

## A DEGREE-BASED ACCOUNT OF *wh*-EXCLAMATIVES IN CATALAN\*

Elena Castroviejo Miró,  
Pompeu Fabra University

elena.castroviejo@upf.edu

### Abstract

In this paper I show that exclamatives in Catalan should be analyzed as a special type of degree construction. It is special because its contribution to discourse is not that of a declarative clause, but rather that of a degree construction – similar to a comparative clause or a result clause construction – because it includes a degree modifier that establishes an equative relation between two degrees. Additionally, I discuss the previous literature on exclamatives and argue that their proposals, according to which exclamatives should be approached from the semantics of questions, are not satisfactory enough to account for the data from Catalan.

### 1 Introduction

In the existing literature (Gutiérrez-Rexach 1996, Zanuttini and Portner 2003) the semantics of *wh*-exclamatives has been derived from the semantics of *wh*-questions. My purpose here is to switch the point of view and propose that *wh*-exclamatives are best approached as a kind of degree construction. In particular, I would like to present an analogy between (1-a) and (1-b).

- (1) a. Quina pel·lícula tan entretinguda!  
(what movie so entertaining)  
'What an entertaining movie!'
- b. La pel·lícula va ser tan entretinguda que tothom va aplaudir.  
(the movie AUX.it to.be so entertaining that everybody AUX.it to.applaud)  
'The movie was so entertaining that everybody applauded.'<sup>1</sup>

By means of these data, I show that exclamatives in Catalan include the degree operator *tan* ('so'), which establishes an equative relation between a reference degree and a standard degree, which is always high. Obviously, though, result clause constructions like (1-b) differ with exclamatives in one important respect: their discourse contribution. The former are declaratives and they make good assertions, but the latter can never have this discourse function. My proposal is that *wh*-clauses contain a backgrounded descriptive content and what is contributed to the common ground is a non-explicit content. In the case of exclamatives, I claim that it is the speaker's attitude towards a degree.

The structure of the article is the following: I first introduce the data; that is, I present the two types of *wh*-exclamatives in Catalan that are the object of my study, and then I highlight the puzzles that are relevant for determining their essential properties. In the following section I present the three axes of my proposal, namely, the justification of exclamatives as a kind of

---

\*I would like to thank the audience of Sinn und Bedeutung 11 for their comments, and especially Xavier Villalba and Louise McNally, for helping me improve my ideas and for advising me on how to present them. Of course, all remaining mistakes are mine.

<sup>1</sup>Abbreviations: AUX = auxiliary, NEG = negation.

degree construction, the compositional semantics and the explanation for their singular way of updating the common ground. The article closes with the discussion of the proposals by Gutiérrez-Rexach (1996) and Zanuttini and Portner (2003) and the justification of the need for an alternative. Specifically I consider to what extent they are adequate for the Catalan examples.

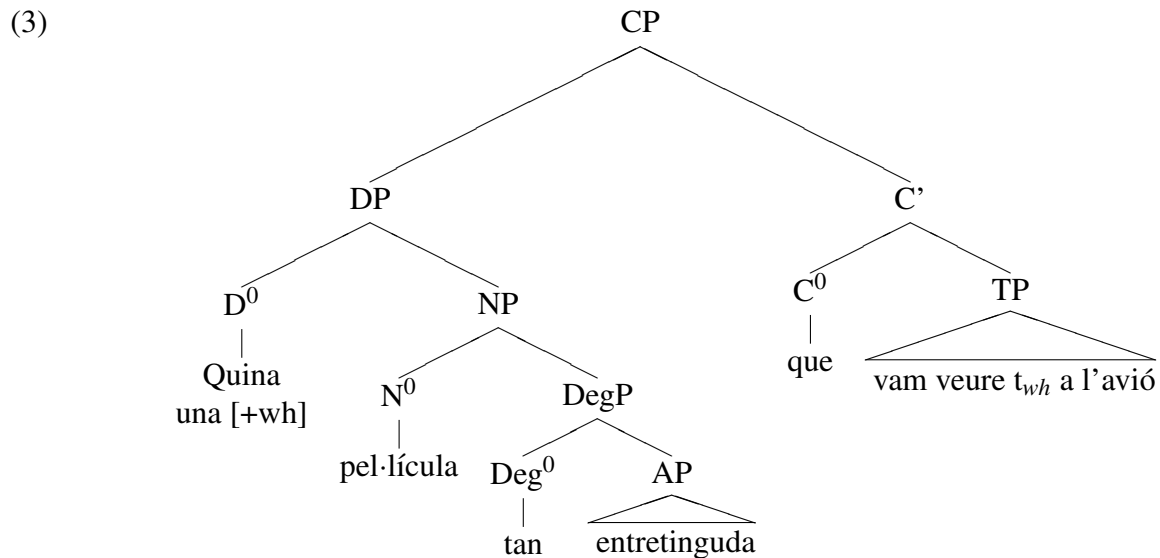
## 2 The data

### 2.1 Exclamatives in Catalan

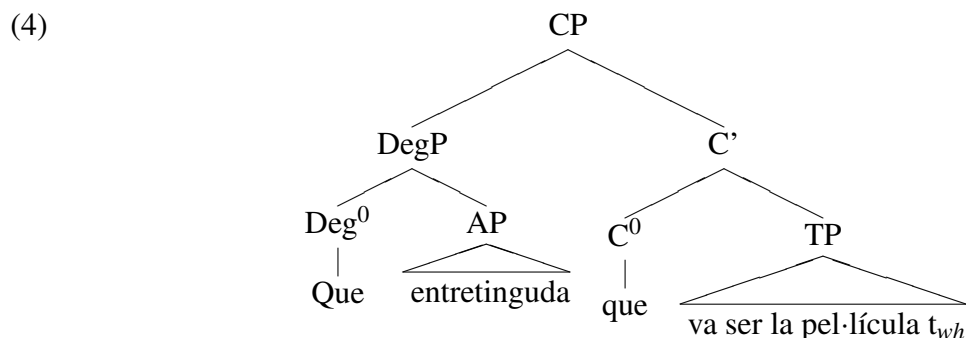
The two types of *wh*-exclamatives I have looked at are syntactically very similar. They only differ in the identity of the phrase that is *wh*-moved to the left periphery.

- (2) a. Quina pel·lícula tan entretinguda que vam veure a l'avió  
 (what movie so entertaining that AUX.we to.see at the plane)  
 'What an entertaining movie we saw on the plane!'  
 b. Que entretinguda que va ser la pel·lícula!  
 (how entertaining that AUX.it to.be the movie)  
 'How entertaining the movie was!'

In (2-a), the *wh*-phrase is a DP that is headed by the *wh*-quantifier *quina* ('what'), which I interpret as the indefinite quantifier *un* ('a') with the [+wh] feature. This formal feature forces movement to Spec,C, as the following phrase marker shows.



On the other hand, example (2-b) involves movement of a DegP headed by *que*, a *wh*-word that is translated as *how*, but which cannot introduce interrogatives.



Note that even if the moved constituents in (3) and (4) are not the same, these two constructions have a crucial property in common: they both include a DegP. And most importantly, I assume from now on that *que* and *tan* are the same degree word, with the sole difference that the former contains an additional formal feature, namely, [+wh].<sup>2</sup>

A final remark regarding the general characteristics of *wh*-exclamatives in Catalan is that, contrary to English, both interrogatives and exclamatives involve subject-verb inversion. However, only exclamatives allow for the presence of the complementizer *que*,<sup>3</sup> which I interpret as evidence in favor of claiming that the *wh*-phrase in an exclamative ultimately lands in Spec,C, because the complementizer occupies C<sup>0</sup>.

## 2.2 Puzzles

### 2.2.1 Factivity

The literature on exclamatives has highlighted a number of puzzles that are relevant for the characterization of this type of clause. One of the most interesting observations by Elliott (1974) is that exclamatives in English can only embed in factive verbs like *know* and *realize*, and in emotive predicates such as *amaze*, *surprise* or *be incredible*. Consider the following examples:

(5) It's amazing how very tall Pau is.

(6) I know how very tall Pau is.

These *wh*-clauses are treated as embedded exclamatives because the presence of *very* makes it difficult for them to be analyzed as questions (cf. # *How very tall is Pau?*). Moreover, note that these very same verbs can embed *wh*-clauses headed by *what a*, which does not introduce interrogatives.

(7) It's amazing what a tall man Pau is.

(8) \*What a tall man is Pau?

These two kinds of *wh*-selecting predicates, which can be called *emotive factives* ((5)) and *cognitive factives* ((6)) are able to introduce *how very* and *what a* clauses, unlike other predicates, that are able to embed questions ((9-a)) and propositions ((10-b)), but not exclamatives ((9-b), (10-b)).

(9) a. I wonder how tall Pau is.

b. \*I wonder how very tall Pau is.

(10) a. I believe that Pau is extremely tall.

b. \*I believe what a tall man Pau is.

---

<sup>2</sup>As a matter of fact, the position of *tan* in (2-a) can also be occupied by the degree word *més* ('more'). This is the degree operator that establishes the  $\succ$  relation in comparatives. Interestingly, exclamatives are the only construction in which both operators are interchangeable. I will devote this paper to the analysis of *tan* and leave the behavior of *més* for future research.

<sup>3</sup>Although this needs thorough research, I assume that the presence of the complementizer is optional in Catalan and I attribute this optionality to dialectal variation.

### 2.2.2 High-degree

Another example of the exclamatives' singular behavior was observed by Elliott (1974). It regards the type of adverbs that can modify an adjective in an exclamative environment. More specifically, he points out that a few adverbs can combine with scalar predicates in exclamatives ((11-a)), but these are not available for interrogatives ((11-c)). They can be referred to as *high-degree denoting adverbs*.

- (11) a. It's amazing how very/unbelievably/extremely long he can stay under water.  
b. \*It's amazing how slightly/fairly/reasonably long he can stay under water.  
c. \*I wonder how very/unbelievably/extremely long he can stay under water.

Examples like the preceding ones (from Elliott (1974)) are used as evidence that exclamatives indicate a degree that lies at the extreme end of a scale.

### 2.2.3 Neither questions nor assertions

A final property that defines exclamatives is their inability to work as questions or as assertions. That is, they cannot be answered nor be used as answers. This has been brought up by Grimshaw (1979) and Zanuttini and Portner (2003), and is presented in the following examples:

- (12) a. A: How tall is Pau? B: 2.10 meters.  
b. A: How tall Pau is! B: # 2.10 meters.
- (13) A: How tall is Pau? B1: # How tall he is! B2: He's very tall.

In (12) we observe that an interrogative can be uttered to ask a question, whereas an exclamative, which is a *wh*-construction, too, cannot have this discourse function. On the other hand, what (13) shows is that even if exclamatives do not make good questions, they do not make good assertions, either. If they did, *how tall he is!* should be able to update the common ground the same way *he's very tall* does, so B1 in (13) would be adequate.

### 2.2.4 A Catalan phenomenon

A final interesting fact is that exclamatives in Catalan, contrary to what has been claimed for exclamatives in English, are reluctant to embed in factive predicates. Though the intuitions are not categorical, it is certain that the following examples are somehow deviant.

- (14) a. ??Em sorprèn que alt que és en Pau.  
(to.me surprises how tall that is the Paul)  
'It surprises me how tall Pau is.'
- b. \*Ja sé quin llibre tan bo que t'has llegit.  
(already know.I what book so good that to.you AUX.you read)  
'I know what a good book you read.'

In contrast, the correspondent English examples are perfectly acceptable. We need to see to what extent the Catalan data do or do not contradict the proposals that only take into account the data from English.

### 3 Proposal

It was advanced in section 1 that my main claim is that exclamatives are a special kind of degree construction. In this section I justify this claim in the following way: I first give evidence in favor of exclamatives being a degree construction, then spell out the compositional semantics and finally approach the problem of accounting for the idiosyncratic behavior of exclamatives regarding their way of updating the common ground.

#### 3.1 Exclamatives as a degree construction

Looking at the data from a Romance languages like Catalan, it becomes evident that exclamatives are related to another family of constructions, namely, degree constructions, because exclamatives include the degree operators *tan* ('so') and *més* ('more'), which also occur in comparatives and result clauses.

- (15) a. Quina pel·lícula **més/tan** entretinguda que vam veure!  
(what movie **more/so** entertaining that AUX.we to.see)  
'What an entertaining movie we saw!'
- b. Aquesta història és **més** vella que l'anar a peu.  
(this story is **more** old that the going on foot)  
'This story is very old.' (lit. This story is older than going on foot.)
- c. En Pau és **tan** alt com en Kareem.  
(the Pau is **as** tall as the Kareem)  
'Pau is as tall as Kareem.'
- d. En Pau és **tan** alt que arriba al sostre.  
(the Pau is **so** tall that arrives at the ceiling)  
'Pau is so tall that he reaches the ceiling.'

All I want to highlight from the previous examples is that exclamatives contain a degree operator. Consequently, they must include a gradable predicate that feeds this operator. This explains the unacceptability of the example in (16).

- (16) \*Quin triangle tan equilàter!  
'What an equilateral triangle!'

It follows that the same non-gradable adjective is unacceptable when merged with the same degree operator in other degree constructions. Consider these examples:

- (17) a. \*Aquest triangle és tan equilàter com l'altre.  
'This triangle is as equilateral as the other one.'
- b. \*Aquest triangle és tan equilàter que el puc dibuixar amb el regle.  
'This triangle is so equilateral that I can draw it with my ruler.'

Two comments are in order: first, usually non-gradable words can be coerced into gradable ones. For instance, we may understand that there are different degrees of having the property of being prototypically equilateral. In this case, examples (16), (17-a) and (17-b) could be interpretable. Note, nonetheless, that this does not contradict the claim that *tan* is a degree word that needs to combine with a gradable predicate.

Second, the English translation of (16) may have an interpretable meaning, but then, the following must occur: the adjective combines with the noun *triangle* (of type  $\langle e, t \rangle$ ) by means of

predicate modification to obtain a new predicate of individuals. Then, we need to assume that there is a gradable adjective that is not spelled out but is salient in the context of utterance such that this equilateral triangle is ADJ to a high degree. Interestingly, this possibility is not available in Catalan, because should the non-gradable adjective combine with the noun, the degree operator *tan* would not precede it.

I propose a denotation for the degree operator *tan* which is adapted from the definition of *as* given in Kennedy (1999):

$$(18) \quad \llbracket \text{TAN}(d_R)(d_S) \rrbracket = 1 \text{ iff } d_R \succeq d_S$$

Where  $d_R$  is a reference degree, and  $d_S$  is a standard degree that needs to be at least achieved. *Tan* (and its *wh*-counterpart *que* – see 2.1) can be translated in the following manner:

$$(19) \quad T(\text{tan}) = T(\text{que}) = \lambda G_{\langle e, d \rangle} \lambda x. \exists d [\text{TAN}(G(x))(d)]$$

From (19) we gather that the reference degree is obtained by applying the gradable property ( $G$ ) to an individual ( $x$ ). That is, gradable adjectives are viewed as measure functions that are applied to individuals and return a degree. The condition that is to be met in order for the saturated formula to turn out true is that the degree of ADJ-ness of a given individual at least achieves a standard degree.

So far, I have shown that *tan* occurs both in equative comparatives and in result clauses. In other words, its English translation can be both *as* and *so*. My hypothesis is that the *tan* that occurs in exclamatives resembles the *tan* that occurs in result clauses. And the difference between *as-tan* and *so-tan* is that the latter requires that the standard degree be high, whereas this does not extend to *as-tan*.

- (20) #En Joan és **tan** gran que es pot vestir ell sol.  
       ‘John is such a grownup that he can get dressed on his own.’  
       ‘(lit.) John is so old that he can get dressed on his own.’

The inadequacy of the previous example stems from the fact that to be able to get dressed on his own, John must not be old to a high degree. Instead, we could expect a *that*-clause such as *that he cannot stand on his feet*. In contrast, see what happens with *as-tan* and *enough*, which are degree operators that establish the  $\succeq$  relation between two degrees (see Meier (2003)).

- (21) a. L’Albert és **tan** alt com en Robert. (e.g., 1.50 m)  
       ‘Albert is as tall as Robert.’  
       b. En Joan és **prou** gran per vestir-se sol. (e.g., 10 years old)  
       ‘John is old enough to get dressed on his own.’

Observe that the standard degree in (21-a) and (21-b) is determined by the comparative clause and the sentential complement respectively, and it need not be high. To capture this property, I make a slight refinement to the denotation of *so-tan* (from now on, just *tan*), which makes sure that the standard degree be high.

$$(22) \quad T(\text{tan}) = T(\text{que}) = \lambda G \lambda x. \text{TAN}(G(x))(d_i)$$

Where  $d_i$  is taken from context and it is high.

The reader can observe a further change with respect to the first proposal ((19)): I have replaced the existential quantifier on degrees for a contextually determined standard degree. Though I

cannot justify this decision in detail here (but see Castroviejo (2006) for the entire argumentation), I will show that existential quantification is not a strong enough condition to account for the behavior of *tan*. Consider the following case of *tan* with negation:

- (23) En Pau no és tan alt.  
(the Paul NEG is so tall)  
'Pau is not so tall.'

What the previous example means is that it is not the case that the degree to which Pau is tall reaches a standard degree. What it does not mean is that there is no degree  $d$  such that Pau is at least as tall as  $d$ . In other words, we want to represent (23) like (24-a) but not like (24-b).

- (24) a.  $\neg[\text{TAN}(\text{alt}(p))(d_i)]$   
b.  $\neg\exists d[\text{TAN}(\text{alt}(p))(d)]$

Moreover, note that by saying that the standard degree is taken from context (and hence the subscript  $i$  on  $d$ ) we obtain two desirable results: On the one hand, we derive the correct interpretation in cases like the previous one, where the existence of the standard degree cannot be negated. On the other hand, we capture the intuition according to which the standard degree has been mentioned in discourse. For example:

- (25) A: En Marc fa 2,10 metres. B: Doncs en Pau no és tan alt.  
(A: the Marc does 2.10 meters. B: Well the Paul NEG is so tall.)  
'A: Marc is 2.10 meters tall. B: Well, Pau is not so tall.'

In (25), the standard degree to which *tan* refers is 2.10 meters, which has been mentioned in the previous utterance.

Recapitulating, I have argued that being *tan* ADJ involves being at least as ADJ as a high standard degree of ADJ-ness. This is in accordance with the facts presented in (11-a) and (11-b), where we see that exclamatives are compatible with adverbs that indicate a high degree, but not an average degree. What I want to clarify at this point is that it makes sense to claim that exclamatives refer to a high degree, but I want to argue that they do not necessarily refer to an extreme degree, which is how exclamatives are informally characterized.

To do so, I make use of closed scale adjectives (i.e., gradable adjectives whose scale is not unbounded but include an upper or lower end. Cf. Kennedy and McNally (2005)). Consider the following example:

- (26) Que ple que està l'estadi!  
(how full that is the stadium)  
'How full the stadium is!'

In (26) the degree to which the stadium is full is not extreme in absolute terms. As a matter of fact, it may be 20% full, 80% full or 100% full depending on where the speaker's expectations lie. If we want to express that the stadium is full in its total capacity, we have to use the positive form ((27)).

- (27) L'estadi està ple.  
'The stadium is full.'

### 3.2 Compositional semantics

So far, exclamatives have been treated as a kind of degree construction comparable to a result clause construction. In the same line, I present their compositional semantics leaving aside the fact that exclamatives are *wh*-constructions, which will be taken up again in subsection 3.3.

The first example is an exclamative whose moved *wh*-phrase is a DP:

- (28) Quina pel·lícula tan entretinguda que vaig veure!  
 ‘What an entertaining movie I saw!’

tan	$\lambda G \lambda x. \text{TAN}(G(x))(d_i)$
entretinguda	$\lambda x. \text{entertaining}(x)$
tan entretinguda	$\lambda x. \text{TAN}(\text{entertaining}(x))(d_i)$
pel·lícula	$\lambda x. \text{movie}(x)$
pel·lícula tan entretinguda	$\lambda x [\text{movie}(x) \wedge \text{TAN}(\text{entertaining}(x))(d_i)]$
quina	$\lambda P \lambda Q \exists x. P(x) \wedge Q(x)$
quina pel·lícula tan entretinguda	$\lambda Q \exists x [\text{movie}(x) \wedge \text{TAN}(\text{entertaining}(x))(d_i) \wedge Q(x)]$
vaig veure $t_{wh}$	$\lambda x. \text{see}(s)(x)$
quina pel·lícula tan entretinguda que vaig veure!	$\exists x [\text{movie}(x) \wedge \text{TAN}(\text{entertaining}(x))(d_i) \wedge \text{see}(s)(x)]$

Table 1: Semantic composition of (28)

In the previous table, we can see how *tan* is applied to the gradable adjective *entretinguda* (‘entertaining’) to give a predicate of individuals. Afterwards, this function of type  $\langle e, t \rangle$  combines with the noun *pel·lícula* (‘movie’) – also of type  $\langle e, t \rangle$  – by means of predicate modification and we obtain a more complex predicate of individuals, which becomes one of the two arguments of *quina*, which is treated as an indefinite quantifier (of type  $\langle \langle e, t \rangle, \langle \langle e, t \rangle, t \rangle \rangle$ ). The final denotation of the example (28) is the following:

- (29)  $\llbracket \text{Quina pel·lícula tan entretinguda que vaig veure!} \rrbracket = 1$  iff  $\exists x [\text{movie}(x) \wedge \text{TAN}(\text{entertaining}(x))(d_i) \wedge \text{see}(s)(x)]^4$

That is, the sentence turns out true only if there is an  $x$  such that  $x$  is a movie and the degree to which this movie is entertaining is at least as high as some contextually determined standard degree that is high, and the speaker saw  $x$ .

As far as exclamatives whose moved *wh*-phrase is a DegP headed by *que*, the semantic composition is comparable to the preceding example.

<sup>4</sup>For the sake of simplicity and because it is not relevant for my purposes here, I abstract away from tense.



- (30) Que entretinguda que va ser la pel·lícula!  
‘How entertaining the movie was!’

que	$\lambda G \lambda x. \text{TAN}(G(x))(d_i)$
entretinguda	$\lambda x. \text{entertaining}(x)$
que entretinguda	$\lambda x. \text{TAN}(\text{entertaining}(x))(d_i)$
la	$\lambda P \iota x. P(x)$
pel·lícula	$\lambda x. \text{movie}(x)$
la pel·lícula	$\iota x. \text{movie}(x)$
que entretinguda que va ser la pel·lícula!	$\text{TAN}(\text{entertaining}(\iota x. \text{movie}(x)))(d_i)$

Table 2: Semantic composition of (30)

The main differences are that the [+wh] feature is not contained in a determiner, but in a degree word (*viz tan*), and that the N *pel·lícula* is not merged with the DegP by predicate modification, because DegP (*tan entretinguda* – ‘so entertaining’) represents the predicate of the subject denoted by the DP *la pel·lícula* (‘the movie’). In this case, the DP is the individual argument of the gradable adjective interpreted as a measure function. The interpretation of the example (30) goes as follows:

- (31)  $\llbracket \text{Que entretinguda que va ser la pel·lícula!} \rrbracket = 1$  iff  $\text{TAN}(\text{entertaining}(\iota x. \text{movie}(x)))(d_i)^5$

In other words, this sentence is true just in case the degree to which the movie is entertaining is at least as high as a contextually determined standard that is high.

Note that, up to now, I have been able to explain why exclamatives are only compatible with high degree denoting adverbs, but the rest of the puzzles remained unexplained. However, the semantics proposed for exclamatives does not seem to be the reason why they are only embeddable in factive verbs in English or why they cannot be used assertorically. I devote the next subsection to suggest that exclamatives do not denote a proposition, because their descriptive content is treated as a fact by the speaker, and this may account for the puzzles presented in section 2.2.

### 3.3 Exclamatives as facts

I want to propose that exclamatives include a descriptive content – which has been analyzed in the previous two subsections – and also a content that the speaker uses to update the common ground (as in Stalnaker (1978)). I claim that their descriptive content is considered a fact by the speaker, because he/she takes it for granted;<sup>6</sup> and what he/she wants to contribute to discourse is his/her attitude towards a degree.

I suggest that, since the descriptive content is a fact and not a proposition, exclamatives cannot be used assertorically. And because they denote facts, they can be introduced by factive verbs in English. However, we have to understand that different restrictions may underlie exclamatives crosslinguistically and, hence, in Catalan exclamatives do not easily embed in these predicates for independent reasons.

<sup>5</sup>For the sake of simplicity and because it does not matter for my purposes here, I do not give any semantic value to the copular verb in this construction where the predicate of the copula is a DegP/AP.

<sup>6</sup>I refer the reader to the literature for a discussion about the properties of facts. See for example Vendler (1968) or Ginzburg and Sag (2001).

### 3.3.1 Discourse contribution

Let us start by discussing in what ways exclamatives are not like declaratives with regard to their discourse contribution. Gunlogson (2001) analyzes the behavior of falling declaratives, rising declaratives and polar interrogatives by means of two parameters: commitment and bias. A discourse participant commits the propositional content of an utterance to another discourse participant when the former confers the belief of this content to the latter. Hence, in a falling declarative (e.g., *Dinner is served*) the speaker is committed to the content of this utterance, whereas in a raising declarative (e.g., *Dinner is served?*) or a polar interrogative (e.g., *Is dinner served?*), the speaker commits the addressee to the propositional content of the utterance.

On the other hand, a context is biased when an individual belief  $p$  is capable of becoming a mutual belief on agreement on  $p$  and  $\neg p$  is ruled out as a possible mutual belief. This means that the context is biased towards  $p$ . But at the moment when nobody has made any statements, the context is neutral. The same happens with questions: they do not involve any bias of the context, but falling and raising declaratives do (if A utters *Dinner is served* or *Dinner is served?*, B is not in a position to utter *Dinner is not served* and yet achieve a mutual belief. In contrast, A may ask *Is dinner served?*, and no matter the answer, the context is not biased towards one of the two options).

As has been shown, with these two parameters, Gunlogson manages to distinguish three kinds of utterance very neatly (see her dissertation for the formal definitions and tests). The question is: are they enough to distinguish exclamatives from declaratives and interrogatives, too? It seems to me that by uttering an exclamation, the speaker is both committed to its descriptive content and the context is biased, just like in a declarative. Consider the following example:

- (32) Que alt que és en Pau!  
'How tall Pau is!'

When a speaker utters (32), he/she is not committing the addressee to the descriptive content of the clause, i.e., he/she does not ask the addressee to convey any information that the speaker is not acquainted with. Thus, the speaker is committed to the descriptive content of the exclamation. On the other hand, if a speaker utters (32), the context is biased towards the belief that Pau is tall to a high degree; the only chance to make this belief a mutual belief is for the addressee to think likewise.

What is then the parameter that distinguishes a declarative from an exclamation? I claim that exclamatives, unlike declaratives, contain two types of meaning: the descriptive content interpreted as a fact and a non-verbally expressed meaning that is the speaker's emotional attitude towards a degree (i.e., surprise, rage, marvel, etc.). Let us repeat example (28) and spell out the two meanings:

- (33) Quina pel·lícula tan entretinguda que vaig veure!  
'What an entertaining movie I saw!'
- a. Fact:  $\exists x[\text{pel·lícula}(x) \wedge \text{TAN}(\text{entretinguda}(x))(d_i) \wedge \text{veure}(\mathbf{s})(x)]$
  - b. Contribution: the speaker experiences an attitude towards  $\wedge \text{TAN}(\text{entretinguda}(x))(d_i)$

The notion of *attitude toward degrees* was coined by Katz (2005) to describe the effect of modifiers such as *surprisingly* and *frustratingly* in the following sentences:

- (34) a. Pau is surprisingly tall.  
b. Rita is frustratingly late.

The difference between the effect of an attitude toward degree modifier and the intended meaning of an exclamative is that, in (34), the attitude is verbally expressed by means of an adverb, whereas in an exclamative this meaning is implicated.

Coming back to example (13) (repeated below for the sake of simplicity), exclamatives do not make good answers, because their descriptive content is not presented as an assertion but as a fact. Moreover, the emotional attitude towards a degree does not constitute a proper way to respond to the required information in a question, because making a question involves asking for asserted content, and we have seen that this attitude is not verbally encoded, but implicated.

(35) A: How tall is Pau? B1: # How tall he is! B2: He's very tall.

Finally, note that contributing to discourse the speaker's attitude towards a degree is incompatible with contributing at the same time the speaker's ignorance of this degree. This is the reason why exclamatives, even if they are *wh*-clauses, do not make good questions (cf. (12)).

### 3.3.2 Embeddability

Note that if we claim that exclamatives denote facts, following Ginzburg and Sag (2001), this explains straightforwardly why exclamatives can only be introduced by factive predicates, and hence the data in (5) and (6). However, this poses a problem for the piece of data from Catalan presented in (14-a) and (14-b). I want to show that only the verbal forms that respect the particular contribution of this type of clause can embed exclamatives in Catalan.

Interestingly, there are a few verbal forms in the paradigm of perception verbs that are able to embed a *wh*-clause and, at the same time, maintain the inference according to which the speaker holds an attitude towards a degree. These verbal forms are the imperative, polar interrogatives and the future tense:

- (36) a. Mira quin llibre tan bo que m'he llegit!  
'Look what a good book I've read!'  
b. Ja veuràs quin llibre tan bo que m'he llegit  
'You'll see what a good book I've read.'  
c. Has vist quin llibre tan bo que m'he llegit?  
'Have you seen what a good book I've read?'

Only in these very specific forms (and not the present or the past tense of the indicative, for instance) are understood as an invitation on the part of the speaker towards the addressee to be in a position to utter the embedded exclamative. More specifically, (36-a) could be paraphrased as *Be in a position to utter* What a good book this is!, (36-b) could be paraphrased as *You'll see that you'll be in a position to utter* What a good book this is! and (36-c) could be paraphrased as *Have you been in a position to utter* What a good book this is!?. And in all these cases, it is inferred that the speaker experiences an attitude towards the fact that the degree to which the book is good reaches a high standard degree.

What prevents factive predicates from selecting *wh*-exclamatives in Catalan? I would like to treat emotive factives and cognitive factives separately. In a nutshell, the problem with emotive factives is that they do not easily embed *wh*-clauses in general, and cognitive factives do not encode the speaker's attitude towards a degree.

The following is an example where a *wh*-interrogative is embedded in an emotive factive. It is headed by *què* ('what'), an interrogative pronoun that, crucially, does not introduce the correspondent English free relative.

- (37) ??Em sorprèn què ha fet.  
 to.me surprises what AUX.he/she done  
 'It surprises me what he/she has done.'

In contrast, these predicates prefer the option of embedding concealed propositions (interpreted as facts) and represented by a plain DP ((38-a)), a degree relative ((38-b)) or a free relative ((38-b)), which include the definite article:

- (38) a. Em sorprèn el llibre que t'has llegit.  
 (to me surprises the book that to you.AUX read)  
 'It surprises me the book you have read.'  
 b. Em sorprèn *lu* alt que és en Pau.  
 (to.me surprises the tall that is the Pau)  
 'It surprises me how tall Pau is.'<sup>7</sup>  
 c. Em sorprèn el que has fet.  
 (to me surprises the that AUX.you done)  
 'It surprises me what you have done.'

On the other hand, cognitive factives do embed *wh*-interrogatives. However, they do not codify the speaker's emotive attitude towards a fact. Hence, unlike emotive factives, the former are not able to license *tan* when it occurs in their complement *that*-clause (cf. (39-a) and (39-b)). This suggests that the unacceptability of embedded exclamatives in these verbs might have to do with the licensing of *tan*.

- (39) a. Em sorprèn que t'hagis llegit un llibre tan bo  
 'It surprises me that you have read such a good book.'  
 b. \*Sé que t'has llegit un llibre tan bo  
 'I know that you have read such a good book.'

We can conclude from the preceding facts that English and Catalan behave differently. In particular, *what a* and *how very* clauses in English only require that the selecting verb be able to introduce *wh*-clauses and that the speaker know the value of the *wh*-variable. This is the reason why fact-embedding verbs but not question-embedding verbs or proposition-embedding verbs are suitable exclamative-embedding predicates (cf. (9) and (10)).

## 4 Comparison with previous analyses

The main semantic approaches to exclamatives, those of Gutiérrez-Rexach (1996) and Zanuttini and Portner (2003), are analogous in two important respects: they derive the denotation of exclamatives from the semantics of questions, and they account for high degree by means of an implicature.

### 4.1 Zanuttini and Portner (2003)

Zanuttini and Portner propose that the semantics of exclamatives is that of interrogatives; in line with the classic accounts on interrogatives (cf. Hamblin (1973), Karttunen (1977), Groenendijk and Stokhof (1984)), this amounts to saying that exclamative denote a set of true answers to the question the *wh*-clause represents. Here is the example they use:

<sup>7</sup>Italics is added to indicate that the determiner *lu* is not accepted in Catalan prescriptive grammar.

- (40) a. Che roba che l mangia! (Paduan)  
 (what stuff that he eats)  
 ‘The things he eats!’ (Zanuttini and Portner 2003, 49)  
 b.  $\llbracket \text{Che roba che l mangia!} \rrbracket_w = \{p: p \text{ is true and } \exists a [p = \text{‘}a \text{ is a pepper and he eats } a\text{’}]\} = \{\text{eats(he,poblanos), eats(he,serranos), eats(he,jalapeños)}\}$
- (41)  $\llbracket \text{What does John eat?} \rrbracket_w = \{\text{eats(John,poblanos), eats(John, serranos), eats(John, jalapeños)}\}$

To explain the puzzle in (11-a) and (11-b), they propose that exclamatives generate a scalar implicature, which they name *widening*, and which derives from the union of two properties of exclamatives: the fact that they are *wh*-clauses and that they contain a factive operator. Widening expands the quantificational domain associated with the *wh*-clause (the standard set of true propositions) to a wider domain (one that includes propositions that are not considered in the standard alternatives). Hence:

- (42) a.  $\llbracket S \rrbracket_{D_1} = \{\text{eats(he,poblanos), eats(he,serranos), eats(he,jalapeños)}\}$   
 b.  $\llbracket S \rrbracket_{D_2} = \{\text{eats(he,poblanos), eats(he,serranos), eats(he,jalapeños), eats(he,güeros), eats(he,habaneros)}\}$

Where  $D_1$  stands for the standard domain (here, the set of pepper that one would most probably eat) and  $D_2$ , the widened domain, which, in the previous example, includes the hottest peppers, the ones that one is less expected to eat.

Aside from accounting for high degree, widening is interpreted as the sentential force of exclamatives and their way of updating the common ground, which is not that of assertions and questions. They explain (13) by saying that exclamatives are factive, and one is not expected to answer a question by treating the required information as presupposed. Again, since they are factive, they do not make good questions (cf. (12)), which would mean asking information that is already presupposed by the speaker.

Finally, the embeddability facts of (5) and (6) are straightforward given that the predicates that embed exclamatives are factive and, according to Zanuttini and Portner, the rest of the *wh*-clause embedding predicates are antifactive.

## 4.2 Gutiérrez-Rexach (1996)

Whereas Zanuttini and Portner (2003) resort to factivity and the *wh*-component to derive the behavior of exclamatives, (Gutiérrez-Rexach 1996) posits the existence of EXC, the exclamative operator over propositions that is defined below:

- (43) Let  $a$  be the speaker,  $w$  a world (typically the actual world),  $p$  a proposition, and  $P \in \text{EMOT}$  (the set of emotive properties). Then,  
 $\text{EXC} =_{df} \lambda a_i \lambda w_s \lambda p_{\langle s,t \rangle} \exists P_{\langle s, \langle \langle s,t \rangle, \langle e,t \rangle \rangle} [P(w)(p)(a)]$

In prose, if a speaker  $a$  in a situation  $w$  utters a proposition  $p$ ,  $\text{EXC}(a)(w)(p)$  will hold iff there is a relation from the set of the emotive predicates that takes as arguments this proposition, this situation and this speaker.

Interestingly, the proposition that EXC takes in *wh*-exclamatives is one that derives from Gutiérrez-Rexach’s interpretation of degree interrogatives in a Groenendijk and Stokhof (1984)’s fashion:

- (44) a. How tall is John?  
 b.  $\lambda w' [\text{id}[\text{tall}(w)(j, d)] = \text{id}[\text{tall}(w')(j, d)]]$

Example (44-b) reads as the set of possible worlds in which John is as tall as he is in the actual world, that is, the proposition that John is tall to degree  $d$ . Now, if we apply EXC to this proposition, the result is as follows:

- (45) a. How tall John is!  
 b.  $\text{EXC}(a)(w)(\lambda w'[\text{id}[\text{tall}(w)(j, d)] = \text{id}[\text{tall}(w')(j, d)]])$   
 iff  $\exists P \in \text{EMOT}[P(w)(\lambda w'[\text{id}[\text{tall}(w)(j, d)] = \text{id}[\text{tall}(w')(j, d)]])(a)]$

Hence, the speaker expresses an attitude (surprise, admiration, amazement) towards the fact that John is  $d$ -tall, where  $d$  is John's degree of tallness.

Note that Gutiérrez-Rexach does not analyze exclamatives as being factive. According to him, factivity is a property of emotive predicates. From the definition in (43) we can gather that the operator EXC is only compatible with factive predicates, and hence the data in (5) and (6). On the other hand, high degree is justified by means of an implicature according to which EXC only applies when the degree of ADJ-ness of an individual is unexpected. He does not give any explanations for the particular discourse contribution of exclamatives.

### 4.3 An alternative

There are empirical as well as theoretical reasons to justify that an alternative is called for, and they basically derive from the fact that there is an identification between *wh*-constructions and questions, which has led the literature to treat exclamatives semantically as questions. This has some undesirable consequences. First, typically, exclamatives cannot be answered (cf. (12)), so accepting that their denotation is the same as that of a question triggers the need to stipulate additional ingredients that block this possibility, such as the factive morpheme in Zanuttini and Portner (2003). Second, free relatives in English are also *wh*-constructions and they are not analyzed as denoting a set of true answers. Third, there are *wh*-words that exclusively introduce exclamatives, such as *que* in Catalan; and the exclamatives whose *wh*-moved phrase is a DP and contain a DegP headed by *tan* do not qualify as proper questions, either, so it is hard to believe that exclamatives denote questions in the first place.

The alternative I sketch below pursues three main goals: cover for the data from Catalan, avoid the problems derived from the account based on the semantics of questions and get rid of as many stipulations as possible. For starters, high degree does not derive from the expansion of a quantificational domain associated to a *wh*-word, but from the denotation of a degree word that has the same meaning in other degree constructions (i.e., *tan*). This way, the denotation of *tan* given to exclamatives is the same as the one given to any construction where *tan* occurs.

On the other hand, the inference of the speaker's attitude towards degrees encodes unexpectedness and other emotions that trigger the utterance of an exclamation. Since the degree that is reached is at least as high as the standard degree of ADJ-ness that it takes to provoke an attitude in the speaker, there is no need for an additional implicature that makes sure this is part of the meaning of an exclamation. Also, observe that this non-explicit kind of meaning does not qualify as asserted meaning and nor does the descriptive content of the exclamation. That is how I can explain why this type of clause cannot be used to answer a question.<sup>8</sup>

Finally, as for the reason why exclamatives in English embed in factive predicates, it still needs to be discussed to what extent *how very* and *what a*-clauses need to be identified as embedded exclamatives. However, the claim according to which exclamatives denote facts is compatible

<sup>8</sup>Note that the reason why they do not make good questions is not relevant if they do not have the semantics of *wh*-interrogatives.

with this idea. Regarding exclamatives in Catalan, aside from the requirement that the speaker be acquainted with the value of the *wh*-variable (which is fulfilled by factive predicates), there is a need for the predicate to embed *wh*-clauses (which is problematic with the case of emotive factives) and to license *tan* (but the complement of a cognitive factive is not the proper environment).

## 5 Conclusions

To recap, it makes sense to approach exclamatives in Catalan from the point of view of degree constructions rather than from the point of view of questions, since we can give a simpler explanation of the data and, at the same time, propose an analysis that unifies the constructions that contain *tan*. In this attempt, a number of new interesting questions arise. For instance, it would be relevant to explore whether there is a common semantics for all *wh*-constructions. As a follow-up, it would be interesting to find out how the difference between declaratives and *wh*-constructions is to be characterized and what properties matrix and embedded exclamatives share (and hence, reach more definitive conclusions about the existence of embedded exclamatives). Finally, another worthwhile research project would be to undertake a crosslinguistic study in order to see whether we can find some universal properties of exclamatives, and establish a set of parameters of variation.

## References

- Castroviejo, E.: 2006, *Wh-exclamatives in Catalan*, PhD thesis, University of Barcelona.
- Elliott, D.: 1974, Toward a grammar of exclamatives, *Foundations of Language* **11**, 231–246.
- Ginzburg, J. and Sag, I.: 2001, *Interrogative investigations: The form, meaning and use of English interrogatives*, CSLI, Stanford, CA.
- Grimshaw, J.: 1979, Complement selection and the lexicon, *Linguistic Inquiry* **2**(10), 279–326.
- Groenendijk, J. and Stokhof, M.: 1984, *Studies on the Semantics of Questions and the Pragmatics of Answers*, PhD thesis, University of Amsterdam.
- Gunlogson, C.: 2001, *True to Form: Rising and Falling Declaratives as Questions in English*, PhD thesis, University of California Santa Cruz.
- Gutiérrez-Rexach, J.: 1996, The semantics of exclamatives, in E. Garret and F. Lee (eds), *Syntax at Sunset. UCLA Working Papers in Linguistics*, UCLA.
- Hamblin, C.: 1973, Questions in montague grammar, *Foundations of Language* (10), 41–53.
- Karttunen, L.: 1977, Syntax and semantics of questions, *Linguistics and Philosophy* (1), 3–44.
- Katz, G.: 2005, Attitudes toward degrees, in C. B. E. Maier and J. Huitink (eds), *Proceedings of SuB9*.
- Kennedy, C.: 1999, *Projecting the adjective. The syntax and semantics of gradability and comparison*, Garland, New York.
- Kennedy, C. and McNally, L.: 2005, Scale structure, degree modification, and the semantics of gradable predicates, *Language* **81**(2), 345–381.

- Meier, C.: 2003, The meaning of *too*, *enough* and *so...that*, *Natural Language Semantics* **11**, 69–107.
- Stalnaker, R.: 1978, Assertion, *Syntax and Semantics* **9**, 315–322.
- Vendler, Z.: 1968, *Linguistics in philosophy*, Cornell University Press, Ithaca.
- Zanuttini, R. and Portner, P.: 2003, Exclamative clauses: at the syntax-semantics interface, *Language* (79), 39–81.