*

Zanuttini & Portner (2003) is the first attempt to provide an analysis of exclamatives that maps syntax, semantics and pragmatics. The key ingredient of a *wh*-exclamative in Zanuttini and Portner’s analysis is the syntactic realization of factivity in a *wh*-clause. And the essence of an exclamative, its sentential force, is what they call ‘widening’: the formalization of a conventional scalar implicature that conveys that the true propositions in the set denoted by the *wh*-clause lie at the extreme end of a scale. Widening is the formal counterpart of descriptive terms such as surprise, admiration or mirativity.

In a nutshell, in their account, exclamatives have two main ingredients, a [+wh] feature (an integral part of *wh*-clauses, which involve an operator–variable relation) and a factive morpheme they call ‘FACT.’ Semantically, they follow other works such as Gutiérrez-Rexach (1996) in claiming that *wh*-exclamatives have a classic question semantics as in Hamblin (1973) and Karttunen (1977); that is, they denote a set of alternatives that represent the true answers to the corresponding *wh*-interrogative. Take (65) as an example.

(65) What things he eats!

In a scenario where some friends are discussing about kinds of peppers a participant of the conversation eats, the denotation of the *wh*-clause is the set of propositions in (66).

- (66)  $[[\text{what things does he eat?}]] = [[\text{what things he eats!}]_w = \{p \mid p \text{ is true in } w \text{ and } \exists a [p = \text{'he eats } a']\} = \{\text{'he eats poblanos' , 'he eats serranos' , 'he eats jalapeños' }\}$

Then, why are *wh*-exclamatives not *wh*-interrogatives? Because the presence of FACT is incompatible with inquiring. Whenever [+wh] and FACT co-occur, widening forces the standard set of answers to expand so as to include non-standard ones. On the other hand, factivity makes the propositions in the widened domain true. Following up on the previous example, widening amounts to considering extreme answers. For instance, 'he eats güeros', in (67), because this kind of pepper is too hot to be a regular pepper one would eat.

- (67)  $\{\text{'he eats poblanos' , 'he eats serranos' , 'he eats jalapeños' , 'he eats güeros' }\}$

We have seen that in this account, [+wh] and FACT are the triggers of widening and, hence, the hallmarks of exclamatives. These ingredients rule out other exclamatory sentences that are not *wh*-clauses (or for which a [+wh] feature cannot be carved out). However, they do not rule out the possibility that certain *wh*-words can introduce *wh*-interrogatives, but not *wh*-exclamatives. To explain differences in the inventory of *wh*-words for interrogatives and exclamatives, Zanuttini and Portner appeal to their morphological make-up. More precisely, *wh*-phrases that are 'E-only' (i.e. introduce *wh*-exclamatives but not *wh*-interrogatives) contain an E-only morpheme that requires the presence of FACT. This explains that such *wh*-phrases cannot introduce interrogatives. Now, the possibility for a *wh*-phrase to include an E-only morpheme depends on its morphological make-up. In (68) we observe the difference between *wh*-phrases with and without the E-only morpheme.

- (68) (a) how many books  
WH MEASURE SORTAL
- (b) how very many books  
WH E-ONLY MEASURE SORTAL

Zanuttini & Portner (2003: 69)

While in English, the role of *very* is to encode the E-only morpheme, Zanuttini and Portner suggest that in Italian, this is the role of *tanti* ('much/many'), as shown below. To be more specific, only *t-* encodes the E-only morpheme, while *-anti* expresses the measure.

- (69) che t-anti libri  
WH E-ONLY+MEASURE SORTAL

Importantly, they assume that those *wh*-phrases without an overt E-only morpheme that can introduce *wh*-exclamatives contain a null E-only morpheme. This would explain that certain *wh*-phrases can introduce both *wh*-exclamatives and *wh*-interrogatives. This line of thought is also able to explain why Italian *wh*-heads like *chi* ‘who’ and *cosa* ‘what’ cannot introduce a *wh*-exclamative. In particular, Zanuttini & Portner (2003) argue that such *wh*-phrases are morphologically complex words encoding *wh* and sortal, so the E-only morpheme cannot be inserted between the other two, which explains their absence in *wh*-exclamatives.

Let us go back to *quin*-exclamatives to test the predictions Zanuttini & Portner (2003) make for them. For one, these authors expect them to have a question semantics, factivity being the reason why they do not have the sentential force of interrogatives. However, we have said at the outset that the evidence in favor of *quin*-exclamatives being factive is not as strong as in e.g. English, since *wh*-exclamatives in Catalan do not easily embed under factive predicates, so the motivation for the factive morpheme is weakened.

Additionally, in the set of propositions approach, the only way to account for the degree restriction is to appeal to the morphological make-up of certain *wh*-words. Following up on this strategy, an option would be to treat the DegP headed by *tan/més* as an E-only morpheme. The downside of this kind of strategy would be that *tan* and *més* would play the role of E-only morphemes, but this would not be informative about their actual lexical and compositional semantics, especially given that they occur in other degree structures (see Section 2.3). In other words, calling them E-only would be a descriptive label, but would not explain how they contribute to the overall denotation of *quin*-exclamatives. Hence, a proposal that incorporates the semantics of these expressions in the overall derivation of the *quin*-exclamative could be said to fare better.

## 5.2 Rett (2011)

As shown in Section 4.1, Rett (2011) diverges from Zanuttini and Portner’s account and argues that *wh*-exclamatives are a degree phenomenon. In terms of their semantics, these *wh*-exclamatives denote a degree property (type  $\langle d, t \rangle$ ); that is, they involve lambda abstraction over the relevant variable, just like free relatives. This degree property feeds an illocutionary force operator Rett names *E-Force*, which is a function from propositions to expressive speech acts that introduces the notion of unexpectedness, here viewed as the expression of expectation contravention, (70).

- (70) *E-Force*( $p$ ), uttered by  $s_c$ , is appropriate in a context  $C$  if  $p$  is salient and true in  $W_c$ . When appropriate, *E-Force*( $p$ ) counts as an expression that  $s_c$  had not expected that  $p$ .

Since the denotation of *wh*-exclamatives is a degree property, an operation other than functional application is needed to satisfy *E-Force*. Rett approaches this as a two-step process, (71). First, context provides an argument for the

degree property. A proposition with an unbound variable results, (71b), which is the argument for E-Force. The *d*-variable gets eventually bound by existential closure, so when E-Force applies to it, it applies to a full-fledged proposition, (71c).

- (71) How tall John is! (Rett 2011: 431)
- (a)  $\lambda d. \mathbf{tall}(j, d)$
- (b)  $\mathbf{tall}(j, d)$
- (c) E-Force(*p*) counts as an expression that  $\exists d'$  such that  $s_c$  had not expected that  $D(d')$ .

While I have adopted the degree property analysis as well as a version of the expressive operator, there are two reasons why this proposal cannot be straightforwardly implemented in the case of *quin*-exclamatives. First, I depart from the analysis of the *wh*-word as a degree operator. Specifically, I do not think there is enough motivation to analyze *quin* as a degree operator that moves away from the NP it selects, leaving behind a trace of type *d*, as in (36), repeated below for convenience.

- (72) (a) [ what<sub>*j*</sub> [ [ *t*<sub>*j(d)*</sub> delicious desserts ]<sub>*i*</sub> John baked *t*<sub>*i(x)*</sub> ] ]
- (b)  $\lambda d. \lambda x. [\mathbf{baked}(j, x) \wedge \mathbf{desserts}(x) \wedge \mathbf{delicious}(x, d)]$   
 $\rightsquigarrow_{\exists \text{closure}} \lambda d. \exists x. [\mathbf{baked}(j, x) \wedge \mathbf{desserts}(x) \wedge \mathbf{delicious}(x, d)]$

While in English, such a mechanism is needed to allow for the intersection between the adjective (*delicious*) and the head noun (*desserts*), in the case of Catalan, as shown in Section 2, the head noun and the adjective are separated by *tan* ‘so’ or *més* ‘more’. The Catalan counterpart of *What delicious desserts John baked!* would be as in (73).

- (73) (a) Quines postres tan/més delicioses que ha preparat en Joan!  
 what desserts so more delicious that has prepared the John  
 ‘What delicious desserts John prepared!’
- (b) [<sub>CP</sub> [<sub>DP</sub> quines [<sub>NP</sub> postres tan/més delicioses]]<sub>*i*</sub> [[<sub>C</sub> que] [<sub>TP</sub> ha preparat *t*<sub>*i(x)*</sub> en Joan ]]]

Observe that the gradable adjective *deliciosos* ‘delicious’ and *quin* are not adjacent, as is the case in English. In Section 4.2 I have argued that *tan* and *més* are heads of a DegP that moves via Quantifier Raising and leave a degree-denoting trace. Hence, the head noun and the adjective can merge via Predicate Modification without *quin* intervening. The alternative analysis whereby *quin* directly modifies the gradable adjective and then moves upward to allow for the gradable adjective to combine with the degree-denoting trace the *wh*-word leaves behind does not seem to be justified. On the other hand, since *quin* seems to range over individuals of type *e* in interrogatives, keeping the same analysis across clause types may be seen as a welcome output.

Second, in Rett (2011), high degree in *wh*-exclamatives is assumed to solely follow from existential closure of the degree variable. This is the same view Rett takes on the positive construction (e.g. *John is tall*), which is only felicitous in a context where this existentially bound degree is high. While this can stem from pragmatic reasoning (the non-evaluative reading would be trivial), in the case of E-Force, which plainly expresses unexpectedness toward a proposition which contains an existentially bound degree variable, it should be possible that this degree be unexpectedly low or a very funny number (on a similar issue, see Morzycki 2008). Thus, the present analysis, where high degree is an entailment of the monotonic properties of EXP-OP, as proposed in Section 4.4, seems more explanatory.

### 5.3 Chernilovskaya & Nouwen (2012)

Chernilovskaya & Nouwen (2012) make the claim that *wh*-exclamatives are not necessarily a degree phenomenon, based on Dutch data, and evidence from German, Turkish, Russian and Hungarian. More specifically, they observe that, cross-linguistically, two classes of *wh*-exclamatives are available, depending on whether the speaker expresses noteworthiness toward the referent of the *wh*-expression or an entire proposition.<sup>21</sup>

Noteworthiness is defined as follows:

- (74) an entity is **noteworthy** iff its intrinsic characteristics (i.e. those characteristics that are independent of the factual situation) **stand out considerably** with respect to a comparison class of entities.

(Chernilovskaya & Nouwen 2012: 175)

The difference between the two types of *wh*-exclamatives cross-linguistically is presented in (75) and (76), respectively.

- (75) Type 1

(a) What a beautiful song John wrote!

(b)  $\exists x[\text{song}(x) \wedge \text{beautiful}(x)(c) \wedge \text{wrote}(\mathbf{j}, x) \wedge \text{noteworthy}(x)$   
 $(\lambda y.\text{beautiful}(y)(c) \wedge \text{song}(y))]$

- (76) Type 2

(a) Wie ik net gezien heb!  
 who I just seen have.1SG  
 ‘(lit.) Who I’ve just seen!’

(b)  $\exists x[\text{noteworthy}(\wedge \text{saw}(\mathbf{I}, x))]$

[21] Later on, Nouwen & Chernilovskaya (2015) propose a slightly different analysis, whereby the two types of exclamatives differ in their scalar semantics, depending on whether surprise targets the referent of the *wh*-phrase or the event s/he takes part in. Here I will stick to the 2012 proposal, because it is more explicit in its predictions.



Crucially, these two types of *wh*-exclamatives, with their own morpho-syntactic characteristics, have two different interpretations, depending on whether noteworthiness (the speaker's exclamative attitude) is predicated of the referent of the subject or the proposition referenced in the exclamative. That is, the scope of the predicate **noteworthy** (whose domain may be either an individual or a proposition) is responsible for the two possible readings. (75) says that there is a song that John wrote that stands out when compared to other beautiful songs. (76) means that it is noteworthy that the speaker has seen precisely the person she has seen. Whereas *what a* is lexically specified to express noteworthiness toward the referent of the *wh*-word, *wie* 'who' is lexically specified to mark noteworthiness toward a proposition. Crucially, Type 1 exclamatives are scalar, in the sense that there has to be some property (in the example, beauty) that some object (the song) has to a high degree, so they obey Rett's (2011) Degree Restriction. Even in the absence of the overt adjective, a Type 1 exclamative cannot convey that it is unexpected that John wrote a specific song. Instead, it must express that the song has some salient property to a high degree. By contrast, Type 2 exclamatives do not involve scalarity in the same sense, since degrees are not relevant. There still is scalarity, though, if we assume that noteworthiness as applied to a proposition involves evaluating the proposition in question with respect to a set of ordered alternatives.

In this cross-linguistic picture, *quin*-exclamatives would fall under Type 1, and the prediction that they are scalar is borne out. That is, in an example such as (77), the sentence cannot be used to express that John wrote one song instead of another one that the speaker expected. Rather, there has to be a salient property (e.g. beauty) that the song has to a high degree, which makes the song stand out in comparison to other songs.

- (77) Quina cançó que ha escrit en Joan!  
 what song that has written the John  
 'What a song John wrote!'

The fact that Catalan (as well as other Romance languages) does not have Type 2 exclamatives (see Section 2, examples in (8)) is compatible with the typology presented by Chernilovskaya & Nouwen. However, there is a general worry, and then there are two aspects that seem *a priori* problematic if we were to extend this analysis to *quin*-exclamatives.

First, it is not clear how the inference of high degree follows from noteworthiness as applied to the referent of an individual. As far as I can tell, if an object stands out in comparison to other similar objects, the reason need not be related to scalarity. It could also be the case that an object stands out because it has a property that the rest of objects in the comparison class lack.

Second, in their formal rendering of (75), the comparison class to which the song John wrote is relativized contains beautiful songs. As Chernilovskaya & Nouwen (2012: 276) put it, 'The comparison class will normally be the class described by the *wh*-phrase.' Importantly, it does not follow that the song John

wrote, compared to a set of beautiful songs, is noteworthy because it holds a high degree of beauty. The formal expression permits that the song stands out in comparison to a set of beautiful songs because of a property this particular song has and the rest of beautiful songs do not have. For instance, it may be that the song John wrote is beautiful, but it stands out because it is also thematically weird. Conceiving the rest of objects to which the song is compared as beautiful does not seem to give rise to the scalar interpretation that the authors are after. More pressing for the case of *quin*-exclamatives, the presence of *tan/més* may not be easily integrated in such a theory, where the gradable adjective held by the subject is in the positive construction (the comparison class to which the subject is compared includes other subjects who also hold this property to a standard threshold). Remember from Section 4.2 that I have argued that *tan/més* and *pos* give rise to different semantic derivations, so we would want to rule out the possibility that the threshold degree of the adjective is existentially bound and established as a contextually determined standard based on a comparison class.

Finally, while the typology presented by Chernilovskaya & Nouwen seems empirically adequate, there is nothing in the analysis that explains why certain *wh*-elements can only give rise to Type 2 exclamatives and not Type 1 exclamatives. In the case of Catalan (and other Romance languages), nothing apparent seems to prevent that *wh*-heads such as *qui* ‘who’ or *què* ‘what’ introduce a *wh*-exclamative.

To wrap up, for different reasons, the potential implementations of the three alternatives we have reviewed to *quin*-exclamatives seem less successful than the proposal defended here. Let us now turn to considering the consequences of the current analysis for other *quin*-exclamatives.

## 6. CONSEQUENCES FOR OTHER *quin*-EXCLAMATIVES

Since the beginning of this paper, it has become clear that the DegP is optional, so it makes sense to discuss the consequences for this analysis in the case of *quin*-exclamatives that do not bear *tan/més*. This section is concerned with the semantic composition when there is no overt DegP headed by *tan* or *més* in a *quin*-exclamative (cf. (2)). Note that I have crucially relied on this DegP as the trigger of the degree variable that is left unbound and can be thus existentially quantified by EXP-OP<sub>wh</sub>. I will side with Rett (2011) in adopting the idea that the property that is held to an unexpected high degree may be recovered from context, but I will qualify this claim by saying that it only happens in certain cases.

Rett proposes the notion of ‘freebie degrees’ to account for examples such as (78) where no gradable adjective is present and, yet, the denotation of the *wh*-clause is said to denote a degree property.

(78) What M-OP desserts John baked!

M-OP is a measurement operator that is valued contextually and is of the same type as a gradable adjective (e.g. *delicious*). The fact that M-OP is freely available

leads to potential overgeneration,<sup>22</sup> so I will try to narrow down the set of *quin*-exclamatives in which this happens. Let us start with a typology of cases.

First, some nouns can only be evaluated according to the size of one dimension. As noted by Brucart & Rigau (2002: 1571) for Catalan, when the noun is lexically associated with an adjective, as in (79), then the default DegP is *tan/més gran* ‘so/more big’.<sup>23</sup>

- (79) Quina paciència (tan/ més gran)!  
 what patience so more big  
 ‘lit. What a (big) patience!’

This also holds for other degree nominalizations such as *alçada* ‘tallness’ and *felicitat* ‘happiness’, or one-dimensional mass nouns such as *fred* ‘cold’.

I propose that the DegP is usually unpronounced because unidimensionality makes these *quin*-exclamatives unambiguous; the missing DegP is by default identified as *tan/més gran* ‘so/more big’. We can assume that these examples deserve the same analysis as the one provided for the overt DegP.

The second type in this classification concerns cases where the property that is evaluated is directly perceivable by the participants in the conversation. Bear in mind that *wh*-exclamatives are usually uttered as a direct response to a stimulus that tends to be perceivable by speaker and interlocutor, which ensures the recovery of the salient property. Imagine a case such as (80).

- (80) Quin arbre!  
 what tree  
 ‘What a tree!’

It is not obvious which property held by a tree can make the speaker utter a *wh*-exclamative. Unless the interlocutors are present when the speaker utters her *quin*-exclamative, they will naturally ask for the content of the DegP for full understanding of what is meant by the speaker (the tree is very tall, beautiful, old, exotic, etc.). Be that as it may, we can still assume that the salient property can be translated as a DegP headed by *tan* or *més*, as illustrated below.

[22] But see Rett (2014) for an account of a varied set of data in which a constraint in terms of monotonicity on the part-whole structure of the relevant dimension of measurement is proposed.

[23] They also claim that (79) is equivalent to (i). The same minimal pair is found in Tovena (2001) for Italian. This seems to be expected if these nouns can only be evaluated according to size, although I will not try to push this idea any further for the sake of brevity.

(i) Quanta paciència!  
 how much patience  
 ‘lit. How much patience!’

- (81) Quin arbre tan/més alt/ bonic/ verd!  
 what tree so more tall beautiful green  
 ‘What a tall/ beautiful/ green tree!’

Hence, the same analysis holds for this type of examples.

Third, there are cases where the DegP headed by *tan* and *més* cannot be inserted. I will mention two specific subtypes. One concerns *quin*-exclamatives whose head noun is modified by a prenominal evaluative adjective, such as *magnífic* ‘magnificent’ or *fantàstic* ‘fantastic’ in (82).

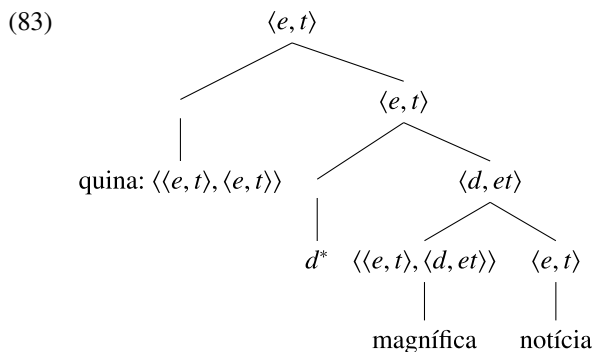
- (82) (a) Quina magnífica notícia!  
 what magnificent news  
 ‘What magnificent news!’  
 (b) Quin fantàstic actor!  
 what fantastic actor  
 ‘What a fantastic actor!’

Note that Catalan usually places its adjectives following the noun. Only a subset of adjectives can precede it. Among them, there is a small number of adjectives that convey a subjective evaluation, and which display a difference in terms of specificity of the indefinite DP depending on whether they are prenominal or postnominal (on this, see Picallo 1994, Bosque 1996, Demonte 2008 for Spanish, and Martin 2014 for French). As put forth by Demonte (2008), in Spanish, these include Dixon’s human disposition adjectives, such as *horrible* ‘horrible’ or *espantoso* ‘awful’, and qualitative superlative adjectives, such as *maravilloso* ‘wonderful’ or *hermosísimo* ‘very beautiful’. The availability of these prenominal adjectives in Catalan is more restricted than in Spanish (they are grammatical but are less commonly used in everyday language), but adjectives such as *magnífic* ‘magnificent’, *fantàstic* ‘fantastic’ and, above all, *bon* ‘good’, are quite frequent.

The main assumption I make, alongside the syntactic literature, is that prenominal and postnominal adjectives merge in different syntactic positions, which, in turn, affects their semantic composition. For instance, Demonte (2008) proposes that non-predicative (prenominal) adjectives merge at the level of nP, while predicative (postnominal) adjectives are sisters to NP.<sup>24</sup> For my purposes, it is enough to assume that prenominal evaluative adjectives of the sort that can occur in *quin*-exclamatives are not merged via Predicate Modification (i.e. intersection) with the head noun. Semantically, I propose, they are of type  $\langle\langle e, t \rangle, \langle d, \langle e, t \rangle \rangle\rangle$ . In this analysis, the result of combining the gradable adjective and the noun is a gradable expression. It does not necessarily combine with *pos*, but the context can provide a value for the degree argument as long as it is salient, as shown

[24] In Demonte’s (2008) terminology, non-predicative adjectives are predicate modifiers, i.e. functions from adjective denotations to adjective denotations, while predicative adjectives are predicates of individuals.

in (83). This way, the degree argument  $d^*$  remains free and is eventually bound by EXP-OP<sub>wh</sub>, in parallel to the usual *tan/més* cases as proposed in Section 4.4.



As to the lexical semantics of such adjectives, we can assume an analysis compatible with Morzycki’s (2012) proposal that extreme adjectives take a degree argument that exceeds a contextual value,  $\max(C)$ , as shown in (84) (see also what I have said regarding extreme degrees at the end of Section 4.4). My adaptation to pronominal *magnífic* is presented in (85).

(84)  $[[\text{gigantic}_C]] = \lambda x \lambda d. d > \max(C) \wedge x \text{ is } d\text{-big.}$

(85)  $[[\text{magnífic}_C]] = \lambda P \lambda d \lambda x. P(x) \wedge d > \max(C) \wedge \text{good}(d)(x).$

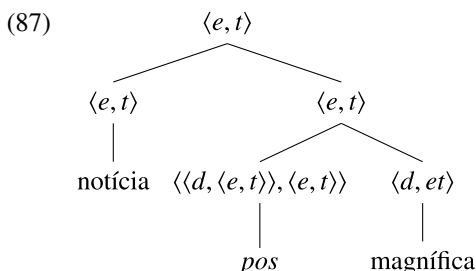
As shown in (85), *magnífic* ‘magnificent’ is taken to build on goodness and to exceed on this scale beyond a contextually relevant maximum. It combines with the noun and yields a gradable predicate. In Morzycki’s (2012) analysis, this gradable predicate is further merged with *pos*. While this is possible here, too, I will assume that, as in the case of the DegP headed by *tan/més*, for EXP-OP<sub>wh</sub> to be able to bind the degree variable and, thus, give rise to a *quin*-exclamative,  $d$  cannot be existentially bound by *pos*. Instead, this salient degree is merged as a free variable taken from context.

Notice that, although extremeness may seem to play a role in the selection of available adjectives in this structure, this is not necessarily the case, as non-extreme evaluative adjective such as *bon* ‘good’ can also occur in the same position as the extreme ones, as illustrated in (86).

- (86) Quina bona notícia!  
 what good news  
 ‘What good news!’

The empirical observation that I put forth is that pronominal adjectives, not being interpreted intersectively, need not have their degree argument bound by the positive morpheme *pos*. Therefore, it is left available to be bound by EXP-OP<sub>wh</sub> at the end of the derivation. My assumption is that, in postnominal position, all gradable adjectives are of type  $\langle d, \langle e, t \rangle \rangle$  and need to combine with type shifter

*pos* to be intersected with the denotation of the head noun, as shown in (87). Thus, unlike preposed adjectives, which may combine with *pos* after merging with the noun – as proposed by Morzycki (2012) – postposed adjectives combine with *pos* to be able to intersect with the noun via Predicate Modification. This way, the degree variable gets bound and is not available for binding by EXP-OP<sub>wh</sub>. On this, see also the arguments provided in Section 4.2.



Let us now turn to a second subtype of *quin*-exclamative whose gradability is not mediated through a DegP headed by *tan/més*. In this case, its gradability is brought about through evaluative nominal morphology that yields a subjective evaluation. The paradigmatic example is the Catalan affix *-às*,<sup>25</sup> illustrated in (88).

- (88) Quin actor-às!  
 what actor-às  
 ≈ ‘What a great actor!’

Even if it happens at a sub-lexical level, as in the case of (85) above, *-às* combines with a noun to yield a gradable predicate whose degree argument, I propose, is left free until the end of the derivation, as indicated in (89).

- (89)  $[[\text{-às}_C]] = \lambda P \lambda d \lambda x. P(x) \wedge d > \max(C) \wedge \mathbf{EvalPred}(d)(x)$ .

Although in the case of (88) the property that is graded could be translated as goodness, as in most cases, the exact lexical meaning of the evaluative component of this derivational morpheme is further specified depending on the properties of the noun (hence the notation **EvalPred** in (89)). For instance, *golàs* ‘goal-às’ could be translated as ‘extremely pretty goal’ and *casassa* ‘house-às.FEM’ could be translated as ‘extremely large house’. What all these evaluative predicates have in common is the fact that the degree that is held is placed above the regular degrees under consideration and that they express the speaker’s amazement (the goal or the house are impressive).

As in the previous subtype, here again the evaluative modifier that yields gradability is not intersected with the noun. Therefore, *pos* is not necessary as

[25] Analogously for Spanish *-azo*. See Masià (2017) on the evaluative character of such formations.

a type shifter and the degree variable that is left unbound can be picked up from the context of utterance, until it is bound by EXP-OP<sub>wh</sub>.

Summing up, it has been shown that *quin*-exclamatives that do not include a DegP headed by *tan/més* do not form a homogeneous class in terms of how the degree variable to be bound by EXP-OP<sub>wh</sub> is obtained. This possibility is constrained either by the availability of a predicate to be retrieved from context or by the presence of an evaluative predicate that can leave a degree argument free.

## 7. CONCLUSIONS

This paper has been concerned with the analysis of *quin*-exclamatives in Catalan, a type of *wh*-exclamative that does not naturally range over degrees but over individuals. I have compositionally developed the idea suggested in Castroviejo (2006) that *wh*-exclamatives in Catalan are degree constructions, including *quin*-exclamatives. To do so, I have adopted Rett's (2009) claim that *wh*-exclamatives denote a degree property that feeds an expressive force operator. Hence, my main purpose has been to show the details of a derivation that permits a degree reading out of a *quin*-clause.

In particular, I have argued that the presence of an explicit degree quantifier (*tan* 'so' or *més* 'more'), which establishes a relation between two degrees, ensures that the adjective's degree is not bound by the type shifter *pos*. Alternatively, the degree argument is first supplied by context and it remains free until the end of the derivation, when it is bound by an expressive force operator.

The present proposal, which succeeds at providing a compositional analysis of *quin*-exclamatives in Catalan (and other Romance languages, to this effect), raises the question of what impact it may have for *wh*-exclamatives more generally. For one, we may wonder whether the analysis proposed for *quin*-exclamatives whose gradability arises through pronominal modifiers could not account for the English and German cases illustrated below.

- (90) (a) What an exotic language!  
 (b) Was für einen schönen Tag!  
 what for a.ACC pretty.ACC day  
 'What a nice day!'

While in Catalan pronominal modification is quite restricted, this is the default word order in English and German (and it is also productive in some Romance varieties), irrespective of whether the adjective merges as a predicative or non-predicative modifier. There are, however, some more fine-grained syntactic differences. For example, the adjective whose degree variable is boosted in *wh*-exclamatives syntactically sits above the predicative ones, as shown in (91).

- (91) What an exotic Romance language!

For obvious reasons – *Romance* is not gradable – the degree that is bound by the expressive force operator is one of exoticness of a certain Romance language.

The question would be whether we can dispense *what* – and for that matter *was für* – from ranging over degrees, as argued for in Rett (2011), and pursue a semantic derivation that parallels that of prenominal adjectives in Catalan *quin*-exclamatives. I leave this question, which would further our understanding of the relation between degrees and individuals, open for future research.

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