Comments on Morzycki and Katz[*]

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1 Morzycki (2005)

1.1 Morzycki's proposal

Morzycki aims to account for a perceived parallel between prenominal adjectives and preverbal adverbs in the availablity of nonrestrictive interpretations. More precisely, he sets out to account for the observation that whereas prenominal adjectives and preverbal adverbs allow for both a restrictive and a nonrestrictive reading, postnominal adjectives and postverbal adverbs admit of only a restrictive reading.

Let's begin with adjectives. Since adjectives are normally prenominal in English, one possibility is to use rather 'heavy' adjectival phrases in order to see the contrast that Morzycki is after. He offers the following examples (the judgments are also his):

(1)   a.   Every *needless and profoundly reprehensible war crime* should be prosecuted.   (Morzycki's (8a))
   b.   #Every *war crime needless and profoundly reprehensible* should be prosecuted.   (Morzycki's (8b))

(2)   a.   Last year, while talking to the kids, [Harold] used several *obviously stunningly inappropriate profanities*.   (Morzycki's (9a))
   b.   #Last year, while talking to the kids, [Harold] used several *profanities obviously stunningly inappropriate*.   (Morzycki's (9b))

As Morzycki observes, the examples in (1b) and (2b) are pragmatically odd. The sentence in (1b) suggests that not every war crime is needless and reprehensible, while

the one in (2b) suggests that not all profanities are inappropriate. If a postnominal adjectival phrase can receive only a restrictive interpretation, then the pragmatic oddness of (1b) and (2b) is expected. The examples in (1a) and (2a) do not give rise to this oddness because a prenominal adjectival phrase can also be interpreted nonrestrictively, and this is the natural reading of the adjectival phrases in (1a) and (2a).

Perhaps a somewhat simpler set of examples to process is the following, which makes the same point:[1]

(3) a. The students good at soccer were absent from class today.
'The students who are good at soccer were absent from class today.'
(no nonrestrictive reading)
b. The students, good at soccer, were absent from class today.
'The students, who are good at soccer, were absent from class today.'
(no restrictive reading)
c. The good-at-soccer students were absent from class today.
'The students who are good at soccer were absent from class today.'
'The students, who are good at soccer, were absent from class today.'

Morzycki argues, following Shaer (2000, 2003), that preverbal and postverbal adverbs exhibit the same pattern as adjectives. His main argument builds on the following rather intricate example:

(4) I'll bet you $80 that Floyd, who has read a lot of medical books, could easily perform a successful nose job in a moving taxi. (Morzycki's (18))

Morzycki claims that *easily* in (4) has both a restrictive and a nonrestrictive reading. Suppose that Floyd manages to perform a successful nose job in a moving taxi but that it was not easy. Do I win or lose the bet? According to Morzycki, on the restrictive reading of *easily*, I lose, but on its nonrestrictive reading, I win. Evidence for this is that if *easily* is postverbal, the intuition is that I lose the bet, which Morzycki takes as showing that only the restrictive reading is possible:

(5) I'll bet you $80 that Floyd, who has read a lot of medical books, could perform a successful nose job in a moving taxi easily. (Morzycki's (19))

Another set of examples that Morzycki cites in support of his view is the following:

(6) a. The Titanic('s) rapidly sinking caused great loss of life. (Morzycki's (16))
(restrictive, nonrestrictive)
b. The Titanic('s) sinking rapidly caused great loss of life (Morzycki's (17))
(restrictive, #nonrestrictive)

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[1]Note that (3c) is very colloquial.

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I find the following contrast, due to Shaer (2003), a bit more robust (the judgments are Shaer's):

(7)   (Shaer's (54))

      a.   Since the Titanic rapidly sank off the coast of Newfoundland, everyone is afraid of icebergs.   (= temporal)

      b.   #Since the Titanic sank rapidly, everyone is afraid of icebergs.

      c.   Since the Titanic sank rapidly, it must have had a design flaw.   (= causal)

Shaer's view is that (7b) is odd because the postverbal placement of *rapidly*, which yields only a restrictive reading, is compatible with only a causal interpretation of *since*, and yet the second clause does not naturally support such a causal interpretation.

Morzycki proposes to analyze the nonrestrictive readings of prenominal adjectives and preverbal adverbs in Potts's (2003) two-dimensional framework. However, since the details of his analysis are not spelled out (in particular, no example with an adverb is analyzed), I will not attempt to fill in the missing details here.

1.2   Comments on Morzycki's proposal

I see two difficulties with Morzycki's proposal, a minor one and a less minor one. The minor one concerns his main set of examples in (4) and (5). Accepting Morzycki's judgment that the speaker loses the bet in (5) in the described scenario, I nevertheless do not think that these examples show what Morzycki claims that they show. The problem is that the modal verb *could* is crucial here, for otherwise it seems clear that the intuition that the bet is lost when the adverb appears postverbally is no longer valid:

(8)   a.   I'll bet you $80 that Floyd easily performed a successful nose job in a moving taxi.

      b.   I'll bet you $80 that Floyd performed a successful nose job in a moving taxi easily.

Recall that, according to the scenario, Floyd manages to perform a successful nose job in a moving taxi but it was not easy. However, in this case, the speaker clearly loses the bet, no matter which sentence in (8) is chosen.

Since *could* evidently interferes in (4) and (5), I suggest that what is really happening on the alleged nonrestrictive reading of *easily* in (4) is that *easily* is (restrictively) modifying *could*. An argument in favor of this suggestion comes from an example in which the meaning of *easily* is incompatible with the meaning of the main verb:

(9)   a.   It could easily rain today.

      b.   #It could rain today easily.

          (acceptable with a pause before *easily*)

(10) a. #It easily rained today.
  b. #It rained today easily.

When *easily* (restrictively) modifies *could*, as in (9a), the resulting meaning is roughly
that the possibility in question is probable (in this case, the possibility that it rains today).

Of course, even if (4) and (5) do not support Morzycki's argument, it is still open
what the meaning difference between the sentences in (8) is. The claim that it is a
difference between nonrestrictive and restrictive modification only labels the problem,
as far as I can tell. Observe that one difference is that only the postverbal placement of
easily is compatible with new information focus:

(11) How did Floyd perform the nose job?
  a. Floyd performed the nose job easily.
  b. #Floyd easily performed the nose job.

The more significant difficulty with is Morzycki's proposal is that he does not offer
a definition of restrictive and nonrestrictive modification, and yet his account implicitly
depends on one. Instead, Morzycki takes it for granted that it is evident what the relevant
definition is and that it yields the desired results when applied to the contrasts that he
wants to account for.

I will conclude with straightforward formal definitions of restrictive and nonrestric-
tive modification that arguably have the virtue of reflecting the traditional intuitions
behind these notions. Although the present interest is in cases in which the modification
is not vacuous (i.e., does not result in the empty set), as in (12b) and (12d), I state a
more general definition of restrictive and nonrestrictive modification as well (see (12a)
and (12c)).

(12) Let a model $\mathcal{M}$ consist of a nonempty set O of objects o, a nonempty set S of
  possible situations s, and an interpretation function $[\![\cdot]\!]$, and let M and H designate
  functions from situations and objects to truth values.
  a. M *restrictively* modifies H in s iff $[\![\lambda o[M_s(o) \wedge H_s(o)]]\!]_{\mathcal{M},g} \subset [\![H_s]\!]_{\mathcal{M},g}$ or
    $[\![\lambda o[M_s(o) \wedge H_s(o)]]\!]_{\mathcal{M},g} = \emptyset$.
  b. M *nonvacuously restrictively* modifies H in s iff M restrictively modifies H in
    s and $[\![\lambda o[M_s(o) \wedge H_s(o)]]\!]_{\mathcal{M},g} \neq \emptyset$.
  c. M *nonrestrictively* modifies H in s iff $[\![\lambda o[M_s(o) \wedge H_s(o)]]\!]_{\mathcal{M},g} = [\![H_s]\!]_{\mathcal{M},g}$.
  d. M *nonvacuously nonrestrictively* modifies H in s iff M nonrestrictively mod-
    ifies H in s and $[\![\lambda o[M_s(o) \wedge H_s(o)]]\!]_{\mathcal{M},g} \neq \emptyset$.

Observe that these definitions are neutral regarding what the set O of objects is: they
may be physical objects, events, times, or still something else. Note also that if the
denotation of H in s is a singleton set, then M cannot nonvacuously restrictively modify
H in s, which captures the old idea that a proper noun can be nonrestrictively but not

restrictively modified.

I find that the definitions in (12a) and (12c) can be applied quite successfully to the examples with adjectival modifiers in (1), (2), and (3). In contrast, the examples with adverbial modification in (6), (7), and (8) do not work so well. The problem is that in each of the situations in question there is a single event described (i.e., a singleton set), hence independent of whether the adverb is preverbal or postverbal the modification can only be nonrestrictive according to (12). After all, there was only one sinking of the Titanic, and in the relevant situation in (8) there was only one nose job performed by Floyd.

In sum, this suggests that either the definitions in (12) are not the intended ones of restrictive and nonrestrictive modification or that the semantic difference between the preverbal and postverbal placement of adverbs does not (usually) correlate with the difference between nonrestrictive and restrictive modification.

2 Katz (2005)

2.1 Katz's proposal

Katz sets out to develop a semantic account of degree modifiers such as *surprisingly*, *frustratingly*, *uncomfortably*, *unexpectedly*, etc., which he claims express a propositional attitude towards the fact that a particular degree property holds:

(13) a. The pool is surprisingly full.
  b. Rebecca is frustratingly late.
  c. The car is uncomfortably small.

Katz focuses on *surprisingly*, though the analysis that he offers for *surprisingly* can be generalized to the other degree modifiers in this class as well.

In what follows, I will reformulate Katz's analysis in an extensional two-sorted type theory in which s (the type of possible worlds) is treated as a basic type, on a par with e and t. The reasons for the reformulation are greater perspicuity and the fact that it will facilitate my comments on his analysis in the next section. Note that nothing essential is lost in this reformulation.

Katz's proposal for the semantics of *surprisingly* is essentially as follows. The adjective *surprising* is analyzed in terms of a basic predicate surprising that is a function from possible worlds and propositions to truth values, as shown in (14a), where w is a variable of type s for possible worlds and p is a propositional variable of type $\langle s, t \rangle$. This predicate receives the interpretation given in (14b) (where W is the set of possible worlds in the model).

(14) a.   surprising $\rightsquigarrow \lambda w \lambda p[\text{surprising}_w(p)]$

    b. $[\![\mathsf{surprising}_w(p)]\!]_{\mathcal{M},g} = 1$ iff for all $w' \in W$: if $[\![p]\!]_{\mathcal{M},g}(w') = 1$,
        then w' is a surprising world.
        ($\approx$ Katz's (30))

The suffix *-ly₁* is treated as a three-place predicate that applies to an attitude predicate Q, a function P from worlds, degrees, and individuals to truth values, and an individual x such that x has P to degree d and for any degree d' that is equal to d or stands in the relation $\bowtie_P$ to d, Q holds of the fact that x has P to degree d', as detailed in (15).[2]

(15) $-\mathsf{ly}_1 \rightsquigarrow \lambda Q \lambda P \lambda x [\exists d[P_w(x) = d \wedge \forall d'[(d' = d \vee d' \bowtie_P d) \rightarrow$
      $Q_w(\lambda w'[P_{w'}(x) = d'])]]]$
      $=: \mathsf{ly\_1}_w$
      ($\approx$ Katz's (40))

The relation $\bowtie_P$ is a constant (the polarity or direction of comparison) determined by the choice of P. The two possible values of $\bowtie_P$ are $>$ ('greater than') and $<$ ('less than'). $\bowtie_P$ also plays a role in the analysis of the positive and comparative form of gradable adjectives.

    The result of combining *-ly₁* with *surprising* by functional application is shown in (16).[3]

(16) $\mathsf{surprisingly}_1 \rightsquigarrow \mathsf{ly\_1}_w(\mathsf{surprising}) =$
    $\lambda P \lambda x [\exists d[P_w(x) = d \wedge \forall d'[(d' = d \vee d' \bowtie_P d) \rightarrow$
      $\mathsf{surprising}_w(\lambda w'[P_{w'}(x) = d'])]]]$
    ($\approx$ Katz's (39))

The derivation of the sentence in (13a) is outlined in (17). The crucial point is that gradable adjectives (e.g., *full*) are treated as functions from worlds, degrees, and individuals to truth values (of type $\langle s, \langle e, \langle e, t \rangle \rangle \rangle$), as seen in (17a).

(17) a. $\mathsf{full} \rightsquigarrow \lambda w \lambda d \lambda x[\mathsf{full}_w(x) = d]$
         $\bowtie_{\mathsf{full}} = >$
    b. $\mathsf{surprisingly}_1 \ \mathsf{full} \rightsquigarrow$
        $\lambda x[\exists d[\mathsf{full}_w(x) = d \wedge \forall d'[(d' = d \vee d' > d) \rightarrow$
          $\mathsf{surprising}_w(\lambda w'[\mathsf{full}_{w'}(x) = d'])]]]$

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[2]The indexing of *-ly* with '1' is intended to make clear that *-ly* is ambiguous. As Katz points out, the use of *surprisingly* as a sentence modifier (e.g., *Surprisingly, the pool is full*) is different from its use as a degree modifier. I might add that many languages (e.g., German) distinguish these two uses morphologically. Note that Katz writes 'R_P' for $\bowtie_P$.

[3]Katz does not include '$d' = d$' as an option here (whereas he does in (15)), but I have added it because it is crucial unless we ensure that $\bowtie_P$ is $\geq$ or $\leq$.

    c.   The pool is surprisingly$_1$ full $\rightsquigarrow$
$\exists d[\text{full}_w(\text{the\_pool}) = d \wedge \forall d'[(d' = d \vee d' > d) \rightarrow$
$\text{surprising}_w(\lambda w'[\text{full}_{w'}(\text{the\_pool}) = d'])]]$

Katz suggests that a natural paraphrase of the analysis in (17c) is the following:

(18)   It is surprising that the pool is as full as it is and it'd be surprising were it fuller. (Katz's (42))

2.2   Comments on Katz's proposal

Since Katz derives *surprisingly*$_1$ from *surprising* and *-ly*$_1$, my comments will address his treatment of *surprising* and his analysis of *-ly*$_1$ in turn.

Surprising. I see two difficulties with Katz's treatment of *surprising* in (14), a minor one and a less minor one. To make the discussion more concrete, let's consider examples analogous to those in (13):

(19)   a.   It is surprising that the pool is full.
        b.   It is frustrating that Rebecca is late.
        c.   It is uncomfortable that the car is small.

To begin with, notice that *surprising*, *frustrating*, and *uncomfortable* are all factive. For example, if it is surprising that the pool is full, then the pool is full. Similarly, if it is frustrating that Rebecca is late, then Rebecca is late. However, the problem is that the factivity of *surprising* does not follow from the semantics in (14b) because nothing guarantees that p actually holds of w, the world of evaluation. Nevertheless, this problem is admittedly a minor one, because the semantics in (14b) could easily be supplemented with a clause requiring that p hold of w.

    A more serious problem with the semantics in (14b) is that it rules out the possibility that there is a world w'' in which p is true but which is not surprising, and yet this seems incorrect. For example, suppose that it is surprising that the pool is full: it is still easy to imagine a context in which the pool is full but it is not surprising that the pool is full. This problem arises because Katz effectively ascribes to *surprising* a counterfactual semantics: the analysis in (14b) equates *It is surprising that p* with the paraphrase 'If p were the case, then that would be surprising'. However, as just mentioned, this contradicts the clear intuition that p could hold without this being surprising. More concretely, *It is surprising that the pool is full* is simply not accurately paraphrased by 'If the pool were full, then that would be surprising'. This difficulty cannot be overcome without an essential revision of the semantics that Katz proposes for *surprising*.[4]

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[4]Katz acknowledges (sect. 3) that the semantics for *surprising* in (14b) is 'clearly not adequate' but adds that it 'will serve our purposes here'. However, he does not clarify what he finds inadequate about

The revision that I would like to suggest is that the semantics of *surprising* is based on a particular *accessibility relation* between worlds.[5] The idea is that given a world w, certain propositions may be surprising in w and, moreover, these propositions may be surprising in certain other worlds w' as well. Thus, from the perspective of w, we can pick out all of those worlds w' in which the surprising propositions of w are also surprising in w'. Employing '$\overset{S}{\longrightarrow}$' for the accessibility relation in question, '$w \overset{S}{\longrightarrow} w'$' will mean that from the perspective of w, w' is compatible with w with respect to the propositions that are surprising in w. Clearly, if there is a proposition that is surprising in w but not in w', then w' is not compatible with w in the sense intended. A reasonable condition on this accessibility relation is that it be reflexive, because it seems natural that any world w should be compatible with itself with respect to the propositions that are surprising in it:

(20) $\forall w[w \overset{S}{\longrightarrow} w]$ (reflexivity of $\overset{S}{\longrightarrow}$)

My proposal for the semantics of *surprising*, which makes vital use of the accessibility relation just introduced, is given in (21). Essentially, the meaning of *surprising* with respect to a world w is a function that applies to a proposition p and states that for every world w' that is compatible with w with respect to the propositions that are surprising in w, p is true in w'.

(21)   surprising $\rightsquigarrow \lambda p[\forall w'[(w \overset{S}{\longrightarrow} w') \to p(w')]]$
          =: surprising$_w$

Observe that the semantics for *surprising* in (21) in combination with the principle in (20) overcomes the two difficulties discussed above. First, the factivity of *surprising* follows straightforwardly, hence if it is surprising that the pool is full, the pool is full.

(22)   *Fact.* $\forall w \forall p[\text{surprising}_w(p) \to p(w)]$

Second, if it is surprising that p, it is still possible for p to hold without this being surprising, hence if it is surprising that the pool is full, it is still possible for the pool to be full without this being surprising. The simple point is that given a world w and a proposition p that is surprising in w, there is a world w' in which p is true and not surprising, and this is permissible precisely because in this case w' is not compatible with w with respect to the propositions that are surprising in w to begin with.

-ly. Again, I see two problems, a minor one and a less minor one. As for the minor problem, I find it surprising that Katz's analysis of -ly_1 in (15) does not make explicit

(14b). I guess that I differ from him in considering (14b) problematic enough that it cannot really serve our purposes here.
    [5]The use of accessibility relations is standard in applied modal logic (Chellas, 1980).

reference to an expected degree even though he clearly shares the intuition that an expected degree plays a role in the semantics of these degree modifiers (see his sect. 4). For example, the analysis of (13a) in (17c) does not make explicit the intuition that if the pool is surprisingly full, then it is fuller than expected—how d in (17c) relates to the expected degree is left completely open. Nevertheless, this would be easy enough to amend in (15).

A more serious problem about the analysis in (15) concerns the idea that degrees modifiers such as *surprisingly*, *frustratingly*, etc. express *de re* attitudes towards particular degrees. To see what this problem amounts to, let's consider the analysis of (13a) in (17c) and the following scenario. Suppose that the pool is 4 m deep. We expected it to be 50% (= 2 m) full. It turns out to be 75% (= 3 m) full, hence the pool is surprisingly full. Notice, however, that the analysis in (17c) requires the following to hold: for every degree d' of possible fullness greater or equal to 75% (= 3 m), it is surprising that the pool is d'-full. But this means that for every value of d' from 75% (= 3 m) to 100% (= 4 m), it is surprising that the pool is d'- full. Yet this cashes out as the following: it is surprising that the pool is 75% (= 3 m) full, it would be surprising if the pool were 76% (= 3.04 m) full, it would be surprising if the pool were 77% (= 3.08 m) full, ..., it would be surprising if the pool were 99% (= 3.96 m) full, and it would be surprising if the pool were 100% (= 4 m) full. If degrees were more finely individuated, then we would get attitudes of surprise towards many more degrees of possible fullness as well, e.g., it would be surprising if the pool were 76.5% (= 3.06 m) full or it would be surprising if the pool were 76.55% (= 3.062 m) full.

Frankly, I find it utterly implausible that the sentence in (13a) expresses a large (perhaps even infinite) set of possible *de re* attitudes of surprise towards particular degrees of possible fullness. An argument in favor of this implausibility is that the sentence in (13a) may be true even if we have no idea exactly how full the pool is. Again, suppose that we expected the pool to be 50% (= 2 m) full. Imagine, moreover, that the side of the pool has a horizontal black line marking the depth of 2 m. It will then be immediately apparent whether the pool is fuller than expected—we only have to check whether the water level is above the black line. In general, we do not need to know exactly how full the pool is to judge whether the pool is surprisingly full. But if correct, then this suggests that *surprisingly*$_1$ does not express a *de re* attitude towards particular degrees after all.

I would like to suggest an alternative analysis, one that takes these degree modifiers to express *de dicto* attitudes towards degrees. The new analysis of *-ly*$_1$ is presented in (23a) (where '$d_{\text{expected}_{w,P,x}}$' denotes the expected degree in w of x with respect to P), and the result of combining *-ly*$_1$ with *surprising* (see (21)) by functional application is shown in (23b).

(23) a. $\text{-ly}_1 \rightsquigarrow \lambda Q \lambda P \lambda x [Q_w (\lambda w' [\exists d [P_{w'}(x) = d \wedge d \bowtie_P d_{\text{expected}_{w,P,x}}]])]$
            $=: \text{ly\_1}_w$

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b. surprisingly$_1 \rightsquigarrow$ ly_1$_w$($\lambda w'$[surprising(w')]) =
$\lambda P \lambda x$[surprising$_w$($\lambda w'$[$\exists d[P_{w'}(x) = d \wedge d \bowtie_P d_{\text{expected}_{w,P,x}}]$])]
=: surprisingly_1$_w$

Basically, the meaning of *surprisingly$_1$* in (23b) is a function that takes a degree pred-
icate P and an individual x and asserts that it is surprising that the degree d of x with
respect to P stands in the relation $\bowtie_P$ to the expected degree of x with respect to P.

For the sake of completeness and comparison (see (17c)), the derivation of the sen-
tence in (13a) is shown in (24).

(24) The pool is surprisingly$_1$ full $\rightsquigarrow$ surprisingly_1$_w$(full)(the_pool) =
surprising$_w$($\lambda w'$[$\exists d$[full$_{w'}$(the_pool) = $d \wedge d > d_{\text{expected}_{w,\text{full,the\_pool}}}$]])

Notice that the analysis in (23b) overcomes the two problems discussed above. First,
the expected degree of x with respect to P receives a prominent place in that the actual
degree of x with respect to P is explicitly compared with it.

Second, the attitude expressed by *surprisingly$_1$* is a *de dicto* attitude towards no
degree in particular. To see this, let's reconsider the scenario described above in which
the pool is 75% (= 3 m) but that we expected it to be 50% (= 2 m) full. Clearly, the pool
is surprising full, and according to the analysis in (24) this straightforwardly means that
it is surprising that the degree of fullness of the pool is greater than expected. Since the
attitude of surprise is not towards a particular degree of fullness, it is not required that
we know exactly how full the pool is. To put it another way, the attitude of surprise
expressed in (24) is towards the *general* proposition that the degree of fullness of the
pool (whatever that may be exactly) is greater than expected. In contrast, the attitude of
surprise expressed in (17c) is towards a *singular* proposition about a particular degree
d' of fullness of the pool, one for every degree d' of possible fullness of the pool.

I conclude with three predictions made by the revised analyis. First, in the scenario
outlined above in which the pool is 75% full, it would still be surprising if the pool were
more than 75% full, precisely because the general proposition that the degree of fullness
of the pool is greater than expected would still hold, hence the monotonicity property
that Katz notes and accounts for is also captured here.

Second, the factivity of *surprising* (see (22)) is inherited by *surprisingly$_1$*: the anal-
ysis in (24) entails that the pool is fuller than expected in the world of evaluation. By
contrast, the analysis in (17c) entails merely that the pool is full to degree d in the world
of evaluation.[6]

Third, and most interestingly, the analysis in (24) makes a clear prediction if the
pool were less full than it actually is but still fuller than expected. Again, if the expected
fullness of the pool is 50% and its actual fullness is 75%, then the pool is surprisingly

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[6]Note that a further difference in this connection is that this factivity in Katz's analysis is due not to
the semantics of *surprising* but rather to that of -*ly$_1$*.

full. But, moreover, if the pool were more than 50% but less than 75% full, it would still be surprisingly full, precisely because the general proposition that the degree of fullness of the pool is greater than expected would still hold, a prediction that conforms to our intuitions. Note that this result contrasts sharply with the analysis in (17c), which leaves it open whether the pool would be surprisingly full in this case.

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