Exclamatives, Degrees and Speech Acts*

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Abstract

The goal of this paper is a semantic and pragmatic account of exclamations. I draw on work in degree semantics to explain why exclamatives – exclamations not formed from declarative sentences – can and must receive a particular type of degree interpretation. The result is a characterization of the illocutionary force of exclamation which appropriately restricts the syntax and semantics of exclamations and which is appropriately different from embedding verbs like *be surprised*.

1 Introduction

1.1 The object of study

The empirical focus of this paper are the forms in (1):

(1)   a.   (Wow,) John bakes delicious desserts!
       b.   (My,) What delicious desserts John bakes!
       c.   (Boy,) Does John bake delicious desserts!
       d.   (My,) The desserts John bakes!

The syntax of the forms in (1) are familiar: (1a) has the syntax of a declarative sentence; (1b) the syntax of a *wh*-clause; (1c) the syntax of a yes/no question; and (1d) the syntax of a definite DP. Exclamations like these are used to exclaim something; this use is marked in English by a falling intonation pattern and emphasis, which is most typically manifested in lengthening effects (Bartels, 1999). Exclamations also optionally occur with interjections or discourse markers like *wow, my, oh, boy* and *man*.
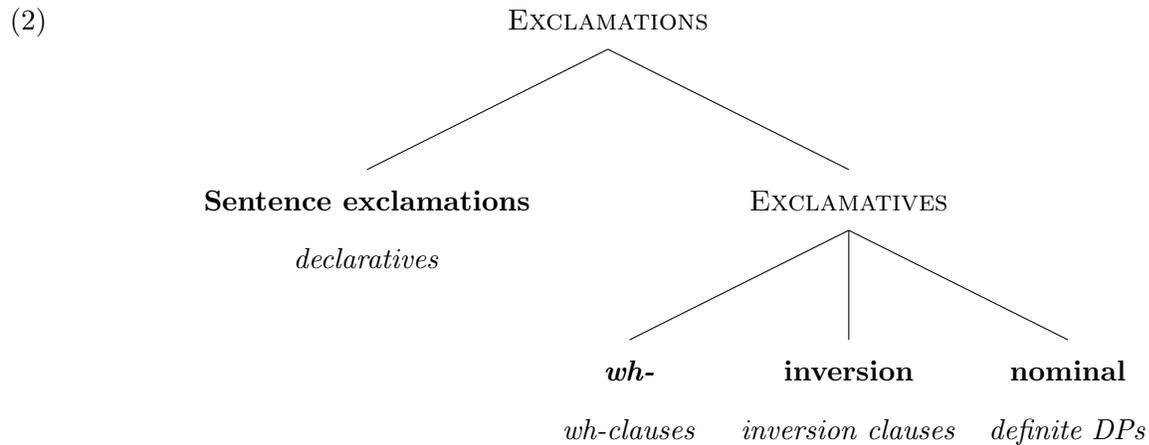
To exclaim something is an act; to do so with language constitutes a speech act. (An example of a non-linguistic expression of exclaim is a gasp.) Because uttering an exclamation constitutes an

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act of exclaiming, exclamations are performative speech acts. The difference between performative speech acts and constative ones (like assertions) amounts to the difference between "doing something and saying something" (Austin, 1962, 54). Kaplan (1999) makes a distinction similar to Austin's, between expressives and descriptives. He says, "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."

I'll use the term 'sentence exclamation' to refer to exclamations formed with declarative sentences like (1a). I'll use the term 'exclamative' to refer to those which are not ((1b)–(1d)). In particular, I'll use the term 'wh-exclamative' for exclamations headed by wh-phrases like (1b), the term 'inversion exclamative' for exclamations formed with clauses displaying subject-auxiliary inversion like (1c), and the term 'nominal exclamative' for exclamations formed with definite DPs, like (1d).

(2)
                          EXCLAMATIONS
                         /   \
         Sentence exclamations   EXCLAMATIVES
              declaratives   / | \
                                   wh- **inversion** **nominal**

                                wh-clauses *inversion clauses* *definite DPs*

I will show that there are important semantic differences between sentence exclamations and exclamatives that justify this terminological distinction.

I have defined exclamations in terms of their speech-act contribution to discourse, and so my discussion of these forms will be restricted to those in matrix contexts. In contrast, many linguists have equated e.g. (1b) with the complement of the embedding verb in *be surprised (at/by) what delicious cakes John bakes* (Elliott, 1974; Grimshaw, 1977, and others after them). In §6, I will return to this issue, arguing that there is good reason to distinguish between exclamatives and the complements of embedding verbs like *be surprised*.

The goal of this paper is an explanation of what exclamations mean, how they come to mean it, and why we use the forms we do to signify such meanings. It draws on previous accounts of exclamatives – along with some independently motivated components of theories in degree semantics – to argue that the illocutionary force of exclamation shapes both the form and meaning of exclamatives in a particular way. §2.1 describes the contribution of sentence exclamations at the speech-act level. §3 presents some semantic restrictions on exclamatives. §4 discusses why accounts of exclamatives in which they're analyzed semantically as questions (e.g. Zanuttini and Portner, 2003) don't properly restrict the interpretations of exclamatives. A new account is presented in §5. I discuss some extensions and consequences in §6.

2 Constitutive rules for exclamation

In this section, I'll argue that exclamations form a unique speech act category. I will, following Searle, develop a set of constitutive rules which characterizes the contribution of sentence exclamations to discourse. I'll then apply them to the utterances of exclamatives. These constitutive rules provide us with the means by which to determine whether or not an utterance of an exclamation is felicitous in a given context, which in turn will allow us to more closely examine the content of exclamatives, the goal of §3.

2.1 Constitutive rules for sentence exclamation

Searle, following Austin, assumed that to speak a language is to perform acts according to rules. He further assumed that different types of speech acts were subject to different rules, their own constitutive rules. He specified four types of rules: 1) content rules (rules about the semantic content of a form); 2) preparatory rules (the contextual preconditions for a given speech act); 3) sincerity rules (addressing what is needed for a speech act to be sincere); and 4) essential rules (specifying what the speech act counts as). The constitutive rules all contribute to the determination of whether or not a speech act is acceptable or felicitous. Table 1 shows some of Searle's constitutive rules for a few types of speech act.

TABLE 1. Constitutive rules for speech acts. *(Adapted from Searle (1969) and Sadock (2006))*

	Assertion	**Thanking (for)**	**Warning**
CONTENT	Any proposition p	Past act A done by H	Future event or state, etc., E
PREPATORY	1. S has evidence for the truth of p; 2. It is not obvious to both S and H that H knows p	A benefits S and S believes A benefits S	1. H has reason to believe E will occur and is not in H's interest; 2. It is not obvious to both S and H that E will occur
SINCERITY	S believes p	S feels grateful or appreciative for A	S believes E is not in H's best interest
ESSENTIAL	Counts as an undertaking that p represents an actual state of affairs	Counts as an expression of gratitude or appreciation	Counts as an undertaking to the effect that E is not in H's best interest

I'll argue in this subsection that sentence exclamations are subject to the constitutive rules in (3). I'll then argue that these are the constitutive rules for exclamation generally.

(3) a. CONTENT RULE: The content of a sentence exclamation is the proposition p denoted by that sentence.
     b. PREPARATORY RULE: S has direct evidence that p is true.
     c. SINCERITY RULE: 1. S believes p; 2. S considers p note-worthy or remarkable.
     d. ESSENTIAL RULE: S's utterance of a sentence exclamation counts as an expression of S's attitude towards p.

I'll explain and motivate these rules in turn.

First, the content rule: because sentence exclamations are formed with declarative sentences, it makes sense to assume in the absence of negative evidence that the semantic content of a sentence exclamation is a proposition. When I extend these constitutive rules to include exclamatives, it's this rule which will need to be amended.

Second, the preparatory rules. The utterance of a sentence exclamation is infelicitous if the speaker doesn't believe that p is true. (Cf. *John isn't short. #How short John is!*.) But a speaker's evidence for p must additionally be direct. Imagine that Sue knows that John has just travelled to a region of the country where one always ends up having to eat some kind of disgusting food, but she has no idea what disgusting food John in fact ate. In this scenario, it would be infelicitous for Sue to exclaim, *What disgusting food John ate!*. This is because, in this scenario, Sue lacks the right

epistemic connection to p, the content of the exclamation.[1] The epistemic connection I have in mind is the same one used in many evidential systems in languages around the world (see Aikhenvald, 2004, for an overview). I use the term 'direct' here but there are other ways to characterize the epistemic connection: in terms of 'experienced' information versus 'non-experienced' information, 'first-hand' information versus 'non-first-hand' information.[2]

Third, the sincerity rule. Searle (1969) observes: "...(W)here the act counts as the expression of a psychological state, (insincerity is) possible. One cannot, for example, greet or christen insincerely, but one can state or promise insincerely" (p65). Because exclamations are expressives, they can be uttered insincerely. The sincerity rule specifies that, in order for the utterance of an exclamation to be sincere, its speaker must find its content note-worthy or remarkable.

The terms 'note-worthy' and 'remarkable' are imprecise and (as a result) a less than completely satisfying description of the relationship between a speaker and the content of an exclamation. But this imprecision reflects well the somewhat blurry natural class of attitudes that license exclamation. I might exclaim something because I'm surprised by it, I might exclaim something because I'm impressed by it, I might exclaim something because I find it extraordinary. I intend the terms 'note-worthy' and 'remarkable' to be cover terms for these instances.

Interestingly, this natural class of attitudes is used elsewhere in natural language: in the description of miratives, a grammatical category similar to but arguably distinct from evidentials. (Zanuttini and Portner 2003 make this connection as well; see DeLancey, 1997, 2001; Aikhenvald, 2004, Chapter 6 for discussion). Two examples are below; the mirative markers are in bold.[3]

(4) 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)*

(5) Fey ti chi domo   kalko-**rke**
     that ART   woman witch–MIR
     'This woman turned out to be a witch (surprisingly).'   *Mapudungun, Zúñiga (2000)*

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[1]Thanks to an L&P reviewer for this very nice point and several examples, including the one presented above, to illustrate it.

[2]I strongly suspect that the requirement that the speaker have direct evidence for the content of an exclamation is related to the general prohibition against indefinites in exclamatives, as in *How very old something is!* (an example from the L&P reviewer) or *(Wow,) A place he'll go!*. However, a formalization of this connection is beyond me, at least for the moment. See §5.4.2 for a bit more discussion.

[3]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

While the requirements of mirative markers differ from language to language (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, 197). The semantic and pragmatic contribution of mirativity does not pattern exactly with that of exclamation, but they show that the challenge of characterizing the conditions under which these sorts of speech acts are licensed is a general one.

Finally, the essential rule in (3) characterizes the contribution of a sentence exclamation to a discourse: the utterance of an exclamation constitutes an expression of the speaker's attitude that p is remarkable or note-worthy. The scenarios below demonstrate the effect of these rules on the felicity of Mary uttering the sentence exclamation *(Wow,) Sue called her mother!*.

(6)   SCENARIO 1: Mary knows that Sue always forgets to call her mother. Mary overhears the two talking on the phone.   **felicitous** (all rules are satisfied)

(7)   SCENARIO 2: Mary knows it's important that Sue call her mother this week; Sue promised Mary she would call at 7pm, and Mary believes she did.
.   **infelicitous** (preparatory rule violated, no direct evidence)

(8)   SCENARIO 3: Mary knows that Sue always forgets to call her mother. She believes that Sue forgot again this week.   **infelicitous** (sincerity rule violated; speaker doesn't believe p)

(9)   SCENARIO 4: Mary knows that Sue calls her mother faithfully at the same time each week. Mary overhears the two talking on the phone.
.   **infelicitous** (sincerity rule violated; speaker doesn't consider p note-worthy)

Two points are in order. First, Zanuttini and Portner (2003) reject the characterization of exclamatives as expressions of speaker surprise, and their reasoning is based on a situation like Scenario 4 above. 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 didnt expect a good dinner or a nice house (p.54).

It's true that these sorts of exclamations are often uttered in scenarios in which the speaker is in fact not surprised at the content of the exclamation. But because exclamations are expressives, they can be used insincerely, and it seems to be a convention of politeness that exclamations can be used in these scenarios to flatter, regardless of the speaker's expectations.[4] These, I believe, are

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[4]Indeed, the ability of exclamations to be uttered sincerely or insincerely can result in some confusion: uttering *(Wow,) You look great!* to someone in a bad mood can, in my experience, mistakenly communicate that you did not expect them to look great.

instances in which the sincerity rule is flouted in order to satisfy some social obligation. So the fact that the sincerity rule in (3) can be violated is, for performative speech acts, not evidence against the existence or relevance of that rule.

This rule aside, a comparison of the constitutive rules of sentence exclamation in (3) and the constitutive rules of assertion in Table 1 reveals that the former are more demanding than the latter.[5] (In other words, the situations in which it is felicitous to utter a sentence exclamation with content p are a subset of the situations in which it is felicitous to utter an assertion with content p.) This means that sentence exclamations illocutionarily entail assertions, in the sense of Vanderveken (1990): an utterance U_1 illocutionarily entails an utterance U_2 if "it expresses in every possible context of use a speech act that the speaker cannot perform without also performing the illocutionary act expressed by $[U_2]$ in the same context" (vol.1 p.2; see also vol.2 Chapter 5). This seems like an intuitive result.

A reviewer wonders whether 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, but which are associated with a secondary speech act of exclamation. This would be another way to characterize the close relationship between sentence exclamations and assertions. But this can't be the right way of doing so, because sentence exclamations have an intonational pattern distinct from assertions.

There is as far as I know unfortunately little formal research on the intonational differences between assertions and sentence exclamations (and e.g. *wh*-questions and *wh*-exclamatives, the latter of which has an intonation pattern distinct from that of sentence exclamations). But the difference comes into play here. Below are two commonly recognized instances of indirect speech acts: a question used as an imperative (10a) and an assertion used as a question (10b).

(10) a.   Could you pass the salt?   *secondary:* Pass the salt!
      b.   Let's go to the movies tonight.   *secondary:* Will you go to the movies with me?

In each case the utterance is associated with a primary and secondary speech act, but in each case

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[5]An exception is Searle's preparatory rule 2: assertions are felicitous only when it isn't obvious to the speaker and the hearer that the hearer knows the content p. I believe that this rule is inappropriate for both assertions or sentence exclamations, as both can be used in this very situation to introduce a new topic into the discourse. Imagine that Mary knows that John received the same email as she did announcing the birth of Sue's baby. She can nevertheless bring up the topic in conversation by uttering either an assertion *(As you know,) Sue had a baby* or a sentence exclamation *So, Sue had a baby!*.

the utterance is articulated with the intonation associated with the primary speech act: question intonation in (10a) and the intonation of assertion in (10b). Because sentence exclamations are always uttered with an intonation distinct from matrix assertions I believe they should not be analyzed as assertions. Because the felicity conditions of sentence exclamations are similar to those of exclamatives, I believe it's best to analyze the two as the same speech act of exclamation, and to therefore assume that they have their own unique and distinct illocutionary force.

2.2 The constitutive rules of exclamatives

In this section, I argue that utterances of exclamatives are subject to the same constitutive rules as sentence exclamations, although they differ in content. I need to establish the felicity and sincerity conditions of exclamatives before I can make the claims I make in §3, namely that the content of exclamatives are restricted in a particular way (relative to e.g. questions). I'll do so here with respect to the exclamative in (11).

(11)   (My,) How tall John is!
    a. $\{d: \text{tall}'(\text{john}, d)\}$
    b. $\{p: p = \lambda w \exists d[\text{tall}'(w)(\text{john},d)]\}$

I will ultimately argue that the content of (11) is a degree property: in particular, it denotes the set of degrees to which John is tall, as in (11a). But others have argued that exclamatives denote sets of propositions (Zanuttini and Portner, 2003, I'll discuss these theories in detail in §4). This would mean that the content of (11) is the set in (11b).

   I order to discuss the constitutive rules of an exclamative in a way that is neutral with respect to their content, I'll generalize over these theories by specifying the content of exclamative as a set Σ of some type $\langle \tau, t \rangle$, where τ is a variable over types (in this case, either $\langle d \rangle$ or $\langle s, t \rangle$). I'll resolve this underspecification when I present my account in §5.

(12)   a.   CONTENT RULE: The content of an exclamative is a set $\Sigma \in D_{\langle \tau, t \rangle}$.
    b.   PREPARATORY RULE: S has direct evidence that some entity $x \in D_\tau$ is a member of Σ.
    c.   SINCERITY RULE: 1. S believes that x is a member of Σ; 2. S considers $\Sigma(x)$ noteworthy or remarkable.
    d.   ESSENTIAL RULE: S's utterance of an exclamative counts as an expression of S's attitude towards $\Sigma(x)$.

Below are scenarios in which the utterance of (11) seems felicitous or infelicitous.

(13)   SCENARIO 1′: Mary spots John, a famous basketball player, across the room. John is 6′11″, taller than anyone she's ever seen.   **felicitous** (all rules are satisfied)

(14)   SCENARIO 2′: Mary hears that John has been drafted to play for the Lakers. She infers that he must be tall.   **infelicitous** (preparatory rule violated, no direct evidence)

(15)   SCENARIO 3′: Mary spots John across the room. He is 5′8″, and Mary considers him to be of average height.   **infelicitous** (sincerity rule violated; speaker doesn't believe $P(x)$)

(16)   SCENARION 4′: Mary is best friends with John, the famous basketball player, who is 6′11″. On meeting him for their weekly lunch, she exclaims to the waiter *My, how tall John is!*
          .   **infelicitous** (sincerity rule violated; speaker doesn't consider $P(x)$ note-worthy)

As before, the sincerity rule can be flouted to satisfy some social obligation. Imagine a scenario in which Mary is introduced to her friend Sue's son John. Sue is a proud mother who often brags about how exceptionally tall her son is. Mary, a school teacher, believes he is of medium height for his age. Her utterance of (11) would be felicitous but insincere.

A quick note about factivity: accounts like those in Grimshaw (1979); Zanuttini and Portner (2003) and Abels (2010) assume that exclamatives are factive, which is to say their content must be true in the world and context of evaluation. Notice that I've left any mention of factivity out of the constitutive rules for sentence exclamation and exclamative. All of Zanuttini and Portner's tests for factivity rely on the behavior of *wh*-clauses embedded under *surprise*, which I argue in §6 behave differently from matrix exclamatives in a variety of different ways. (See Castroviejo, 2006; Mayol, 2008; Rett, 2008b, for specific arguments against the claim that exclamatives are factive.) I have a strong intuition that the speaker must believe the content of an exclamation to be true – a requirement that is represented in these constitutive rules – but I think it's felicitous for a speaker to exclaim about something false as long as it meets this and the other requirements.[6] I'll say a little more about factivity when discussing Zanuttini and Portner's account in §4 and when discussing clauses embedded under *surprise* in §6.

This discussion, while it is an incomplete examination of the speech-act properties of exclamatives, suggests that utterances of sentence exclamations and exclamatives are subject to the same restrictions and instantiate the same type of speech act. The next few subsections use these

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[6]A reviewer wonders whether factivity is snuck into the constitutive rules in (3) and (12) via the adjectives *note-worthy* and *remarkable*. I strongly suspect that these adjectives are non-factive – that someone can believe in something false and also consider it note-worthy – but it's hard to defend this position. The factivity of sentences like *John thinks/finds/believes it note-worthy that p* is dependent on the properties of the embedding verb, and sentences like *It is note-worthy that p* are suspect because they are speaker-evaluative (see §3.5).

observations about what is required for the utterance of an exclamative to be felicitous to argue that the interpretation of exclamatives is semantically restricted in a particular way, which has consequences for the content rule in (12a).

In §6, I will additionally argue that *wh*-clauses, inversion clauses and definite DPs embedded under verbs like *surprise* behave significantly differently than they do when used as exclamatives. As a result, it's a mistake to assimilate the illocutionary force of exclamation with embedding verbs (or perhaps Illocutionary Force Indicating Devices, IFIDs) like *surprise*. I therefore intend these descriptions of the constitutive rules of exclamation to characterize the illocutionary force of exclamation, but not to characterize the meaning of e.g. *surprise*. Nor do I intend to postulate an IFID in the syntax (see Levinson, 1983; Sadock, 2006, for an overview of problems with the Performative Hypothesis).

3   Semantic restrictions on exclamatives

This section maps out the possible interpretations of *wh*-, inversion and nominal exclamatives in order to determine the content of 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); Michaelis and Lambrecht (1996); Espinal (1995); Ginzburg and Sag (2001); Villalba (2003); Castroviejo (2006). Common to these accounts is the use of terms like 'extreme degree interpretation', suggesting that exclamatives convey not only a degree reading but one whose value is particularly high. The arguments presented here are intended to systematically motivate and strengthen this characterization. The analysis presented in §5 is an attempt to formalize and explain it.

Of these authors, only Villalba and Castroviejo propose formal accounts which explicitly restrict the interpretations of exclamatives to degree readings. 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 current paper draws on their observations and accounts to make broader claims about exclamatives generally. In particular, I'll argue that exclamatives don't just typically receive degree interpretations; they necessarily receive degree interpretations, and that this restriction sets exclamatives apart from sentence exclamations.

Milner and Gérard were, as far as I know, the first to argue that exclamatives are unique in their ability to receive degree interpretations in the absence of degree morphology. I'll agree with the general observation – that some exclamatives receive their degree interpretation despite not having e.g. gradable adjectives – but will argue that exclamatives are not unique in this respect.

3.1 Degrees versus individuals

The degree restriction is particularly evident in exclamatives headed by *what*. Use of *what* independent of exclamatives suggests that it most naturally ranges over entities, as it does in the question in (17a) and the free relative in (17b).

(17) a. What (peppers) did John eat?
     b. I want to eat [RC 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 (18) 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. (17a) suggests that *what* in (18) 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 (18) is felicitous in a situation in which the speaker finds it note-worthy that John ate the peppers he did. I'll call this the 'individual interpretation'.

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

But because A, B and C are particularly spicy peppers in this context, the acceptability of (18) in this context is also compatible with the claim that (18) is being used to exclaim about how spicy the peppers John ate are. I'll refer to this as the 'degree interpretation'. To differentiate between the two meanings, and to determine which is the true meaning of (18), we need to test a *what*-exclamative in a context in which the degree and individual interpretation come apart.

Imagine you were told that John would bake a pumpkin pie and a crème brûlée, but you see that he instead baked a chocolate cake and a blueberry cobbler. Suppose further that you have no

assumptions about how these desserts relate to each other; you don't, for instance, think that the second group of desserts are more exotic or challenging than the first. In this scenario, an utterance of (19) seems infelicitous.

(19)   (My,) What desserts John baked!

This suggests that (19) cannot be used to exclaim that John baked a chocolate cake and a blueberry cobbler (instead of the other two). This is despite the fact that (i) you have direct evidence that he baked a chocolate cake and a blueberry cobbler; and (ii) you consider it note-worthy or remarkable that he baked a chocolate cake and a blueberry cobbler. This suggests that there's something about the content of (19) that fails to appropriately represent the content of your surprise.

A felicitious utterance of (19) is one in which it's used to exclaim about the degree to which the desserts John baked instantiate some gradable property. This description of the meaning of (19) 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* exclaim about degrees to which individuals instantiate gradable properties, not the individuals themselves.

This point is important, so I'll discuss a second example. Imagine that you and a friend are playing with a deck of cards, and the friend picks two cards at random from the deck. He chooses the 3 of clubs and the 6 of diamonds. You shuffle them back into the deck and your friend chooses two cards at random a second time. Amazingly, he chooses the same two cards: the 3 of clubs and the 6 of diamonds. You shuffle them back into the deck again and then, for a third time, your friend chooses the 3 of clubs and the 6 of diamonds. In this scenario, it would be felicitous for you to utter the sentence exclamation *(Wow,) You picked the 3 of clubs and the 6 of diamonds (again)!*, but it would be infelicitous for you to utter the *wh*-exclamative *(My,) What cards you picked!*. This is evidence that *wh*-exclamatives cannot be used to exclaim about note-worthy or remarkable individuals in the way that sentence exclamations can be used to exclaim about note-worthy or remarkable propositions. In other words, *wh*-exclamatives and sentence exclamations differ in whether they are felicitous in situations in which a speaker finds it note-worthy that a predicate is true of certain individuals as opposed to other individuals.

There are two important correlates of this observation: 1) *what* can range over degrees in exclamatives; and 2) *wh*-exclamatives like (18) 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 modus operandi. In particular, questions seem to be the only sort of construction in which *what* can't range over degrees, as (20) demonstrates.[7]

(20)   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).

(21)   Mike put [$_{RC}$ what things he could] into his pockets.   (Carlson, 1977)
        a. #individual reading: $\forall x$[M could put x into his pockets → 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

(22)   It would take days to drink [$_{RC}$ 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.

(18) 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); 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 §5.3 and argue that the phenomenon is more general.

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[7]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 are 'E-only' (only possible in exclamatives).

3.2 Degrees versus kinds and manners

Individuals and degrees are not the only types of entity around; it's possible that *wh*-phrases could be ranging over something else, like kinds. But there is reason to doubt this; if exclamatives could be used to exclaim about kinds, 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 exclaim about gradable kinds, which suggests that apparent 'kind' readings are actually ones involving degrees.

Imagine a situation in which you expected the farmer's market to carry red apples and not green apples. Imagine further that you have no opinion about the relative difference between the two types of apples; say, you've never tasted either, you were 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, that particular exclamative cannot be used to exclaim that the apples instantiate one kind instead of another. Still, as before, the exclamative is acceptable in principle, but its use is restricted to situations in which the speaker uses it to exclaim about a degree (say, how tasty or expensive the apples are).

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:

(23) Q: How did she run the race?
      A: Beautifully.

And in fact the exclamative *(My,) How she ran that race!* can be used to exclaim about the beauty with which someone ran a race. This suggests that *how*-exclamatives can be used to exclaim about gradable manners.

But the question in (23) can also be used to elicit an answer about non-gradable manners:

(24) Q: How did she run the race?
      A: Blindfolded.

Imagine a situation in which Lou expected that Amy would run the race without a blindfold on, and she instead ran blindfolded. In such a situation, Lou's utterance of the exclamative *(My,) How she ran the race!* is infelicitous. It seems as though it cannot be used to exclaim that an action was completed in one manner as opposed to another. Intuitively, it can only be used to exclaim about

the extent to which an action was completed in a particular manner. And this is what we would predict if exclamatives were restricted to degree interpretations.

3.3   The scope of the degree restriction

The degree restriction extends to nominal and inversion exclamatives, making it a property of exclamatives generally. Given the syntactic form of nominal exclamatives, like those in (25), it seems most natural to assume that they denote individuals (as definite descriptions do).

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

If nominal exclamatives denoted individuals, we would predict that (25a) could be used to exclaim about the places Tori visited. Specifically, assuming that (25a) denotes the plural entity composed of the places Tori visited (A⊕B⊕C in a Linkian semantics), we would predict that an utterance of (25a) would be felicitous in a situation in which the speaker found it note-worthy that Tori visited A⊕B⊕C.

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 (25a) 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, (25a) can only be used to exclaim about the degree to which the places Tori visited instantiate some gradable predicate (e.g. how exotic they are). And as with *wh*-exclamatives, the same reading is available for counterparts of (25a) with overt gradable predicates like *(Oh,) The exotic places Tori visited!*.

Inversion exclamatives are subject to the degree restriction as well. (26a) cannot be used to exclaim about the fact that Adam can cook steak, only that he can cook steak e.g. particularly well. Similarly, (26b) can't be used to exclaim about the fact that Sue likes banana bread, only about the extent to which she likes banana bread.

(26)   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 (27) aren't, underscores the need to treat exclamatives and sentence exclamations as having different semantic content.[8]

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

The exclamations in (27) parallel the inversion exclamatives in (26) 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 (26). Specifically, we would predict that (27a) can be used to exclaim about the degree to which Adam can cook steak, and that (27b) could be used to exclaim about the degree to which Sue likes banana bread. But this prediction is wrong: (27a) denotes the proposition *Adam can cook steak*, and the only felicitous utterance of (27a) is one in which the speaker is exclaiming about the fact that Adam can cook steak. (Say, because the speaker knows that Adam does not know how to boil water.) (27b) denotes the proposition *Sue likes banana bread*, and the only felicitous utterance of (27b) is one in which the speaker uses it to exclaim about the fact that Sue likes banana bread. (Say, because the speaker knows that Sue hates bananas.)

To sum up this descriptive discussion: exclamatives are subject to a degree restriction, which means that they are only felicitous when used to exclaim about the degree to which entities, actions, manners or states instantiate some (gradable) property. *Wh*-exclamatives headed by *what* can be used to exclaim about the degree to which entities instantiate gradable properties; those headed by *how* can be used to exclaim about degrees associated with gradable adjectives (as in *How short you are!*) or with gradable manners (as in *How she ran that race!*). *Wh*-exclamatives headed by *how many* or *how much*, of course, can be used to exclaim about amounts or quantities.

Nominal exclamatives are also subject to the degree restriction: they can only be used to exclaim about the degree to which an entity (denoted by the definite) satisfies a gradable predicate. Inversion exclamatives, too, are subject to the degree restriction; we saw that exclamatives like *(Boy,) Does Sue like banana bread!* can also be used to exclaim about the extent to which Sue likes

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[8]Of course, 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 all and only the contexts in which *How early Sue woke up!* is. McCready (2006) discusses this effect with respect to the particle *man*, as in *Man it's hot in here!*.

banana bread but, in contrast to sentence exclamations, cannot be used to exclaim about the fact that Sue likes banana bread.

The next section discusses a second but related restriction on exclamatives.

3.4   The evaluativity restriction

Exclamatives can't be used to exclaim about just any degree; the degree in question must be particularly high on a given scale relative to a context. This doesn't follow from the degree restriction: it's logically possible for a speaker to find a degree note-worthy even if it is objectively unremarkable in that context. I'll demonstrate this briefly.

Imagine a scenario in which Mary has been led to believe that Bill owns 2 shirts, but in fact he owns 3. Imagine further that Mary and Bill live in a culture in which most people own around 20 shirts. Upon learning that Bill owns 3 shirts, it would be infelicitous for Mary to utter the exclamative in (28) despite the fact that Bill owns more shirts than she expected.

(28)   (My,) How many shirts you own!

Because Mary finds the quantity of shirts Bill owns note-worthy in this scenario, the exclamative satisfies the degree restriction. Intuitively, the reason why (28) is infelicitous in this case is because Bill doesn't own many shirts in the objective sense.

The notion of 'objectively many' I wish to evoke here is one relative to a contextually-valued standard. It's the same standard we witness in the truth conditions of positive constructions (sentences containing unmodified gradable adjectives) like (29).

(29)   a.   Bill owns many shirts.
        b.   Sue is tall.

But it's important to note that this standard isn't part of the meaning of *many* (or *tall*); *many* occurs lots of places without invoking a standard. In particular, it doesn't do so in the question in (30a), which is the question counterpart of (28).

(30)   a.   How many shirts do you own?
        b.   How few shirts do you own?

That is, (30a) doesn't presuppose that the addressee owns many shirts, in contrast to e.g. (30b),

which presupposes the addressee has few shirts.

So *wh*-exclamatives appear to have an additional requirement that the degree in question exceed a contextual standard. They have this in common with positive constructions (like (29)) but only with some questions (witness (30a)). Rett (2008a,b) calls this property **evaluativity**, and proposes an optional null degree modifier EVAL to account for the distribution of evaluativity among positive constructions, questions and comparative constructions.[9]

(31)   EVAL $\rightsquigarrow \lambda D_{\langle d,t\rangle}\lambda d.D(d) \wedge d > s$

The evaluativity restriction extends to the other types of exclamatives, as well. Consider the nominal and inversion exclamatives in (32):

(32)   a.   (Wow,) The shirts Bill owns!
        b.   (Boy,) Does Bill own shirts!

Like (28), the exclamatives in (32) are infelicitous in a situation in which Bill has objectively few shirts, regardless of whether or not Mary is surprised to find he has as many shirts as he does. Such a fact might be note-worthy – as evidenced by the felicity of a sentence exclamation like *(Wow,) Bill has three shirts!* – but that is apparently not enough to render these exclamatives felicitous.

To sum up: exclamatives, like sentence exclamations, require that the speaker believe that the content of the exclamation be note-worthy. They differ in that they must be used to exclaim about a degree, and that degree must be objectively high. While evaluativity itself isn't an unusual property of degree constructions, it is unique to degree constructions. The theory of exclamatives I present in §5 accounts for the degree restriction by way of accounting for the evaluativity restriction.

3.5   A final restriction

In the scenarios above which demonstrated the degree restriction, I specified that the speakers were unaware of any gradable property according to which the various entities I discussed could be differentiated. So in evaluating the felicity of e.g. *(My,) What desserts John baked!* you took it for granted that the speaker didn't have any opinion about the differences between one pair of

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[9]The reader might be accustomed to associating this semantic property with the operator *pos*, which gets its name from the phrase 'positive constructions' and which was proposed to explain the presence of evaluativity in positive constructions and the perceived absence of evaluativity in other degree constructions (Cresswell, 1976; Kennedy, 1999). But a theory which attributes evaluativity to *pos* makes the wrong predictions with respect to the distribution of evaluativity in ways that are very relevant to exclamatives. See Rett (2008a, in prep.) for an overview.

desserts and another pair of desserts. I only specified that the first pair was expected, the second unexpected.

But if exclamatives are only felicitous in situations in which the speaker exclaims about a degree, and if the degree can be supplied from context (as *What desserts John baked!* suggests), what's preventing a predicate like *note-worthy, remarkable, unexpected* or *surprising* from fulfilling the degree restriction? That is, in a scenario in which two pairs of desserts are differentiated only in how expected they are, why can't an exclamative like *What desserts John baked!* be (felicitously) used to reflect that the desserts John baked were particularly remarkable or note-worthy?

I'll present my answer to the question informally here; how precisely it can be implemented will become more concrete after I present the analysis in §5. Predicates like *note-worthy, remarkable, unexpected* and *surprising* differ from predicates like *delicious, exotic* and *beautifully* in that they reflect the speaker's evaluation of a situation (see also Morzycki, 2007, for discussion). While exclamatives can invoke a gradable property that receives its value from context, this gradable property cannot be one that reflects the speaker's attitude towards the relevant entities. If it did, the exclamative would count as an expression of the speaker's attitude towards the high degree to which the speaker holds some attitude. That is, valuing these exclamatives with predicates of speaker evaluation results in acts of meta-exclamation instead of acts of exclamation. I can only gesture towards some explanations of why natural language would disallow such a thing, but it's clear enough that it does: exclamatives like (33), to the extent that they sound natural, are interpreted as reflecting an objective surprise or unexpectedness rather than one oriented to the speaker.

(33) a. How very unexpected John's news is!
      b. What a surprise John's height is!

4   Question-based accounts of exclamatives

I've already mentioned the previous work on exclamatives which focuses on their ability to receive 'extreme degree' interpretations. Other analyses of exclamatives focus on their morphological similarities to questions. I'll address some of these accounts here and argue that they are hard-pressed to account for the degree restriction.

Some theorists have focused on the syntactic diversity of the forms in (1), attempting to provide a single generalization of what *wh*-exclamatives, inversion exclamatives and nominal exclamatives have in common. A representative statement of this goal is as follows:

> We say that a sentence type exists when a certain communicative function is conventionally associated with a particular grammatical structure. ...The issue that concerns us here is whether we can identify an exclamative sentence type for English once we confront the great variety of forms to which someone could intuitively assign an exclamative function (Michaelis and Lambrecht, 1996, 375).

Many analyses whose goal it is to find a common syntactic form among (1b)-(1d) characterize them as related to questions in various ways (Grimshaw, 1977, 1979; Gutiérrez-Rexach, 1996; Zanuttini and Portner, 2003, among others). Specifically, exclamations like (1b) look like *wh*-questions, exclamations like (1c) look like yes/no questions,[10] and exclamations like (1d) look like concealed questions (e.g. *I know the capital of France*; although see Portner and Zanuttini, 2005, for an account of nominal exclamatives distinct from the one in Zanuttini and Portner 2003).[11]

4.1 Domain-widening in Zanuttini and Portner (2003)

I'll argue here that question-based theories of exclamation have two weak points: 1) if exclamatives mean what they mean because they're like questions, they can't mean what they mean because they're like sentence exclamations; and 2) without incorporating a theory of structured propositions, accounts of exclamatives which operate at the level of sets of propositions cannot distinguish between propositions "about" degrees and propositions "about" individuals, and therefore cannot account for the degree and evaluativity restrictions. I'll take the semantic theory presented in Zanuttini and Portner (2003) as representative of such accounts and use it to illustrate these weak points.

A fundamental claim of Zanuttini and Portner (2003) is that the contribution of *wh*-exclamatives to discourse comes from domain widening, a concept adapted from Kadmon and Landman's (1993) theory of *any*. They assume, following the semantic analysis of questions in Karttunen (1977), that

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[10]I'm taking a liberty here in my discussion of this parallel; some of these authors have noted the parallel between inversion exclamatives and yes/no questions, but as far as I know, semantic proposals like that in Zanuttini and Portner (2003) were not intended to cover inversion exclamatives.

[11]This parallel might only be superficial: nominal exclamatives can only be formed from definites, but recent work on concealed questions (Nathan, 2006; Frana, 2007; Caponigro and Heller, 2007) suggests that they can be formed with indefinites and universals in addition to definites.

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, exclamatives cannot function as assertions or questions. They are only semantically coherent if they include an operator ('$R_{widening}$') which requires that the domain of quantification indicated by the *wh*-phrase be particularly wide.

Here's an illustration of how the Zanuttini and Portner (2003) account works, in reference to the exclamative in (34).

(34)   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 $R_{widening}$, 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 [(34)] 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 [(34)] thus causes the domain of $R_{widening}$, D1, to be expanded to D2, including this additional type. This expansion of the domain is the widening component of meaning of exclamatives (p.50).

So the denotation of (34) in this context, in this account, is something like (35).

(35)   ⟦What things he eats!⟧
        = {He eats poblano, He eats serrano, He eats jalepeño, 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 describe, "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 sincerity in §2.1 that they don't believe all exclamatives indicate this.) This contribution to discourse in their theory comes only 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 as a relevant possibility. Learning that ones expectations are not met is precisely what gives rise to a feeling of

surprise" (p56). 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," p51.)

4.2 Some problems with domain-widening

There are several problems with this approach. Some have to do with Zanuttini and Portner's assumptions about the discourse-level contribution of exclamatives, and one has to do with the semantic content the theory assigns exclamatives.

In assimilating exclamatives to questions, Zanuttini and Portner (2003) argue that however the utterance of an exclamative affects the discourse, it does so by expanding the set of relevant propositions that are in the common ground. This analysis assumes a) that the content of an exclamative is not new to either the speaker or the hearer (otherwise it would not be in the common ground); and b) that the content of an exclamative is presupposed to be true by both the speaker and the hearer. These are both incorrect assumptions.

First, exclamatives, like sentence exclamations, are felicitous in situations in which the content of the exclamative is new to the hearer. Imagine Mary and Sue are discussing John, and furthermore that the only thing Sue knows about John is that he is a successful architect. It seems felicitous, in this context, for Mary to exclaim, *What a great guy John is!* to simultaneously inform Sue that John is a great guy and to demonstrate that she finds the extent to which he is great remarkable or note-worthy.

Second, it is not the case that exclamatives are only felicitous in situations in which the hearer (in addition to the speaker) believes the content of the exclamative to hold. This is evidenced by the fact that it's possible for an interlocutor to deny the content of an exclamative. Imagine a situation in which Mary and Sue are discussing John. Imagine further that Mary loves John, but Sue has had a terrible experience with John and has reason to believe that he's a swindler. In this context, the following exchange is felicitous:

(36)   Mary: (Oh,) What a great guy John is!
        Sue: Not really! He swindled me!

(36) shows that it is felicitous for Mary to utter an exclamative whose content (how great of a guy John is) isn't in the common ground; it also shows that it's possible for a hearer to deny the content of an exclamative.

More generally, assimilating exclamatives with questions appears to preclude their assimilation with sentence exclamation. According to Zanuttini and Portner, the discourse-level contribution of exclamatives comes about in a completely different way than the discourse-level contribution of sentence exclamation. From this point of view, the similarity of the felicity conditions of sentence exclamations and exclamatives arises independently and accidentally. This isn't an intolerable state of affairs, but it would be preferable to characterize the speech-act properties of sentence exclamations and exclamatives using the same mechanism.

Finally, it's not at all clear that the analysis in Zanuttini and Portner (2003) can be supplemented to account for or implement the degree restriction (cf. their discussion on p55). Their theory as it is overgenerates: it predicts that exclamatives are felicitous in the non-gradable individual, kind and manner scenarios discussed in §3. Recall that, in their account, the discourse-level contribution of exclamatives comes about as the result of exclamatives denoting a widened set of true propositions. To get the widening of a set of propositions to correspond to an increase in information, the authors assume that the propositions in these sets are ordered with respect to some property valued by context, e.g. likelihood. Unless we amend it to operate on structured propositions (and furthermore to differentiate between propositions about degrees and propositions about e.g. individuals), the theory in Zanuttini and Portner (2003) cannot account for the degree restriction.

I'll make this point using one scenario, and then discuss it in a broader sense. Imagine that you're going to a conference and you expect to meet scholars A, B, C and D there, but you don't expect to meet scholars E and F (say, because you know that they missed their flights). Assume furthermore that you ended up meeting every one of them (A, B, C, D, E and F) after all. In this context, the set of true propositions of the form *I met X yesterday* can be ordered in terms of likelihood. This ordering is shown in (37a); it is an ordered and widened version of the set in (37b), presumably be the denotation of the *wh*-clause before it underwent widening (but after it underwent contextual domain restriction).

(37) a. <I met A yesterday, I met B yesterday, I met C yesterday, I met D yesterday, I met E yesterday, I met F yesterday>
      b. <I met A yesterday, I met B yesterday, I met C yesterday, I met D yesterday>

But we've already seen that *what*-exclamatives like *What scholars I met yesterday!* can't be felicitously used by a speaker to express surprise that she met E and F in addition to A, B, C and D when there is no salient degree property that distinguishes E and F on the one hand and A, B, C and D on the other.

The domain of times is presumably intrinsically linearly ordered. Zanuttini and Portner's theory predicts that, in the right contexts, exclamatives could be used to effectively exclaim about times. Imagine that John and Mary are discussing their friend Sue, who just recently pawned an antique necklace which she has owned for five years. Imagine furthermore that Sue is notoriously bad with money and has in the past pawned every piece of jewelry that she's come into possession of within one year of obtaining it. John and Mary are marveling at how long Sue has kept this necklace. In this context, however, it would be infelicitous for one of them to utter then exclamative in (38).

(38) What a necklace Sue owned!

The intuition is that (38) can only be used to exclaim that Sue owns a necklace that is particularly P for some gradable predicate P. But in this scenario, Zanuttini and Portner would predict that the exclamative in (38) denotes the set of true propositions in (39a).

(39) a. {Sue owned a necklace at t_1, Sue owned a necklace at t_2, Sue owned a necklace at t_3, Sue owned a necklace at t_4, Sue owned a necklace at t_5}
      b. <Sue owned a necklace at t_1, Sue owned a necklace at t_2, Sue owned a necklace at t_3>
      c. <Sue owned a necklace at t_1, Sue owned a necklace at t_2, Sue owned a necklace at t_3, Sue owned a necklace at t_4, Sue owned a necklace at t_5>

They also predict that these propositions can be ordered in a way dictated by context – in this scenario, plausibly, the times at which she's owned the necklace – and that the exclamative denotes the ordered set in (39c) instead of the (contextually restricted) set in (39b). In their theory, it's this widening that gives the exclamative its meaning. In other words, they predict that (38) can be used to exclaim about the number of years she's owned the necklace.

What's more, there are a number of different ways a set of propositions can be ordered by context. Theories of modality, beginning with Kratzer (1977), assume that modals contribute to

the meaning of a sentence an ordering source and quantificational force. Imagine that Sue is an English major whose advisor gave her a summer reading list. In this context, the sentence *Sue must read books this summer* is true. According to these theories of modality, the modal *must* specifies a deontic ordering source (where the rule of law is determined by Sue's advisor) and universal quantificational force. The ordering source orders possible worlds in terms of how they conform to Sue's advisor's demands; the more a world conforms to Sue's advisor's demands, the higher it is in the ordering source. Because *must* contributes a universal modal, the sentence *Sue must read books this summer* is true iff all of the worlds which best comply with Sue's advisor's demands are worlds in which Sue reads books this summer.

If these theories are right, then context can provide an ordering of propositions within a set in terms of possible worlds. And, given a context which makes this ordering salient, Zanuttini and Portner (2003) might predict that e.g. (40) could be uttered to exclaim about just how strong the requirement that Sue read books this summer is.

(40)   (My,) What books Sue must read this summer!

To sum up: Zanuttini and Portner's account needs to be amended to better reflect the demands of exclamatives on the epistemic commitments of speakers and hearers. But this wouldn't be enough to properly account for restrictions on the interpretations of exclamatives. The degree restriction shows that exclamatives must be "about" degrees, and that this is different from being "about" propositions that are ordered with respect to a salient property. To be able to differentiate between degree-related content and non-degree-related content, question-based accounts of exclamatives might be able to incorporate theories of structured propositions (see von Stechow, 1984; Cresswell, 1985, for some examples), but it's not clear to me how effective this amendment would be within the Zanuttini and Portner (2003) framework. Below, I argue that the illocutionary force of exclamation differentiates between degree-related content and non-degree-related content by requiring that open arguments exceed a contextually relevant standard. This makes the right prediction with respect to other types of entities and does so in an intuitive way: exclamatives have a 'high degree' meaning because they are formed from constructions which denote evaluative degree properties.

5 The illocutionary force of exclamation

Exclamations are used by speakers to exclaim something, and I've argued that they can only be used to exclaim about propositions (for sentence exclamations) and degrees (for exclamatives). In this section, I propose an account based around the illocutionary force for exclamation, which I call 'E-Force'. If the content of an exclamation is a proposition, E-Force requires that a speaker find that proposition note-worthy. If the content of an exclamation is a function other than a proposition, E-Force additionally restricts the domain of the function to entities which exceed a contextually valued standard. A consequence of this is the degree restriction: E-Force is compatible only with forms that denote propositions or degree properties (type $\langle d, t \rangle$)[12] rather than individual properties, etc.

I'll first discuss what it means to have illocutionary force operate on non-propositional content. I'll then present a characterization of E-Force. The remaining sections discuss why and how *wh*-clauses, definite descriptions and inversion constructions might come to denote degree properties.

5.1 Speech acts and non-propositional content

Searle (1969) symbolized the illocutionary act as $F(p)$, with F the illocutionary force and p the propositional content denoted by the articulated material. But exclamatives clearly don't denote propositions. This disconnect is a problem for all theories of exclamatives, including those which characterize them as denoting sets of propositions. It's also a problem for theories about non-assertoric speech acts like questions and imperatives (Bierwisch, 1980).

Questions denote, depending on who you talk to, either sets of propositions (Hamblin, 1973; Karttunen, 1977) or properties (Groenendijk and Stokhof, 1989), so we need a formulation of the illocutionary force of questioning whose domain is non-propositional content. Similarly, Hausser (1980) and Portner (2007) suggest that imperatives (like *Leave!*) denote properties (although see Huntley, 1984, for a different perspective). While the illocutionary force of assertion can be a function from propositions, Hausser takes for granted the fact that the illocutionary force of non-proposition-denoting forms must restrict or value open arguments. Hausser's illocutionary force operator for imperatives does so by requiring that the open argument corefer with the hearer.

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[12]I've kept this discussion extensional. A more explicit account would involve degree properties of type $\langle d, \langle s, t \rangle \rangle$ and propositions p (see (41)) of type $\langle s, t \rangle$.

Portner assumes that imperatives denote properties that can only be true of the addressee.[13]

Since exclamations can be formed with declarative sentences, which denote propositions, as well as other constructions which do not, the illocutionary force operator of exclamation must be able to similarly constrain its input when necessary. In what follows, I'll propose E-Force does just that. This might sound unusual, because we (and certainly Searle) associate speech acts like assertions with one and only one semantic type. But it's necessary for exclamation, and possibly for other speech acts as well: there is reason to think that theories of assertoric force, too, need to deal with a variety of inputs. Han (2002), for instance, argues that rhetorical questions are assertions formed with *wh*-clauses (*Who likes eggplant?!* for 'No one likes eggplant') and inversion sentences (*Didn't I tell you that writing a dissertation would be hard?!* for 'I told you that writing a dissertation would be hard').

5.2 E-Force

I've argued that there are two restrictions on the semantic objects underlying exclamatives: they must be about degrees (as opposed to individuals, kinds, manners, etc.); and the degree must exceed a contextual standard. An important observation here is that this second requirement ensures the first. As discussed in §4, the degree domain isn't the only domain that is intrinsically ordered, but it is the only domain for which we have independent evidence of standards. In other words, there is no parallel of the positive construction in other domains: there is no interpretation of *I will eat a slice of pizza*, for instance, that requires the tense to pick out a future time which is significantly far in the future. For whatever reason, contextually valued standards are unique attributes of degree scales, and reference to contextually valued standards are unique to degree constructions (see Rett, in prep., for discussion). If the illocutionary force operator of exclamation requires that an open argument in a proposition exceed a standard, then the degree restriction falls out automatically.

I therefore characterize E-Force as follows:

(41) E-Force(Υ) uttered by a speaker S is felicitous in a context C iff:
  (i) S has direct evidence for p;
  (ii) S believes p; and
  (iii) S finds p note-worthy or remarkable; Where $p = \Upsilon$ or $p = \exists x \in D_{\langle \tau \rangle}[x > s \wedge \Upsilon(x)]$.

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[13]Others, like Han (2000), have argued from cross-linguistic data that the operator that gives imperatives their illocutionary force is syntactically realized.

When defined, E-Force(Υ) counts as an expression of S's attitude towards p.

The disjunction allows Υ to range over a variety of semantic types. If Υ denotes a proposition, then E-Force(Υ) will be felicitous iff the speaker has direct evidence for, believes, and finds the denotation of Υ note-worthy in the context of utterance. If Υ denotes a function to a proposition, then E-Force(Υ) will be felicitous iff there exists an input x to the function denoted by Υ such that x exceeds a standard, and the speaker has direct evidence for, believes and finds the resulting proposition note-worthy.

I have used the variable x to range over possible inputs. The definition in (41) allows x to be of any type τ, so E-Force doesn't explicitly restrict the content of exclamatives to be about degrees. It is the restriction $[x > s]$ that in practice requires that x range only over degrees. It is by virtue of its requirement that denoted properties encode evaluativity that E-Force comes to enforce the degree restriction.

I'll first demonstrate how E-Force works on *wh*- and nominal exclamatives with overt gradable predicates. The next section discusses how *wh*- and nominal exclamatives without overt gradable predicates.

I assume that all exclamatives denote degree properties. This 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). The relevant assumption is that *wh*-phrases are modifiers which contribute, depending on the *wh*-phrase, restrictions like animacy (Caponigro, 2004). I assume below that the range of *what* is unspecified in English (it's the *wh*-phrase used in English to range over miscellany, like propositions in *What do you think?*).

(42) $[\![\text{what}]\!] = \lambda P_{\langle\tau,t\rangle}\lambda x_{\langle\tau\rangle}.P(x)$ *(for any type τ)*

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]$_i$ John bakes t_i* 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).

I've subscripted the traces below with indices as well as their types. Because t_i is the trace of a moved DP, its type is $\langle e \rangle$. Because t_j 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 (43c)). The result is that the compositional semantics of certain nodes on the tree (e.g. (43c)) employs the rule of predicate modification rather than function application.

(43)   [what$_j$ [[$t_{j_{\langle d \rangle}}$ delicious desserts]$_i$ John baked $t_{i_{\langle x \rangle}}$]]

    a. $⟦$John baked $t_{i_{\langle x \rangle}}⟧$ = baked$'$(john,x)

    b. $⟦t_{j_{\langle d \rangle}}$ delicious desserts$⟧$ = $\lambda x.$desserts$'(x) \wedge$ delicious$'(x,d)$

    c. $⟦t_{j_{\langle d \rangle}}$ delicious desserts$⟧(\lambda x_i.⟦$John baked $t_{i_{\langle x \rangle}}⟧)$
$$= \lambda x.\text{baked}'(\text{john},x) \wedge \text{desserts}'(x) \wedge \text{delicious}'(x,d)$$

    d. $⟦$what$⟧(\lambda d_j.⟦t_{j_{\langle d \rangle}}$ delicious desserts John baked $t_{i_{\langle x \rangle}}⟧)$
$$= \lambda d \lambda x.\text{baked}'(\text{john},x) \wedge \text{desserts}'(x) \wedge \text{delicious}'(x,d)$$

    e. $\leadsto_{\exists closure}$ $\lambda d \exists x[\text{baked}'(\text{john},x) \wedge \text{desserts}'(x) \wedge \text{delicious}'(x,d)]$

Notice that (43) denotes a degree property, but it does not denote an evaluative degree property (there is no additional conjunct like $\wedge\ d > s$). It need not. When applying to the denotation of a *wh*-clause like *what delicious desserts John baked*, E-Force will result in a felicitous exclamation only if there is some degree in the denoted set which exceeds the standard. In this respect, E-Force is doing the work of the EVAL modifier proposed in Rett (2008a,b), and this is because the data suggests that it does; all exclamatives are evaluative, while it is not the case that all assertions and/or questions are.

This restriction of E-Force also accounts for the fact that exclamatives can only be formed with *wh*-clauses which are headed by *wh*-phrases that can range over degrees.

(44)   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!)

A plausible explanation for the unacceptability of (44d)-(44g), given the restriction on interpretations demonstrated above, is that they are headed by *wh*-phrases which cannot range over degrees.[14]

This formulation of E-Force also correctly predicts that multiple *wh*-clauses do not make ac-

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[14]This can't be the whole story, as Zanuttini and Portner (2003) report that *wh*-exclamatives headed by *who* are acceptable in Paduan. See Rett (2008b) for discussion.

ceptable exclamatives; E-Force allows Υ to denote one-place functions but not two-or-more-place functions.[15]

(45) a. *How very fat how very many people are! (*intended*: lots of people are very fat)
      b. *What funny people what nerdy people are! (*intended*: very funny people are very nerdy)

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 (46), followed by a derivation for the nominal exclamative *(Oh,) The exotic places Tori visited!*.[16]

(46) $[\![\text{the}]\!] = \lambda \mathcal{P}_{\langle d, \langle e, t \rangle \rangle} \lambda d \iota x [P(x)(d)]$

(47) $[\text{ the } [\text{ exotic places }] [\text{ } wh_i \text{ Tori visited } t_{i_{\langle x \rangle}}]]$
      a. $[\![wh_i \text{ Tori visited } t_{i_{\langle x \rangle}}]\!] = \lambda x.\text{visited}'(\text{tori}, x)$
      b. $[\![\text{exotic places}]\!] = \lambda d \lambda x.\text{places}'(x) \wedge \text{exotic}'(x, d)$
      c. $[\![\text{exotic places } wh_i \text{ Tori visited } t_{i_{\langle x \rangle}}]\!] = \lambda d \lambda x.\text{visited}'(\text{tori}, x) \wedge \text{places}'(x) \wedge \text{exotic}'(x, d)$
      d. $[\![\text{the}]\!]([\![\text{exotic places } wh_i \text{ Tori visited } t_{i_{\langle x \rangle}}]\!])$
          $= \lambda d \iota x [\text{places}'(x) \wedge \text{visited}'(\text{tori}, x) \wedge \text{exotic}'(x) = d]$

I'll now turn to an analysis of the counterparts of these exclamatives without overt gradable adjectives. I'll start by discussing measurement operators, which have been proposed elsewhere in the degree semantics literature for dealing with degrees in the absence of overt degree morphology.

5.3 Degrees without degree morphology

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

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[15]Ono (2006) argues that multiple-*wh*-exclamatives are acceptable in Japanese (p.71), but observes that one of the degree properties must be dependent on the other degree property. This makes it an open question whether or not the semantics treats these forms as involving two independent *wh*-phrases.

[16]The constituency of the material in the DP head is up for debate. As I've presented it in (47) (following Partee, 1976), the degree argument contributed by the gradable adjective *exotic* must be curried (or Schönfinkelized) for the individual modification of $[\![\text{exotic places}]\!]$ and $[\![wh_i \text{ Tori visited } t_{i_{\langle x \rangle}}]\!]$. If the constituency is instead $[$ the $[$ exotic $[$ places $[$ wh_i Tori visited $t_{i_{\langle x \rangle}}]]]]$ (as in Chomsky, 1975), no currying is needed. A brief discussion of this difference and debate is in Heim and Kratzer (1998) p.83.

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.

In this solution, entities can optionally be associated with a degree representing a measure whose dimension is supplied by context. 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.

5.3.1 Measurement operators

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 – presumably 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. 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 other than quantity. These accounts

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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). Schwarzschild, as well as Kennedy and Svenonious, focus on the composition of measure phrases ('MPs') like *two inch* and noun phrases. Schwarzschild's account relies on measurement operators to help explain the different dimensions invoked in partitive MP constructions like (48a) and attributive MP constructions like (48b).

(48) a. two inches of cable   *dimension:* **length**
      b. two-inch cable   *dimension:* **width**

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 (48) ensure that μ 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 (49).

(49)   M-Op $\leadsto \lambda d\lambda x.\mu(x) = d$, where μ, a measurement function, is valued contextually[17]

The idea is that M-Op can occur freely with entities which can be measured. I focus on individuals, here, but Nakanishi provides compelling reasons to think that M-Op can measure events as well. 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, at least in those theories which disassociate evaluativity and argument binding (like Rett, 2008a,b).

So far, the data we've seen that provide motivation for measurement operators have all involved numerals (either in isolation or as part of an MP). One might argue based on this observation that the distribution of freebie degrees is conditioned by numerals or MPs, or that measurement op-

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[17]This is the predicative version; the attributive version is $\mu \leadsto \lambda d\lambda P\lambda x.P(x) \wedge \mu(x) = d$.

erators are selected by numerals or MPs, or so forth. But there are other constructions that demonstrate the need for measurement operators. I'll argue that exclamatives are just such a phenomenon; to support this extension of measurement operators, I'll discuss another such phenomenon: 'exceeds' comparatives.

English employs many comparison strategies, the most canonical of which is one involving the degree quantifier -*er* (or, for quantities, *more*). 'Exceeds' comparatives comprise an additional, lexicalized strategy (in addition to other strategies like *I am tall relative to you*). They're unusual in that the parameter or dimension of comparison, contributed by an adjective in arguments of other comparatives, is only optionally specified (via an *in*-PP).

As a result, 'exceeds' comparatives can be ambiguous with respect to the dimension of comparison. The comparative in (50), in a context in which you and I are discussing a beauty pageant, will most probably refer to the attractiveness of our children.

(50)   My child exceeds your child.

An unambiguous version would use a PP to explicitly identify the dimension of comparison: *My child exceeds your child in beauty.* In another context – one in which we are discussing potential colleges – the dimension of comparison invoked by (50) would be quite different (something like intelligence, or athleticism). Because 'exceeds' comparatives appear to be comparing degrees without containing numbers or gradable predicates, they appear to provide additional evidence for the need for measurement operators, and initial evidence that these measurement operators can occur optionally on any noun.

To sum up: measurement operators – functions from entities to degrees on some contextually-determined scale – have long been invoked to account for a variety of data. They are most canonically used in theories of numerals or MPs, but these "freebie degrees" seem to pop up in a variety of constructions: amount relatives like *Bill put what he could in his pockets* (see §3; Carlson, 1977; Grosu and Landman, 1998) are one example, 'exceeds' comparatives are another.

5.4 Measurement operators in *wh-* and nominal exclamatives

5.4.1 *Wh-* and nominal exclamatives and M-Op

Wh- and nominal exclamatives which lack overt gradable adjectives differ from their counterparts like (43) and (47) 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.

(51)   [what$_j$ [[$t_{j_{\langle d \rangle}}$ M-OP desserts]$_i$ John baked $t_{i_{\langle x \rangle}}$]]
     a. $[\![$John baked $t_{i_{\langle x \rangle}}]\!] = \text{baked}'(\text{john},x)$
     b. $[\![t_{j_{\langle d \rangle}}$ M-OP desserts$]\!] = \lambda x.\text{desserts}'(x) \wedge \mu(x) = d$
     c. $[\![t_{j_{\langle d \rangle}}$ M-OP desserts$]\!](\lambda x_i.[\![$John baked $t_{i_{\langle x \rangle}}]\!])$
$$= \lambda x.\text{baked}'(\text{john},x) \wedge \text{desserts}'(x) \wedge \mu(x) = d$$
     d. $[\![$what$]\!](\lambda d_j.[\![t_{j_{\langle d \rangle}}$ M-OP desserts John baked $t_{i_{\langle x \rangle}}]\!])$
$$= \lambda d \lambda x.\text{baked}'(\text{john},x) \wedge \text{desserts}'(x) \wedge \mu(x) = d$$
     e. $\rightsquigarrow_{\exists closure} \lambda d \exists x[\text{baked}'(\text{john},x) \wedge \text{desserts}'(x) \wedge \mu(x) = d]$

(52)   [the [M-OP places] [wh_i Tori visited $t_{i_{\langle x \rangle}}$]]
     a. $[\![wh_i$ Tori visited $t_{i_{\langle x \rangle}}]\!] = \lambda x.\text{visited}'(\text{tori}, x)$
     b. $[\![$M-OP places$]\!] = \lambda d \lambda x.\text{places}'(x) \wedge \mu(x) = d$
     c. $[\![$M-OP places wh_i Tori visited $t_{i_{\langle x \rangle}}]\!]$
$$= \lambda d \lambda x.\text{visited}'(\text{tori},x) \wedge \text{places}'(x) \wedge \mu(x) = d$$
     d. $[\![$the$]\!]([\![$M-OP places wh_i Tori visited $t_{i_{\langle x \rangle}}]\!])$
$$= \lambda d \iota x[\text{places}'(x) \wedge \text{visited}'(\text{tori},x) \wedge \mu(x) = d$$

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.

The formulation of E-Force in (41) thus predicts that any string that denotes a degree property can be used to express an exclamative. Combining this theory of E-Force with the extant degree-semantic notion of measurement operators, we predict that degree-property-denoting strings can come in a variety of different forms: headless and headed nominal relatives, headless adjectival relatives like *How silly!*, etc. As discussed in Villalba (2003) and Castroviejo (2006), languages like Catalan even allow exclamatives formed with the comparative morpheme.

5.4.2 Nominal exclamatives and definiteness

E-Force, along with M-Op, can account for how relative clauses headed by definite determiners can denote degree properties for the purpose of exclamation. But they cannot account for why nominal exclamatives can only be formed with definite determiners.

(53)   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)

I cannot at this time provide an account of this restriction. 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 the data in (53) reflect a more general restriction on the availability of freebie degrees rather than a requirement of the illocutionary force of exclamation, and suggest that theories of measurement operators need to be revised to be less permitting.

In particular, there is evidence from other constructions that indicates that freebie degrees in nominals are only available to definites generally. (54) shows that amount relatives can only be headed by definites ((54a) is from Heim, 1987). *Many*, which arguably modifies degrees associated with amounts (Rett, 2007, 2008b), can only modify definite descriptions in the predicative position (55). This suggests that M-Op, for whatever reason, isn't available to the nominals in (55b), which supports the prohibition of exclamatives like (53c) and (53d).

(54)   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.
(55)   a.   The/Her guests were many.
        b.   *A group of/All/Some guests were many.

I argue in §6 that it's important to differentiate between exclamatives and complements of embedding verbs like *surprise*. But the data in (56) 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 (56a), it is not available to indefinites (56b).

(56) 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 (56a) can mean that the speaker is surprised by how delicious John's desserts were, (56b) cannot mean that the speaker is surprised by how delicious some of John's desserts were.

To sum up: there's clearly a general correlation between the availability of freebie degrees introduced by M-OP and definite descriptions. I have nothing to say about the direction or nature of this correlation, or about what property of definites it relates to. I would however like to stress the generality of this phenomenon, which suggests that encoding it in the definition of E-Force would be mistaken.

This section examined how *wh*-clauses and definites use measurement operators to form degree properties; the next section suggests how they might work in inversion exclamatives.

5.5   Measure operators in inversion exclamatives

Extending E-Force to inversion exclamatives is arguably less straightforward. There appears to be a connection between the subject-auxiliary inversion displayed in inversion exclamatives and their degree reading: sentence exclamations, which form a minimal pair with inversion exclamatives, can but need not receive a degree interpretation (57), but inversion exclamatives, like other exclamatives, are subject to the degree restriction (58).

(57) (Wow,) Susan woke up early!
      a. *proposition interpretation*: used to exclaim the fact that Susan woke up early
      b. *degree interpretation*: used to exclaim that Susan woke up particularly early

(58) (Boy,) Did Susan wake up early!
      a. #*proposition interpretation*: used to exclaim the fact that Susan woke up early
      b. *degree interpretation*: used to exclaim Susan woke up particularly early

The fact that sentence exclamations can receive these proposition interpretations but inversion exclamatives cannot suggests that there's a correlation between subject-auxiliary inversion and its degree interpretation. I'll pursue that idea informally below.

First, I'd like to emphasize that there are several reasons to disassociate inversion exclamatives and yes/no questions, and therefore against a semantic theory in which they receive similar treatment. McCawley (1973) consists of a long list of syntactic and semantic differences between yes/no

questions and inversion exclamatives. Here are a few: the former but not the latter are compatible with negation *(*Boy, isn't syntax easy!)*; the former but not the latter license NPIs (*ever* in inversion exclamatives is an intensifier: *(Boy,) Are you ever hungry!*); the former but not the latter can contain degree quantifiers like the equative and superlative **(Boy,) is she the prettiest girl in your class!)*.

Furthermore, however tempting it might be to assimilate the inversion in yes/no questions with the inversion in inversion exclamatives, this assimilation falls apart within the broader picture of exclamatives: while inversion exclamatives and yes/no questions both display inversion, only constituent questions (but not *wh*-exclamatives) display inversion. Brandner (2010) encodes this difference between *wh*-exclamatives and inversion exclamatives in a difference between the operators used to form questions and exclamations respectively, as well as the varying strength of related syntactic features. While I disagree with some of Brandner's assumptions – she assumes that *wh*-exclamatives, but not inversion exclamatives, are subject to the degree restriction – I do not intend to argue against Brandner's theory. It may well be that her syntactic account is compatible with E-Force.

The first claim I'll make about inversion exclamatives is that the degree reading they receive is eventuality-related, rather than individual-related. (I use the term 'eventuality' to refer to a class which includes both events and states.) That is, in an inversion exclamative which lacks an overt gradable adverb or adjective, M-OP measures the eventuality associated with the verb, rather than the individual associated with the noun. (Recall that Nakanishi, 2007a,b, proposes an event version of M-OP for independent reasons.) The exclamative in (59) 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. challenging.

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

The degree readings of *wh*- and nominal exclamatives with measurement operators could be paraphrased using adjectives, as in (60).

(60)   a.   (My,) What (delicious) desserts John bakes!
          b.   (Oh,) The (exotic) places Tori visited!

This suggests that inversion exclamatives, then, can be paraphrased using adverbs. But inversion exclamatives are awkward with overt adverbs, in contrast to (60). This is also addressed in McCawley (1973); she discusses intensifiers like *very*.

(61)   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)!

So it appears as though an exclamative can be formed with a clause which displays subject-aux inversion iff: (a) it denotes a degree property; (b) the degree property is associated with an eventuality; and (c) if it's M-Op measuring the eventuality. I don't have an explanation for why there is a one-to-one correlation between subject-auxiliary inversion and the application of M-Op to the eventuality denoted by a main verb; it's possible that this phenomenon could be assimilated with other instances of inversion triggered by a variety of operators in CP (like the Q operator, or negation), or that it could be accounted for in the same way as verum focus in yes/no questions (Romero and Han, 2004). But it seems clear to me that there is such a correlation.

To sum up this section: I have characterized E-Force, the illocutionary force operator of exclamation. Its disjunctive definition accounts for the observation that E-Force can have either propositions or properties in its domain. That it requires the open argument of the denoted material to exceed a contextual standard accounts for the evaluativity restriction, and indirectly the degree restriction. The prediction is therefore that exclamations can be expressed with any construction whose content is a degree property or a proposition. This prediction is manifested clearly in the case of *wh-* and nominal exclamatives once we borrow the notion of freebie degrees and their origin from other theories within degree semantics. It is less clear how and why sentences which display inversion can and must denote degree properties, but I've mentioned a few additional properties of inversion exclamatives which suggest that the presence of M-Op in a particular capacity might be responsible.

6 Exclamatives as speech acts

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 (one exception is Krifka, 2001).[18] Since the syntactic accounts in Elliott (1974) and Grimshaw (1977, 1979), however, clauses embedded under verbs like *be surprised* have been termed "embedded exclamatives", and it has become routine to infer from the behavior of these embedded clauses to the behavior of root exclamations.

I'll start this discussion by presenting Grimshaw's original reason for differentiating between 'embedded questions' and 'embedded exclamatives'. I'll then present several reasons to think that clauses embedded under *I am surprised* and root exclamations are very different things, that E-Force is consequently different from *I am surprised*, and that it's wrong to infer from the behavior of one to the behavior of the other.

6.1 Motivation for 'embedded exclamatives'

The main motication for embedded exclamatives is Grimshaw's (1977; 1979) observation that sentences like (62) are ambiguous:

(62)   John knows how high the ceiling is.

Grimshaw dubs the two readings the 'question' and 'exclamative' readings. Imagine that the ceiling at issue is 300cm high. The 'question' reading of (62) 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 (62) 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.

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[18]Green (2000), for instance, develops a theory of Embedded Force Exclusion: "If ϕ is either a part of speech or a sentence, and ϕ contains some indicator f of illocutionary force, then ϕ does not embed". See also Price (1994); Zimmerman (1980).

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

Based on these observations, Grimshaw used the presence of intensifiers in subordinated clauses as a diagnostic for the 'exclamative' reading. She consequently categorized embedding verbs into those which couldn't, could, and must take exclamatives. *Ask* is an example of the first, *know* of the second, and *be surprised* of the third.

(64)   a.   John asked how (*very) cold it is outside.
         b.   John knows how (very) cold it is outside.
         c.   John is surprised at/by how (very) cold it is outside.

However, there is an account of the distribution of intensifiers in *wh*-clauses which is independent of their status as exclamatives, and there is also an independent account of the ambiguity of (62). I'll describe these in turn.

First: it's generally assumed that intensifiers can't occur in questions, thus explaining the contrast in (64) and that in (65) and (66).

(65)   a.   How very many shirts Bill owns!
         b.   How incredibly large your garden is!

(66)   a.   *How very many children does Bill have?
         b.   *How incredibly large is your garden?

But Abels (2004) provides an account of the unacceptability of these intensifiers in questions, arguing that most questions carry a presupposition of speaker ignorance with respect to the answer, and this presupposition is incompatible with evaluativity (or the meaning contributed by the intensifier). He argues that, when 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.

Second, the reading that Grimshaw dubbed the 'exclamative' reading is something we've already seen: it's an evaluative reading. Specifically, the two readings of (63) differ only in the presence or absence of evaluativity (whether or not the degree in question exceeds a contextually-valued standard). The 'question' reading involves the degrees to which the ceiling is high; the 'exclamative'

reading involves the degrees above the relevant standard to which the ceiling is high. Notice that a version of (63) with a negative antonym, as in (67), is unambiguous:

(67)   John knows how low the ceiling is.

(67) can only have the 'exclamative' reading in which John knows that the ceiling is low. This has to do with the relationship between positive and negative antonyms and its effect on evaluativity (see Rett, 2008a,b) and should not be attributed to the semantics of the embedding verb. As with intensifiers, negative antonyms are only acceptable as questions (e.g. embedded under *ask*) in contexts where the presupposition is satisfied, as in (68).

(68)   The real estate agent came out rubbing the top of her head, so John asked her how low the ceiling is.

As we've seen, exclamatives are evaluative, but so are lots of other degree constructions, which makes it a bad idea to associate evaluativity in this case with exclamatives. The difference between the two readings in (63) falls out of the analysis of evaluativity in Rett (2008a,b,in prep.) In this account, the *wh*-clause *how high the ceiling is* is ambiguous between the two denotations in (69).

(69)   a. $[\![\text{how}_i \text{ the ceiling is } t_i \text{ high}]\!] = \lambda d.\text{high}'(\iota x[\text{ceiling}'(x)], d)$
        b. $[\![\text{EVAL how}_i \text{ the ceiling is } t_i \text{ high}]\!] = \lambda d.\text{high}'(\iota x[\text{ceiling}'(x)], d) \wedge d > s$

(67) on the other hand, because it involves a negative antonym, can only receive an evaluative interpretation. This is for reasons to do with the difference in markedness between positive and negative antonyms, as well as differences between forms like *wh*-clauses and comparatives. There is a clear and predicted parallel in equatives too:

(70)   a.   John is as tall as Mary.
        b.   John is as short as Mary.

While (70a) is compatible with Mary being tall or not particularly tall, (70b) is only acceptable in a situation in which Mary is known to be short.

To sum up: Abels has convincingly argued that the presence of intensifiers in *wh*-clauses is conditioned contextually, because intensifiers have strong presuppositions, not the clausal type of *wh*-clauses. And Rett's EVAL theory predicts the ambiguity of *wh*-clauses embedded under *know* using independent means (and, given (67), better than Grimshaw can). So we have lost the original

motivation for associating exclamatives and embedded clauses. In the next section, I'll argue that doing so is not only unmotivated, but a bad idea.

6.2   Disassociating exclamation from embedded clauses

I argued earlier that it makes sense to characterize exclamatives as speech acts, on par with sentence exclamations. 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).

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

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

The question is this: are E-Force and embedders like *I am surprised* the same thing? I argue here that they're very different. This supports the characterization of E-Force I presented above, and it also means that we should not infer from the properties of embedded clauses to properties of exclamations.

There is one difference between E-Force and *I am surprised* that parallels the difference between all illocutionary force operators and their embedding verb counterparts. In a context in which a speaker is surprised, both E-Force and *I am surprised* can signify the speaker's expression of surprise. But they differ in how the surprise is signified. While embedders like *I am surprised* result in assertions, which can be either true or false, it is not possible to affirm or negate the content of E-Force.

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

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

While (73) isn't entirely natural – it seems odd for one interlocutor to confirm or deny another's emotional state – (74) is comparatively terrible. The affirmation *yes* in (74) can only be interpreted as affirming the fact that A won the contest.

Furthermore, *be surprised*, and any related embedding verb, don't pass Searle's test for performatives:

(75)   a. #I am hereby surprised that John likes pizza.
        b. #I hereby exclaim that John likes pizza.

If exclamatives indeed form a subset of exclamations, and if exclamations are expressives and therefore performatives, this is a compelling reason to disassociate the illocutionary force of exclamation from these embedding verbs.

But the main and unique difference between exclamations and clauses embedded under *be surprised* is the types of forms each context permits. Clauses displaying subject-auxiliary inversion are entirely unacceptable embedded.

(76)   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* (77); it also means that it can embed things like multiple *wh*-clauses (78) (Huddleston, 1993; Lahiri, 2002).

(77)   a.   I'm surprised at/by who came to the party.
        b.   I'm surprised at/by why he bought a horse.
(78)   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.

(79)   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, root exclamatives are subject to the degree and evaluativity restrictions; clauses and nominals embedded under *be surprised* are not.

(80)   a.   (My,) What desserts John baked!
        b.   I am surprised at/by what desserts John baked.

(81)   a.   (Oh,) The places Tori visited!
         b.   I am surprised at/by the places Tori visited.

(80b), but not (80a), 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. (80a), but not (80b), 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 argument can be replicated for the nominal exclamative in (81).

To sum up: E-Force and *be surprised* differ in how they encode the speaker's expression. They differ in the types of syntactic objects they can take as arguments. Within those types of arguments they have in common, E-Force can occur with only a subset of those that *be surprised* can occur with. And, the few forms that E-Force and *be surprised* can both take as arguments are interpreted differently in each context. As a result, we have no reason to associate the meaning contributed by E-Force and that contributed by *I am surprised*.

7   Conclusion

The goal of this paper has been a unified account of the data in (1) – sentence exclamations and exclamatives – based on the observation that they seem to be making the same contribution to discourse. But there is reason to distinguish them: exclamatives, but not sentence exclamations, are subject to the evaluativity and therefore the degree restriction. I have proposed a characterization of the illocutionary force of exclamation, E-Force, which requires that an exclamation must denote either a proposition that the speaker finds note-worthy or a function to a proposition the speaker finds note-worthy whose input must exceed a contextually valued standard. Because the degree domain is the only domain to have contextual standards, E-Force also accounts for the degree restriction. And the theory has morphosyntactic consequences: it predicts that all and only constructions which denote degree properties can be used as exclamations.

The analysis provided here makes crucial use of a measurement operator M-Op, which is a function from individuals to a scale whose dimension is determined contextually. I've argued based on other proposals that M-Op is available in principle to all individuals and eventualities,

which correctly predicts that exclamatives without overt degree morphology can receive degree interpretations. A significant consequence of this assumption is the prediction that all sorts of strings, like the questions headed by *what* in (20), can receive degree interpretations. This is too broad of a prediction, and more work needs to be done to rein it in. I have observed, but provided no explanation for, the fact that freebie degrees can be associated with definite descriptions but not indefinites or other quantifiers. I've also observed (but not explained) that the inversion displayed in inversion exclamatives is correlated with the presence of M-Op measuring eventualities.

There are several ways in which exclamatives might be unique as a speech act: they don't appear to have an equivalent IFID, for instance, and their illocutionary force operator puts clear and specific restrictions on the semantics and consequently syntax of the forms. But I believe exclamatives can nevertheless inform the study of speech acts generally: they suggest that understanding a construction's semantics is very important for understanding its morphology, syntax and pragmatics.

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