

# Exclamatives, degrees and speech acts

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**Abstract** The goal of this paper is an account of the semantics and pragmatics of exclamation. I focus on two key observations: first, that sentence exclamations like *Wow, John bakes delicious desserts!* and exclamatives like *What delicious desserts John bakes!* express that a particular proposition has violated the speaker's expectations; and second, that exclamatives are semantically restricted in a way that sentence exclamations are not. In my account of these facts, I propose a characterization of illocutionary force of exclamation, a function from propositions to speech acts of exclamation. The difference in meaning between sentence exclamations and exclamatives has consequences for the type of violated expectation. I end with a comparison to some previous approaches and a tentative extension of parts of the analysis to other constructions.

**Keywords** Exclamatives · Exclamation · Illocutionary force · Speech acts · Degree semantics · Mirativity

## 1 Introduction

The goal of this paper is a semantic and pragmatic account of exclamation that accounts for the similarities of and differences between sentence exclamations, like

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This work has had several previous incarnations and owes a great deal to those who have suffered through them: Mark Baker, Adrian Brasoveanu, Elena Castroviejo-Miro, Veneeta Dayal, Jane Grimshaw, Nathan Klinedinst, Angelika Kratzer, Eric McCready, Adam Sennet and audiences at Rutgers, SALT XVIII, UCLA, UCSC and UMass Amherst. A special thanks goes to Sam Cumming and Roger Schwarzschild. Thanks also to my anonymous *L&P* reviewers who have influenced the paper immensely.

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(1) and exclamatives, like (2). I consider something a sentence exclamation if it is an exclamation formed with a declarative sentence; I consider something an exclamative if it is an exclamation formed with something other than a declarative sentence. There are three distinct types of exclamatives: those formed with *wh*-clauses, as in (2a); those formed with inversion constructions, as in (2b); and those formed with definite DPs, as in (2c).

- |     |  |                              |
|-----|--|------------------------------|
| (1) | (Wow,) John bakes delicious desserts!        | <b>sentence exclamation</b>  |
| (2) | a. (My,) What delicious desserts John bakes! | <b>wh-exclamative</b>        |
|     | b. (Boy,) Does John bake delicious desserts! | <b>inversion exclamative</b> |
|     | c. (My,) The delicious desserts John bakes!  | <b>nominal exclamative</b>   |

In this section, I will present what I take to be the two core components of the meaning of exclamatives: first, the utterance of an exclamation expresses a violation of the speaker's expectation. And second, that exclamatives are semantically restricted in that they can only receive degree interpretations. I'll discuss these in turn before presenting a semantic and pragmatic analysis of exclamatives in Sect. 3. The subsequent sections discuss previous approaches to the syntax and semantics of exclamatives as well as potential extensions of the current theory.

### 1.1 Expressions of expectation violation

Exclamations form a natural class of utterances which express that a particular proposition has violated the speaker's expectations. They are part of a larger class of expressives; according to Kaplan (1999), "A descriptive is an expression which describes something which either is or is not the case. ...[A]n expressive... expresses or displays something which either is or is not the case." One good example of an expressive is a lamentation, e.g. a sentence with *alas*:

- (3) Alas, John won the race.

As observed by Vanderveken (1990), lamentations assert a proposition *p* while expressing regret that *p*. (In his terminology, lamentations "illocutionarily entail" assertions.) That they assert a proposition *p*—in the case of (3), the proposition that John won the race—is evident in the ability of this proposition to be confirmed or denied by an interlocutor, as in (4).

- (4) A: Alas, John won the race.  
B: No he didn't, he lost it at the last minute.

The utterance of a declarative sentence containing the adverbial *regrettably* (e.g. *John regrettably won the race*) is very similar in meaning, but it differs in that it makes explicit the expression of regret.

Sentence exclamations, like lamentations, are expressives. A sentence exclamation, in English, has a rising pattern of intonation and receives emphasis, which is

typically manifested in lengthening effects (Bartels 1999).<sup>1</sup> I indicate this intonation using an exclamation point. Exclamations can also optionally occur with interjections or discourse markers like *wow*, *my*, *oh*, *boy* and *man*.

The utterance of a sentence exclamation counts as an assertion of the denoted proposition  $p$ —in (5), that John won the race—and an expression that  $p$  violates the speaker's expectation. (In other words, that the speaker expected  $\neg p$ .) Parallel to (4), B's ability to deny  $p$  in (5) confirms that A has asserted it.

- (5) A: (Wow,) John won the race!  
 B: No, he didn't, he lost it at the last minute.

In this way, the utterance of a sentence exclamation is a lot like the utterance of a declarative sentence containing the adverbial *surprisingly*. But like *regrettably* makes explicit an expression of lamentation on the part of the speaker, *surprisingly* makes explicit an expression of violated expectation on the part of the speaker.

In contrast to a sentence exclamation, the utterance of the sentence *John won the race* with declarative intonation results in an assertion that John won the race but does not express anything about the speaker's expectations or hopes with respect to that proposition.

A reviewer wonders whether the expressive component of sentence exclamations might instead be considered a type of indirect speech act. The idea would be that they are declaratives whose primary speech act is assertion and whose secondary one is exclamation or expression. However, in canonical (arguably all) instances of indirect speech acts the indirect act arises from context, either linguistic or non-. In sentence exclamations, the expressive component can be directly attributed to intonation. I believe a characterization of exclamation as an independent speech act best captures this relationship between intonation and perlocution.

The utterance of an exclamative, too, results in an expression of expectation violation. However, it is a little less straightforward which is the relevant expectation. I've repeated the exclamatives from (2) in (6) below. An utterance of any of these exclamatives, like the utterance of the sentence exclamation (*Wow,*) *John bakes delicious desserts!*, results in an expression that some proposition has violated the speaker's expectation.

- (6) a. (My,) What delicious desserts John bakes!  
 b. (Boy,) Does John bake delicious desserts!  
 c. (My,) The delicious desserts John bakes!

But while an utterance the sentence exclamation (*Wow,*) *John bakes delicious desserts!* expresses that the speaker had expected that John wouldn't have baked delicious desserts, utterances of the exclamatives in (6) express that the speaker had expected that the desserts John bakes wouldn't be as delicious as they are. That is,

<sup>1</sup> Here is an interesting difference between sentence exclamations and exclamatives I will not have time to explore: while English sentence exclamations have a rising pattern, exclamatives tend to have a falling pattern.

while the sentence exclamation seems to be associated with a non-scalar expectation (that the desserts John bakes would not be delicious), the exclamatives seem to be associated with a scalar expectation (that the desserts John bakes would not be as delicious as they are). I'll have a lot more to say about this. It's sufficient for now to notice that sentence exclamations and exclamatives both express that the speaker's expectation has been violated, but that the relevant unexpected proposition can be different in sentence exclamations and exclamatives.

Finally, while the utterance of a sentence exclamation additionally counts as an assertion, this doesn't seem to be the case for exclamatives.

- (7) A: (Wow,) John bakes delicious desserts!  
 B: No (he doesn't), these are store-bought. John's actually a terrible cook.
- (8) A: (My,) What delicious desserts John bakes!  
 B: ?No (he doesn't), these are store-bought. John's actually a terrible cook.
- (9) A: (Boy,) Does John bake delicious desserts!  
 B: ?No (he doesn't), these are store-bought. John's actually a terrible cook.
- (10) A: (My,) The delicious desserts John bakes!  
 B: ?No (he doesn't), these are store-bought. John's actually a terrible cook.

In this paper, I'll defend the claim that exclamatives, like sentence exclamations, contribute to a discourse the expression that a proposition  $p$  has violated the speaker's expectation. But I'll also claim that exclamatives differ from sentence exclamations in part because utterances of the former do not count as assertions that  $p$ . I'll argue that the difference between sentence exclamations and exclamatives in terms of whether their content can be denied falls out of a difference between sentence exclamations and exclamatives regarding the nature of the relevant  $p$ .

Since at least Grimshaw (1977, 1979), many have argued that *wh*-exclamatives denote sets of propositions (like questions in a Hamblin/Karttunen framework) whose content is presupposed in the context of utterance (Michaelis and Lambrecht 1996; Zanuttini and Portner 2003; Abels 2010). If this were the case we would expect, following von Stechow (1999), that B could follow up A's exclamative utterances in (8)–(10) with *Hey, wait a minute! John doesn't bake delicious desserts!*. This exchange seems just as awkward as the direct denial (this point is also made in Mayol 2008).

Within a framework in which *wh*-exclamatives denote sets of propositions, the main motivation for claiming that these propositions are presupposed comes from a related but I think distinct construction: embedded *wh*-clauses which look like exclamatives (dubbed "embedded exclamatives" by Grimshaw), in part because they contain intensifiers like *very* or morphology like *what a*, as in (11).

- (11) a. Mary is surprised at what a delicious dessert John baked.  
 b. Mary is amazed at how very many shoes John owns.

However there are a number of differences between exclamatives and clauses which can be embedded under verbs like *surprise*. I'll review these differences in Sect. 4.2. Given these differences, I see no reason to think that the presuppositional status of one necessarily reflects the presuppositional status of another.

Zanuttini and Portner additionally argue that the fact that exclamatives can't function as answers to questions is evidence that they presuppose their content; I believe there are more plausible ways to account for this fact, in particular that exclamations aren't the right sort of speech act for answering.

Interestingly, reference to speaker expectation is found elsewhere in natural language. Some evidential languages have "mirativity markers" which mark propositional content as contrary to a speaker's expectation (DeLancey 1997, 2001; Aikhenvald 2004, Chap. 6). Two examples are below, the mirative markers are in bold.<sup>2</sup>

- (12) Okomobi faha hi-fa-**hani** ama-ke.  
 Okomobi water Oc-drink-IMM.P.NONFIRSTH.f EXT-DECL.f  
 'Okomobi (to his surprise) drank water.' Jarawara, Dixon (2004)
- (13) Fey ti chi domo kalko-**rke**.  
 that ART Woman witch-MIR  
 'This woman turned out to be a witch (surprisingly).' Mapudungun, Zúñiga (2000)

While the requirements of mirative markers differ from language to language (for instance, some require a lack of control on the part of the speaker), they all signify "a more or less spontaneous reaction to a new, salient, often surprising event" (Aikhenvald 2004, p. 197).

I should mention that a characterization of exclamatives in terms of the speaker's expectation has been explicitly rejected by Zanuttini and Portner (2003). They say, with respect to *wh*-exclamatives:

One way to think about this would be to take an example like *How tall Muffy is!* as saying that it was unexpected that she is tall. This cannot be correct in general, however, given examples like *What a delicious dinner you've made!* or *What a nice house you've got!*. In these cases, the speaker doesn't mean to imply that he or she didn't expect a good dinner or a nice house (p. 54).

I've suggested—and will provide an account that predicts—that these exclamatives express that Muffy is taller than the speaker expected; that the hearer made a dinner more delicious than the speaker expected; and that the hearer has a nicer house than the speaker expected, respectively. This is different from saying that the utterances of these exclamatives indicate that the speaker expected no degree (or a low degree) of tallness, deliciousness or niceness.

<sup>2</sup> Abbreviations: Oc = marker of O-construction type; IMM.P = immediate past; NONFIRSTH = non-first-hand evidential marker; f = feminine; EXT = extent; DECL = declarative; ART = article; MIR = mirative.

Still, this intuition brings out a curious generalization: utterances which claim or express that a speaker's expectation has been surpassed can in some contexts be used as flattery and in others as insults (or backhanded compliments). DeLancey (2001) makes the same observations about miratives, and Slobin and Aksu (1982) characterize the meaning of Turkish miratives—which can only be used to report hearsay—as follows: “No matter how high my expectations might have been, what I have just heard exceeded them.” There are two legitimate ways to interpret such a meaning. In a good mood, I might take Amy's utterance of *You look beautiful today!* to mean that I have exceeded a reasonable expectation of my beauty, and therefore that my beauty—at least for today—is above par. In a bad mood, I might take the same utterance to mean that Amy had an unrealistically low expectation of my beauty, and be insulted that she has such a poor impression of me. The same functional difference can, I believe, be ascribed to an assertion like *You did better on this test than the faculty expected you to*. If this is right, it indicates that instead of being specific to exclamatives, the ability to function as either a compliment or an insult is really an intrinsic property of claims about surpassed expectation. . . and, perhaps, that flattery and insult are in the eyes of the beholder.

There are two other prima facie counterexamples to the claim that exclamations express that a speaker's expectation has been violated. First, exclamations, just like promises, can be uttered insincerely (Searle 1969). If Mary thinks John's cat is ugly, she can nevertheless utter *What a beautiful cat John has!*, and in doing so she would be expressing that John's cat is more beautiful than she'd expected, but would in fact be misrepresenting herself. Second, it's important to keep separate *wh*-exclamatives, which have a falling intonation pattern, from rhetorical questions, which tend to have an emphatic rising pattern. If John is introducing his cat to Mary, he can utter, *How beautiful is my cat?!* without suggesting that he had expected his cat to be less beautiful than it is. I don't attempt to address the semantics of rhetorical questions here, see Han (2002) for recent discussion.

## 1.2 The degree restriction

In this section, I argue that exclamatives are subject to a particular semantic restriction: they can receive only degree interpretations. In the discussion below, based on work in Rett (2008b, 2009), I examine several different types of exclamatives, a variety of logically possible expectations they could be associated with, and argue that the degree version is the only available one. I will eventually relate this restriction to the nature of speaker expectation associated with exclamatives.

Many early theories of exclamatives characterize them as pertaining to degrees in various ways: Bolinger (1972), Milner (1978), Gérard (1980), Obenauer (1984), Carbonero Cano (1990), Espinal (1995), Michaelis and Lambrecht (1996), Ginzburg and Sag (2001), Villalba (2003), Castroviejo (2006). Common to these accounts is the use of the term ‘extreme degree interpretation’, suggesting that exclamatives require that a degree be particularly high on a scale. Of these authors, only Villalba and Castroviejo propose formal accounts which explicitly restrict the interpretations of exclamatives to those involving degrees. But the accounts of both authors focus on a particular subtype of exclamative in Catalan, one with explicit degree

morphology (degree *wh*-words like *how* or the comparative *més*). The arguments here are intended to clarify, strengthen and generalize this observation. In particular, I argue that exclamatives don't just typically receive degree interpretations; they necessarily receive degree interpretations, and it's in this way that they differ from sentence exclamations.

In the previous section I argued that the utterance of an exclamation expresses that a particular proposition *p* has violated the speaker's expectation. I'll try to simplify the discussion here about the nature of this proposition by using the term 'exclaim that'. That is, if a speaker can use an exclamation to felicitously exclaim that *p*, then that utterance of that exclamation expresses that *p* has violated the speaker's expectation.

Important for the degree restriction is the observation that, in English and many other languages, exclamatives can only be formed with a strict subset of *wh*-phrases: *what*, *how* and *how many/much/few/little*.<sup>3</sup>

- (14) a. How (very) short your children are!  
 b. How (very) few papers you've written!  
 c. What mean neighbors you have!  
 d. \*Who that lovely woman married! (. . .He's so acerbic!)  
 e. \*Where she goes out partying! (. . .It's so seedy!)  
 f. \*When she gets out of bed in the morning! (. . .I eat lunch at that hour!)  
 g. \*Why she dropped out of college! (. . .Her cat isn't *that* lonely!)

I'll argue that the *wh*-phrases that are acceptable in exclamatives are those which can range over degrees (while those which are unacceptable range over individuals, times, etc.).

### 1.2.1 Degrees versus individuals

The degree restriction is particularly evident in exclamatives headed by *what*. The use of *what* outside of exclamatives suggests that it most naturally ranges over entities, as it does in the question in (15a) and the free relative in (15b).

- (15) a. What (peppers) did John eat?  
 b. I want to eat [<sub>RC</sub> what John ate].

In these constructions, *what* ranges over individuals corresponding to things John ate.

A clear extension of this observation results in the prediction that *what* can range over individuals in *wh*-exclamatives. Imagine that (16) is uttered in a context in which the spiciness of peppers our friends eat is at issue, and the peppers John ate—peppers A, B and C—are particularly spicy in this context. (15a) suggests that *what* in

<sup>3</sup> Zanuttini and Portner (2003) report that *wh*-exclamatives headed by *who* are acceptable in Paduan, but they do not discuss the possible interpretations of such exclamatives. It's possible that this difference between Paduan and English is due to a difference between the Paduan and English *who* in their ability to range over degrees; however, more investigation is needed to test this hypothesis.

(16) can be used to exclaim that John ate peppers A, B and C as opposed to other peppers. In other words, we have independent reasons to believe that *what* can range over individuals, and so we might predict that (16) can be used to exclaim that John ate some peppers instead of others (or that John ate peppers other than the ones he was expected to). I'll call this the 'individual interpretation'.

(16) (My,) What peppers John ate!

But because A, B and C are particularly spicy peppers in this context, the acceptability of (16) in this context is also compatible with the claim that (16) is being used to exclaim that the peppers are spicier than the speaker expected. I'll refer to this as the 'degree interpretation'. To differentiate between the two meanings, and to determine which is the true meaning of (16), we need to test a *what*-exclamative in a context in which the degree and individual interpretation come apart.

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 this scenario, Mary's utterance of (17) seems infelicitous.

(17) #(My,) What desserts John baked!

This suggests that (17) cannot be used to exclaim that John baked desserts other than the ones he was expected to (the individual interpretation). This suggests that there's something about the content of (17) that fails to appropriately represent the content of Mary's expression of violated expectation. This constraint on the interpretation of (17) is especially clear in contrast to the sentence exclamation (*Wow,*) *John baked THOSE desserts!*, which can be used to exclaim that John baked one set of desserts instead of the other.

A felicitous utterance of (17) is instead one in which it is used to exclaim that the desserts John baked instantiate some gradable property to a degree higher than the speaker expected. It seems quite natural in a scenario in which Mary had expected John to cook relatively good desserts, but then realized his desserts were delicious beyond her expectations. This description of the meaning of (17) seems particularly appropriate given that a speaker can perform the same act of exclamation with (*My,*) *What delicious desserts John baked!*, a *wh*-exclamative with an overt gradable predicate.

So it seems as though exclamatives headed by *what* express something about the degree to which an individual instantiates some gradable property, not the individual itself. This observation has two distinct components: (1) *what* can range over degrees in exclamatives; and (2) *wh*-exclamatives like (16) can receive degree interpretations without containing any overt degree morphology. I'll address these points in turn.

First: we tend to think of questions as canonical instances of *wh*-clauses, and therefore of the use of *wh*-phrases in questions as canonical uses of *wh*-phrases.



But the study of exclamatives suggests that this isn't always the best perspective. In particular, questions seem to be the only sort of construction in which *what* can't range over degrees, as (18) demonstrates.<sup>4</sup>

- (18) a. \*What tall is John?  
 b. #What spicy peppers did John eat? (*intended*: How spicy were the peppers John ate?)

But *what* can range over degrees in *wh*-exclamatives, as we've seen. And it can also range over degrees in relative clauses. Such constructions have been dubbed 'amount relative clauses' (Carlson 1977; Heim 1987; Grosu and Landman 1998).

- (19) Mike put [<sub>RC</sub> what things he could] into his pockets. (Carlson 1977)  
 a. # individual reading:  $\forall x$ [M could put  $x$  into his pockets  $\rightarrow$  M put  $x$  into his pockets]  
 b. degree reading: M put  $d$ -many objects into his pockets, where  $d$  is the maximum amount of objects M could fit into his pockets
- (20) It would take days to drink [<sub>RC</sub> the champagne they spilled that evening]. (Heim 1987)  
 a. # individual reading: it would take days to drink  $x$ , where  $x$  is the champagne they spilled that evening  
 b. degree reading: it would take days to drink  $d$ -much champagne, where  $d$  is the amount of champagne they spilled that evening.

Amount relatives have a fairly restricted distribution, especially compared to the availability of the degree reading in exclamatives. Which brings me to the second point.

(16) can apparently receive a degree interpretation without containing any overt degree morphology. (I use the term 'degree morphology' as a cover term for gradable or amount predicates like *spicy*, *many* or *beautifully*.) This property of exclamatives has been noted by Milner (1978) and Gérard (1980), who suggested that it is unique to exclamatives. I'll provide an explanation for the availability of such readings in the account in Sect. 2.2. and argue that the phenomenon is more general.

Given the syntactic form of nominal exclamatives, like those in (21), it seems most natural to assume that they denote individuals (as definite descriptions do).

- (21) a. (Oh,) The places Tori visited!  
 b. (Boy,) The shoes that girl wears!

If nominal exclamatives denoted individuals, we would predict that (21a) could be used to express something about the places Tori visited. Specifically, assuming that

<sup>4</sup> There is an exclamative-specific use of *what*: *what a*, as in *What a liar that man is!* I have nothing interesting to say about this construction or its prohibition outside of exclamatives. See Heim (1987) for some discussion of its origins and meaning and Zanuttini and Portner (2003), who label some *wh*-phrases as 'E-only' (only possible in exclamatives).

(21a) denotes the plural entity composed of the places Tori visited ( $A \oplus B \oplus C$  in a Linkian semantics), we would predict that an utterance of (21a) would be felicitous in a situation in which the fact that Tori visited  $A \oplus B \oplus C$  was contrary to the speaker's expectation.

But this is not the case. Imagine that Tori was supposed to go to places D, E and F, and informed her mother that she would be visiting D, E and F. Imagine further that Tori's mother has no opinion about the relative differences between D, E and F on the one hand and A, B and C on the other. It would be infelicitous, in such a scenario, for Tori's mother to utter (21a) to exclaim that Tori visited A, B and C instead of D, E and F. (This is in contrast to the utterance of the sentence exclamation (*Wow,*) *Tori visited A, B and C!*.) Intuitively, as before, (21a) can only be used to exclaim that the places Tori visited instantiate some gradable predicate (e.g. 'exotic') to a degree higher than the speaker expected. And as with *wh*-exclamatives, the same reading is available for counterparts of (21a) with overt gradable predicates like (*Oh,*) *The exotic places Tori visited!*

### 1.2.2 Degrees versus kinds and manners

Individuals and degrees are not the only types of entity around; it's possible that *wh*-phrases could also be ranging over something else, like kinds. But there is reason to doubt this; if exclamatives could be used to exclaim that the speaker expected one kind instead of another, then they could in theory be used to exclaim about *any* kind, gradable or not. This is not the case: exclamatives can only be used to express something about gradable kinds, which suggests that apparent 'kind' readings are actually ones involving degrees.

Imagine a situation in which Mary expected the farmer's market to carry red apples and not green apples. Imagine further that Mary has no opinion about the relative difference between the two types of apples; say, she's never tasted either, but was just told to expect the apples to be red ones. In such a situation, upon spotting green apples at the farmer's market, it is infelicitous to utter  $\#(My,)$  *What apples they sell here!*. That is, Mary's utterance of that particular exclamation cannot be used to express that the kind of apples available at the farmer's market violated her expectation. Instead, such an utterance is felicitous only in a situation in which the speaker's expectations were violated by the degree to which the apples instantiate some gradable property.

We can make a similar argument against a hypothesis that exclamatives can receive a manner interpretation when headed by the *wh*-phrase *how*. In questions, after all, *how* can range over manners:

- (22) Q: How did John run the race?  
A: Beautifully.

And in fact the exclamation (*My,*) *How John ran that race!* can be used to exclaim that John's running of the race was more beautiful than the speaker expected. This shows that *how*-exclamatives can be used to exclaim about gradable manners.

But the question in (22) can also be used to elicit an answer about non-gradable manners:

- (23) Q: How did John run the race?  
A: Blindfolded.

Imagine a situation in which Mary expected that John would run the race without a blindfold on, and he instead ran blindfolded. In such a situation, Mary's utterance of the exclamative #(My,) *How John ran the race!* is infelicitous. It seems as though Mary cannot use it to express that the fact that John ran the race blindfolded violated her expectations. Intuitively, an utterance of this exclamative is only felicitous in contexts in which the degree to which John's running instantiated some property violated the speaker's expectations. And this is what we would predict if exclamatives were restricted to degree interpretations.

Inversion exclamatives are subject to the degree restriction as well. (24a) cannot be used to exclaim that Adam can cook steak, only that he can cook steak e.g. particularly well (an adverbial interpretation) or that he sure can cook steak (I'll call this the 'verum interpretation'). Similarly, (24b) can't be used to exclaim that Sue likes banana bread, only that she really likes banana bread.

- (24) a. (Man,) Can Adam cook steak!  
b. (Boy,) Does Sue like banana bread!

That inversion exclamatives are subject to the degree restriction, but sentence exclamations like (25) aren't, underscores the need to treat exclamatives and sentence exclamations as having different semantic content.<sup>5</sup>

- (25) a. (Wow,) Adam can cook steak!  
b. (My,) Sue likes banana bread!

The exclamations in (25) parallel the inversion exclamatives in (24) very closely, except they do not display subject-auxiliary inversion. If sentence exclamations were subject to the degree restriction, they could receive the same interpretations as the inversion exclamatives in (24). But this prediction is wrong: the only felicitous utterance of (25a) is one in which the speaker expresses that the fact that Adam can cook steak violated his expectations.

To sum up this descriptive discussion: exclamatives are subject to a degree restriction, which means that they are only felicitous when used to exclaim that the degree to which entities instantiate some (gradable) property is higher than the speaker expected. *Wh*-exclamatives headed by *how* address degrees associated with gradable adjectives (as in *How short you are!*) or with gradable manners (as in *How*

<sup>5</sup> Importantly, just because sentence exclamations aren't subject to the degree restriction doesn't mean that they can't be used to exclaim about high degrees. An utterance of the sentence exclamation *Wow, Sue woke up early!* in which *early* is focused, for instance, is felicitous in the same contexts in which *How early Sue woke up!* is. I discuss this further in Sect. 3.

*she ran that race!*). And utterances of *wh*-exclamatives headed by *how many* or *how much* express that some amount or quantity surpassed the speaker's expectation. Nominal exclamatives can only be used to exclaim that the degree to which the entity denoted by the definite description satisfies a gradable predicate is higher than expected. And inversion exclamatives, too, are subject to the degree restriction. While an utterance of the sentence exclamation (*Wow,*) *Sue likes banana bread!* expresses that the fact that Sue likes banana bread violated the speaker's expectation, the exclamative (*Boy,*) *Does Sue like banana bread!* can only be used to express that the extent to which Sue likes banana bread violated the speaker's expectations. In contrast, sentence exclamations seem to have no restrictions on their content.

### 1.3 Summary: the meaning of exclamatives

I've argued here that all exclamations—sentence exclamations and exclamatives—make the same contribution to discourse: they express that some proposition has violated the speaker's expectations. In the last section, I've argued that exclamatives are subject to an additional semantic restriction which forces them to have a degree interpretation. The result is that sentence exclamations express what I've called a non-scalar expectation: that the speaker expected  $p$ , but  $\neg p$ . And exclamatives express what I've called a scalar expectation: that the speaker expected a gradable property to be instantiated only up to a particular degree, and the actual value exceeded that expectation.

This difference between negated and surpassed expectation will be important for the semantic and pragmatic analysis presented in the next two sections. In it, I have two goals: to capture the fact that sentence exclamations and exclamatives make an analogous contribution to discourse; and to account for the difference between the two types of exclamation in terms of the degree restriction.

## 2 Exclamatives and degree properties

The analysis presented here has two components. In this section, I'll account for the syntax and semantics of exclamatives by arguing that exclamatives denote degree properties: relations between degrees and worlds. For simplicity's sake, I'll suppress the world argument. Then in Sect. 3. I'll develop a characterization of the illocutionary force of exclamation in terms of propositions resulting from those properties, and the speaker's expectations.

### 2.1 *Wh*- and nominal exclamatives with degree morphology

The assumption that *wh*-clauses can denote degree properties is compatible with the semantics of *wh*-clauses as they appear in relative clauses (see Jacobson 1995; Portner and Zanuttini 2005; Rett 2008b, for discussion) and, according to some theories, in questions (see in particular Groenendijk and Stokhof 1989). I follow e.g. Caponigro (2004) in assuming that *wh*-phrases are modifiers which contribute,

depending on the *wh*-phrase, restrictions like animacy. And I consider that the range of *what* to be unspecified in English (it's the *wh*-phrase used in English to range over a miscellany of types, such as propositions in *What do you think?*).

$$(26) \quad \llbracket \text{what} \rrbracket = \lambda P_{\langle \tau, t \rangle} \lambda x_{\langle \tau \rangle} \cdot P(x) \quad (\text{for any type } \tau)$$

I also assume that *wh*-phrases *wh*-move to spec, CP and pied-pipe the rest of the material comprising the NP (just as in theories of 'how many' questions, see Romero 1998; Rett 2007). I assume that, when *wh*-clauses like [*what delicious desserts*]<sub>*i*</sub> *John bakes* *t<sub>i</sub>* denote a degree property (e.g. in exclamatives and amount relatives), the individual argument undergoes existential closure. Correspondingly, when they denote an individual property, as in questions and standard relatives, it's the degree argument that undergoes existential closure.

This process is demonstrated below in (27). I've subscripted the traces below with indices as well as their semantic types. Because *t<sub>i</sub>* is the trace of a moved DP, its type is  $\langle e \rangle$ . Because *t<sub>j</sub>* is the trace of a moved degree operator, its type is  $\langle d \rangle$ . I follow convention in lambda-abstracting over these traces before the moved element is interpreted in its surface location (as in (27c)). The result is that the compositional semantics of certain nodes on the tree (e.g. (27c)) employs the rule of predicate modification rather than function application.

$$(27) \quad \llbracket \text{what}_j \llbracket [t_{j\langle d \rangle} \text{ delicious desserts}]_i \text{ John baked } t_{i\langle x \rangle} \rrbracket \rrbracket$$

- $\llbracket \text{John baked } t_{i\langle x \rangle} \rrbracket = \text{baked}'(j, x)$
- $\llbracket [t_{j\langle d \rangle} \text{ delicious desserts}] \rrbracket = \lambda x. \text{desserts}'(x) \wedge \text{delicious}'(x, d)$
- $\llbracket [t_{j\langle d \rangle} \text{ delicious desserts}] \rrbracket (\lambda x_i. \llbracket \text{John baked } t_{i\langle x \rangle} \rrbracket)$   
 $= \lambda x. \text{baked}'(j, x) \wedge \text{desserts}'(x) \wedge \text{delicious}'(x, d)$
- $\llbracket \text{what} \rrbracket (\lambda d_j. \llbracket [t_{j\langle d \rangle} \text{ delicious desserts John baked } t_{i\langle x \rangle}] \rrbracket)$   
 $= \lambda d \lambda x. \text{baked}'(j, x) \wedge \text{desserts}'(x) \wedge \text{delicious}'(x, d)$
- $\rightsquigarrow \exists \text{closure } \lambda d \exists x [\text{baked}'(j, x) \wedge \text{desserts}'(x) \wedge \text{delicious}'(x, d)]$

The derivation of nominal exclamatives formed with relative clauses headed by definite DPs closely patterns the derivation of the *wh*-exclamative above. But because these definite descriptions denote degree properties, I need to additionally assume a version of definite determiners which are functions from degree properties, not just functions from individual properties. Such a definition of *the* is in (28), followed by a derivation for the nominal exclamative (*Oh,*) *The exotic places John visited!*<sup>6</sup>

$$(28) \quad \llbracket \text{the} \rrbracket = \lambda P_{\langle d, \langle e, t \rangle \rangle} \lambda d t x [P(x)(d)]$$

<sup>6</sup> The constituency of the material in the DP head is up for debate. As I've presented it in (29) (following Partee, 1976), the degree argument contributed by the gradable adjective *exotic* must be carried (or Schönfinkelized) for the individual modification of [*exotic places*] and [*wh<sub>i</sub> John visited* *t<sub>i(x)</sub>*]. If the constituency is instead [ *the* [ *exotic* [ *places* [ *wh<sub>i</sub> John visited* *t<sub>i(x)</sub>* ] ] ] (Chomsky, 1975), no currying is needed. A brief discussion of this difference and debate is in Heim and Kratzer (1998: 83).

- (29) [ the [ exotic places ] [  $wh_i$  John visited  $t_{i(x)}$  ] ]
- $\llbracket wh_i \text{ John visited } t_{i(x)} \rrbracket = \lambda x.\text{visited}'(j,x)$
  - $\llbracket \text{exotic places} \rrbracket = \lambda d\lambda x.\text{places}'(x) \wedge \text{exotic}'(x, d)$
  - $\llbracket \text{exotic places } wh_i \text{ John visited } t_{i(x)} \rrbracket = \lambda d\lambda x.\text{visited}'(j,x) \wedge \text{places}'(x) \wedge \text{exotic}'(x, d)$
  - $\llbracket \text{the} \rrbracket \langle \llbracket \text{exotic places } wh_i \text{ John visited } t_{i(x)} \rrbracket \rangle = \lambda d\lambda x[\text{places}'(x) \wedge \text{visited}'(j,x) \wedge \text{exotic}'(x) = d]$

Before I present an analysis of inversion exclamatives, I'll discuss how a clause lacking overt degree morphology can come to denote a degree property.

## 2.2 Freebie degrees

There have been several accounts of exclamatives in which null exclamative-specific morphology has been proposed to account for the Gérard/Milner observation that exclamatives can receive a degree interpretation regardless of whether or not it contains degree morphology (Michaelis and Lambrecht 1996; Villalba 2003; Castroviejo 2006; Rett 2008a,b). The goal of this section is to assimilate the apparent presence of degree arguments in exclamatives without overt degree morphology with the apparent presence of degree arguments in other constructions lacking obvious degree morphology, for which an independent solution has been proposed.

I'll use the term “freebie degree” to refer to apparent degree arguments in constructions that lack overt degree morphology. One important argument for freebie degrees comes from the ability of nouns—which presumably denote properties, type  $\langle e, t \rangle$ —to combine with numerals, as in *three cats*. Within degree semantics, the general tendency is to treat these numerals as (degree) arguments rather than e.g. quantifiers.<sup>7</sup> This allows for, among many other things, a general account of numerals as they occur in measure phrases and as differentials (as in *I have three more than you have*).

Typical degree-semantic approaches to numerals stem from independent proposals in Cartwright (1975) and Cresswell (1976). These accounts and their successors postulate “quantity operators” which associate plural or mass individuals with a degree that signifies the quantity of that individual. Cresswell, for instance, analyzes the plural count noun *men* as at times denoting a one-place predicate of the form “ $x$  is a man” and at times denoting a two-place predicate of the form “ $x$  is a  $y$ -membered set of men”, where  $y$  ranges over degrees. He proposed two null quantity operators to produce this effect, ‘Pl(urality)’, an operator for count nouns, and ‘Tot(ality)’ for mass nouns.

The concept has been borrowed widely. Some adaptations of quantity operators provide additional syntactic motivations (e.g. Villalba 2003; Abeillé et al. 2006; Kayne 2007); others provide additional semantic motivation (Nerbonne 1995; Rett 2007). An important extension of the concept of quantity operators are accounts which emphasize the need for freebie degrees that correspond to gradable properties

<sup>7</sup> A notable exception is Schwarzschild (2005), in which measure phrases like *5ft* are treated as degree modifiers.

other than quantity. These accounts postulate more general ‘measurement operators’: functions from entities to degrees along some scale which may or may not be a quantity scale (Parsons 1970; Higginbotham 1994; Schwarzschild 2002, 2006; Kennedy and Svenonius 2006; Nakanishi 2007a,b; Champollion 2010). Measurement operators are useful for accounting for (varied) degree readings in ‘exceeds’ comparatives (e.g. *My child exceeds yours*); amount relatives (e.g. *Bill put what he could in his pockets*, Carlson 1980; Grosu and Landman 1998); and degree modifier constructions (e.g. *That’s quite a table*, Morzycki 2006; Rett 2008b; Nouwen 2011).

These measurement operators differ from quantity operators because they need to account for the fact that potential dimensions of measurement can vary based on the nouns involved and based on context. As Schwarzschild (2002) puts it: “The choice of function will be constrained by the meanings of the measure phrase and the noun phrase but it won’t always be determined by them”. So the nouns *inch* and *cable* in the DP *two inches of cable* ensure that  $\mu$  won’t denote a function from individuals to scales of beauty, but we still need context (and, as Schwarzschild argues, syntax) to determine if the inches are inches of length, width, height, surface area, etc. I’ll abbreviate this measure function as M-Op; its definition, based on proposals in Schwarzschild (2002, 2006) and Nakanishi (2007a,b), is in (30).

- (30) M-Op  $\rightsquigarrow \lambda d \lambda x. \mu(x) = d$ , where  $\mu$ , a measurement function, is valued contextually<sup>8</sup>

The idea is that M-Op can occur freely with entities which can be measured.<sup>9</sup> The degree argument M-Op introduces is bound via existential closure at the end of the utterance if it is otherwise unbound. In this way, the degree argument introduced by M-Op receives the same treatment as those introduced by gradable adjectives in positive constructions in some recent theories (Rett 2008a,b).

The adoption of this assumption for exclamatives accounts for their ability to receive degree interpretations despite the fact that they lack overt gradable adjectives or adverbs. It does however shift the theoretical responsibility: instead of requiring an explanation for how degree interpretations of exclamatives and other constructions arise, we now need an explanation of when and why they don’t arise. This is a general challenge for theories which adopt measurement operators, within and outside of the realm of exclamations, and I won’t be able to present a satisfactory solution here.

### 2.3 Exclamatives with M-Op

*Wh*- and nominal exclamatives which lack overt gradable adjectives differ from their counterparts like (27) and (29) only in that they contain M-Op instead of an overt gradable adjective. The (parallel) derivations for the exclamatives (*Oh,*) *What desserts John baked!* and (*Oh,*) *The places Tori visited!* are as follows.

<sup>8</sup> This is the predicative version; the attributive version is M-Op  $\rightsquigarrow \lambda d \lambda P \lambda x. P(x) \wedge \mu(x) = d$ .

<sup>9</sup> Nakanishi provides compelling reasons to think that M-Op can measure events as well as individuals, which will be useful for an account of manner exclamatives like (*My,*) *How John ran the race!*

- (31) [what<sub>j</sub> [[*t*<sub>*j*(*d*)</sub> M-Op desserts]<sub>*i*</sub> John baked *t*<sub>*i*(*x*)</sub>]]
- [[John baked *t*<sub>*i*(*x*)</sub>]] = baked'(j,x)
  - [[*t*<sub>*j*(*d*)</sub> M-Op desserts]] = λ*x*.desserts'(x) ∧ μ(x) = *d*
  - [[*t*<sub>*j*(*d*)</sub> M-Op desserts]](λ*x*<sub>*i*</sub>.[[John baked *t*<sub>*i*(*x*)</sub>]])  
= λ*x*.baked'(j,x) ∧ desserts'(x) ∧ μ(x) = *d*
  - [[what]](λ*d*<sub>*j*</sub>.[[*t*<sub>*j*(*d*)</sub> M-Op desserts John baked *t*<sub>*i*(*x*)</sub>]])  
= λ*d*λ*x*.baked'(j,x) ∧ desserts'(x) ∧ μ(x) = *d*
  - ↔<sub>closure</sub> λ*d*∃*x*[baked'(j,x) ∧ desserts'(x) ∧ μ(x) = *d*]
- (32) [the [M-Op places ] [*wh*<sub>*i*</sub> *Tori* visited *t*<sub>*i*(*x*)</sub>]]
- [[*wh*<sub>*i*</sub> *Tori* visited *t*<sub>*i*(*x*)</sub>]] = λ*x*.visited'(t,x)
  - [[M-Op places]] = λ*d*λ*x*.places'(x) ∧ μ(x) = *d*
  - [[M-Op places *wh*<sub>*i*</sub> *Tori* visited *t*<sub>*i*(*x*)</sub>]]  
= λ*d*λ*x*.visited'(t,x) ∧ places'(x) ∧ μ(x) = *d*
  - [[the]]([[M-Op places *wh*<sub>*i*</sub> *Tori* visited *t*<sub>*i*(*x*)</sub>]])  
= λ*d**t*<sub>*x*</sub>[places'(x) ∧ visited'(t,x) ∧ μ(x) = *d*]

Nominal exclamatives without overt gradable adjectives can also be formed from much simpler definites, like (*My*,) *Your dress!* or (*Oh*,) *That man!*. Accounting for these exclamatives also requires M-Op—they seem oddly unnatural with overt gradable adjectives (*#My, your beautiful dress!*)—and are more straightforwardly derived than the relative-clause nominal exclamatives.

I unfortunately do not have an explanation for why nominal exclamatives are restricted to definite DPs, as shown in (33).

- (33) a. (*Oh*,) The places *Tori* visited!  
b. (*Wow*,) That guy she brought home!  
c. \*(*Wow*,) A pie John baked! (intended meaning: John baked a delicious pie)  
d. \*(*Oh*,) Some places *Tori* visited!  
(intended meaning: Some of the places *Tori* visited were exotic)

As I present it here, the M-Op theory predicts that freebie degrees are available to any construction that needs them. (That is to say, the distribution of M-Op is unrestricted.) But I believe that this restriction isn't unique to exclamatives or exclamation; rather there is a larger phenomenon relating degree expressions and definiteness, suggesting not surprisingly that theories of measurement operators need to be made less permissive. In particular, there is evidence from other constructions that indicates that freebie degrees in nominals are only available to definites generally. (34) shows that amount relatives can only be headed by definites ((34a) is from Heim, 1987). *Many*, which arguably modifies degrees of quantity (Rett, 2007, 2008b), can only modify definite descriptions in the predicative position (35). This suggests that M-Op, for whatever reason, isn't available to the nominals in (35b), which supports the prohibition of exclamatives like (33c) and (33d).

- (34) a. It would take days to drink the champagne they spilled that evening.  
b. #It would take days to drink some champagne they spilled that evening.



- (35) a. The/Her guests were many.  
 b. \*A group of/All/Some guests were many.

I argue in Sect. 4.2 that it's important to differentiate between exclamatives and complements of embedding verbs like *surprise*. But the data in (36) are relevant to a discussion of freebie degrees generally; nominal complements of *be surprised* can receive degree interpretations, too, presumably via M-Op. While the degree interpretation is available to definites (36a), it is not available to indefinites (36b).

- (36) a. I am surprised at/by the desserts John baked. (*individual or degree reading*)  
 b. I am surprised at/by some desserts John baked. (*individual reading only*)

That is, while (36a) can mean that the speaker is surprised by how delicious John's desserts were, (36b) cannot mean that the speaker is surprised by how delicious some of John's desserts were.

These data reinforce the very natural suspicion that the distribution of measure operators needs to be better constrained. I do not offer suggestions here for how to do so, but I believe it is important to point out that the restriction of nominal exclamatives to definites seems to lie outside of the phenomenon of exclamation.

I'd like to address one more point about M-Op. The scenarios above which I used to argue that exclamatives cannot receive e.g. individual interpretations were all scenarios in which the speaker had no knowledge of a difference in any gradable property between the two pluralities (pumpkin pie and *crème brûlée* vs. chocolate cake and blueberry cobbler; red apples vs. green apples, etc.). I specified only that the speaker expected one instead of another. This difference—unexpected vs. expected—cannot be a possible value for  $\mu$ , because 'expectedness' is not a gradable property (not a measure function), and therefore the inclusion of M-Op into the theory does not erroneously predict that exclamatives are acceptable in such scenarios. There are however ways to encode the same difference in a gradable property: in the scenarios, red apples could be e.g. more surprising than green apples. But this, too, will not work in the end. Recall that part of an exclamation's discourse contribution is the expression that its meaning is contrary to the speaker's expectation. If  $\mu$  were valued with a property like 'surprising', this would amount to a speaker expressing that the degree to which an entity is surprising exceeds his expectations. I find it easy to believe that one cannot have expectations about how surprising something will be, and therefore that such an expression is not possible.

#### 2.4 Inversion exclamatives and degree properties

I cannot offer a formal proposal for how inversion exclamatives come to denote degree properties, but I will discuss a few suggestions. See McCawley (1973) for an extensive discussion of why we should disassociate inversion exclamatives from *yes/no* questions.

There seem to be two possible interpretations for inversion exclamatives: the denoted degree property can correspond to a null gradable adverb (the adverbial

interpretation); and the denoted degree property can address the degree to which a proposition is true or likely (the verum interpretation). I'll address each in turn.

First, and unsurprisingly, the adverbial interpretation is eventuality-related, rather than individual-related. (I use the term 'eventuality' as a cover term for events and states.) The exclamative in (37) can only be used to exclaim that Sue's winning of the race was particularly e.g. exciting, but not that the race Sue won was particularly e.g. long.

- (37) (Wow,) Did Sue win that race!
- a. # individual-related degree interpretation: expresses that the degree to which the race Sue won was challenging/long was unexpected.
  - b. event-related degree interpretation: expresses that the degree to which Sue's winning of the race was exciting/intense was unexpected.

But while *wh*- and nominal exclamatives with M-OP could be paraphrased using exclamatives with overt adjectives (e.g. *What desserts John baked!* versus *What delicious desserts John baked!*), inversion exclamatives with M-OP can't be paraphrased using exclamatives with overt adverbs. This is because inversion exclamatives are largely awkward with overt adverbs (in contrast to a claim in McCawley 1973).

- (38) a. (Boy,) Did Sue (\*really) win that race (\*well/\*quickly/\*by a long shot)!
- b. (Boy,) Will John (\*really) win that race (\*well/\*quickly/\*by a long shot)!
- c. (Man,) Can John (\*really) bake desserts (\*well/\*quickly/\*by a long shot)!

This suggests to me that subject-auxiliary inversion in inversion exclamatives signifies that M-OP is being used to measure events (Nakanishi 2007a,b). To verify this suspicion would require a more in-depth investigation of the syntax and semantics of subject-auxiliary inversion and null operators.

The second type of degree interpretation available to inversion exclamatives corresponds to a use of the intensifier *really* in sentences like *Mary really won that game!*, in which it seems like the speaker is communicating that Mary won the game particularly vigorously, or that it's extremely evident that Mary won. At this time I can only draw parallels between these exclamatives and verum focus in *yes/no* questions (Romero and Han 2004). It's possible that inversion exclamatives differ from their corresponding sentence exclamations in that they denote degree properties based on verum-focused interpretations of the related sentence.

In sum, I've argued that exclamatives denote degree properties, relations between worlds and degrees (although I've suppressed the world argument in the compositional semantics above). In the case of *wh*-exclamatives, this is accomplished via a relatively straightforward interpretation of existing semantic accounts of relative clauses (and some accounts of questions). In the case of nominal exclamatives, it's required the postulation of an arguably type-shifted version of the definite article which is type  $\langle\langle d, \langle e, t \rangle \rangle, \langle d, t \rangle\rangle$  (instead of  $\langle\langle e, t \rangle, t \rangle$ ). And in the case of inversion exclamatives, it seems plausibly related to subject-aux inversion but I haven't provided an account of how. What's more, each type of exclamative can occur

without overt degree morphology; I've argued that these exclamatives should be treated semantically on par with other constructions which can include "freebie degrees," that is with a null measurement operator M-Op. I've tried to show that some of the restrictions on the distribution of M-Op observed in exclamatives are in fact restrictions on the distribution of M-Op generally, and so don't need to be (and, what's more, shouldn't be) built in to a semantics of exclamatives or exclamation. In the next section I'll focus on the speech-act component of my account of exclamation. The main goal of such an account is to propose a single illocutionary force operator of exclamation which can be appropriated for the two different content denoted by sentence exclamations and exclamatives (and, correspondingly, the two different types of expectation each form invokes).

### 3 The speech act of exclamation

Based on my observations and arguments above, a theory of the meaning of exclamations will need to address two main issues: the nature of the illocutionary force of exclamation and how it relates to the content of an exclamative. I'll address them in turn and then discuss some consequences of the theory.

#### 3.1 The illocutionary force of exclamation

In Sect. 1.1, I argued that exclamations and exclamatives form a natural class of speech act: exclamations, which are a type of expressive. The utterance of an exclamation seems to express that a particular proposition was unexpected by the speaker. In this section, I'll define an illocutionary force operator for exclamation which is a function from propositions to expressive speech acts. The next section will discuss the nature of the propositional input to this illocutionary force operator.

As mentioned earlier, there are a number of lexical items that seem to be expressives: *alas*, for one (see also Wu 2008, for a discussion of adverbials that appear to be expressive versions of *surprisingly* and *unsurprisingly*). I've modeled the illocutionary force of exclamation, 'E-FORCE', on a description of the German expressive particle *ja* in Kratzer (1999). I assume that a Context  $C$  includes information about a speaker  $s_C$  in that context as well as a world ( $w_C$ ) and time ( $t_C$ ) of utterance.

- (39) 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  $p$ .

I assume that a speaker's expectations are encoded as sets of possible worlds, and that these expectations (the set of worlds  $E$ ) can be provided by context, so (39) effectively expresses that  $p \notin E$ . (See Merin and Nikolaeva 2008, for a proposal of a null operator related to speaker expectation.) I've been ignoring (implicit) time arguments in my discussion of expressives and the relevant expectation-violating propositions, but it's worthwhile mentioning them here. If a proposition

$p =$  ‘John wins the race at  $t$ ’ functions as the input to E-FORCE, the relevant expectation set will need to be calculated based on some salient time  $t' > t$ . In other words, E-FORCE( $p$ ) counts as an expression that  $p$  was not in  $s$ ’s set of expectations  $E$  at some salient time  $t'$  before  $t$ , the time at which John won the race.<sup>10</sup>

### 3.2 The content invoked by exclamation

With a general definition of the illocutionary force of exclamation we can turn to the difference between sentence exclamation and exclamatives. There are two related differences to account for: first, I’ve argued that the former denote propositions while the latter denote degree properties. And second, I’ve argued that the former can be associated with non-scalar expectation—and as a result express that an expectation has been negated—while the latter are associated with scalar expectation, expressing that an expectation has been surpassed.

This difference between scalar and non-scalar expectation is particularly clear in the juxtaposition of the pair in (40).

- (40) a. (Wow), John arrived early!  
 b. How (very) early John arrived!

(40a), uttered in an appropriate context with a neutral intonation, results in an assertion that  $p$ —that John arrived early—and an expression that the speaker had expected that John would not arrive early. The utterance can be very naturally continued with a clarifying sentence like *I would have guessed that he would be late* but, importantly, not with a sentence like *I’d guessed that he’d be early, but not this early!*

An utterance of (40b), on the other hand, results in the expression that the degree to which John was early surpassed the speaker’s expectation. It can be naturally continued with *I guessed that he’d be early, but not this early!* as well as *I would have guessed that he would be late*. The key to unifying sentence exclamations and exclamatives under E-FORCE lies in relating the difference between the expression of scalar and non-scalar expectation violation to the denotations of the strings used to form the exclamations.

Because sentence exclamations denote a proposition, it’s easy to see how they interact with E-FORCE. (41) illustrates this for *(Wow,) John won the race!*

- (41) (Wow,) John won the race!  
 a.  $p = \lambda w. \text{won}^w(\text{john}, \text{IX}[\text{race}^w(x)])$   
 b. E-FORCE( $p$ ), uttered by  $s_C$ , is appropriate in  $C$  if  $p$  is salient in true in  $w_C$ . When appropriate, E-FORCE( $p$ ) counts as an expression that  $s_C$  had not expected that  $p$ .

<sup>10</sup> Exclamations which refer to states (instead of events) will probably require a more sophisticated incorporation of time arguments, e.g. that we revert to intervals and the notion of overlap rather than points and the notion of precedence.

So, (39) correctly characterizes the discourse contribution of (41) as an expression that the speaker had not expected that John would win the race.

To extend E-FORCE to exclamatives and thereby to scalar expectations, the denoted degree property must be converted into a proposition. We see this need elsewhere, for instance, with positive constructions. *John is tall* requires of a context that there exist a high degree to which John is tall. But there are reasons to believe this existential quantifier isn't contributed by the adjective (*tall* can combine with the comparative *-er* which is itself a degree quantifier) or whatever it is that adds the requirement that the degree be high relative to a context (this requirement too can be present with other degree quantifiers). I've thus proposed elsewhere that the degree argument of adjectives in some degree constructions (like *John is tall*) undergoes existential closure (Rett 2008a,b).

I will characterize this as a two-step process for exclamatives. First, context provides an argument for the degree property denoted by the *wh*-clause, nominal or inversion construction. The result is a proposition with an unbound variable, as in (42b). It's this proposition  $-D(d')$ —that functions as the input to E-FORCE; finally, the unbound variable is bound at the end of the utterance or discourse via existential closure, resulting in (42c).

- (42) How tall John is!
- a.  $\lambda d.tall(john,d)$
  - b.  $tall(john,d')$
  - c. E-FORCE( $p$ ) counts as an expression that  $\exists d'$  such that  $s_C$  had not expected that  $D(d')$ .

(42c) correctly characterizes the discourse contribution of (42) as an expression that there is a degree  $d'$  such that the speaker had not expected John would be  $d'$ -tall. I've illustrated this process only for a *wh*-exclamative but it extends to all kinds of exclamatives.

There are other plausible ways to reconcile the type mismatch between E-FORCE and the content of exclamatives: for instance, the context could instead provide some degree  $\epsilon$ —representing some information about the speaker's expectation—to function as the contextually-valued argument for the degree property. The process in (42) makes the right predictions about the discourse contributions of exclamatives while exhibiting strong parallels with semantic process in other degree constructions. And while there is an ongoing debate about whether or not quantifiers generally can scope outside of speech acts—see Krifka (2001) for such a proposal—the process illustrated above relies only on the idea that existential closure can happen at the discourse level, something for which there is already ample evidence.

The different ways in which the content of sentence exclamations and exclamatives interact with E-FORCE contribute to their difference in discourse contribution. Recall that, while the utterances of sentence exclamations and exclamatives result in expressions of expectation violation, the two differ in whether or not they introduce content that is deniable. A utterance of a sentence exclamation seems to additionally assert that  $p$ , while an utterance of an exclamative doesn't appear to make a contribution to discourse which can be denied or affirmed directly.

- (43) A: (Wow,) John won the race!  
 B: No, he didn't, he lost it at the last minute.
- (44) A: (My,) How John won the race!  
 B: ?No, he didn't, he lost it at the last minute.

The present account correctly predicts that (43) is appropriate only in situations in which the proposition  $p$  is salient and true in the world of utterance. This means that any context in which a sentence exclamation with content  $p$  can be uttered appropriately is a context in which  $p$  is true, and any act of exclamation that  $p$  illocutionarily entails (in Vanderveken's sense) an assertion that  $p$ . On the other hand, the proposition which functions as the input to E-FORCE in the case of exclamatives is one containing an unbound variable. While I don't have a particular proposal about exactly how this difference can effect the utterance (and why), it seems plausibly related to the difference in discourse contribution between the two types of exclamation.

In the following section I continue this discussion of E-FORCE by examining some consequences of it within and outside of the phenomenon of exclamation.

### 3.3 Focus and McCready's *man*

I've suggested that, while exclamatives are associated with scalar expectations, sentence exclamations can be associated with non-scalar expectations. But, as I mentioned in footnote 5, sentence exclamations can receive degree interpretations (and thereby be associated with scalar expectations) too. In particular, sentence exclamations formed from declaratives containing focused gradable predicates receive degree interpretations.

- (45) a. Wow, John arrived EARLY!  
 b. How (very) early John arrived!

Intuitively, both exclamations in (45) assert that John arrived early and express surprise at the degree to which John's arrival was early. In this case, as in the exclamation *How (very) early John arrived!*, an utterance of (45a) asserts that John arrived early, but expresses that the degree to which John arrived early exceeded the speaker's expectation.

That sentence exclamations can be associated with scalar expectations, and that this is accomplished using focus, is interesting for a number of reasons. First, it demonstrates parallels with what has been previously considered an independent phenomenon: the effect of particles like *man*, as discussed in McCready (2007).

- (46) a. Man, that movie was boring! *comma intonation*  
 b. MAN that movie was boring! *integrated intonation*

McCready observes that the string in (46) can be uttered with two distinct intonation patterns, corresponding to two different interpretations. The comma intonation in

(46a) includes a pause after *man*; the integrated intonation in (46b) involves focus on *man* and no intonation break after it. The former is interpreted just like a non-scalar sentence exclamation: it asserts  $p$ —that the movie was boring—and expresses that  $p$  is contrary to the speaker’s expectation. The latter is interpreted just like a scalar sentence exclamation: it asserts the same  $p$  but instead expresses that the degree to which the movie was boring exceeds the speaker’s expectation. In this respect, it seems as though *man* in (46b) is performing the same function as the focus on the gradable predicate in (45a).

This suggests that the distinction between scalar and non-scalar expectation has a broader significance. And it also suggests that there are a number of ways to bring out the scalar expectations: a) using a degree-property-denoting clause, as in exclamatives; b) using focus on a gradable predicate, as in some sentence exclamations; and c) using a particle like *man*, as in (46b). Perhaps these constructions all involve different ways of accomplishing the same semantic task: focusing a degree rather than a proposition. If this is the case, then we can say that exclamatives have the syntax they do because they denote degree properties; and that they denote degree properties because it is one of a few ways to express that a scalar expectation has been exceeded.<sup>11</sup> I’ve suggested here that there are two types of speaker expectation—scalar and non-scalar—and that this could speak to the observation that exclamations can only be formed using strings that denote propositions or degree properties. However, hinting at this possible correlation is not the same as proposing an explanation for the prohibition of e.g. *wh*-exclamatives denoting individual properties, which I cannot do at this time.

#### 4 Previous theories of exclamatives

In this section, I’ll compare the analysis presented above to two important theories of exclamation: the question-based account of *wh*-exclamatives in Zanuttini and Portner (2003) and various accounts of embedded *wh*-clauses as embedded exclamatives.

##### 4.1 Question accounts of exclamatives

Many analyses whose goal it is to find a common syntactic form among exclamatives characterize them as related to questions in various ways (Grimshaw 1977, 1979; Michaelis and Lambrecht 1996; Gutiérrez-Rexach 1996; Zanuttini and Portner 2003, among others). On the surface, *wh*-exclamatives look like constituent questions; inversion exclamatives look like *yes/no* questions, and nominal exclamatives look like concealed questions (as in *I know the capital of France*).

Despite this, I know of no question-based semantic theory intended to account for all three types of exclamatives. Zanuttini and Portner (2003) assimilate *wh*-exclamatives to

<sup>11</sup> It’s possible of course to focus other constituents in a sentence exclamation. (*Wow.*) *JOHN arrived late!*, for instance, could be analyzed in terms of non-scalar expectations and a focus-alternative semantics. It could alternatively be analyzed in terms of a bivalent scalar expectation. I’ll leave the examination of the intersection of focus and speaker expectation for later research.

constituent questions but do not address nominal or inversion exclamatives. Portner and Zanuttini (2005) present a distinct analysis for nominal exclamatives but do not address *wh*- or inversion exclamatives. And while there are superficial similarities between nominal exclamatives and concealed questions, recent work on the latter (Nathan 2006; Frana 2007; Caponigro and Heller 2007) suggests that the similarity is only superficial. In particular, concealed questions—but not nominal exclamatives—can be formed with indefinites and universals in addition to definites.

Zanuttini and Portner's (2003) account of *wh*-exclamatives is perhaps the most influential theory of exclamatives. I'll review it here and then compare it to the speech-act-based theory presented above.

A fundamental claim of Zanuttini and Portner (2003) is that the contribution of *wh*-exclamatives to discourse comes from domain widening, a concept adopted from Kadmon's (1993) theory of *any*. They assume, following the semantic analysis of questions in Karttunen (1977), that *wh*-exclamatives denote sets of true propositions, and they do so because they contain an operator 'WH' in Spec,CP. They additionally assume that the propositions in the set denoted by the *wh*-clause are presupposed to be true (this comes in via an abstract morpheme 'FACT'). Because their content is presupposed, the explanation goes, exclamatives cannot function as assertions or questions. They are only semantically coherent if they include an operator (' $R_{\text{widening}}$ ') which requires that the domain of quantification indicated by the *wh*-phrase is particularly wide.

Here's an illustration of how their account works, in reference to the exclamative in (47).

(47) What things he eats!

To see the role of this [widening] operator, consider the following context. We're discussing which hot peppers some of our friends like to eat. The domain of quantification for  $R_{\text{widening}}$ , let us call it D1, is a set of peppers that contains (in increasing order of spiciness): poblano, serrano, jalapeño, and güero. Our friends who like spicy food tend to eat the poblanos, serranos, and occasionally jalapeños. We say [(47)] about one of these friends. In this context, the sentence implicates that he eats all types of peppers, not only all those in D1 but also, for example, the habanero, which is so spicy that it often makes people ill. Uttering [(47)] thus causes the domain of  $R_{\text{widening}}$ , D1, to be expanded to D2, including the additional type. This expansion of the domain is the widening component of [the] meaning of exclamatives (p. 50).

So the denotation of (47) in this context, in this account, is something like (48).

(48) [[What things he eats!]]  
 = {He eats poblano, He eats serrano, He eats jalapeño, He eats güero,  
 He eats habanero}

The idea is that the inclusion of these extra propositions—in the context described above, the propositions 'He eats güero' and 'He eats habanero'—is the discourse-level contribution of exclamatives. As the authors say, "the *wh*-phrase binds a



variable for which an appropriate value cannot be found in the contextually given domain” (p. 50).

Zanuttini and Portner observe that exclamatives often indicate that the speaker found the content surprising or note-worthy. (Recall from the discussion of expectations in Sect. 1.1 that they don’t believe all exclamatives indicate this.) When it does occur, this contribution to discourse, according to their theory, comes about indirectly, via implicature. They say, “With the example *What a cool day it was yesterday in New Delhi!*, widening means that the temperature is below what we had considered a relevant possibility. Learning that ones’ expectations are not met is precisely what gives rise to a feeling of surprise” (p. 56). That is, the utterance of an exclamative affects the common ground by widening the set of propositions presupposed to be true. They rely on Stalnaker’s conception of presupposed content, which they describe as “the set of propositions mutually held as true, for purposes of the conversation, by the participants, in a conversation at a given time,” p. 51.

I agree with many of Zanuttini and Portner’s general observations; for the sake of comparison, I’ll draw attention here to some ways in which our accounts differ.

As I mentioned earlier, they argue that the content of an exclamative is presupposed. Their conviction that this is the case is derived mostly from tests of *wh*-clauses embedded under verbs like *surprise*, which I’ll argue in the next section seem to be quite distinct from *wh*-exclamatives. However, that exclamatives presuppose their content falls out nicely from their account in which exclamatives are a certain sort of question. Their version of my ‘speaker unexpectedness’ is encoded in the set of propositions denoted by the *wh*-clause. They implicitly assume that questions denote a subset of the true answers, one restricted by context, and explicitly assume that the same *wh*-clause in an exclamative denotes the unrestricted set of true answers. The difference in the size of the set—the relative widening of the set denoted by the exclamative—results in the illocutionary force of the exclamative.

I’ve already suggested that exclamatives fail von Fintel’s *Hey, wait a minute!* test, and this is one reason to think that their content is not presupposed. Additionally, *wh*-exclamatives, like sentence exclamations, are felicitous in situations in which the content of the exclamative is new to the hearer, which suggests contrary to Zanuttini and Portner that the denoted propositions are not necessarily in the common ground. Imagine that John goes to Crete and writes Mary to let her know how his visit is going. It seems perfectly fine for him to begin his letter, *What a magnificent place Crete is!*, thus informing Mary that Crete is magnificent to an unexpected degree, whether or not Mary would have guessed as much before hearing from John.

While I argue that exclamations express something about the speaker’s expectations being unfulfilled, Zanuttini and Portner deny that expectations are at issue and instead characterize this contribution as one of domain widening. I’m also uncomfortable with this characterization of the semantic difference between questions and exclamatives. It will certainly be true that in many contexts the set of true propositions denoted by a question will be restricted by context, but there are many scenarios in which this cannot be the case. Imagine that there are ten supercentenarians in the world, and that they’ve all been named on *The Today Show*. Then the

question *What supercentenarian has been named on The Today Show?* denotes ten propositions, corresponding to each supercentenarian. It's not clear to me how the denotation of the corresponding exclamative, *(My,) What supercentenarians have been named on The Today Show!*, could be a widened version of this set. In this case, the difference in denotation between a question and exclamative appears to have been neutralized, yet they still seem to make different contributions to the context.

What's more, the exclamative seems to exclaim about the value of gradable property belonging to the supercentenarians, a consequence of the degree restriction. It's possible that the theory in Zanuttini and Portner (2003) could be adapted to account for the degree restriction, but it cannot in its current form.

In sum, the present account differs from the one in Zanuttini and Portner (2003) by making different assumptions about the denotation of *wh*-exclamatives (degree properties versus sets of propositions) and different assumptions about the contribution of these exclamatives to the discourse (assertion and expression versus presupposition and widening). While their goal was a unified account of *wh*-exclamatives and constituent questions, my goal has been a unified account of the speech act of exclamation, which I take to represent a more natural class.

#### 4.2 Accounts of 'embedded exclamatives'

I have characterized exclamatives as a sub-class of exclamations, and I have characterized exclamations as speech acts. For most speech act theorists, this means that exclamations are a matrix or root phenomenon; generally, it's assumed that speech acts can't be embedded (an exception is Krifka 2001).<sup>12</sup> Some accounts of *wh*-exclamatives assimilate them to *wh*-clauses embedded under verbs like *surprise*, and therefore have as their goal a theory which treats them as the same phenomenon. I'll argue against such theories here on the basis of two observations: first, there are important semantic differences between the *wh*-clauses in exclamatives and those embedded under *surprise*; and second, there are important differences between the illocutionary force of exclamation, E-Force, and verbs like *be surprised*.

Searle (1969), following Austin (1962), observed that the illocutionary force of many speech acts has the same function as some speaker-oriented embedding verbs, which he referred to as Illocutionary Force Indicating Devices (IFIDs).

- (49) a. I will go to the store on my way home.  
b. I promise I will go to the store on my way home.

- (50) a. Bring me my shoes!  
b. I command you to bring me my shoes.

However, this has long been observed to be a superficial resemblance. IFIDs, but not illocutionary forces, contribute their meaning to the assertive act. So while the

<sup>12</sup> Green (2000), for instance, develops a theory of Embedded Force Exclusion: "If  $\phi$  is either a part of speech or a sentence, and  $\phi$  contains some indicator  $f$  of illocutionary force, then  $\phi$  does not embed". See also Price (1994) and Zimmerman (1980).

speaker's surprise in (51) can be agreed with, a sign that it was part of the assertion, the speaker's expression of unfulfilled expectation in (52) cannot.

- (51) A: I am surprised that I won the contest.  
B: Yes, you seem shocked.

- (52) A: Wow, I won the contest!  
B: # Yes, you seem shocked.

While (51) isn't entirely natural—it seems odd for one interlocutor to confirm or deny another's emotional state—(52) is comparatively terrible. The affirmation *yes* in (52) can only be interpreted as affirming the fact that A won the contest. This is compatible with an analysis of *surprise* as asserting that the speaker is surprised that *p*, and an analysis of E-Force, as above, as asserting that *p* and expressing that *p* is contrary to the speaker's expectations.

Perhaps the most compelling difference between exclamatives and the arguments of *be surprised* is that exclamatives can be formed from *wh*-clauses, definite descriptions or inversion constructions, while *be surprised* completely disallows clauses displaying subject-auxiliary inversion.

- (53) a. \*I am surprised (at/by) can Adam cook steak.  
b. \*I am surprised (at/by) does Sue like banana bread.

What's more, while only a subset of *wh*-clauses make possible exclamatives, any *wh*-clause can be embedded under *be surprised*. This means that *be surprised* can embed *wh*-clauses headed by *wh*-phrases like *who* (54); it also means that it can embed things like multiple *wh*-clauses (55) (Huddleston 1993; Lahiri 2002).

- (54) a. I'm surprised at/by who came to the party.  
b. I'm surprised at/by why he bought a horse.
- (55) a. I'm surprised at/by who ate what.  
b. I'm surprised at/by how many people flew where.

There is a parallel for nominal exclamatives: while nominal exclamatives can only be formed with definite descriptions, *be surprised* can embed any sort of nominal.

- (56) a. I am surprised at/by some of the things he wears.  
b. I am surprised at/by all the students who showed up.

Finally, for those *wh*-clauses and nominals that **can** occur in both contexts, we find that E-Force and *be surprised* treat them quite differently. In particular, exclamatives are subject to the degree restriction, but clauses and nominals embedded under *be surprised* are not.

- (57) a. (My,) What desserts John baked!  
 b. I am surprised at/by what desserts John baked.
- (58) a. (Oh,) The places Tori visited!  
 b. I am surprised at/by the places Tori visited.

(57b), but not (57a), can be used in a situation in which the speaker expected John to bake a pumpkin pie and a *crème brûlée*, but John instead baked a chocolate cake and a blueberry cobbler. (57a), but not (57b), would be appropriate in a context in which the speaker considers John's desserts to have achieved some high degree of some gradable predicate, e.g. when they're particularly delicious or beautifully crafted. The same can be said for the nominal exclamatives in (58).

The assimilation of exclamatives and *wh*-clauses embedded under verbs like *be surprised* originated in syntactic work by Elliott (1974) and Grimshaw (1977, 1979). There were two main motivations for the assimilation. First, *wh*-exclamatives can be formed with morphology whose distribution is relatively restricted in *wh*-clauses across the board, and *wh*-clauses embedded under *be surprised* can have this same morphology. In both, *how*-clauses can contain intensifiers (59), and *what*, when occurring with nouns with singular agreement, becomes *what a* (57a).

- (59) a. How very/incredibly/terribly cold it is in here!  
 b. John is surprised at/by how very/incredibly/terribly cold it is in here.
- (60) a. What a clown she married!  
 b. John is surprised by what a clown she married.

This has typically been characterized as “exclamative-specific” morphology, considered unacceptable in questions. But Abels (2004) provides an account of the fact that these intensifiers tend not to be acceptable in questions: they signify that the property is instantiated to a particularly high degree, whereas questions tend to presuppose speaker ignorance with respect to the question's answer. He argues that, once this presupposition is filtered, intensifiers are acceptable in questions, as in *If it is already this hot down here on the main floor, how unbearably hot must it be up on the balcony?* If this is right, then it's a mistake to say that questions disallow intensifiers by virtue of their being questions. The right generalization is that intensifiers carry a particular presupposition, and that this presupposition is par for the course with exclamatives, but rare in the case of questions.

The second motivation for characterizing these embedded *wh*-clauses as exclamatives comes from their interpretation under verbs like *be surprised* and also under verbs like *know*. Grimshaw observed that a sentence like (61) is ambiguous:

- (61) John knows how high the ceiling is.

Imagine that the ceiling at issue is 300cm high. The ‘question’ reading of (61) is one that is consistent with John knowing the exact height of the ceiling. Imagine further

that this height is particularly high for ceilings (at least in this context). The ‘exclamative’ reading of (61) is consistent with John knowing that the ceiling is high in the evaluative sense, whether or not he knows the exact height of the ceiling.

Notice further that adding an intensifier in the *wh*-clause renders the sentence unambiguous: it can only have the ‘exclamative’ reading, which is to say that John can’t be agnostic with respect to whether or not the ceiling’s height exceeds the contextual standard.

(62) John knows how very high the ceiling is.

Based on these observations, Grimshaw argued for a differentiation of ‘question’ and ‘exclamative’ interpretations of embedded *wh*-clauses, and used the presence of intensifiers in subordinated clauses as a diagnostic for the ‘exclamative’ reading.

But, as argued in Rett (2008b), the difference between the two readings boils down to a difference in evaluativity, whether or not the degree in question exceeds a standard. This property is known to be obligatory in some degree constructions—e.g. positive constructions, like *John is tall*—and arguably optional in other degree constructions (e.g. positive equative constructions, like *John is as tall as Sue*. Given that evaluativity has a wide distribution outside of embedded *wh*-clauses, it seems best to treat it independently of theories of exclamation and embedding verbs. Rett (2008a,b) provides a suggestion of how to do so.

To sum up: I’ve characterized exclamatives as a type of exclamation, a speech act with a unique illocutionary force while makes a unique contribution to discourse. I believe there are a number of reasons to assimilate exclamatives with sentence exclamations, while being mindful of their differences. In this last section, I’ve provided some reason to think that assimilating exclamatives with other sorts of things—questions on the one hand and embedded *wh*-clauses on the other—makes for a less satisfying theory.

## 5 Conclusion

My main goal has been to show that sentence exclamations and exclamatives have in common that they express that some expectation of the speaker has been violated, but they differ in terms of their content and consequently the type of expectation they attribute to the speaker. I’ve attempted to provide a semantic and pragmatic account of these observations. I’ve argued that the *wh*-clauses, definite descriptions and inversion constructions which can be used to form exclamatives denote degree properties, sometimes with the help of a null measurement operator M-OP. I’ve suggested that there is a single, unified illocutionary force active in the utterance of all exclamations, E-FORCE, and I’ve demonstrated one way in which we can reconcile the difference in content between sentence exclamations and exclamatives with the fact that E-FORCE, like other illocutionary force operators, is a function from propositions.

The discussion here represents an early attempt at including some notion of speaker expectation into a natural language theory. While there are a number of differences between the illocutionary force of exclamation and, say, mirative

markers, the possible interpretations and discourse contributions of exclamation might prove helpful for a more general investigation into the expression of expectation violation.

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