Amazing DPs

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1. Introduction

DPs introduced by *wh*-embedding predicates like *know* and *tell* can sometimes carry the meaning of embedded interrogative clauses. They are then called *concealed questions* (henceforth CQs) (cf. Baker 1968, Heim 1979), and it is still under discussion whether they should be analysed as clausal or as DPs proper.[1] We propose to look at another set of DPs in intensional argument positions, which the literature has not treated as CQs, but as concealed exclamations (henceforth CEs), the reason being that the embedding predicates are the ones that also embed *wh*-exclamatives. In this paper, we present a unified account for what we call C-DPs. Specifically, we argue (*i*) that both CQs and CEs have proper DP denotations, and (*ii*) that the differences in interpretation and acceptability derive from the respective embedding predicates.

1.1. Previous Assumptions about CEs

Grimshaw (1979) coined the term *concealed exclamation* to refer to DPs that are introduced by the predicates that embed *wh*-exclamatives (which she called *exclamatory predicates*). The relevant examples are in (1), where we see that a DP can be replaced by a *wh*-exclamative without significant changes in interpretation.

(1)   a. John couldn't believe **the height of the building**.

        b. John couldn't believe **what a height the building was**.

She named these DPs CEs because they have a *wh*-counterpart, just like CQs, as can be seen below:

(2)   a. John asked **the height of the building**.

        b. John asked **what height the building was**.

In both cases, the embedding verb can introduce a *wh*-clause or a DP with – roughly – the same interpretation, which was the reason why these DPs were treated as CEs and CQs respectively.

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[1]Cf. e.g., Janssen (1984), Romero (2008), Frana (2008), Caponigro and Heller (2003), Nathan (2005), Schwager (t.a.), Aloni and Roelofsen (this volume).

Interestingly enough, cognitive factives (e.g., *know, find out*) are claimed to embed both *wh*-interrogatives and *wh*-exclamatives (cf. 3). It follows that when such predicates introduce a DP, the DP will be ambiguous. An example is given in (4), where (4a) is interpreted as in (4b) if it is a CQ, or as in (4c) if it is a CE.[2]

(3)   a. I know who came to the party.   *interrogative*

       b. I know how **very** tall Bill is   *exclamative*

(4)   a. John found out the height of the building.   *ambiguous* CQ, CE

       b. John found out what height the building was.   *interrogative*

       c. John found out **what a height** the building was.   *exclamative*

However, just like what happens in cases like (3b), where *very* disambiguates the reading in favor of the exclamative one, DPs in these contexts can be disambiguated with the presence of an evaluative adjective (e.g., *incredible*):

(5)   John found out the **incredible** height of the building.   *only* CE

Even though so far the parallelism between CQs and CEs seems fully justified, the DPs that may be embedded under exclamatory predicates do not constitute a uniform class. This is one of the claims by Portner and Zanuttini (2005), who establish a distinction between CEs (as occurring in (1a)) and *nominal exclamatives* (henceforth NEs). To begin with, NEs are special in that they lack agreement between verb and DP (cf. 6).

(6)   a. The people who come from Italy **are** amazing.   *ordinary DP*

       b. **It's** amazing the people who come from Italy.   NE

Also, NEs must include a relative clause ((7)).

(7)   It's surprising. . .

       a. the people [who come from Italy].

       b. # the people from Italy.

The final parameter that differentiates CEs and NEs according to Portner and Zanuttini (2005) is that the latter, but not the former, can stand alone as matrix exclamatives (cf. 8).

(8)   a. The people [$_{RelCl}$ who come from Italy]!

       b. # The people from Italy!

Crucially, Portner and Zanuttini (2005) rely on the relative clause to assign exclamative clausal denotations to NEs. More specifically, they argue that NEs and *wh*-exclamatives have the same semantic and pragmatic properties, so they want to prove that NEs involve *widening*. This is derived from the semantics of sets of alternatives together with factivity (cf. Zanuttini and Portner 2003). In particular, they propose that there is a *which*$_{EXCL}$ that generates a set of propositions and that the definite article contributes factivity.

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[2]Adverbs like *very* or *wh*-phrases like *what a NP* ensure an unambiguously exclamative reading of the *wh*-clause, which cannot be embedded by a purely question embedding predicate. Cf. e.g., Elliott (1974), Grimshaw (1979).

1.2. Towards a Uniform Class of CEs

Note, however, that despite the important observation that a relative clause plays a decisive role in making a DP a suitable CE in our broader sense, the parameters that define NEs do not identify a natural class.

For starters, the data in (9) and (10) show that the restrictions on NEs are different from those on CQs (cf. 2).

(9)　　a. It's amazing the incredible things he says.

　　　　b. # It's amazing the incredible height of the building.

(10)　　a. John found out the incredible things he says.

　　　　b. John found out the incredible height of the building.

In the previous examples we see that *the height of the building* is not a proper complement of *it's amazing*, but it can be introduced by a CQ-embedding predicate. However, some other DPs without a relative clause can actually be complements of *it's amazing* (cf. 11). Note that the presence of a demonstrative instead of a definite article introducing *building* also plays a role.

(11)　　a. It's amazing the nerves of some people.

　　　　b. It's amazing the height of **this** building.

Then again, some DPs that include a relative clause cannot appear as NEs:

(12)　　# It's amazing [$_{DP}$ the man [$_{RelCl}$ who climbed Mount Everest]].

Also, the presence of a relative clause is not obligatory in order for the DP to have stand-alone options (cf. 13, 14).

(13)　　a. The incredible things he says!

　　　　b. # The height of **the** building!

(14)　　a. The nerves of some people!

　　　　b. The height of **this** building!

Finally, all DPs following *it's amazing* involve lack of agreement, not only those that come with a relative clause (cf. 15).

(15)　　a. It's$_{sing}$ amazing the things$_{pl}$ he says.

　　　　b. It's$_{sing}$ amazing the nerves$_{pl}$ of some people.

It is for these reasons that we will follow the lead proposed by Portner and Zanuttini (2005) w.r.t. a significant contribution of the relative clause, but we will not make a difference between CEs and NEs. In other words, we are from now on exclusively concerned with CQs, CEs (comprising both Portner and Zanuttini (2005)'s NEs and CEs) and, more generally, C-DPs.

In the following, we attempt to answer the following three questions: (*i*) How do we obtain a clausal interpretation out of DPs in intensional argument positions of factive predicates?; (*ii*) How do we end up with a common analysis of C-DPs, i.e., suitable for both CQs and CEs?; (*iii*) What restrictions do the different embedding predicates impose on C-DPs?

1.3. Claims

We claim that DPs embedded under emotive predicates constitute a uniform class. Relative clauses help to establish a particular type of interpretation (kind or degree reference), but they do not distinguish two different classes of DPs embedded under emotive predicates. Certain DPs can also achieve the relevant interpretation on lexical grounds in the absence of a relative clause (cf. section 3.4).

Moreover, contrary to both Grimshaw (1979) and Portner and Zanuttini (2005), we argue that C-DPs in general receive non-clausal interpretations. More specifically, they are functions from indices to entities (individuals, degrees, or kinds). It is the embedding predicate that contributes the – interrogative or exclamative – clausal interpretation. Consequently, even if we propose a global account for C-DPs, we expect CEs and CQs to exhibit some differences, but they stem from the interpretation of the embedding predicate.

Finally, we suggest that there are two different sources for exclamative flavors. On the one hand, the semantics of emotive predicates (e.g., *it's amazing, you wouldn't believe*) and, on the other hand, the expressive meaning that arises from the presence of adjectives behaving as non-restrictive modifiers, such as *incredible*. The latter possibility allows for a strictly uniform account of C-DPs under cognitive factives like *know* and *find out*.

2. Restrictions on C-DPs

As has been pointed out in the previous subsection, not just any DP can appear as a CE. In what follows, we will go over the relevant restrictions on C-DPs in general and we will highlight the different constraints that apply to CQs and CEs, which represent apparent counterarguments for a unified account in terms of C-DPs. Ultimately, we will argue that they follow from independent properties of the embedding predicates.

2.1. CEs Need to Be Definite

It has been noted for CQs (Frana 2008) that the DP need not be definite, as (16) shows. In contrast, this does not hold for CEs (cf. 17).

(16)   a. I know a doctor who can help you.

b. Bill told me a European capital.

(17)   a. *It's amazing a secret that Mathew spread.

b. It's amazing the secret that Mathew spread.

Possessives behave exactly like other definites:

(18)   It's amazing his strength.[3]

2.2. Restrictive Relative Clauses and Other Modifiers

All C-DP-embedding verbs impose certain restrictions on the kind of nominal that constitutes the core of the CE or CQ.

(19) a. # It's amazing the table.   CE

      b. # I know the table.   CQ

It has been pointed out (e.g., Nathan 2005) that DPs tend to make good CQs if they are more complex than just [Det N]. For instance, relational nouns plus overt arguments tend to make good CQs (but cf. Frana 2008). Interestingly, even those do not make good CEs (cf. 20). Noun modification creates the same pattern: it helps to interpret DPs as CQs, but not as CEs (cf. 21).

(20) a. # It's amazing the capital of California.

      b. Bill told me the capital of California.

(21) a. # It's amazing the new carburetor on the market.

      b. I know the new carburetor # (on the market).

In contrast, relative clauses tend to make available both CEs and CQs:

(22) a. It's amazing the material that's out there.

      b. It's amazing the number of people who look the other way.

      c. You wouldn't believe the carburetor my new car has.

(23) I know the material that's out there.

Nevertheless, not even relative clauses guarantee acceptable CEs, as we have already seen in (12) (repeated here as (24)).

(24) # It's amazing [$_{DP}$ the man [$_{RelCl}$ who climbed Mount Everest]].

2.3. Adjectives Setting the Source of Amazement

Irrespectively of the preference for a relative clause, CEs optionally contain an adjective that modifies the noun, as in the examples below.

(25) a. It's amazing the (big) car you bought.

      b. You wouldn't believe the (beautiful) woman I met in that bar.

Most importantly, the adjective must indicate the speaker's evaluation or subjective description of the noun. Observe in (26) that even when the DP includes a non-evaluative adjective like *red*, we infer that there is some contextually salient (gradable) property that modifies the complex nominal *red car* and indicates the reason for the speaker's amazement.

(26) It's amazing the red car you bought.
      ⇒ *It's amazing the beautiful/expensive/big/… red car you bought.*

When the nominal itself is measurable, the adjective that modifies it indicates the speaker's amazement towards a high degree, as in (27).

(27)   You wouldn't believe the (incredible) price of milk.

The presence of such adjectives is blocked when the embedding predicate can only introduce *wh*-interrogatives but not *wh*-exclamatives, like *ask*:

(28)   a. John asked how (# very) tall Bill is.

        b. John asked the (# incredible) price of milk.

We would have a perfect CQ in (28) if it were not for the presence of the adjective *incredible* modifying the nominal *price of milk*. Consequently, contrary to the previous examples, in these cases no evaluative adjective is inferred from context when it is absent.

2.4. DPs with Relative Clauses Can either Have an Amount Reading or a Kind Reading

Whenever a predicate like *it's amazing* introduces a plural DP (or a mass noun DP) without a gradable adjective modifying the noun, two possible readings are available. Consider (29):

(29)   It's amazing the cars he owns.

We obtain one possible interpretation in which the speaker is amazed at the fact that the cars he owns are very beautiful, expensive, big, etc., but there is still another reading where the speaker is amazed at the amount of cars he owns. Which one of these interpretations is the actual one depends upon the context.

3. A Uniform Analysis for C-DPs

In the following section, we will present an account for C-DPs that is uniform in that it relies on proper DP-denotations throughout. Neither CQs nor CEs receive clausal interpretations. The differences between CQs and CEs follow from the requirements of the respective embedding predicates.

At first glance, this seems problematic for cognitive factives like *know* and *find out* that allow for both CE and CQ readings of their DP complements. We argue that it is not the predicate that is ambiguous between a CQ and a CE embedding version, but rather that in this case non-restrictive modification comes into play as a different source of emotivity.

First, we briefly present Schwager (t.a.)'s account for CQs (cf. section 3.1). Then, we show how it extends to an emotive predicate like *you wouldn't believe* (cf. section 3.2). In 3.3, we argue that there is an independent source of emotive flavors responsible for the exclamative reading of certain C-DPs under cognitive factive predicates. Finally, we propose an analysis for emotive predicates like *it's*

amazing/surprising/awful/.... It is this particular class that motivated Portner and Zanuttini (2005)'s distinction between CEs (in their narrower understanding) and NEs. We will offer a slightly different explanation for their observation that restrictive relative clauses play a decisive role. We take our account to be more adequate because it extends to all C-DPs in argument positions of such predicates. Yet, it seems restrictive enough to exclude DPs that are inacceptable in such positions.

3.1. CQs *in a Nutshell*

Schwager (t.a.) bases on the idea of Heim (1979)'s pragmatic analysis that CQs express particular attitudes w.r.t. the referent of the CQ. *knowing the president of the US*, on its CQ-reading, means to know of the actual president of the US (in our case, the individual G. W. Bush) that he is the president of the US. However, it is well-known from the literature on *de re/de dicto*-readings that attitudes cannot hold of individuals simpliciter, but only regarding the particular ways in which they are given to the attitude subject (cf. Kaplan 1969). Schwager (t.a.) builds this into her analysis of CQs by assuming that the identification of the CQ value has to happen w.r.t. the perspective that is taken on the individuals in the context. Such a perspective is modelled as a set of individual concepts that, at all (relevant) worlds, pick out all (relevant) individuals exactly once (i.e., a *conceptual cover*, cf. Aloni 2000).[4]

(30) $[[\text{know}_{CQ}]]^C = \lambda w \lambda x_{se} \lambda u_e . \exists^C y [y(w) = x(w) \wedge \forall w' \in \text{Dox}_u(w)[x(w') = y(w')]]$

According to (30), the subject *u CQ*-knows individual concept *x* iff (*i*) *u* has an *identifier* (another individual concept *y*) for the actual referent of *x*; (*ii*) *u* knows that *x* and *y* pick out the same individual (whichever that is); and (*iii*) there are pragmatic constraints on what are possible identifiers (*y* has to come from a conceptual cover *C* that is contextually salient according to pragmatic principles of INFORMATIVITY, RELEVANCE, CONSISTENCY and AVOIDACCOMMODATION, cf. Aloni 2000). For *know the president of the US*, the set of proper names consitutes a plausible perspective *C*; for (31), a set of degree expressions is preferred.

(31) $[[\text{John knows the height of the building.}]]^C =$
       $\lambda w . \exists^C y [y(w) = \text{height-building}(w)$ &
                           $\forall w' \in \text{Dox}_{\text{John}}(w)[\text{height-building}(w') = y(w')]]$

There is an identifier *y* (e.g., $\lambda w.259m$) which belongs to the contextually salient perspective *C* and which correctly identifies the height of the building at the actual world as well as at each of John's belief worlds. A similar analysis carries over to *find out*.

(32) $[[\text{John found out the height of the building.}]]^C =$
       $\exists e[\text{CAUSE}(e, \textit{John knows}_{CQ} \textit{ the height of the building})].$

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[4]In order to capture indefinite CQs, Schwager (t.a.) argues that *know*$_{CQ}$ uniformly embeds a property (type $\langle s, et \rangle$), which can easily be gained from an individual concept by the identity-type shift. Aloni and Roelofsen (this volume) defend a very similar analysis in terms of conceptual covers but argue for a different type of the CQ-predicate.

This, of course, is the interrogative reading of *know* and *find out*. We will see in 3.3 that the additional emotive reading comes about due to the presence of a non-restrictive modifier in the C-Dp.

3.2. Emotive Predicates

There is a class of emotive predicates that typically alternate with *wh*-clauses in object position and express that the value of of the *wh*-variable exceeds the expectations of the referent of the subject. They normally implicate that the speaker is emotional about it as well. The prototypical cases are complex forms like *couldn't believe* or *wouldn't believe*, where the verb is not in the indicative mood and it is negated (note that their indicative affirmative versions do not select for a *wh*-clause **I believe how tall Bill is*, or a DP **You believe the height of the building*).

We claim that emotive predicates impose the same constraints on C-Dps as the cognitive factives in the previous subsection. The only difference is that *you wouldn't believe* expresses that the addressee (and maybe the speaker) is emotional, which does not hold for *know* or *find out*. Take a look at the example below:

(33) [[You wouldn't believe the height of the building.]]^C =
$\lambda w.\exists^C y$[the-height-of-the-building$(w) = y(w)$ & $\forall w' \in \text{Dox}_{Speaker}(w)$[the-height-of-the-building$(w') = y(w')$] & $\neg\exists w' \in \text{Exp}_{Addressee}(w)$[the-height-of-the-building$(w') = y(w')$]]

The formula says that there is an identifier which at the actual world and at all my believe worlds picks out the height of the building, but it does not pick out the height of the building at those that come closest to what you expect.

3.3. Interpretation of Evaluative Adjectives

In this section we argue that certain adjectives that modify the noun within a C-Dp can be interpreted non-restrictively, and hence, in a domain of meaning separate from the domain where regular meaning is computed. In particular, adjectives like *incredible* with measurable nouns and gradable adjectives with arbitrary nouns. Following Morzycki (2008), we claim that non-restrictive modifiers are interpreted at the expressive domain and, thus, they have the properties of other expressive items.

To get a flavor of the distinction between restrictive and non-restrictive modifiers, take a look at the following pairs of examples:

(34) Every **unsuitable** word was deleted.   (Larson and Marušič 2004)

  a. *restrictive*: every word that was unsuitable was deleted.

  b. *non-restrictive*: every word was deleted; they were unsuitable.

(35) The Titanic('s) **rapidly** sinking caused great loss of life. (Peterson 1997)

  a. *restrictive*: The Titanic's sinking being rapid caused great loss of life.

  b. *non-restrictive*: The Titanic's sinking, which was rapid, caused great loss of life.

We see that both adjectives (cf. 34) and adverbs (cf. 35) can have a restrictive and a non-restrictive reading by default. However, in some other configurations, a restrictive interpretation is awkward (see also Castroviejo (to appear)); here, the non-restrictive interpretation paraphrased in (36b) is much more natural.

(36)   Paul found out the **beautiful** name of his admirer.

    a. # *restrictive*: Paul finally knew (only) the beautiful name of his admirer (he still needs to know her ugly names).

    b. *non-restrictive*: 'Paul finally knew the name of his admirer & the speaker comments that the name is beautiful.'

Support for the assumption that adjectives like *beautiful* are often understood as non-restrictive when they occur in C-Dps comes from Catalan. Catalan hardly ever accepts prenominal modification. Crucially, when it does, the modifier must be non-restrictive (see also Demonte 2008 regarding the interpretation of pre and postnominal adjectives in Spanish). In C-Dps, the prenominal placement of such adjectives is felicitous and even preferred to a postnominal placement, which favors the restrictive interpretation of adjectives.

(37)   En Pau ha esbrinat el (preciós) nom (# preciós) de la seva admiradora.
    'Paul found out the beautiful name of his admirer.'

Now, it is most interesting to realize that treating these adjectives as non-restrictive modifiers along the lines of Morzycki (2008) has some advantages. First, we account for the data and, second, we can understand how the emotive meaning is derived in cases of C-Dps introduced by cognitive factives. More precisely, non-restrictive modifiers are side comments by the speaker and, as such, they are interpreted in the expressive domain of meaning, and the occurrence of such expressives is responsible for the emotive flavor of C-Dps under *know* and *find out*.

    Morzycki (2008) proposes to apply Potts (2005)'s two-dimensional semantics to the analysis of non-restrictive *unsuitable*. A rough sketch of the idea applied to (34) is given in (38).

(38)   a. *descriptive domain*: ⟦All the words were deleted.⟧

    b. *expressive domain*: ⟦unsuitable words⟧

Accordingly, our proposal is to analyze *beautiful* as modifying *name* in the expressive domain. Here is the scheme:

(39)   a. *descriptive domain*: ⟦John found out the name of his admirer.⟧

    b. *expressive domain*: ⟦beautiful name⟧

Expectedly, if these adjectives are expressives, they are supposed to be entailments, which is borne out, as (40) shows:

(40)   John found out the extraordinary price of the new car, # but I'm not amazed at how expensive it is.

To be more precise, it is not only the case that the speaker cannot contradict herself by denying her own emotional attitude, but she cannot explicitly declare her ignorance on the identity of the C-DP. Roughly, she cannot claim the name of her admirer is beautiful and at the same time (i.e., in the very same utterance) declare that she does not know the name of her admirer. That is why (41) is unacceptable.[5]

(41)   I don't know the (# beautiful) name of my admirer.

Finally, note that as long as the speaker is knowledgeable, the adjective can occupy this position.[6]

(42)   She doesn't know the (beautiful) name of her admirer.

(42) is compatible with the speaker being knowledgeable, and hence, the non-restrictive interpretation is acceptable.

3.4. Emotive Predicates of the amazing-Type

In English, emotive adjectives like *amazing* (e.g., also *surprising, terrible, stupid, awful, …*) can occur as adjectival/adverbial modifiers or predicates (*amazing*$_{\text{Mod}}$), or together with an expletive and a postposed DP (*amazing*$_{\text{DP}}$).

(43)   a. This guy is amazing/amazingly stupid/an amazing teacher.   *amazing*$_{\text{Mod}}$

       b. It's amazing the stupid things he says.   *amazing*$_{\text{DP}}$

This basic syntactic distinction is accompanied by at least two differences: first, *amazing*$_{\text{Mod}}$ allows for substitution of co-extensional expressions *salva veritate* (cf. 44), whereas *amazing*$_{\text{DP}}$ does not (cf. 45):

(44)   John is amazing.
    John is Mary's boyfriend.
    ∴ Mary's boyfriend is amazing.

(45)   It's amazing the boyfriends Mary has.
    Mary's boyfriends are always Peter's students.
    ∴̸ It's amazing the students Peter has.

Second, unlike *amazing*$_{\text{Mod}}$, *amazing*$_{\text{DP}}$ shows severe restrictions on what DPs it can combine with: (*i*) the DP has to be definite, and (*ii*) the NP within it has to be the projection of a degree noun or has to contain a modifying relative clause.[7]

    Portner and Zanuttini (2005) only deal with *amazing*$_{\text{DP}}$ plus a DP that contains a relative clause (their NEs) and extract the clause-like meaning from the relative clause (cf. section 1.1). They mention the fact that amazement targets the

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[5]Such sentences has an acceptable reading when interpreted as a mixed quotation.

[6]Even if the speaker is knowledgeable, non-restrictive adjectives are excluded in DPs embedded under *ask* and *depend*. For independent reasons, Nathan (2005) argues that these predicates are only apparent CQ-embedders. We will leave the issue for further research.

[7]Note that (11a) constitutes an exception to condition (*ii*) which we cannot currently account for.

kind or amount/number of entities denoted by the DP, but this is not exploited in their analysis. In the following, we will argue that a uniform analysis for all CEs is possible, if we take this insight as a starting point. On a simple google-search for "it's X the", for X = *surprising, stupid, terrible, awful* and *wonderful*, we found 62 clear-cut examples of the *amazing*$_{\text{DP}}$-construction. 22 express amazement about the kind of entities the DP describes (e.g., (46)), 29 about the amount of entities (e.g., (47)), and 11 are ambiguous between a kind and an amount reading.

(46)   It's amazing the year he is having but A-Rod could very well be having his best year ever.[8]

(47)   I went to 2 health fairs on Saturday and it's amazing the people who continue to think they're alone in their struggle for weight loss. That's why I'm still trying to get my live chat up and running... hopefully that will be soon.[9]

We assume the two syntactic realizations of adjectives like *amazing*, *amazing*$_{\text{DP}}$ and *amazing*$_{\text{Mod}}$, share a semantic core. This is reflected in the cross-categorial meta-language predicate AMAZING.

AMAZING abbreviates the propositional attitude that some x has different properties from what the speaker had expected (modelled by a set of possible worlds $\text{Exp}_{Speaker}(w)$ that verify everything the speaker expected at w).[10,11]

(48) $\text{AMAZING}(w)(x) := \forall w' \in \text{Exp}_{Speaker}(w)[\{P \mid P_{w'}(x)\} \neq \{P \mid P_w(x)\}]$

For *amazing*$_{\text{Mod}}$, we have argued that it allows for substitution *salva veritate*. Hence, we take it to be of type $\langle s, et \rangle$, and propose to treat it as follows:

(49) $[\![amazing_{\text{Mod}}]\!] = \lambda w \lambda x_e.\text{AMAZING}(w)(x)$
        $\qquad\qquad\quad = \lambda w \lambda x_e.\forall w \in \text{Exp}_{Speaker}[\{P \mid P_{w'}(x)\} \neq \{P \mid P_w(x)\}]$

In contrast, *amazing*$_{\text{DP}}$ creates an intensional context w.r.t. its argument position and expresses amazement that the entities that fall under the definite description are those that actually do.

(50)   It's amazing the height of that building.
        $\approx$ *It's amazing that building has the height it actually has.*

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[8]community.foxsports.com/blogs/Pipsy

[9]http://www.fitbyjen.com/Blog.aspx

[10]We are indebted to Katrin Schulz (p.c.) and the audience at the Semantikkolloquium in Frankfurt for pointing out that expectations are probably not what is at stake. It seems indeed that one could have known for a while what properties John has and still assent to *John is amazing*. Hence, stereotypical assumptions or counterfactual expectations might be a better starting point for amazement. In any case, since the same difference between modifier positions and expletive construction arises for lexically less problematic adjectives like *surprising, awful,...* , the issue is orthogonal to our discussion and will thus be left for further reserach.

[11]For the moment, we ignore the issue that like epistemic modals and predicates of taste in general (cf. e.g., Stephenson 2005), *amazing* shifts in embedded position: what is relevant in a sentence like (i) is Mary's attitude towards John, not the speaker's:

(i)   Mary thinks John is amazing.

Nevertheless, the difference is not just between individuals and individual concepts. DPs that can easily achieve intensional readings e.g., in CQ-positions are excluded in CE-positions.

(51)   a. The president of the US is amazing.
        ≈ *Bush is amazing.*

        b. #It's amazing the president of the US.
        ≠ *It's amazing who is the president of the US.*

We argue that (51b) is infelicitous because it can achieve neither a degree nor a kind reading (cf. below). Crucially, we assume that (*i*) *amazing*$_{\text{DP}}$ combines with expressions denoting functions from indices to degrees or to properties that describe kinds; and that (*ii*) this hinges on a similarity in logical type: kinds and degrees can be treated as individuals simpliciter (type *e*), but kinds and degrees can also be derived as being of type $\langle s, et \rangle$. In other words, kinds and degrees are properties that are special in that they also (rigidly) correspond to an entity of type *e*. Thus, *amazing*$_{\text{DP}}$ takes as arguments (non-trivial) functions from indices to kinds/degrees (type $\langle s, \langle s, et \rangle \rangle$), but presupposes that at each world the latter corresponds to an individual of type *e* that can be derived by Chierchia (1984)'s kind operator $\cap$.[12]

(52) $[\![amazing_{\text{DP}}]\!] = \lambda w \lambda P_{\langle s, \langle s, et \rangle \rangle} : \forall w' \exists x_e [x = {}^{\cap}(P(w'))].\text{AMAZING}(w)(P)$
        $= \lambda w \lambda P_{\langle s, \langle s, et \rangle \rangle} : \forall w' \exists x_e [x = {}^{\cap}(P(w'))].\forall w' \in \text{Exp}_{Speaker}(w)[\{Q \mid Q_{w'}(P(w'))\}$
                                          $\neq \{Q \mid Q_w(P(w))\}]$

The fact that $^{\cap}$ cannot be applied to singular properties (i.e., properties that are instantiated by only one individual at each world) accounts for the unacceptability of CEs that are singular DPs but do not contain a degree NP (cf. 12,19a,20a,21a). It is now time to understand why relative clauses play the special role that has first been pointed out by Portner and Zanuttini (2005).

3.4.1. Why Relative Clauses Are Helpful

Carlson (1977) observes that relative clauses can turn ordinary nouns into degree expressions (amount/number) or kind expressions (cf. also Heim 1987):

(53)   a. It will take us the rest of our lives to drink the champagne they spilt last night.   *the amount of*

        b. We will never be able to recruit the soldiers the Chinese paraded on May 1.   *the number of*

        c. You no longer see the telephone's that there were in my grandmother's time.   *the kind of*

With Carlson and Heim, we leave open the mechanisms that trigger this sort of reinterpretation; but we observe that the relative clauses after *it's amazing* obtain the

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[12]Use of $^{\cap}$ requires caution with the ontology, cf. Chierchia (1984). Note that we use a version of $^{\cap}$ that does not contain $^{\wedge}$.

same effects and are interpreted like their counterparts headed by an overt degree expression:

(54)   a. It's amazing the people you meet along the way.[13]

   b. It's amazing the number of people who look the other way.[14]

   c. It's amazing the amount of money we spent to be able to deliver the sales-force application in a SaaS model. In fact, it's ridiculous the amount of money we spent.[15]

   d. And fishes, tropical fishes - it's amazing the kind of marine life that you will experience on a Galapagos vacation.[16]

We do not attempt to show that all relative clauses occuring with *amazing*$_{DP}$ are kind or amount relatives. Clearly, if the head noun is already of the right kind (e.g., a degree noun) a modifying relative clause need not be of this particular 'third kind' (to use Grosu and Landman (1998)'s term). Moreover, it is very hard to identify clear-cut formal criteria for such an individuation.[17] Yet, we can show that *amazing*$_{DP}$-constructions can contain kind or amount relatives, because of the following restriction: relative clauses with traces in existential constructions that do not show definiteness effects have to be kind or amount relative clauses (cf. 53c). The complement of *amazing*$_{DP}$ can contain such a relative clause:

(55)   It's amazing the telephone's that there were in my grandmother's days.

Heim (1987) explains the contrast as follows: in the trace position, we find an indefinite containing a degree/kind trace bound by the relative clause operator.

3.4.2. Application to Kinds

If we apply Heim's analysis to the relative clauses within *amazing*$_{DPS}$, for a CE with a kind reading like (56), we obtain the following result:

(56)   (It's amazing) the things you can find in the dumpster.
LF: the P you can find things of P in the dumpster
$\iota P_{\langle s,et \rangle}[\text{CAN}_w \; \lambda w'.\exists x[\text{you find } x \text{ in the dumpster in } w' \text{ and } P(w')(x)]$,
where ι ranging over a plural set expresses maximalization,
i.e., $\iota P[Q(P)]) := \text{the unique } P \text{ s.t. } Q(P) \text{ and } \neg \exists P'[P' \neg P \& P \sqsubseteq P']$; where $P \sqsubseteq P' := \forall w[P(w) \subseteq P'(w)]$.

The DP gives us exactly the property of 'things you find in the dumpster'. Now, given that this is not a property of single objects and that it is not constrained to

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[13]chelle2china.blogspot.com/2007/ 07/its-amazing-people-you-meet-along-way.html

[14]www.city-data.com

[15]http://billyonopensource.blogspot.com/2007/05/its-amazing-its-ridiculous.html

[16]www.top-adventure-tours.com/galapagos-vacation.html

[17]Some authors (e.g., Carlson 1977) assume that only *that*-relative clauses, but not *wh*-relative clauses may constitute kind or amount relatives. This judgment ist not shared by e.g., Safir (1982). Indeed, many CEs contain *wh*-relatives clauses that would have to come out as number or kind relatives on our account.

a particular set of objects (i.e., it is 'open' in the sense of Chierchia 1998), it can be mapped to a kind by Chierchia (1998)'s kind-operator ($^\cap P$). Application of [[*amazing*$_{\text{DP}}$]] to the intension of the relative clause yields the following proposition:

(57) [[*amazing*$_{\text{DP}}$ [the P you can find things of P in the dumpster]]] =
$\lambda w.\text{AMAZING}(w)$
$(\lambda w.\iota P_{\langle s,et \rangle}[\text{CAN}_w\,\lambda w'.\exists x[\text{you find } x \text{ in } w' \text{ in the dumpster \& } P(w')(x)]])$
$= \lambda w.[\forall w' \in \text{Exp}_{Speaker}(w)$
    $[\{Q \mid Q_{w'}(\iota P_{\langle s,et \rangle}[\text{CAN}_{w'}(\lambda w''.\exists x[P(w'')(x) \text{ \& find}(w'')(\text{Addressee})(x)])])\}$
    $\neq \{Q \mid Q_w(\iota P_{\langle s,et \rangle}[\text{CAN}_w(\lambda w''.\exists x[P(w'')(x) \text{ \& find}(w'')(\text{Addressee})(x)])])\}]$

Given how the maximal property P is defined, it can only have different properties Q if the kind of things that can be found in w is different from the kinds of things that can be found in each of the expected worlds w' respectively.

3.4.3. Application to Degree/Amount/Number Readings

The application of the analysis to *amazing*$_{\text{DP}}$ with degree nouns or degree readings of other nouns as triggered by relative clauses is in principle analogous. It only requires some reflection on what degrees actually are. Degrees are often taken as primitive and are then just individuals (or sometimes objects of a particular logical type d). Here, we will assume that degrees are not just primitive but correspond to equivalence classes of objects that behave the same w.r.t. a particular gradable property like height, for example.

Crucially, the height of an object is not an essential property: We can easily hypothesize about one and the same object having different heights (for simplicity, assume, pace Lewis, that individuals are not tied to a particular world). It is also possible to compare individuals that live within different worlds.

(58) a. Peter could have been taller.

b. Sherlock Holmes is as tall as G. W. Bush.

Note that there is a huge amount of context dependence w.r.t. which individuals are considered at all, and in particular, w.r.t. the granularity of the equivalence classes. The context of utterance might e.g., render accessible a partition that includes the following classes corresponding to height in decimetres; e.g., d_{18} is the class of pairs of a world w and an individual x s.t. individual x is 1.80m tall in world w.

d_{18}:	$\langle w_1, g.w.bush \rangle, \langle w_2, s.holmes \rangle, \langle w_3, g.w.bush \rangle, \ldots$
d_{19}:	$\langle w_2, g.w.bush \rangle, \langle w_3, s.holmes \rangle, \langle w_4, g.w.bush \rangle, \ldots$
$\ldots$	$\ldots$
d_{2590}:	$\langle w_1, commerzbank-tower \rangle, \langle w_2, empire-state \rangle, \ldots$
$\ldots$	$\ldots$

Degrees always come with a partial order $\preceq$ needed for monotonicity observations (cf. Katz 2005, Nouwen 2005). Heights also come with a conventionalised measurement system, but this does not hold for all gradable properties (consider e.g.,

beauty). But even where there is a conventionalized measurement system, in certain contexts, the granularity of the equivalence classes may be determined by a more coarse-grained system (e.g., *How high is the building?*: very high (hard to climb), medium high (ok to climb), small (easy to climb)).

Technically, each of the degree equivalence classes d is a subset of $W \times D_e$, and can thus be characterized by a function of type $\langle s, et \rangle$. Moreover, we can also keep an individual fixed and consider the function that maps each world w onto the set of individuals it is in the same degree class with at w. E.g., *the height of this building* can then denote the function that maps each w to that degree d s.t. $\langle w, that-building \rangle \in d$. Example (11b) can now be interpreted as in (59).

(59) $[[\text{It's amazing the height of this building.}]] =$
$\lambda w.\text{AMAZING}(w)(\lambda w.\iota d_{\langle s,et \rangle}[\langle w, this-building \rangle \in d]) =$
$\lambda w.\forall w' \in \text{Exp}_{Speaker}(w) \left[\{Q \mid Q_{w'}(\iota d_{\langle s,et \rangle}[\langle w', this-building \rangle \in d])\} \right.$
$\left. \neq \{Q \mid Q_w(\iota d_{\langle s,et \rangle}[\langle w, this-building \rangle \in d])\} \right]$

If the speaker expected the building to have a different height, the classes singled out are different, hence, they have different properties (e.g., in terms of what their elements are). This predicts that the sentence could also be true because something else had not been expected to fall into the same class of height as the building; we take this to be correct in combination with the fact that amazement is monotonic.[18]

3.4.4. Evaluating the Predictions

If the head noun is not a degree noun, the corresponding *amazing*$_{\text{Mod}}$-construction gets different truth conditions from *amazing*$_{\text{DP}}$ (cf. 60); in contrast, for degree nouns, the two constructions mean more or less the same (cf. 61).

(60) a. The people that work there are amazing.
particular group of people (e.g., my co-workers)
b. It's amazing the people that work there.
what people that company employs in general

(61) a. The height of that building is amazing.
b. It's amazing the height of that building.

We think that this comes out from the way we have construed degree and kind readings. Consider '*amazing*$_{\text{Mod}}$ + *degree noun*': how can one particular d have different properties?

(62) $\lambda w.\text{AMAZING}(w)(\iota d[\langle w, that-building \rangle \in d]) =$
$\lambda w.\forall w' \in \text{Exp}_{Speaker}(w)[\{Q \mid Q_{w'}(\iota d_e[\langle w', that-building \rangle \in d])\}$
$\neq \{Q \mid Q_w(\iota d_e[\langle w, that-building \rangle \in d])\}]$

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[18]That is, in principle, (61b) could be true just because that building happens to be the same height as the church and the speaker did not expect them to be of exactly the same height. In itself, neither the height of the building nor the height of the church surprises him. We think that this reading is ruled out by the independent property that amazement has to be monotonic, cf. Nouwen (2005). Why amazement is monotonic to begin with is an open problem left for further research.

The crucial property is $\lambda w \lambda d.\langle w, that-building \rangle \in d$: this property applies to d at w, but at none of the expected worlds w'. Again, other properties are ruled out because of the monotonicity requirement (cf. footnote 18). Therefore, the result is similar to *amazing*$_{\text{DP}}$.

3.4.5. Some Further Considerations

What about kinds simpliciter? Atomic kinds do not render accessible index-dependent properties. Hence, they only combine with *amazing*$_{\text{Mod}}$.

(63)   [[Dogs are amazing.]] $= \lambda w.\text{AMAZING}(w)(\text{dog-kind}_e)$

Indeed, (63) does not mean that different animals are dogs than what was expected, but that dogs have different properties than what was expected. In particular, no distribution to individuals is required: (63) can be true thanks to properties that hold of the entire kind but not of singular individuals (e.g., they are incredibly widespread, or: genetically, they have not changed much over the past 300 years).

Nevertheless, our analysis faces a problem if we consider what conjunctions are possible. Crucially, for us, the DP in an *amazing*$_{\text{DP}}$-construction has to denote a particular sort of (intension of a) property. In view of this, it is surprising that CEs can be conjoined with *wh*-clauses.

(64)   He began working with indigenous people at age 19, as a missionary. He received money from people and churches in Minneapolis who wanted to support him, because he had a lot of idealistic goals. He learned the Motilonesa language, their traditions. Going deep into the jungles of Colombia, it's like going into history. **It's amazing, the communities there and how they live.** They have very interesting traditions.[19]

(65)   It's amazing his progress and how happy and healthy he is! [20]

The same problem arises for CEs embedded under *you wouldn't believe*.

(66)   You wouldn't believe the amount of love they provide and what they teach their families.[21]

We hope that closer comparison with Aloni and Roelofsen (this volume)'s work on CQs will provide some valuable insights into this issue.

4. Conclusions

In this paper we have argued that both CQs and CEs receive prototypical DP denotations (individual concepts or index dependent properties that correspond to individual concepts). The differences between various types of C-DPs both w. r. t.

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[19]http://www.brandeis.edu/ethics/Telling_the_Story/panel1.html)

[20]www.teamdonk.org/happyfeetarticle.htm

[21]www1.dshs.wa.gov/word/ea/0705SVNews.doc

interpretation and w.r. t. restrictions on the NP they contain come exclusively from the embedding predicates. Ultimately, three types of predicates emerge: cognitive factives, emotive predicates like *you wouldn't believe*, and another class of emotive predicates like *it's amazing*. The latter two classes differ in that only predicates of the *it's amazing* type require their complements to correspond to index dependent kinds or degrees. Relative clauses are special because they facilitate kind or degree interpretations as required for this last kind. However, they do not give rise to clausal interpretations for DPs. Finally, we have shown that the exclamative flavor of C-DPs stems from either the semantics of the emotive predicate (e.g., *it's amazing, you wouldn't believe*) or, in the case of cognitive factives, from the presence of an adjective used non-restrictively (e.g., *incredible* in *incredible height*).

At this point there are a number of issues that deserve some attention in future research. For instance, we should extend our theory to account for the stand-alone condition of CEs. Also, we would like to be able to explain why there is a difference between definite determiners and demonstratives as arguments within CEs (cf. 11b). Furthermore, we should explore the consequences this proposal has for an analysis of embedded *wh*-exclamatives, and how our analysis can be reconciled with the fact that CEs can be conjoined with *wh*-exclamatives. To conclude, taking into account the monotonicity of amazement (Katz 2005, Nouwen 2005) in more detail will improve the analysis of CEs.

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