MONOTONE AMAZEMENT

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1. Evaluative Adverbs

Adverbs like *amazingly*, *surprisingly*, *remarkably*, etc. are derived from so-called evaluative predicates. There is a subtle difference in meaning between (1-a), where the evaluative adverb *amazingly* is used ad-sententially, and (1-b), where *amazingly* seems to modify the determiner *few*.

(1)   a. Amazingly, few people came to my party.
      b. Amazingly few people came to my party.

Whereas it follows from (1-a) that few people attended my party, this does not necessarily follow from (1-b). It seems that *amazingly few people* are not necessarily *few people*. For instance, it could be that my parties, including this one, are always extremely well-attended. Although this means that many people came to the party, I could still use (1-b) to express that they were by far not as many as I had anticipated.

The meaning contrast is clearer in examples with an absolute gradable adjective. Katz 2005 points out that the entailment in (2-a) holds, whereas the one in (2-b) obviously does not.

(2)   a. Surprisingly, the glass is empty. $\Rightarrow$ The glass is empty.
      b. The glass is surprisingly empty. $\nRightarrow$ The glass is empty.

As Katz points out, however, the contrast turns up with relative gradable adjectives as well. It is possible to consider someone quite short, but at the same time think of this person as *surprisingly tall*, given that, for instance, I had expected him or her to be even shorter. Being *surprisingly tall* therefore does not entail being *tall*.

This shows that at least two occurences of evaluative adverbs should be distinguished. Ad-sentential adverbs as in (1-a) and (2-a) simply comment on a proposition. So, (1-a) says that few people attended my party and that I consider this fact to be amazing. The cases in (1-b) and (2-b), however, are less straightforward. They seem to involve an evaluation of the degree expressed by the adjective or the determiner. One could, for instance, propose an analysis as in (3).

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(3)   Cody is amazingly tall. = The degree to which Cody is tall is amazing.

Morzycki 2004, however, argues against an all too simplistic paraphrase as in (3). For instance, suppose that Cody is extremely short. In fact, he is so short, that it is amazing. It would now follow from an analysis as in (3) that Cody is *amazingly tall*, simply because the degree to which he is tall is amazing. Clearly this is not right. For another example, suppose it has been established that Cody is exactly as long as his neighbour is, not a millimetre shorter or longer. Consequently, both neighbours could find the degree to which Cody is tall amazing. But that does not commit them to consider Cody *amazingly tall*.

Despite these remarks, I will propose an analysis of structures like *amazingly tall* which is not very different from (3). I will propose a relatively simple semantics of evaluative adverbs that rests on the crucial assumption that evaluative predicates are monotone. The starting point for my investigation is therefore the interaction of evaluative adverbs with the polar orientation of expressions.

2.   Evaluation and Polarity

Katz 2005 discusses polarity effects with evaluative adverbs. The examples in (4), for instance, can both be uttered about the same pool of water. They differ, however, in what is expressed about the speaker's expectations.

(4)   a. The water is surprisingly warm.   (the water was expected to be less warm)
      b. The water is surprisingly cold.   (the pool was expected to be warmer)

Katz proposes to account for these effects by assuming that the semantics of evaluative degree modifiers involves universal quantification over degrees. So (4-a), for instance, is paraphrased as: 'there is a degree d such that the water is d-warm and for every degree $d' \geq d$ it is the case that would be surprising that the water is d'-warm'. The domain of quantification for the universal quantifier depends on the polarity of the degree predicate that is being modified. For *warm* the relative ordering relation is '$\geq$', but for a negative scalar predicate like *cold* the ordering relation will be '$\leq$'.

This analysis is partly based on the observation that the polarity effects seem to disappear when the evaluative predicate is not used adverbially. The first sentence in (5), for instance, does not say anything specific about what was expected.

(5)   It is surprising that the pool is 60% full. We thought it'd be totally full or empty.

Katz concludes from this that the morpheme *-ly* is responsible for effects like those in (4) and that, consequently, it is this morpheme that adds universal quantification to the meaning of the evaluative predicate. I will argue, however, that the effects in (4) are due to inferences which are triggered solely on the basis of the monotonicity of both the evaluative predicate and the degree predicate. Evidence for this comes from the realm of nominal quantifiers. Although the examples in (6) have subtle meaning

differences, they all express a similar disappointment about how many people turned up.

(6) a. Surprisingly, few people turned up.   (?less/more were expected)
    b. Surprisingly few people turned up.   (#less/more were expected)
    c. It is surprising that few people turned up.   (?less/more were expected)

The example in (6-c), together with the contrast in (7-a) and (7-b), show that the polarity effects are present in all the different guises evaluative predicates take.

(7) a. It is surprising that many people turned up.   (less/#more were expected)
    b. It is surprising that exactly fifty people turned up. (less/more were expected)

Apparently, evaluative predicates interact with monotonicity. I will therefore propose an analyses for evaluations of quantifiers and quantified statements as well as for evaluations of degree expessions which is based entirely on the assumption that evaluative predicates are monotone. That is, all forms of evaluative predication trigger polarity effects, since all these forms essentially involve a monotone predicate.

Monotonicity is defined as follows. Let P be some operator on propositions.

(8) a. P is MON↑ iff $p \rightarrow p' \Rightarrow P(p) \rightarrow P(p')$
    b. P is MON↓ iff $p \rightarrow p' \Rightarrow P(p') \rightarrow P(p)$.

Viewed as propositional operators, most evaluative predicates seem to be downward entailing. If I find p' *amazing* (or *surprising, remarkable, fortunate, unfortunate, revolting, nauseating,* etc.) then the same would hold for any stronger proposition p. For instance, if the fact that Cody came to my party is remarkable, then it would be equally remarkable had Cody come to my party early. Indications of expectation are examples of upward entailing operations. I cannot expect Cody to come to my party early, without expecting him to come to my party.

In my view, these simple monotonicity inferences are responsible for the polarity effects observed in the previous section. It follows from *Many people came to the party* that *Some people came to the party*. So, if some people turn up and this fact surprises me, then I would have been surprised as well in case many people had turned up. This indicates that my expectation was that no students came.

The main advantage of this analysis is that there is a straightforward relation between adjectives like *surprising* and adverbs like *surprisingly*. In contrast to the proposal in Katz 2005, with this account no additional mechanism is needed to explain polarity effects with evaluative adverbs. These effects occur since the sentence in the scope of the evaluative predicate allows for monotonicity inferences.

There is also a straightforward account for (5). Given that *60% full* is (or at least can be) construed as being non-monotone, nothing follows about other propositions being surprising as well. Since (5) does not commit the speaker to being equally surprised about less or more people being in the pool, nothing can be said about

what causes the surprise. (Hence the felicitous open continuation). Similarly, the question marks in (6-a) and (6-c) are due to the potential exhaustification of the quantificational statement, rendering it non-monotone as well.

As I will explain next, taking evaluative predicates to be monotone will clarify the semantics of evaluative adverbs to considerable degree.

3. Evaluation and the Standard of Comparison

An important difference between the ad-sentential and the modifier use of evaluative adverbs is that the latter is more restricted. As becomes clear from (10), only gradable adjectives can be combined with evaluatives. In this sense they parallel degree modifiers like *very*. Similar observations can be made with respect to determiners.

(9)   a. Surprisingly, Vic is tall/dead/imprisoned.
       b. Surprisingly, Vic has many/some/twenty friends.

(10)   a. Vic is surprisingly/very tall/#dead/#imprisoned.
       b. Vic is surprisingly/very *(well) educated.
       c. Vic has surprisingly/very many/#some/#twenty friends.

These observations support the intuition that was discussed in the first section: when someone is said to be *amazingly tall*, it is not the fact that (s)he is tall that is amazing, but rather the degree to which (s)he is tall. Obviously, a paraphrase like this presupposes gradability.

Gradable adjectives have a positive form in which the relevant degree is contextually determined. So, whereas *2 feet tall* denotes the set of entities that are 2 feet tall, $[_{AP}$ *tall* $]$ denotes the set of entities that are tall to a sufficient degree determined by some contextual norm, the so-called standard of comparison. It is standard practice to assume that this positive form involves some silent operation, referred to below as $\varnothing$ (see Kennedy 2005 and references therein). It is this operation that provides the contextual standard of comparison. I propose that an adverb like *surprisingly* can perform a similar operation. It too provides a standard of comparison, but unlike $\varnothing$, this standard is not contextual, but rather determined by the criterion of causing surprise. So, in parallel to $\varnothing$, the semantics of *surprisingly* is a function from degree predicates to sets of individuals.

(11)   a. $\varnothing \rightsquigarrow \lambda P.\lambda x.\exists d[\mathbf{C}(d) \ \& \ P(d)(x)]$
       b. *surprisingly* $\rightsquigarrow \lambda P.\lambda x.\exists d[\text{SURPRISING}(^\wedge P(d)(x)) \ \& \ P(d)(x)]$

The operator $\varnothing$ takes a degree predicate and returns the set of those individuals for which the predicate holds for some degree d which corresponds to the contextual standard for this predicate (where $\mathbf{C}$ represents the contextual selection).[1]

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[1]This is one of many possible proposals in the literature for how the standard of comparison is incorporated in the positive form. It is not crucial to the analysis, however, that I happen to have chosen this

At first sight, it might seem that this analysis runs into the same problems as did the paraphrase in (3), since (12-c) suggests that something is *surprisingly tall* if the degree to which it is tall is surprising.

(12) a. *tall* $\rightsquigarrow \lambda d.\lambda x.\text{TALL}(x) = d$
    b. $[_{\text{AP}} \varnothing \ tall] \rightsquigarrow \lambda x.\exists d[\mathbf{C}(d) \ \& \ \text{TALL}(x) = d]$
    c. $[_{\text{AP}} \ suprisingly \ tall] \rightsquigarrow \lambda x.\exists d[\text{SURPRISING}(^{\wedge}\text{TALL}(x,d)) \ \& \ \text{TALL}(x,d)]$

All depends, however, on the semantics one assumes for the degree predicate (TALL). One possibility is that degree predicates are taken to be monotone relations (Heim 2000). That is, if something is d-tall, then it is also d'-tall for any $d' \preccurlyeq d$. Given this assumption, the objections against a simple analysis as in (12-c) disappear. Take the case of the incredibly short Cody who despite his surprising height cannot be called *surprisingly tall*. If I am surprised at $\text{TALL}(\text{c}, d)$ then, given the monotonicity of surprise and the monotonicity of the degree predicate, it follows that I would be equally surprised had Cody been taller. This explains why short Cody cannot be called *surprisingly tall*.

Clearly, what I should say of Cody is that he is *surprisingly short*. Assuming, once again, that SHORT is monotone, it follows that if someone is d-short, (s)he is also d'-short for any lesser degree of shortness.[2] So, if I am surprised at Cody's degree of shortness, it follows that in case Cody had been even shorter, I would have been surprised as well. Thus, the monotonicity of degree predicates makes *surprisingly short* a suitable and *surprisingly tall* an unsuitable description of Cody.

Let me finaly return to the contrast I observed at the beginning of the paper. In ad-sentential position, an evaluative adverb is factive. So, from [*Surprisingly, S*] it follows that *S*. This is easily explained if we view the adverb as a parenthetical comment on the assertion of *S* (cf. Potts 2005). As a degree modifier, however, the evaluative adverb shows no traces of factivity. In particular, it was noted that being *surprisingly A* does not entail being *A*. In the absence of an evaluative modifier, the adjective is in its positive form. So, someone is tall if and only if one is at least as tall as some contextually determined norm, the standard of comparison. This standard, however, could be based on a lot of things, among which one's expectations, one's desires, one's obligations, etc. Whereas a modifying evaluative adverb fixes the standard to a specific mode of evaluation, the positive form can be interpreted with respect to a different, potentially higher, standard. This explains why, for instance, something can be *surprisingly tall* without being *tall*.

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particular one. See Kennedy 2005 for extensive discussion.
[2] An elegant and arguably necessary means of relating degree predicates that form polar opposites, like *tall/short*, is taking degrees to correspond to intervals (or *extents*). One can then distinguish between positive degrees of the form $\langle 0, d \rangle$, and negative degrees of the form $\langle d, \infty \rangle$. Viewing degrees as (ordered) sets of values, one can moreover define an ordering relation that applies to both negative and positive degrees: $d \succcurlyeq d' \Leftrightarrow d \cap d' = d'$. See Kennedy 2001 and references therein for discussion.

4. Conclusion

I have defended a simple analysis of evaluative adverbs modifying gradable adjectives. Crucial to this analysis is the interaction of forms of monotonicity. Based on the hypothesis that evaluative predicates are monotone, I have been able to maintain, first of all, that both evaluative predicates and adverbs mark polar orientation and, second, that when evaluative adverbs modify gradable adjectives, they express evaluations of degrees.

As far as I can see, the analysis extends without problems to cases where evaluatives combine with gradable determiners like *many* and *few*. However, I leave the precise details of the correspondence of vague determiners to degree predicates to further research.

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