Toward a General Theory of Nonlocal Readings of Adjectives[1]

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Abstract. Adverbial readings of adjectives (as in *The occasional sailor strolled by*) have been a longstanding curiosity, but are often thought peripheral and idiosyncratic. This paper argues that such nonlocal readings are both more common and more systematic than previously recognized. The empirical aim here is to demonstrate that despite some real idiosyncrasies, the regularities are sufficient to require a unified account. Adjectives that give rise to these readings fall into three classes distinguished by the restrictions they impose on the quantificational force of their determiner. These restrictions and the unexpected wide scope of the adjective can both be explained by assuming that the relevant adjectives are quantificational, trigger QR from inside the DP, and leave behind a type-shifted trace.

Keywords: adjectives, nonlocal readings, scope, occasional construction, average.

1. Introduction

One of the stranger properties of certain adjectives is that they are sometimes interpreted as though they weren't adjectives at all. The best-studied case of this involves so-called adverbial readings of *occasional* and related frequency adjectives (Bolinger 1967, Stump 1981, Larson 1999, Zimmermann 2003, Schäfer 2007, Gehrke and McNally 2010, DeVries 2010), illustrated in (1):

(1)   An occasional sailor strolled by.
      a. *internal*: 'Someone who sails occasionally strolled by.'
      b. *external*: 'Occasionally, a sailor strolled by.'

The well-behaved reading is the one in (1a), called the internal reading. The odder and therefore more interesting one is in (1b), the external or adverbial reading, where the adjective contributes a semantics that would normally be associated with an adverb. This could be framed as a scope puzzle: why does the adjective apparently take scope outside its DP? A number of additional puzzles arise as well, including the rather mysterious fact that (1b) would mean precisely the same thing on the external reading if *an* were replaced with *the*.

This phenomenon and the *occasional* construction more generally are sometimes regarded as a kind of grammatical curiosity, vexing and interesting, but probably peripheral and idiosyncratic. My aim here will be to demonstrate that the opposite is true: they are in fact the tip of a much larger iceberg. Such readings are both far more common and more systematic than has been gener-

ally recognized. Larson (1999) and Schwarz (2006, to appear) point out a number of connections among them and take a broader analytical outlook. Apart from that, though, such nonlocal readings of adjectives (I borrow the term from Schwarz) typically remain unobserved or are given an independent explanation for every lexical-semantic flavor of adjective that manifests them. But although there is some real quirkiness in this domain, the regularities are sufficiently numerous and robust to require a unified analysis.

Section 2 will identify some of these regularities across several lexical classes of adjective and make the case for their pervasiveness. They encompass *average/typical* (Kennedy and Stanley 2009), *wrong* (Haïk 1985, Schwarz 2006, to appear), *whole/entire* (Moltmann 1997, 2005, Morzycki 2002), *possible* and its kin (Larson 2000, Schwarz 2005, Romero 2013, Leffel 2014), *unknown* and its kin (Abusch and Rooth 1997), and perhaps even *same* and *different* (Nunberg 1984, Heim 1985, Carlson 1987, Keenan 1992, Moltmann 1992, Beck 2000, Lasersohn 2000, Majewski 2002, Alrenga 2006, 2007a, b, Barker 2007, Brasoveanu 2011) – and there are others still. Section 3 will discern in the data some patterns according to which adjectives with nonlocal readings can be grouped into three classes according to the restrictions they impose on the quantificational force of their determiner. I'll call these the ellipsis class, the weak-determiner class, and the quantifier-resistant class. Section 4 will sketch an analysis of a few adjectives with an eye to elucidating the properties of these classes in a generalizable way. The theoretical claims on which this analysis is built are that the relevant adjectives are quantificational, trigger Quantifier Raising from inside the DP, and leave behind a type-shifted trace. The determiner restrictions and unexpected wide scope follow. Section 5 concludes.

2. Nonlocal readings are widespread

2.1. Frequency adjectives and common properties of nonlocal readings

To identify the properties that nonlocal readings share, it helps to first consider *occasional*, the paradigm case, in some detail. We've already briefly encountered three of such properties: the unexpectedly wide-scope interpretation, the internal/external ambiguity, and an unexpected interpretation of the determiner.

On that last point, more should be said. As already noted, on the external reading, *a* and *the* mean more or less – and perhaps precisely – the same thing. But worse, *your* seems to have this meaning as well:

(2)   {An/The/Your} occasional sailor strolled by.
        'Occasionally, a sailor strolled by.'

This observation is widely made in the literature on this construction (Bolinger 1967, Stump 1981, Larson 1999, Zimmermann 2003, Schäfer 2007, Gehrke and McNally 2010, 2015, DeVries 2010), but for the most part is treated as something that must ultimately be stipulated (Gehrke and Mc-

Nally 2010 being notable exceptions). Other frequency adjectives, such as *infrequent* (*An infrequent visitor was seen*) and *sporadic* (*A sporadic shot was fired*) behave more or less similarly (Larson 1999).

There is further odd determiner behavior to be recognized, though. With most other determiners, the external reading is unavailable:

(3)   {Every/Some/Several/Many/Most} occasional sailor(s) strolled by.
    a.   *internal*: '*D* person/people who sail(s) occasionally strolled by.'
    b. #*external*: 'Occasionally, *D* sailor(s) strolled by.'

For the sake of having a convenient label, I'll refer to these determiners as 'inherently quantificational'. I mean this, for the moment, as a pretheoretical descriptive term for determiners other than *the* and *a*, making no commitments about how this distinction should be cashed out.[2] It is, of course, not at all clear why the external reading should disappear here. Conceptually, there is absolutely nothing wrong with what (3), on the external reading, would be trying to mean.

Another restriction on the external reading concerns the position of the adjective relative to other adjectives. If *occasional* (or other frequency adjective) occurs leftmost in a sequence of adjectives – and therefore presumably in a structurally higher position – both readings are possible:

(4)   The occasional angry sailor strolled by.
    a.   *internal*: 'Someone angry who sails occasionally strolled by.'
    b.   *external*: 'Occasionally, an angry sailor strolled by.'

When another adjective occurs above it, however, the external reading is lost:

(5)   The angry occasional sailor strolled by.
    a.   *internal*: 'Someone angry who sails occasionally strolled by.'
    b. #*external*: 'Occasionally, an angry sailor strolled by.'

The external reading is also absent in coordinate structures:

(6)   The occasional and angry sailor strolled by.
    a.   *internal*: 'Someone angry who sails occasionally strolled by.'
    b. #*external*: 'Occasionally, an angry sailor strolled by.'

It is also absent when the adjective hosts a degree modifiers:

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[2]The most straightforward option would probably be to adopt a DRT/File Change Semantics (Kamp 1981, Heim 1982) conception of definiteness, in which *a* and *the* have no quantificational force of their own. On this view, though, it would seem more than slightly mysterious that *this* and *that* also don't support external readings

(7)   The very occasional sailor strolled by.
        a. *internal*: 'Someone who sails very occasionally strolled by.'
        b. #*external*: 'Very occasionally, a sailor strolled by.'

2.2. 'Average'

There is a longstanding linguistic and philosophical debate around the semantics of *average* and *typical*, chiefly because of sentences like (8) (Carlson and Pelletier 2002, Kennedy and Stanley 2009):

(8)   An average American has 2.3 children.

The problem is usually taken to be one of reference: to what do *an average American* and *2.3 children* refer? But as Kennedy and Stanley (2009) observe, one might view this as a compositional problem rather than as an issue of reference. That's what's most relevant here, because it turns out that this construction has all the signature features of the *occasional* construction noted above.

First, there is an internal/external ambiguity:

(9)   An average American has 2 children.
        a. *internal*: 'An American, who is typical, has 2 children.'
        b. *external*: 'On average, an American has 2 children.'

Second, there are unexpected interpretations of the determiner, and in precisely the same way as for *occasional*. *A*, *the*, and *your* all wind up meaning the same thing:

(10)   {The/Your} average American has 2 children.
        a. *internal*: '{The/Your} American that's a typical one has 2 children.'
        b. *external*: 'On average, an American has 2 children.'

Third, on the external reading, the same restriction is imposed against other determiners:

(11)   #{Every/Most/Some/Several/Two} average American(s) {has/have} 2.3 children.

Here, I've exploited the convenient fact that *2.3 children* normally forces the external reading. On the internal reading, it would require that there be a plurality of children 2.3 children, counter-pragmatically. This reading is in fact possible if we assume the existence partial children. Fourth, as before, external readings are available only when *average/typical* is leftmost in a string of adjectives:

(12)   a.   An average irritable American has 2.3 children.
        b. #?An irritable average American has 2.3 children.

Again, (12b) has only the internal reading and therefore requires recognizing fractional children. Fifth, as before, the external reading is lost in coordinate structures:

(13) #An irritable and average American has 2.3 children.

Sixth, it's also lost in the presence of degree modification:

(14) #A very average American has 2.3 children.

2.3. 'Wrong'

The version of the now-familiar pattern emerges once again with *wrong* (Haïk 1985, Schwarz 2006, to appear). It too has an internal/external ambiguity, though perceiving it is slightly trickier. Suppose Floyd is a spy who is required to provide his interlocutor with false information and deprive her of true information. If he succeeds in this, (15) is true on the internal reading, on which the information provided was incorrect:

(15) Floyd gave the wrong answer.
      a. *internal*: 'Floyd gave an answer that was incorrect.'
      b. *external*: 'Floyd gave an answer that it was wrong of him to give.'

On the external reading, (15) is false, because Floyd answered as he is supposed to. On the other hand, if Floyd slips up at some point and accidentally answers a question truthfully, the situation is flipped: (15) is still true, but only on the external reading: he provided information that he isn't supposed to provide, namely, true information. Something similar happens in (16):

(16) Floyd killed the wrong person.
      a. *internal*: 'Floyd killed a person that was just a wrong person in general.'
      b. *external*: 'Floyd killed a person that it was wrong of him to kill.'

There is again an odd fact about the interpretation of the determiner: *the* is interpreted as an indefinite. In (15), there need not have been only one wrong answer, and in (16), there need not have been only one person who must not be killed. The picture is slightly different, though. *Your* is impossible here except on its usual possessive reading, irrelevant here:

(17) a. ?Floyd gave your wrong answer.
      b. ?Floyd killed your wrong person.

Strangely, it's not just that the definite determiner is interpreted as an indefinite, but it's the principal way to say this. The indefinite would be unusual on the external reading:

(18) a. Floyd gave a wrong answer.
      b. Floyd killed a wrong person.

It's not actually fully clear what reading these receive. For me, an external reading is possible, but only when there is a desire to communicate that there there are many answers that shouldn't be given and people that shouldn't be killed.

Apart from that quirk, again we encounter restrictions on the choice of determiner on the external reading:

(19) #Floyd opened {every/most/some/several/two} wrong envelope.

As before, inherently quantificational determiners fail.

The requirement that the nonlocal adjective be structurally higher than other adjectives again emerges:

(20) a. Floyd opened the wrong brown envelope.
      b. #Floyd opened the brown wrong envelope.

So does the ban on coordination:

(21) #Floyd opened the wrong and brown envelope.

And so does the ban on degree modification:

(22) #Floyd opened the very wrong envelope.

2.4. 'Whole' and 'entire'

The parallels continue with *whole* and *entire*, though there will be an important twist. As before, there is an ambiguity (Moltmann 1997, 2005, Morzycki 2002), which I'll assume is a special case of the internal/external ambiguity:

(23) A whole ship was submerged.
      a. *internal*: 'A complete, structurally intact ship was submerged.'
      b. *external*: 'A ship was wholly submerged.'

(24) The whole apple is terrible.
      a. *internal*: 'The complete, structurally intact apple, the one with no bites taken out of it, is terrible.'
      b. *external*: 'All parts of the apple are terrible.'

The internal reading is actually the unusual one in these cases, and may take a moment to perceive. It's what could be expressed more or less unambiguously with *complete* – indeed, I suspect that it's

precisely the existence of this unambiguous alternative that accounts (on broadly Gricean grounds) for the unnaturalness of the internal reading.

As before, there are restrictions on the determiner, but they take a different form. First, *a*, *the*, and *your* retain their usual meanings, and don't become interchangeable. Second, strong quantifiers are still incompatible with the external reading, but weak ones are perfectly compatible with it:

(25)   a. $\left\{ \begin{matrix} \text{\#Every/\#Most} \\ \text{Many/Several/Two} \end{matrix} \right\}$ whole ship(s) $\left\{ \begin{matrix} \text{was} \\ \text{were} \end{matrix} \right\}$ submerged.

      b. $\left\{ \begin{matrix} \text{\#Every/\#Most} \\ \text{Many/Several/Two} \end{matrix} \right\}$ whole apple(s) $\left\{ \begin{matrix} \text{is} \\ \text{are} \end{matrix} \right\}$ terrible.

The other, now increasingly familiar restrictions reemerge in their customary form. The external reading is only possible when the nonlocal adjective occurs high (I will now indulge in the habit of marking sentences with a #when they are impossible on the external reading):

(26)   a.   A whole enormous ship was submerged.
      b. #An enormous whole ship was submerged.

It's incompatible with coordination:

(27)   A whole and enormous ship was submerged.

And it's incompatible with degree modification:

(28)   #An entirely whole ship was submerged.

2.5. Epistemic adjectives

Abusch and Rooth (1997) observed a proposition-modifying interpretation of what they called 'epistemic adjectives' that, in the current context, won't come as a shock. These adjectives include *unknown*, *undisclosed*, *unspecified*, and *unexpected*. They can receive

(29)   Solange is staying at an unknown hotel.   (Abusch and Rooth 1997)
      a. *internal*: 'Solange is staying at a hotel no one has heard of.'
      b. *external*: 'Solange is staying at a hotel and it is not known which hotel she is staying at.'

At this point, the reader is invited to sing along, because we will again encounter the same analytical refrain. On the external reading, there are again restrictions on the determiner. Although *the* and *a* seem to behave normally, strong inherently quantificational determiners remain impossible:

(30)   Solange stayed at {#every/#most/some/several/two} unknown hotel(s).

As for *whole*, weak determiners are compatible with external readings.

The restrictions on the structural position of the adjective in the DP remain the same. The external reading is, as we have come to expect, possible only when the adjective is high:

(31) a. Solange stayed at a horrible unknown hotel.
     b. #Solange stayed at a unknown horrible hotel.

The external reading is unavailable when the adjective occurs in a coordinate structure:

(32) #Solange stayed at a horrible and unknown hotel.

It's incompatible with degree modification:

(33) #Solange stayed at a very unknown hotel.

2.6. 'Same' and 'different'

Other adjectives fall under broadly the same rubric. Among the best-studied of these are *same* and *different* (Nunberg 1984, Heim 1985, Carlson 1987, Keenan 1992, Moltmann 1992, Beck 2000, Lasersohn 2000, Majewski 2002, Alrenga 2006, 2007a, b, Barker 2007, Brasoveanu 2011). The facts in this domain are complicated in ways that muddy the waters considerably, but for our purposes the important point is that there is an ambiguity:[3]

(34) Floyd and Clyde read the same book.
     a. *internal (anaphoric)*: 'Floyd and Clyde read a book that is the same as the one previously mentioned.'
     b. *external*: 'Floyd and Clyde read a book in common.'

(35) Floyd and Clyde read a different book.
     a. *internal (anaphoric)*: 'Floyd and Clyde read a book that is the different from the one previously mentioned.'
     b. *external*: 'The book Floyd read was not the same book as the one Clyde read.'

The discourse-dependent anaphoric reading counts as internal in the sense that it doesn't require the adjective to scope outside the DP.

I won't rehearse the full song-and-dance. Suffice it to say that on the external reading, *same* and *different* impose restrictions on the determiner with which they combine:

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[3]The term 'internal' is actually used by Carlson for one of these readings, but given our taxonomy it would be the internal one.

(36)　#Floyd and Clyde read {every/most/some/several/two} same book(s).

And on this reading *same* and *different* are subject to a structural position requirement:

(37)　a.　Floyd and Clyde read the same good book.
　　　b.　*Floyd and Clyde read the good same book.

2.7. Modal superlatives: the possible class

There is another important class of nonlocal readings of adjectives, which I will mostly set aside. These involve *possible*, *conceivable*, and the like ('modal superlatives'; Bolinger 1967, Larson 2000, Schwarz 2005, Cinque 2010, Romero 2013, Leffel 2014):

(38)　They interviewed every possible candidate.
　　　a. *external*: 'They interviewed every candidate that it was possible to interview.'
　　　b. *internal*: 'They interviewed every person who was possibly a candidate.'

There are important distinctions between these cases and the ones we've examined so far, but for the moment I will note only the similarity: again, there is an ambiguity between an internal and external reading.

2.8. Miscellaneous obscurities and novelties

Without further discussion, I'll note a few examples of nonlocal readings that are either obscure or, to my knowledge, novel:

(39)　The inevitable counterexample arose.
　　　'Inevitably, a counterexample arose.'

(40)　He spooned a moody forkful.　　　　　　　　　　　　　　(P.G. Wodehouse; Hall 1973)
　　　'Moodily, he spooned a forkful.'

(41)　An unlikely chiropractor discovered the solution.
　　　'A chiropractor discovered the solution and it was unlikely that that chiropractor (or a chiropractor?) would do so.'

(42)　Clyde asked a random linguist.
　　　'Clyde asked a linguist randomly.'

(43)　Floyd received an unfortunate grade.
　　　'Floyd received a grade such that it was unfortunate to receive it.'

One shouldn't read too much into these without careful examination, of course, but they collectively suggest that more external readings lurk just over our analytical horizon.

3. Patterns and subclasses

It's possible to digest the patterns we've so far encountered a bit further. Although there is a lot of heterogeneity among nonlocal readings, there is also order amid the chaos. What emerges are three different patterns, and therefore three different classes of nonlocal adjectives:

(44) a. the quantifier-resistant class: *occasional, average*
      b. the weak-determiner class: *whole*, *unknown*
      c. the ellipsis class: *possible*, *conceivable*

The last of these, the ellipsis class, has been mostly set aside here, and I don't propose to change that, but a few words are in order about why setting it aside is reasonable. The essential reason is that this class is weird even from the point of view of the other nonlocal readings. It simply doesn't seem to fit into the bigger picture. Unlike all other nonlocal adjectives, it is not only compatible with *every*, but actually requires it or else *only* or a superlative:

(45) We interviewed $\left\{ \begin{array}{c} \text{every/the only/the best} \\ \text{\#the/\#a/\#no/\#three} \end{array} \right\} \left\{ \begin{array}{c} \text{possible} \\ \text{conceivable} \end{array} \right\}$ candidate.

It is also amenable to an enlightening analysis quite different from any that would suffice for the other groups. As the name I have adopted suggests, the crucial element of this analysis is ellipsis. Larson (2000) argues persuasively that at some level of representation there is an elided constituent:

(46) We interviewed the best candidate possible ~~for us to interview~~.

Romero (2013) shows that an account in this spirit can actually be built from standard assumptions about superlatives. These readings have been largely demystified, but an explanation along these lines is a non-starter for the other classes. Indeed, one might wonder whether the nonlocal readings involved in these ellipsis cases are really 'nonlocal' in the same sense.

Setting these cases aside, all nonlocal readings observe a generalization:

(47) *Strong Quantifier Generalization*
      Strong, inherently quantificational determiners (*every, most, no*) are incompatible with
      nonlocal readings.

This has been observed for specific lexical-semantic families of adjectives, but the important point is that it seems to be true of all of them.

As we've seen, a few nonlocal adjectives – *occasional*, *average*, and *wrong* – are even more constrained in that they are incompatible with any determiner apart from (some combination of) *the*, *a*,

and generic *your*. Stating it more officially:

(48) *Quantifier Resistance Generalization*
Some adjectives with nonlocal readings idiosyncratically resist all inherently
quantificational determiners.

Of course, the challenge now is to explain these generalizations. That's a tall order, inasmuch as it requires a synthesis of a vast array of adjectives and (collectively) a vast literature and set of analytical approaches. This won't happen in any single paper. Nevertheless, having framed the challenge in this way, we are in a better position to assess what an explanation might look like.

4. Determiner-like adjectives

4.1. Incorporation

First, we must dispense with a straw man. One might imagine that external readings of adjectives are brought about simply by moving the adjective from its base position to an adverbial position, where it is interpreted as an adverb. The idea is a natural one, and I'll argue that in a certain sense it's not entirely wrong – but formulated in this crude way, it's unenlightening. Why should this movement happen? Why would an adjective have an adverb meaning? How does this help us understand the interaction of the adjective with the determiner?

More enlightening alternatives are available. There are of course many analyses on the market of specific parts of the larger problem of nonlocal readings, but most aren't straightforwardly generalizable in a way that might account for the generalizations we seek to explain. There is one idea, though, that is constitutes an excellent starting point. It's Larson (1999) and Zimmermann (2000, 2003) proposal that, in the *occasional* construction, the adjective incorporates into the determiner in a process of 'complex quantifier formation'. This movement creates a single quantificational determiner, *an+occasional*. It is then possible to provide this determiner with a denotation, listed in the lexicon just like that of any other. The advantage of that is that it's straightforward to capture various idiosyncrasies. If we need to stipulate that for *occasional* and *average*, the denotations of *the*, *a*, and *your* should be identical but for *wrong* they shouldn't be, we can reflect it directly. Indeed, we should *expect* such idiosyncrasies, inasmuch as the lexicon is, after all, a repository of the idiosyncratic. Less comfortable is that we have to stipulate not only that *an+occasional*, *the+occasional*, and *your+occasional* all have identical denotations, but also do so independently for *a+sporadic*, *the+sporadic*, and *the+sporadic* – and indeed for other combinations of *a*, *the*, and *your* with adjectives of this class. The incompatibility of this construction with other determiners would could be captured simply by not stipulating a denotation for any other combination of a determiner and frequency adjective.

This approach provides helps in one way right off the bat. Quantificational determiners have access to the VP by perfectly ordinary means: QR. A generalized quantifier takes a VP as its argument,

and if an adjective is part of a quantificational determiner meaning, it will gain access to the VP as a matter of course. Thus this approach accounts for the adverbial scope of *occasional* and its kin, for the idiosyncratic interpretations of determiners in this construction, and for restrictions on the determiner. It also accounts for the restriction on coordination: any adjective in a coordinate structure would be unable to move out of it without violating the Coordinate Structure Island. The obligatory high position of the adjective is explained as well – any adjectives above it would block its path to the determiner. The incompatibility of external readings with degree modification would also be expected, because only a bare adjective, and not a phrasal constituent, can do head-to-head movement. This approach may even shed light on Zimmermann (2003)'s observation that external readings are often absent where QR is blocked. This analysis can be extended to *average*, *wrong*, perhaps *same*, and maybe others.

Nevertheless, one might have some qualms. The movement required would seem to violate the Head Movement Constraint. More worrying, perhaps, why are *a*, *the*, and *your* the determiners that have been targeted for complex quantifier formation? Could it in principle have been any other combination? And why is it that the denotations of these complex determiner-adjective combinations aren't unpredictable? If they're specified in the lexicon, one might imagine arbitrary variation, but the generalizations we would like to explain aren't arbitrary. Whatever the answers to these questions, more would have to be said to make weak-determiner-compatible adjectives such as *whole*, *unspecified*, and *different* fit in.

4.2. An alternative: determiner-like adjectives

One satisfying aspect of the incorporation analysis is that it reflects that nonlocal adjectives aren't prototypically adjective-like, even on a purely descriptive level. They don't pass standard diagnostics for adjectives, such ability to occur in comparatives, with degree modifiers, or in the complement position of *seem*. They don't conjoin with adjectives. Nor do they occur in the same positions as adjectives generally; rather, they are obligatorily high.

This might suggest incorporation or another form of syntactic differentiation, but all these properties also follow from simply assuming that nonlocal adjectives have an unusual semantic type. In the spirit of the incorporation approach, I'll assume these adjectives have quantificational determiner denotations, type $\langle et, \langle et, t \rangle \rangle$. This has as a consequence that the node above the adjective would denote a generalized quantifier, and would therefore have to QR to avoid a type clash. But in the resulting structure, the remnant DP needs help. It gives rise to a different type clash: the node to the right of *the* would be a trace, so it would denote an individual, but *the* is of type $\langle e, t \rangle$ and expects a property. A natural solution is to adopt the standard BE type shift (Partee 1987):

(49) a. $[\![\text{BE}]\!] = \lambda x \lambda y [x = y]$

  b. $[\![\text{BE } x_1]\!] = \lambda y [x_1 = y]$

That resolves the type clash by providing *the* with the property-denoting argument in (49b). But as it turns out, it does more.

4.3. Determiners that work

One of the things we would like to explain is why *the*, *a*, and *your* seem to work robustly with a number of nonlocal adjectives, and why distinctions in their interpretations seem to be neutralized in the presence of frequency adjectives and *average/typical*. That result follows from the type shift alone. *The* would combine with the shifted trace to yield the unique individual that is identical to the one the trace denotes. Of course, that individual is always, well, that very same individual:

(50)   a. $[\![\,the\,]\!] = \lambda P_{\langle e,\,t\rangle}.\iota y[P(y)]$
       b. $[\![\,the\,]\!]\,([\![\,\textsc{be}\ x_1\,]\!]) = \iota y[x_1 = y] = x_1$

The effect is as though *the* were absent entirely, as though the nonlocal adjective and its NP sister had occurred in subject position on their own. The semantically-bleached variant of *your* that occurs in e.g. *your average American* mostly amounts to a version of *the* with a slight whiff of genericity about it, which would leave us in more or less the same place (see Gehrke and McNally 2010, 2015 for more). As for *a*, the right result follows from the simple equivalence in (52):

(51)   a. $[\![\,a\,]\!] = \lambda P_{\langle e,\,t\rangle}\lambda Q_{\langle e,\,t\rangle}.\exists x[P(x) \wedge Q(x)]$
       b. $[\![\,a\,]\!]\,([\![\,\textsc{be}\ x_1\,]\!]) = \lambda Q_{\langle e,\,t\rangle}.\exists x[x_1 = x \wedge Q(x)]$

(52) $\exists x[x_1 = x \wedge Q(x)] \Leftrightarrow Q(x_1)$

To say that there is an individual identical to x_1 of which the predicate Q holds is simply to say that Q holds of x_1. The result, again, is truth-conditionally identical to what would have happened had the determiner been absent entirely.
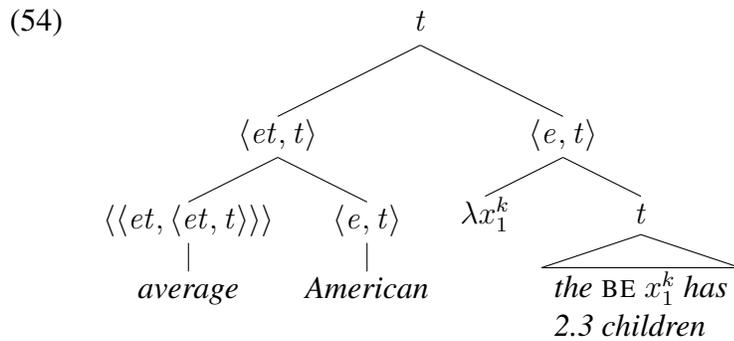
To articulate this a little bit further, let's adopt the toy denotation for *average* in (53a). This applies to the denotation of the modified NP, and predicates the VP meaning of the kind that corresponds to the NP meaning, using Chierchia (1998)'s $^{\cap}$ property-to-kind type shift:[4]

(53)   a. $[\![\,average\,]\!] = \lambda P_{\langle e,\,t\rangle}\lambda Q_{\langle e,\,t\rangle}.Q(^{\cap}P)$
       b. $[\![\,average\ American\,]\!] = \lambda Q_{\langle e,\,t\rangle}.Q(^{\cap}\textbf{American})$

Naturally, this isn't remotely adequate on its own as a theory of *average*, and much of Kennedy and Stanley (2009) would have to be layered on top of it. But it suffices to sketch the compositional

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[4]Given this denotation, I could have equivalently dispensed wth the λQ in the denotation of *average* and had *average American* denote a kind directly. This is possible here only because I have radically simplified the denotation, though. Ultimately, *average* would need to have access to the VP denotation.

machinery. Thus the updated tree would look like this (I've ornamented the tree with a superscript k to reflect that the trace of *average American* denotes a kind):

(54)

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                              t
                  ┌───────────┴───────────┐
             ⟨et, t⟩                    ⟨e, t⟩
         ┌──────┴──────┐           ┌──────┴──────┐
  ⟨⟨et, ⟨et, t⟩⟩⟩   ⟨e, t⟩      λx₁ᵏ            t
        │            │                      ┌───┴───┐
     average      American            the BE x₁ᵏ has
                                       2.3 children
```

The result of the computation would be just what we need:

(55) a. $\llbracket$ *the* BE x_1^k $\rrbracket = x_1^k$

      b. $\llbracket$ *the* BE x_1^k *has 2.3 children* $\rrbracket = $ **has-2.3-children**(x_1^k)

      c. $\llbracket$ *average American* $\rrbracket = \lambda Q_{\langle e,\, t\rangle}.Q(^{\cap}$**American**$)$

      d. $\llbracket$ *average American* $\rrbracket$ $(\llbracket \lambda x_1^k$ *the [*BE x_1^k*]] has 2.3 children* $\rrbracket)$

          $= $ **has-2.3-children**$(^{\cap}$**American**$)$

4.4. Determiners that don't work

What of determiners that *don't* work? Again, the nature of the movement and resulting type shift helps the situation – or rather, undermines it in the right way. Strong determines like *every* and *most* presuppose that their domain has more than one member. (Hence the oddness of e.g. *Every guy in the corner should leave* when there is only one such guy.) In (56), *every* combines with the property $\llbracket$ BE x_1^k $\rrbracket$:

(56) a. #Every average American has 2.3 children.

      b. [average American] [λx_1^k [every [BE x_1^k]]] has 2.3 children

(57) $\llbracket$ BE x_1^k $\rrbracket = \lambda y[x_1^k = y]$

But (57) is a singleton property – there is only one individual that is identical to x_1^k. It therefore violates the presupposition *every* imposes on its first argument. *Most* would work similarly. Because movement below the DP level systematically gives rise to such singleton properties, it systematically precludes combining with strong quantifiers.

Weak determiners like *many* and *three* are also incompatible with *average* and *occasional*, and these don't have the same presupposition. Nevertheless, for *average*, they fail in another respect.

The denotation of *three* is as in (58a), a property of individuals that have a cardinality of 3:

(58) a. $[\![\,three\,]\!] = \lambda x[|x| = 3]$
      b. $[\![\,three \text{ BE } x_1^k\,]\!] = \lambda y[x_1^k = y \wedge |y| = 3]$

Combining with the shifted denotation of the kind trace, the result is as in (58b). Because the kind corresponding to x_1^k is identical to y and y has a cardinality of 3, it has to be the case that x_1^k has a cardinality of 3. But x_1^k is a kind, not an ordinary individual. Kinds don't have cardinalities, and English number terms can't be predicated of them – hence the ungrammaticality of e.g. *three cheese*. So in this case, the problem that rules out weak quantifiers has to do with kinds, and it will be only nonlocal adjectives that leave behind kind-denoting traces that will be subject to this additional restriction.

Occasional is also incompatible with weak quantifiers, and, as Gehrke and McNally (2010, 2015) demonstrate, its semantics also relies crucially on kinds. Nonlocal adjective with no kind overtones such as *whole* or *wrong* or *unspecified* should therefore avoid running afoul of this difficulty and be compatible with weak quantifiers even on their external readings. And indeed they are.

4.5. Summary

The result, then, is that there is no need for incorporation. The external scope facts follow from QR. The interpretation of determiners is standard. Restrictions on determiners follow from independent considerations. The general resistance of nonlocal adjectives to strong quantifiers follows from the compositional circumstances of their movement, which invoke a type shift with which they are incompatible. The resistance of certain nonlocal adjectives to weak quantifiers follows from independent facts about the lexical semantics of the adjective – specifically, having a kind-based semantics. Other restrictions, like the lack of coordination with ordinary adjectives and absence of degree modifiers, follow from the quantifier type of these expressions.

This means it was not necessary to stipulate which determiners support incorporation and which don't, or what interpretations result for every combination. Nor was it necessary to stipulate why *the*, *a*, and *your* wind up identical, or to do so repeatedly for each frequency adjective. It also wasn't necessary to stipulate anything about the interaction of quantificational force with external readings. This is possible in part precisely because what I have offered here is only a sketch. The devil, as always, is in the details. But I hope this illustrates an analytical approach to these facts that might scale up.

5. Final remark

I'll close with a few words about the analytical intuition – vague and hard to pin down but nevertheless clear and common – that nonlocal readings are a grammatical oddity, a locus of idiosyncrasy.

These adjectives are indeed odd, but in a precise and interesting sense. They are odd in the way that platypuses and lungfish are odd: they are transitional forms in an evolutionary progression, unusual because they combine features of two distinct categories that we normally regard as mutually exclusive. Over succeeding generations of speakers, certain adjectives may emerge from the swampy depths of the inner NP to which they are usually confined, and tentatively make their way onto the dry land of the determiner domain. They can't be expected to make this leap in a single stride, so we can observe them in the midst of their evolutionary journey and thereby discover more about both their origin and their destination. Like platypuses and lungfish, they are important and analytically revealing not despite their strangeness, but because of it.

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