

On the Semantics of “Embedded Exclamatives”*

Abstract

It is sometimes assumed that there is a special exclamative semantics, in particular, that some *wh* clauses have an exclamative semantics even when embedded, maybe beside an interrogative semantics. In this paper I investigate what such an exclamative semantics might consist in, arguing that there are indeed different readings of *wh* clauses involved, but that these nuances do not concern the meaning type common to exclamatives and interrogatives: a function assigning to any world a true proposition.

1 Introduction

Clauses used as exclamations often coincide formally with embedded clauses, in particular, embedded *wh* clauses, like the German *was* ‘what’, *wer* ‘who’, or *wie* ‘how’ clauses in (1)–(3).

- (1) a. Ich mag mir nicht ausmalen, was da hätte passieren können.
‘I’d rather not picture what might have happened.’
b. Was da hätte passieren können!
- (2) a. Ist es nicht verwunderlich, wer da alles gewinnt?
‘Isn’t it amazing who wins those things?’
b. Wer da alles gewinnt!
- (3) a. Ich sehe es noch vor mir, wie er den Ball um die Mauer zirkelt.
‘I can still visualize the way he bent the ball round the wall.’
b. Wie er den Ball um die Mauer zirkelt!

It is *prima facie* natural, then, to assume a uniform meaning for these clauses irrespectively of whether they are embedded or used as exclamations. Indeed, an assumption that clauses used as exclamations denote true propositions, as do *wh* clauses according to Groenendijk and Stokhof (1982), is attractive. Propositions known to be true are uninformative, so the clauses cannot be used as assertions; by the same token, however, they are well suited to serve as exclamations: if, as seems reasonable, the point of exclamations is to communicate that something is, at a minimum, remarkable, i.e., a factive propositional attitude, then a true proposition, a fact, is just what this speech act requires.

*I owe a great debt to the participants at the NORMS workshop on exclamatives in Tromsø in October 2007 and to the audiences at the 3ième Journée de Sémantique et Modélisation in Paris in March 2005 and at a presentation at the University of Frankfurt in December 2006.

If clauses used as exclamations denote true propositions, one would expect that not just *wh* clauses but also *that* clauses can be used as exclamations, provided that the propositions they denote count as true in the situation of utterance, and this expectation is borne out (at least in regard to German):

- (4) Dass du dich daran noch erinnerst!
'that you still remember that'

The parallel between exclamatives and interrogatives has been noted by many. Let us formulate the hypothesis that *wh* sentences used as exclamations denote true propositions – assuming the theory of Groenendijk and Stokhof (1982) – or sets of true propositions – assuming the theory of Karttunen (1977) – precisely:

- (5) THE EXCLAMATIVE-INTERROGATIVE CONNECTION (EIC1)
The compositionally derived intension of a *wh* clause used as an exclamation assigns to any world a proposition true in that world, or a set of propositions true in that world.

Certain facts might seem to cast doubt on this hypothesis:

1. Some *wh* clauses cannot or can barely be used as exclamations ((6)).
 2. Some *wh* clauses that can serve as exclamations can barely be embedded.
 3. Some *wh* clauses that can serve as exclamations cannot be embedded under verbs like *ask* or *wonder* or, suitably transformed, used as questions ((8)).
- (6) #Which ship her brother was lost from!
(7) ??Han visar vad stark han är. (Swedish)
he shows what strong he is
(8) #What a grand ship is she?

These facts can be taken to indicate the existence of semantic properties peculiar to “exclamatives”, i.e. clauses used as exclamations. They may seem to motivate the assumption that the meaning of exclamatives involves something different from or more than the meaning of superficially equal or similar interrogatives.

Several proposals have been made in this direction. Especially relevant to Fact 1 is the assumption, variously formulated, that exclamatives crucially involve **degrees** and **scales** (Miró 2007, Rett 2008, Zanuttini and Portner 2003). Fact 2 would go to show that certain (variants of certain) *wh* words (as also certain equative adverbs and subjunctions like Norwegian *så*, *som*) signal exclamations in a similar way as direct question word order and intonation signal questions (Beyssade and Marandin 2006: 50). None of this is necessarily at odds with (5).

To meet the challenge from Fact 3, it is natural to assume, following Zanuttini and Portner (2003), that exclamatives are inherently factive in the strong sense that they presuppose themselves; the sentences could only be felicitously used if the denoted propositions follow from the Common Ground. Such sentences are useless as questions because the answers are already given.

Yet there are problems with Fact 3 and those *wh* clauses that can be embedded under many predicates but not, suitably transformed, used for asking questions. One problem concerns *wh* clauses like (9a), which can be used as exclamations but not as questions, though they can be embedded under predicates like *know*:¹

- (9) a. how very long the Nile is
 b. #How very long is the Nile?
 c. Jane knows how very long the Nile is.

A presupposition to the effect that (9b) presupposes its own true answer must be triggered by something, and the only trigger candidate is the adverb *very*, yet it is not plausible that this word should encode such a presupposition.

Zanuttini and Portner (2003) suggest that the obligatory exclamative nature of *how very* phrases is marked by an additional element, lexicalized as *very*, and that in a case like (9c), the denotation of the embedded exclamative (9a) is computed with respect to two domains, D1 and D2, each a set of lengths, where D2 is the result of widening D1, as if the embedded exclamative were a root exclamative; D1 reflects the ‘expected’ values while D2 also contains more extreme values, presupposed to be true of the length of the Nile.

Thus the word *very*, in combination with *how*, induces widening and factivity, the two interpretive characteristics of exclamations in this theory, but it does not do so by virtue of its ordinary meaning; *very* is seen as ambiguous between an “E-only marker” and an “ordinary modifier”. Still, it is desirable to assume just one *very*, seeking the source of the infelicity of (9b) in the meaning of (9a). But in fact, it is unclear how this meaning is built: on existing analyses of *very*, this adverb yields predicates, whereas *how* needs a measure function. Besides, the analysis must predict that (9c) presupposes that the Nile is very long. So:

- What is the meaning of *how very long* and how is this meaning built?
- How does the presupposition that ... is very long come about?
- What accounts for the infelicity of the *how very long* question?

Another problem concerns clauses like (10a), with roughly the same distribution as the *how very* (*enormously*, *extremely*, ...) clauses:

- (10) a. what a long river the Nile is
 b. #What a long river is the Nile?
 c. Jane knows what a long river the Nile is.

A presupposition to the effect that (10b) presupposes its own true answer could be anchored to the adverb *what*, so the infelicitous question is not the problem. Rather, the problem concerns, again, the compositional semantics: the *wh* word *what* would seem to act as a degree adverb, but at the same time to operate on an NP; this is particularly apparent in cases like (11), without an adjective:

¹In actual fact, the unacceptability of examples like (9b), and especially variants with other adverbs like *extremely*, is somewhat variable and dependent on context; cf. Section 2.3.

(11) Jane knows what a diva Justin Timberlake is.

The case is similar for clauses where *how* acts as a degree adverb without any adverb: the *wh* clause in (12) is ambiguous between a degree and a mode reading, but if it is used as a question, the former is not preserved. The degree adverb interpretation of *how* seems difficult to reconcile with the type of its argument.

(12) God alone knows how she has suffered over the years.

According to Grimshaw (1979) and Elliott (1974), the *wh* clauses in (9c), (10c), (11) and (12) are **embedded exclamatives**, and the *wh* clause in (13) can be an embedded exclamative or an embedded interrogative; it ought to be ambiguous.

(13) Jane knows how long the Nile is.

On this view, even ordinary degree *wh* clauses – *how* + A – would have a reading that is not available if the clause is used as a question.

Grimshaw held that (14) is indeed ambiguous and that the two readings can be separated by considering scenarios like (15a–b) and paraphrases like (16a–b):

(14) John knows how tall that building is.

(15) a. John asked the height of that building.
b. John couldn't believe the height of that building.

(16) a. John knows what the height of that building is.
b. John knows that that building is notably (significantly) high.

Our intuitions may not be so clear here. But anyway, as long as we do not know what it means to be notably high, the exclamative reading remains elusive.

Summing up, we do not know for sure what (9c), (10c), (11), (12) (on the degree reading) or (13) (on the alleged exclamative reading) mean, and as long as we do not, these clauses and readings may well pose a threat to our hypothesis (5). The same can be said about clauses that cannot be embedded under anything or used as questions (Fact 2), but clauses that can be embedded under predicates like *know* are easier to study because the sentences where they are embedded have determinate truth conditions. The question is what those are, and, if (13) and (14) are truly ambiguous, what the “exclamative” interpretation is.

We do have a fair idea what the *wh* clause in (13) denotes on the interrogative reading: (17) (Karttunen 1977 style) or (18) (Groenendijk–Stokhof 1982 style) (ϕ is a proposition, δ is a degree, w is a possible world, v is the actual world):

(17) $\lambda\phi \exists\delta \phi = \lambda w \text{ length}(w)(n) = \delta \wedge \phi(v)$

(18) $\lambda w \text{ length}(w)(n) = \text{length}(v)(n)$

Henceforth I will concentrate on the Groenendijk and Stokhof theory, mostly because it immediately predicts that any complement of predicates like *know* denotes a proposition, but also because given (5), reducing to (19), it predicts that a *wh* clause provides the exclamation speech act with a proposition.

(19) THE EXCLAMATIVE-INTERROGATIVE CONNECTION (EIC2)

The compositionally derived intension of a *wh* clause used as an exclamation assigns to any world a proposition true in that world.

The goal of the paper is rather restricted: simply to defend (19), or at least, the weaker version (5), in the face of putative counterevidence, mainly coming from ‘exclamative-only’ locutions. In so doing, I am not defending or attacking any particular theory of exclamatives or exclamations; especially (5) is compatible with various theories, notably Zanuttini’s and Portner’s theory (2003), building on Karttunen’s question theory, and Gutiérrez-Rexach’s theory (1996), building on Groenendijk’s and Stokhof’s question theory. In spirit, though, (5) and especially (19) lean towards a ‘semantic minimalist’ theory, leaving relatively much to pragmatics; a theory of exclamations rather than a theory of exclamatives.

The rest of the paper is structured as follows. In Section 2, I develop an analysis of the *how very* construction, involving a split positive formative where the lower part measures the difference between a measure and a standard of comparison. Section 3 presents an analysis of the *what a* construction in terms of a mapping from properties – of individuals or events – to measure functions. In Section 4, I address the issue whether ordinary degree *wh* clauses are ambiguous, concluding that they are, but not just two-way. Section 5 brings general conclusions.

2 How very A

This section focusses on the semantics and pragmatics of intensified degree *wh* clauses, as they occur in the following authentic sentences:

- (20) Wenn man überlegt, wie enorm tief dieser Fjord ist,
when one contemplates how enormously deep this fjord is
wird einem schaurig. (German)
becomes one shivery
- (21) Not until . . . have many really thought about how very tall the Bluffton
Bluff is in very flat Wells County.
- (22) Failure to realize how very tall the plants become leads to trees being
planted in improper places.

Recall that we need to find answers to the following questions:

- What is the meaning of *how very long* and how is this meaning built?
- How does the presupposition that . . . is very long come about?
- What accounts for the infelicity of the *how very long* question?

These questions are addressed in successive subsections.

2.1 Building “how very A”: A Split Positive

The first thing to note is that existing descriptions of *very* etc. make these degree adverbs operate on measure functions or on predicates to produce predicates. This is natural; after all, degree modifiers normally cooccur with the positive. But precisely because they output predicates, they bar the degree adverb *how* from applying to the result, for *how* itself needs a measure function; normally, it cooccurs with and applies to an adjective or adverb stem.

I cite the analysis proposed by Katz (2005); the analyses proposed, in different forms, by Klein (1980), Kennedy and McNally (2005), and Barker (2002) differ in the type of the argument of the *very* function but not in the type of the value: a predicate.

The Semantics of *very* according to Katz (2005: 187):

$$\llbracket \textit{very} \rrbracket = \lambda P \lambda x \exists d [P(x)(d) \wedge d R_P d_P \wedge d \text{ is distant from } d_P]$$

This should be compared to Kennedy’s (2007) theory of the positive as a covert formative severed from the adjective stem ($d R_P d_P$ corresponds to $g(x) \geq \mathbf{s}(g)$):

The Semantics of *pos* according to Kennedy (2007: 17):

$$\llbracket \textit{pos} \rrbracket = \lambda g \lambda x g(x) \geq \mathbf{s}(g)$$

Here \mathbf{s} is a context-sensitive function from measure functions to degrees that returns a standard of comparison based on properties of the adjective g and on features of the context of utterance, “in such a way as to ensure that the objects that the positive form is true of ‘stand out’ in the context of utterance, relative to the kind of measurement that the adjective encodes” (Kennedy 2007: 17). Katz’ definition of *very* incorporates such a relation to the standard of comparison, predicting that *very* and *pos* are in complementary distribution.

In the framework of the interrogative theory of Groenendijk and Stokhof (1982), the *wh* degree adverb *how* might denote (23):

$$(23) \quad \textit{how}'_i = \lambda m \lambda x \lambda j m_i(x) = m_j(x)$$

Here m is a measure function, normally coming from an adjective stem, x is an individual, j is a world, and i is the actual world. For *how* to apply to *very* . . . , *very* must both take and give a measure function, that is, degree adverbs like *very* must modify measure functions. One way to make *very* modify a measure function is to make it systematically diminish the measure: if m is the input, the output is $\lambda x m_i(x) - v$ where v is the – very vague and context relative – measure associated with this adverb:

$$(24) \quad \textit{very}'_i = \lambda m \lambda x m_i(x) - v$$

If this output is fed to the positive formative à la Kennedy (2007), a sentence like (26) gets the reasonably sensible interpretation that the length of the Nile exceeds the standard length even after a factor v has been subtracted from it.

$$(25) \quad \text{POS}'_i = \lambda m \lambda x m_i(x) > \mathcal{S}_i(m)$$

(26) The Nile is very long.

(27) $length_i(n) - v > \mathcal{S}_i(m)$

However, for (28), one cannot yet derive the presupposition that the Nile is very long; in fact, *very* is redundant, since the proposition Jane is to know is (29):

(28) Jane knows how very long the Nile is.

(29) $\lambda j \ length_j(n) - v = length_i(n) - v$

(30) how very long the Nile is

(29) may be a possible interpretation of (30), but it is hardly the intended one. Rather, what one knows if one knows (30) is not the absolute length of the Nile but its length relative to the standard of comparison – how much (and it is very much) the absolute length exceeds the standard length.

One way to capture this intuition is to retain the definition of *very* in (24) but supplement a pseudo positive formative POS_0 modifying the measure function stemming from the stem of the adjective before *very* modifies the result.

(31) $POS_0'_i = \lambda m \lambda x \ m_i(x) - \mathcal{S}_i(m)$

This ‘lower positive’ supplants the definition of the positive in (25) partially: it introduces the difference between the absolute measure and the standard of comparison, but the greater-than relation must be encoded in a ‘higher positive’ formative stating that the measure it applies to is (literally) positive:

(32) $POS_1'_i = \lambda m \lambda x \ m_i(x) > 0$

The true positive (the Nile is long) will involve both the lower and the higher functor, POS_0 and POS_1 , but the *how (very)* context will only involve the former. It is important to note at once that there is independent evidence for introducing this complexity, evidence to which I will return in a moment.

Note that the lower positive defined in (31) may return a negative number for the difference between observed and standard measure; in this way, there can be measures falling short of the higher positive defined in (32), so that a sentence like *the Nile is long* can be false. Note, too, that if, as Kennedy (2007) argues, the standard for adjectives like *clean* or *full* is a maximum, the $>$ relation in (32) should be replaced by \geq , used by Kennedy in his definition of the positive, so that a sentence like *the barrel is full* can be true.

Fitting the pieces together, the denotations I propose for the relevant words and functors are:

$$long'_i = \lambda x \ length_i(x)$$

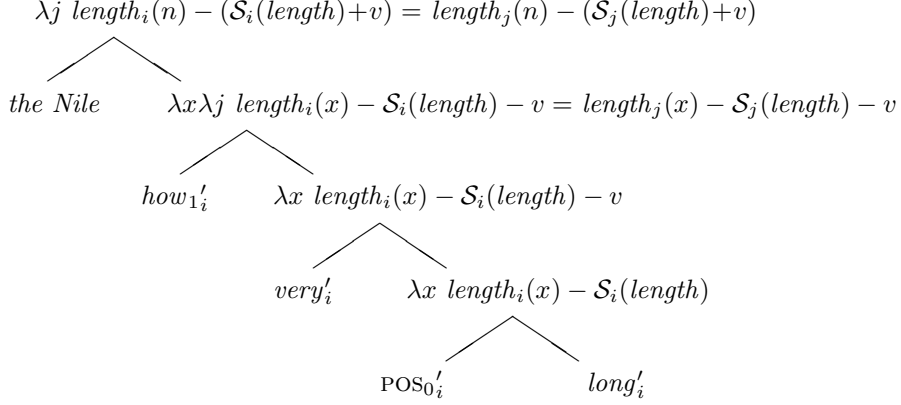
$$very'_i = \lambda m \lambda x \ m_i(x) - v$$

$$POS_1'_i = \lambda m \lambda x \ m_i(x) > 0$$

$$POS_0'_i = \lambda m \lambda x \ m_i(x) - \mathcal{S}_i(m)$$

$$how_1'_i = \lambda m \lambda x \ \lambda j \ m_i(x) = m_j(x)$$

And the semantic composition of “how very long the Nile (is)”, (30), is:



According to this, to know how very long the Nile is is to correctly believe that the difference between the length of the Nile and the standard of comparison enhanced by the v measure (v for *very*) is as great as it actually is.

This is a plausible interpretation, and the key element in the analysis is that the positive is split in two halves where the lower half introduces the difference from the standard of comparison without stating that it be greater than zero.

Importantly, this novel element is independently motivated. The degree adverb, *very* or another, is of course omissible, so it is predicted that ordinary degree *wh* clauses can involve POS_0 as well. Strong evidence for this comes from a class of contexts which threaten to be tautologous on a standard analysis: degree *wh* clauses where the subject is an absolute measure, as in (33) and (34).

(33) I heard my brother’s voice (the mountaineer) before my trip asking me “Tricia, do you have *any* idea how high 19.000 feet is?” and my response “I know exactly how high it is!” Ah, the arrogance of the inexperienced climber! I now realized he was right – I had *no* idea what 19.000 feet felt like, until now.

(34) Maybe you don’t know how fast 50 seconds is.

On a standard analysis, not relating the measure to the comparison standard, (35a) is ascribed the interpretation (35b).

(35) a. how high 19.000 feet is
 b. $\lambda j \text{ height}_j(19.000 \text{ ft}) = \text{height}_i(19.000 \text{ ft})$

And this is a tautology, because the height of 19.000ft is constant, it could not vary from one world i to another world j .

While absolute measures are world-independent, comparison standards are not. This is evident from locutions like (36).

(36) In America my farm would be small.

Therefore, the problem disappears once POS_0 is interpolated, resulting in the interpretation (35c).

$$(35) \quad c. \quad \lambda_j \text{ height}_j(19.000 \text{ ft}) - \mathcal{S}_j(\text{height}) = \text{height}_i(19.000 \text{ ft}) - \mathcal{S}_i(\text{height})$$

This is a synthetic content and also a plausible interpretation of (35a). To know how high 19.000 ft. is amounts to correctly believing that the difference between 19.000 ft. and the standard of comparison is as great as it actually is.

This is the only sensible interpretation of degree *wh* clauses where the subject is an absolute measure, but the relative interpretation involving POS_0 is possible when the subject is not an absolute measure, so that the relevant measure is world-dependent, as well. Indeed, since POS_0 is omissible, any degree *wh* clause is predicted to be ambiguous along this axis: it must be possible to know how long the Nile is without POS_0 – absolutely – without knowing how long it is with POS_0 – relatively; it must not be contradictory that Jane knows that the Nile is such and such long, yet she does not know how long it is.

As far as asking, not knowing, is concerned, Quine would disagree:

Asking after the thing in itself, apart from human conceptualization, is like asking how long the Nile really is, apart from our parochial miles or kilometers. (Quine 1993: 113)

But it does seem possible to know a measure in the first, absolute sense without knowing it in the second, relative sense. To know *wh* ... in the first sense but not in the second sense amounts to not knowing the standard of comparison – having no or a false belief about it. This is witnessed by the following examples.

- (36) She knew the jump was long, and she knew it measured 5.70 m, but she didn't know how long it was until the end of the competition.
- (37) I didn't realize how much time I used to have until I had James.
- (38) She didn't realize how far it was, although she knew it was 40 km and she knew it was far; what she failed to realize was that in those conditions, her threshold for getting tired was at 20 km, not at 30 km.

This is one way that Grimshaw's claim that (14) has an exclamative beside an interrogative reading can be made precise. I return to this issue in Section 4.

Additional motivation for introducing a split between differential measurement (POS_0) and inequality (POS_1) might come from the phenomenon that Kennedy (2001: 42) calls *comparison of deviation* (COD) constructions, like [(20)].

- (20) The Sears Tower is as tall as the San Francisco Bay Bridge is long.

This sentence can have either the 'standard' interpretation (which is false) or the COD interpretation paraphrased as:

The degree to which the Sears Tower exceeds a standard of tallness (for buildings) is at least as great as the degree to which the San Francisco Bay Bridge exceeds a standard of length (for bridges). (Kennedy 2001: 43)

Kennedy concludes that “it must be the case that comparison of deviation interpretations represent a freely available option in comparatives”. His analysis involves “differential degrees”, intervals corresponding to, e.g., the length of the San Francisco Bay Bridge subtracted by the standard length. The current proposal, severing the standard differential (POS_0) from the positive proper (POS_1), can be seen as a way to build a compositional account of comparison of deviation interpretations generally.

So although it may seem dangerous to introduce another optional covert formative like POS_0 , the ambiguities introduced along with it are attested in a wider domain than just degree *wh* clauses. A full survey of the possible consequences would, however, go beyond the scope of this paper.

2.2 The Presupposition

What accounts for the presupposition carried by (28) that the Nile is very long?

(28) Jane knows how very long the Nile is.

Rett (2008a) introduces an optional, covert degree modifier EVAL resulting in (39), to be compared with (17) as the interpretation of (13):

(13) Jane knows how long the Nile is.

(17) $\lambda\phi \exists \delta \phi = \lambda w \text{ length}(w)(n) = \delta \wedge \phi(v)$

(39) $\lambda\phi \exists \delta \phi = \lambda w \text{ long}(w)(n) = \delta \wedge \delta > \mathcal{S}(\text{long}) \wedge \phi(v)$

On Rett’s analysis, (13) may mean that Jane knows (17) or that she knows (39), the degree to which the Nile is long *and that it is long relative to the standard*. Correspondingly, (28) may mean that Jane knows the degree to which the Nile is long *and that it is very long relative to the standard*. But this seems too weak: (36) or (38) come out as contradictory and (34) comes out as equivalent to (40):

(40) Maybe you don’t know that 50 seconds is fast.

But reconsider now the interpretation proposed above for (30), (41):

(41) $\lambda_j \text{ length}_i(n) - (\mathcal{S}_i(\text{length})+v) = \text{length}_j(n) - (\mathcal{S}_j(\text{length})+v)$

Note that the proposition that the Nile is very long arguably corresponds to the existential presupposition commonly associated with *wh* questions: that there is a nonvacuous answer, that is, that the relevant set is nonempty; in this case, that the measure is positive, $m(x) > 0$, spelt out as (42):

(42) $\lambda_j \text{ length}_j(n) - (\mathcal{S}_j(\text{length})+v) > 0$

The presupposition to be accounted for thus corresponds to the presupposition often accompanying *wh* questions. Often, that is, not always; many scholars, notably Groenendijk and Stokhof (1997: 1120), have cited counterexamples and warned that the alleged presupposition is labile. However, note that without it, the degree adverb, *very* or one of its alternatives, would be totally redundant.

As far as the assertion is concerned, it is indeed redundant, as is evident from (41): The length and the standard may be world-dependent, but the adverb measure (v) is not, so it can safely be cancelled on both sides of the equation. Once the putative presupposition is taken into consideration, however, *very* etc. make a difference after all, causing what is presupposed if something is in fact presupposed to be not merely that the Nile is long but that it is very long; and because the only reason there can be for uttering the adverb is to modify the presupposition, the presupposition is in fact communicated.

2.3 The Ban on Questions

What accounts for the fact that *how very* clauses cannot be questions?

(43) #How very long is the Nile?

We have seen that if (30) denotes a proposition (if the Nile is indeed very long), it denotes the same proposition as (44) on the relative interpretation: (45).

(30) how very long the Nile is

(44) how long the Nile is

(45) $\lambda j \text{ length}_j(n) - \mathcal{S}_j(\text{length}) = \text{length}_i(n) - \mathcal{S}_i(\text{length})$

Thus the intension of (43) defines the same partition – set of complete answers – as the intension of (46) on the relative interpretation, (47).

(46) How long is the Nile?

(47) $\lambda i \lambda j \text{ length}_i(n) - \mathcal{S}_i(\text{length}) = \text{length}_j(n) - \mathcal{S}_j(\text{length})$

Now consider what such an answer can look like. The first thing to note is that although it is theoretically possible, it is not appropriate to answer a question about the difference between the relevant measure and the relevant comparison standard by specifying a measure. Because it is difficult to isolate the relative interpretation of a question like (46), it is useful to consider what would be natural answers to questions involving absolute measures, like (48).

(48) How high is 19.000 feet?

It is inappropriate to answer “4.000 ft. (higher than the comparison standard)”, and the reason is presumably that a contextual standard is too vague to form a basis for measurement (as if one were to say of a collection of sand grains that to form a heap, it would need to grow by such and such a number of grains). Rather, appropriate answers will be vague and often circumspect, like:

- very, enormously, extremely, etc.;
- high enough to ... / too high to ...; so high that ...

The first class consists of vague degree adverbs like those under discussion here, the second consists of modal adjuncts of the kinds analyzed by Meier (2003).

The key observation is that such an answer is already given in the *very* question by virtue of the presupposition, in (43), that the Nile is very long, so in a sense, *how very* interrogatives will presuppose their own answers, thus falling prey to the restriction formulated by d’Avis (2001: 67): “*Wh*-clauses that presuppose their own answer cannot occur in question contexts.”²

Interestingly, however, the ban on intensified degree questions is not absolute. Abels (2007) cites some felicitous German cases (displaying the adverb *enorm*). Here the context contains some alternative to the measure under consideration. For instance, the length of something is established and it is established that it is long; then attention shifts to something longer, and one can meaningfully ask: How very long is that then? (49) is a possible Norwegian dialogue:

- (49) – Du får spørja far min.
 – Far din? Kor gamal er du?
 – Eg er 80.
 – Kor enormt gamal er far din då?
 ‘You’d better ask my father.’ ‘Your father? How old are you?’ ‘I’m 80.’
 ‘How enormously old is your father then?’

There is evidently something about this situation of utterance that saves this intensified question from presupposing its own answer and thus from infelicity. To me, the essential feature seems to be that the standard of comparison counts as given, in the Common Ground, so that it does not vary from one world to the other. In that case, the meaning of the question is not (50) but (51), which reduces to (52), a question about the measure in the absolute sense.

$$(50) \quad \lambda_i \lambda_j \text{age}_j(f) - (\mathcal{S}_j(\text{age})+v) = \text{age}_i(f) - (\mathcal{S}_i(\text{age})+v) = \\ \lambda_i \lambda_j \text{age}_j(f) - \mathcal{S}_j(\text{age}) = \text{age}_i(f) - \mathcal{S}_i(\text{age})$$

$$(51) \quad \lambda_i \lambda_j \text{age}_j(f) - \mathcal{S}_j(\text{age}) = \text{age}_i(f) - \mathcal{S}_j(\text{age})$$

$$(52) \quad \lambda_i \lambda_j \text{age}_j(f) = \text{age}_i(f)$$

A natural continuation of (49) would be (53), and such an answer is not already given by virtue of the presupposition that the father is enormously old:

- (53) – Han er 100!
 he is 100

3 What a (A) N

This section addresses the semantics and pragmatics of such *wh* functors which, like English *what* and *how* in one of their uses, seem to apply to NPs or to VPs and to define a measure function over these arguments.

The NPs tend to include gradable adjectives, cf. (54)–(56), but as long as the noun is itself intrinsically gradable, this is not necessary, cf. (57)–(59).

²According to d’Avis (2001), intensified degree interrogatives presuppose their own answer by denoting singleton proposition sets; Abels (2007) argues that this analysis is not tenable.

- (54) He knows what a long hike it is home.
 (55) I learnt what a long process the law is.
 (56) Most people don't appreciate what a big country Venezuela is.
 (57) ... , bragging about what a Casanova he is.
 (58) We all know what a (huge) fan of horse racing he is.
 (59) He even goes out of his way to make sure anyone reading each entry knows how innocent he is and what a (big) victim he is.

This use of *what* corresponds to *kva* or *hvilk-* in Norwegian. The absence of the indefinite article here, cf. (60), indicates that the indefinite article occurring after *what* in English is spurious; the NP consistently denotes a predicate.

- (60) Han visste ikkje kva skatt han bar.
 he knew not what treasure he bore

Likewise, it is not necessary for the VPs to include gradable adverbs:

- (61) Do you remember how it rained that week?
 (62) See how they run! (Lennon 1968) / See how they shine! (Simon 1969)
 (63) Don't you see how (badly) she is shivering? Do something!

This use of *how* corresponds to *koss/åssen* (or *som*) or *kor* in Norwegian. The last word is the word used as a degree *wh* adverb and not as a mode *wh* adverb.

(64) exemplifies the use corresponding to (61)–(63):

- (64) No e sola komma, sjer du kor ho skin?
 now is sun come, see you where it shines

3.1 Building “What a (A) N”: Δ , the Inverse Positive

There are basically two possible approaches to these phenomena. One is to posit a covert gradable adjective or adverb which is determined by the noun or verb it modifies or by the context, and let the *wh* functor operate on that adjective or adverb in the usual way, the way that *how* operates on adjectives or adverbs. The other possible approach is to take the constructions at face value and say that the *wh* functor operates on NPs or VPs, properties of individuals or events, and measures the degree to which these properties hold of individuals or events.

The first approach, taken by, inter alia, Castroviejo-Miró (2006), is problematic for two interrelated reasons:

First, there are limits to the use of the *wh* word without any adjective or adverb: The noun or verb must have the potential for a scalar interpretation.

- (65) ??Jane knows what a river the Nile is.
 (66) Don't you see how she is walking? Do something!

This constraint applies less strictly, if at all, to exclamations:

(67) \surd What a river the Nile is!

Presumably, (65) is odd because the *river* property is not inherently gradable. While (66) is meaningful, it is not, as are (61)–(63), ambiguous between a scalar and a mode reading; it only has a mode reading. To predict this constraint on the hypothesis that there is a covert adjective or adverb, it seems necessary to require that this covert adjective or adverb be uniquely determined by the noun or verb, in other words, that there be a partial function mapping a noun or verb to its associated adjective or adverb; in this way, the adjective or adverb would not add information, it would effectively be synonymous to the noun or verb, in which case there would be no gain in positing it.

Second, the adjectives or adverbs that can modify the inherently gradable nouns or verbs overtly, like *huge* in (58), *big* in (59), or *badly* in (63), do not seem to denote measure functions at all, but rather properties of measure functions, as if they were intensifiers like *very* etc.; at any rate they are far from synonymous to the nouns or verbs they modify. So on the hypothesis that a covert adjective or adverb is there, this must at least in some cases be different from the overt adjective or adverb; and this is theoretically and descriptively problematic.

Thus I will take the second approach to the phenomenon under consideration, building on the intuition that, say, (55) means that I learnt to what extent the law is a long process, and, an affirmative answer to (61) means that I remember to what extent it rained last week. More exactly, I assume that the *wh* functor takes properties of individuals or events and treats them as measure functions, furthermore, that the nouns and verbs in (57)–(64) are born measure functions, as if they were adjectives, and become properties through a positive formative.

In particular, the “what” at work here (labelled *what*₃ to distinguish it from pronominal *what*₁ and *what*₂ meaning the same as *which*) is assumed to incorporate a mapping from properties to measure functions:

$$(68) \quad \boxed{\textit{what}_{3'_i} = \lambda P \lambda x \lambda j \Delta(P)_j(x) = \Delta(P)_i(x)}$$

(69) $\Delta(P)_j(x)$ reads ‘the degree to which x is P in j ’.

The same format can be used for inherently gradable event properties (the *how* under consideration here is labelled *how*₃ to distinguish it from the mode *wh* adverb *how*₁ and the ordinary degree *wh* adverb *how*₂):

$$(70) \quad \boxed{\textit{how}_{3'_i} = \lambda Q \lambda e \lambda j \Delta(Q)_j(e) = \Delta(Q)_i(e)}$$

(71) $\Delta(Q)_j(e)$ reads ‘the degree to which e is Q in j ’.

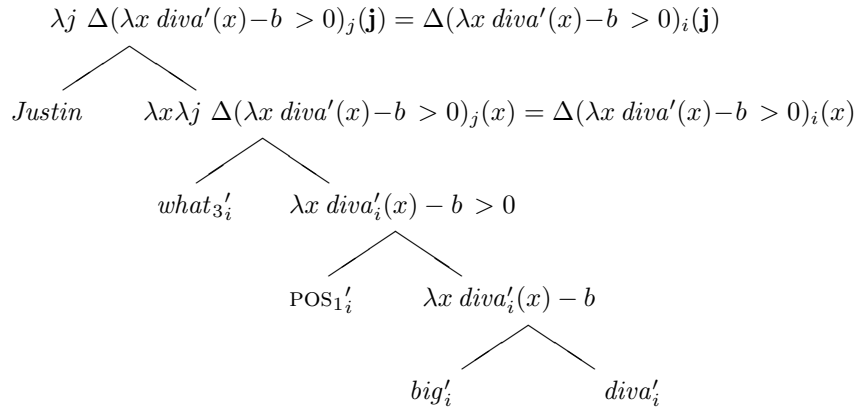
As noted above, Δ must be a partial function – not all properties can be turned into measure functions; they must have the capacity for a scalar interpretation. All NPs consisting of a noun and an adjective express properties that have this capacity by virtue of the adjective, but bare nouns must be inherently gradable.

One way to model this is to decompose the noun and say that the property is in turn based on a measure function – it is born one and only becomes a property in the course of prelexical derivation, through positive formation.³

This is illustrated in the below semantic composition tree for the clause (72).⁴ Some nouns born measure functions may seem to involve, in Kennedy’s (2007) term, ‘lower closed scales’, as do adjectives like *dirty* or *bent*, so that (a relative) 0 counts as the standard of comparison. For this reason, the tree does not include a POS_0 introducing a separate standard \mathcal{S} in a merge with the noun-to-be *diva*. This assumption is not essential, however; there could well be that extra level at the bottom right and a $-\mathcal{S}_i(\text{diva})$ operation propelled upward.

The adjective *big* is treated as a measure function modifier, i.e., an intensifier. In the second merge, POS_1 turns the modified measure function into a property, and in the third, *what*₃ takes this to a function from entities to propositions.

(72) what a big diva Justin Timberlake is



The effect of the intensifier *big* (or, as the case may be, *great* etc.) is, just like the effect of *very* etc., to force a presupposition, here, that Justin is a big diva, because that is the only way it can escape redundancy. But in other contexts, these degree modifiers will have a clear effect on truth conditions, of course, as in ordinary positive statements like *Justin is a big diva*.

The definedness condition and the content of Δ (as applied to properties) can be made precise in this way (*em* is the type of measure functions):

(73) $\Delta_{(s(et))(s(em))}$ is only defined for properties P such that there is a unique measure function m such that $P = \lambda i \lambda x m_i(x) > 0$; then $\Delta(P) = m$.

³Paradis (2000) and Morzycki (2006) make suggestions along these lines.

⁴For the general case, it will be necessary to lift this “what” and this “how” to a function from sets of entities/events to functions from sets of sets of entities/events to propositions; the “what”/“how” phrase undergoing QR, leaving a trace of the type of sets.

Thus Δ and POS_1' are inverse functions: $\Delta(\text{POS}_1'(m)) = m$, and for any noun (or verb) Q inherently gradable in the sense that it is born a measure function, if its adjectival root form (in the terminology of Distributed Morphology) is \mathcal{A} , *what a Q you are* denotes $\lambda j \mathcal{A}'_j(\text{you}) = \mathcal{A}'_i(\text{you})$. In consequence, the top line of the above tree for (72) reduces to $\lambda j \text{diva}'_j(\mathbf{j}) = \text{diva}'_i(\mathbf{j})$.

With (68), (73), and the interpretation of many nouns as born adjectives and some adjectives as (sometimes) born degree modifiers, I invoke a considerable machinery to construct a compositional description of degree *what (a)* clauses. It may appear costly and risky to do so. However, part of that machinery – or something similar – must be invoked anyway to account for the properties of those nouns and adjectives independently of *what* clauses. Admittedly, though, the discussion of these properties and the proposed analysis must in the framework of the present paper remain somewhat tentative and sketchy.

Many inherently gradable nouns are metaphors, predicates of ‘personal taste’ (Lasersohn 2005, 2007), or words carrying an ‘expressive meaning’ (Potts 2007). It is perhaps not implausible that such N items should start life as adjectives; however, needless to say, these issues are in need of further research.

3.2 The Ban on Questions

It is impossible to use a *what a* clause to ask a question, or to embed one under *ask* or *wonder*.

(74) #What a (great) friend is she?

(75) #What a large city is Baghdad?

One cannot argue here that the question answers itself by virtue of its semantics, as in the case of *how very*. One could try to argue that it is difficult to answer a question like (74); but on the other hand, it is possible to ask a question like (76), and the meaning seems to be much the same:

(76) How great a friend is she?

It may be difficult to answer such a question, but it is evidently not impossible. However, since the *wh* word *what* must be ascribed a special meaning anyway, it is possible, as suggested in Section 1, to define a presupposition consisting in the true answer to the *wh* clause qua question, as a part of the meaning definition. In the complete definition (77), the denominator represents the presupposition:

$$(77) \quad \boxed{\text{what}'_{3i} = \lambda P \lambda x \frac{\lambda j \Delta(P)_j(x) = \Delta(P)_i(x)}{\lambda j \Delta(P)_j(x) = \Delta(P)_i(x)}}$$

On a standard notion of presupposition, presupposed material must follow from the Common Ground; at a minimum, the speaker must believe the proposition.

Thus if *what*₃ triggers a presupposition corresponding to the true answer, (75) carries the condition that the extent to which Baghdad is a big city follow from the Common Ground or at least the speaker’s beliefs. That *what*₃ does trigger such a presupposition is evidenced by the different entailment relations in (78) and (79): (78a) seems to entail (78b) while (79a) does not seem to entail (79b).

- (78) a. Jane does not know what a large city Baghdad is.
 b. I know what a large city Baghdad is.
- (79) a. Jane does not know how big a city Baghdad is.
 b. I know how big a city Baghdad is.

In fact, Zanuttini and Portner (2003) propose that exclamative clauses generally contain a factivity functor causing the clause to presuppose every proposition in (a certain subset of) its denotation (following Karttunen’s theory of questions). Thus the clauses “cannot be questions, because it would be pointless to ask a question where the answer is presupposed” (Zanuttini and Portner 2003: 50).

And on an appropriate semantics for verbs like *ask* and *wonder*, committing the subject to the presuppositions of the complement clause, the impossibility of embedding *what a* clauses under these verbs will follow as well.

Note that this “factive” presupposition does not coincide with but is stronger than the presupposition coming from a factive predicate like *know*, reducing to the “diagonal” of the proposition, $\lambda i(\psi_i)$, in the *wh* case, the tautology. Rather, it corresponds to “superfactivity” in predicates like *amazing* (Sæbø 2007: 196f.).

4 The Variability of Degree *wh* Clauses

In the light of the discussion of *how very* and *what a* clauses in the previous two sections, the question naturally arises how the results reflect on normal degree *how* clauses, especially regarding Grimshaw’s contention that (13), (14), or (80) is ambiguous, oscillating between an interrogative and an exclamative reading.

- (80) how cold it is in Tromsø

4.1 Relative Reading and Positive Presupposition

First, we saw in Section 2.1 that some ordinary degree *how* clauses, those where the subject is an absolute measure, must be read in the **relative** sense, where the relevant measure is the deviation from the standard of comparison. Those *how* clauses must have this interpretation, involving the POS_0 functor, in order to make sense and not be tautologous. It seems only reasonable, then, to assume that any degree *how* clause **can** have this interpretation and that this is one source for the alleged ambiguity of clauses like (80). The two readings of (44), repeated here as (81), are (82) and (45), repeated here as (83):

- (81) how long the Nile is
 (82) $\lambda_j \text{ length}_j(n) = \text{length}_i(n)$

$$(83) \quad \lambda_j \text{ length}_j(n) - \mathcal{S}_j(\text{length}) = \text{length}_i(n) - \mathcal{S}_i(\text{length})$$

Through the relative interpretation (83), the possibility of a nontrivial *wh* type presupposition arises – viz., that there is in fact a (positive) difference between the length and the standard, that is, the Nile is long, and it is cold in Tromsø.

And indeed, this seems part of the interpretation that Grimshaw had in mind. Recall that Rett (2008a) introduces an operator EVAL designed, inter alia, to capture the “exclamative” reading by adding the content of this presupposition. If we include it, the interpretation of (81) is not just (83) but (84):

$$(84) \quad \frac{\lambda_j \mathcal{L}_j(n) - \mathcal{S}_j(\mathcal{L}) = \mathcal{L}_i(n) - \mathcal{S}_i(\mathcal{L})}{\lambda_j \mathcal{L}_j(n) - \mathcal{S}_j(\mathcal{L}) > 0} \quad (\mathcal{L} = \text{length})$$

This interpretation can hardly be called a reading, though, in the sense that the presence or absence of the presupposition constitutes an ambiguity; as noted in section 2.2, the existential presuppositions frequently accompanying *wh* clauses are not stable but seem to rely on other factors than the *wh* words themselves. A presupposition which is sometimes there, sometimes not there, without any formal (overt or covert) correlate, is not a presupposition but just a presumption which the speaker must rely on extrinsic, contextual factors to get across. Still, it will in many cases actually come across, thus confirming Grimshaw’s intuition that (13), repeated here as (85), can mean more or less the same as (86).

(85) Jane knows how long the Nile is.

(86) Jane knows that the Nile is notably long.

To a certain extent, the interpretation will depend on the embedding predicate. Thus a verb like *realize* or an adjective like *aware* will favour the relative reading and a positive presupposition, as will also an adjective like *amazing*.

4.2 A ≥ Interpretation

In addition to the possibility of a relative reading and the option of a positive presupposition, there is yet another semantic variable in degree *wh* clauses, not encountered so far: the ambivalence between a “greater than or equal to” (\geq) and an “equal to” (=) reading, corresponding to the “at least” interpretation and the “exactly” interpretation of equatives, discussed by Rett (2008a: 124ff.). (81) may have the interpretation (87) or (88) rather than (82) or (83):

$$(87) \quad \lambda_j \text{ length}_j(n) \geq \text{length}_i(n)$$

$$(88) \quad \lambda_j \text{ length}_j(n) - \mathcal{S}_j(\text{length}) \geq \text{length}_i(n) - \mathcal{S}_i(\text{length})$$

Quite many predicates favour or force a \geq reading. Clauses with causal verbs or prepositions, such as (89a), become too strong if the = interpretation is chosen, resulting in counterfactual paraphrases like (89b); the \geq interpretation, on the other hand, licenses the intuitively correct counterfactual paraphrase (89c).

- (89) a. Lombard Street snakes from side to side due to how steep the hill is.
 b. Lombard Street would not snake from side to side if the hill were less or more steep.
 c. Lombard Street would not snake from side to side if the hill were less steep.

A similar effect can be observed when *how* clauses are complements of emotive (surprise) predicates; from (90a) (90b) follows, but not (90c). This asymmetry can only be accounted for on the inequality interpretation of the *how* clause.

- (90) a. She was relieved when she saw how wide the sound was.
 b. She was relieved when she saw that the sound was not narrower than it was.
 c. She was relieved when she saw that the sound was not wider than it was.

Interestingly, in Groenendijk’s and Stokhof’s theory, intensions like (91) are not equivalence relations and so do not define partitions, hence they form deficient questions. Still, they assign to any world a proposition true in that world.

$$(91) \quad \lambda i \lambda j \text{ length}_j(n) \geq \text{length}_i(n)$$

This they share, according to the hypothesis (19) in Section 1, repeated here as (92), with the intension of any *wh* clause used as an exclamation; thus they do not form deficient exclamations. Indeed, it may well be that all degree *wh* clauses used as exclamations select the \geq interpretation.

(92) THE EXCLAMATIVE-INTERROGATIVE CONNECTION (EIC2)

The compositionally derived intension of a *wh* clause used as an exclamation assigns to any world a proposition true in that world.

It is at least not surprising if they do: Exclamations express that something is, in various ways, remarkable, and it seems that all emotive attitude predicates select the “at least” interpretation; this interpretation would also accord with the inherently scalar nature of exclamations noted by many scholars.

4.3 Superfactivity?

There is maybe the intuition that (93) sometimes entails that I, the speaker, know how cold it is in Tromsø, sometimes not. Yet to say that, say, (81) might and might not presuppose itself, i.e., (83), depending on the circumstances, would clearly be a mere stipulation, – unless one posits, as do Zanuttini and Portner (2003) (cf. Section 3.2), a formal correlate of the presupposition in the form of an optional covert (super-)factivity functor.

- (93) Jane knows how cold it is in Tromsø.
 (81) how long the Nile is

$$(83) \quad \lambda_j \text{ length}_j(n) - \mathcal{S}_j(\text{length}) = \text{length}_i(n) - \mathcal{S}_i(\text{length})$$

What could be noted is that a verb like *realize*, or *appreciate*, does seem to presuppose the proposition denoted by the embedded *wh* clause, and what could tentatively be assumed on that basis is that the verb *know* is polysemous and has this variant where it carries the same presupposition along.

Be that as it may; what seems clear is that impersonal emotive and ‘surprise’ attitudes like *astonishing*, *marvellous* do license the inference that the speaker knows the proposition, thus triggering a ‘superfactive’ presupposition, and, in addition, favour a relative degree reading with a positive degree presupposition, plus selecting the greater-than-or-equal-to interpretation.

Similarly, the exclamation speech act, which Gutiérrez-Rexach (1996) treats as a general emotive propositional attitude, will allow the inference that the speaker knows the proposition, thus triggering a ‘superfactive’ presupposition, and, in addition, favour a relative degree reading with a positive degree presupposition, plus selecting the greater-than-or-equal-to interpretation.

4.4 Summary

Summing up this subsection, there is support for the long-standing hypothesis that ordinary-looking degree *how* clauses are ambiguous; they are in two ways:

- a relative, $m_i - \mathcal{S}_i(m)$ interpretation versus an absolute interpretation,
- an inequality, \geq interpretation versus an equation, $=$ interpretation.

On the other hand, there is no clear indication that they have a separate reading with a positive presupposition or a presupposition of the proposition itself.

Anyway, we can maintain that on any interpretation, degree *how* clauses denote propositions that are actually true.

5 Summary and Conclusions

The challenge has been to defend, in the face of potential counterevidence, the thesis that “interrogatives and exclamatives have basically the same denotations” (Gutiérrez-Rexach 1996: 154). More precisely, assuming the *wh* theory of Groenendijk and Stokhof (1982), it has been to defend EIC2:

$$(19) \quad \text{THE EXCLAMATIVE-INTERROGATIVE CONNECTION (EIC2)}$$

The compositionally derived intension of a *wh* clause used as an exclamation assigns to any world a proposition true in that world.

Especially one class of facts might seem to provide counterevidence to this: Some *wh* clauses that can serve as exclamations cannot be used as questions or embedded under *ask* or *wonder*, although they can be embedded under a wide range of other predicates, including *know*. The problematic cases are:

- Degree *how* clauses intensified by *very*, *enormously*, or the like;
- adnominal *what a* and adverbial *how* clauses used as degree *wh* clauses;
- degree *how* clauses on an alleged exclamative interpretation.

Each case has been analysed in a way which leaves the basic semantics intact; one can indeed maintain the clause’s denotation as a proposition actually true. The *how very* case has been seen to involve a relative measure, the difference to the standard of comparison; the observed presupposition (the Nile is very long) emerges as an existential presupposition necessary for the intensifier not to be redundant; and what makes these clauses useless as questions is the circumstance that the intensifier is itself an appropriate answer.

Adnominal *what* and adverbial *how* (as degree modifiers) have been argued to involve a mapping from predicates to measure functions. To account for the fact that these clauses cannot be used as questions, it has seemed necessary to appeal to a presupposition triggered by these *wh* items: the denoted proposition is presupposed, so that the putative question will answer itself.

The alleged exclamative reading of normal degree *how* clauses has been argued to derive from a combination of three factors: a relative measure interpretation, a \geq interpretation (an option highly relevant for the other cases as well and in itself sufficient to render the clause deficient as a question), and the semantics of the embedding predicate (i.e., a reading of *know* in the sense of *realize*).

The focus of this paper has been on so-called embedded exclamatives, and no attention has been paid to those clauses that can barely be embedded and those items (such as Norwegian *så*, *som* or Swedish *vad* as degree modifiers) that seem to carry the speech act of exclamation on their sleeve. Does the fact that these clauses are restricted to this speech act raise doubts about EIC? I think not. The direct link between an item and the speech act can be motivated through the notion of hearer economy: while it is economical for the speaker to use the same words for the same semantics regardless of the speech act, for the hearer it is economical to receive as many clues to the act as possible. Besides, one should bear in mind that even those *wh* clauses that can both be embedded under a wide range of predicates and used as exclamations are distinguished by formal correlates when used as exclamations, in the form of intonation.

A defense of the EIC does not entail a defense of a theory of exclamations; especially EIC1 is compatible with several theories, building on Groenendijk’s and Stokhof’s question theory (e.g. Gutiérrez-Rexach 1996) or on Karttunen’s (e.g. Zanuttini and Portner 2003). But the analyses developed in the defense may be argued to obviate the need for exclamative-specific semantic features, such as the widening operation posited by Zanuttini and Portner (2003).

On the other hand, the EIC is not compatible with a theory like Rett’s (2008), where *wh* clauses used as exclamations denote properties of degrees, a move motivated by the fact that not just any *wh* clause can act as an exclamation (“Fact 1” in Section 1). That is (indirect) counterevidence to the EIC of a kind that has not been addressed in this paper; my main aim has been to counter the threats to the EIC posed by the so-called “embedded exclamatives”.

References

- Abels, Klaus (2005)** “Remarks on Grimshaw’s clausal typology”, in Maier, Bary, and Huitink (eds.) *Proceedings of Sinn und Bedeutung 9*, Nijmegen, 1–15.
- Abels, Klaus (2007)** “Deriving selectional properties of ‘exclamative’ predicates”, in Späth, A. (ed.) *Interfaces and Interface Conditions*, Berlin: d Gruyter, 115–140.
- Barker, Chris (2002)** “The Dynamics of Vagueness”, *Linguistics and Philosophy* **25**, 1–36.
- Beysade, Claire Jean-Marie Marandin (2006)** “The Speech Act Assignment Problem Revisited: Disentangling Speaker’s Commitment from Speaker’s Call on Addressee”, in Bonami and Cabredo Hofherr (eds.) *Questions empiriques et formalisation en syntaxe et sémantique 6: Travaux présentés à CSSP 2005*, 37–68.
- Castroviejo-Miró, Elena (2006)** *Wh-Exclamatives in Catalan*. Dissertation, Universitat de Barcelona, Barcelona.
- d’Avis, Franz Josef (2001)** “Über ‘w-Exklamativsätze’ im Deutschen”. Tübingen: Niemeyer.
- d’Avis, Franz Josef (2002)** “On the interpretation of *wh*- clauses in exclamative environments”, *Theoretical Linguistics* **28**, 5–32.
- Elliott, Dale (1974)** “Towards a grammar of exclamations”, *Foundations of Language* **11**, 231–246.
- Grimshaw, Jane (1979)** “Complement selection and the lexicon”, *Linguistic Inquiry* **10**, 279–326.
- Groenendijk, Jeroen & Martin Stokhof (1982)** “Semantic analysis of Wh-complements”, *Linguistics and Philosophy* **5**, 175–233.
- Groenendijk, Jeroen & Martin Stokhof (1997)** “Questions”, in van Benthem and ter Meulen (eds.) *Handbook of Logic and Language*, Amsterdam: Elsevier, 1055–1124.
- Gutiérrez-Rexach, Javier (1996)** “The Semantics of Exclamatives”, in Garrett and Lee (eds.) *Syntax at Sunset*, UCLA Working Papers in Linguistics, 146–162.
- Karttunen, Lauri (1977)** “Syntax and Semantics of Questions”, *Linguistics and Philosophy* **1**, 3–44.
- Katz, Graham (2005)** “Attitudes toward Degrees”, in Maier, Bary, and Huitink (eds.) *Proceedings of Sinn und Bedeutung 9*, Nijmegen, 183–196.
- Kennedy, Chris (2001)** “Polar Opposition and the Ontology of ‘Degrees’”, *Linguistics and Philosophy* **24**, 33–70.
- Kennedy, Chris (2007)** “Vagueness and Grammar: The Semantics of Relative and Absolute Gradable Adjectives”, *Linguistics and Philosophy* **30**, 1–45.
- Kennedy, Chris and Louise McNally (2005)** “Scale Structure, Degree Modification, and the Semantics of Gradable Predicates”, *Language* **81**, 345–381.
- Klein, Ewan (1980)** “A Semantics for Positive and Comparative Adjectives”, *Linguistics and Philosophy* **4**, 1–45.

- Lasersohn, Peter (2005)** “Context Dependence, Disagreement, and Predicates of Personal Taste”, *Linguistics and Philosophy* **28**, 643–686.
- Lasersohn, Peter (2007)** “Relative Truth, Speaker Commitment, and Control of Implicit Arguments”, to appear in *Synthese* **94**.
- Meier, Cécile (2003)** “The Meaning of *Too*, *Enough*, and *So ... that*”, *Natural Language Semantics* **11**, 69–107.
- Miró, Elena Castroviejo (2007)** “A degree-based account of *wh*- exclamationatives in Catalan”, in Puig-Waldmüller (ed.) *Proceedings of Sinn und Bedeutung 11*, Barcelona, 134–149.
- Morzycki, Marcin (2006)** “Size Adjectives and Adnominal Degree Modification”, in Georgala and Howell (eds.) *Proceedings of SALT 15*, Ithaca: CLC.
- Paradis, Carita (2000)** “Reinforcing adjectives. A cognitive semantic perspective on grammaticalization”, in Bermúdez-Otero et al. (eds.) *Generative Theory and Corpus Studies*, Berlin: Mouton de Gruyter, 233–258.
- Potts, Christopher (2007)** “The Expressive Dimension”, *Theoretical Linguistics* **33**, 165–198.
- Quine, Willard van Orman (1993)** “In praise of observation sentences”, *Journal of Philosophy* **90**, 107–116.
- Rett, Jessica (2008)** “A Degree Account of Exclamationatives”, to appear in *Proceedings of SALT 18*.
- Rett, Jessica (2008a)** *Degree Modification in Natural Language*. Dissertation, Rutgers University.
- Sæbø, Kjell Johan (2007)** “A Whether Forecast”, in ten Cate and Zeevat (eds.) *Logic, Language, and Computation*, Berlin: Springer, 189–199.
- Zanuttini, Raffaella and Paul Portner (2003)** “Exclamationative Clauses: at the Syntax-Semantics Interface”, *Language* **79**, 39–81.