The Landscape of Nonlocal Readings of Adjectives

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Introduction

Adverbial readings of adjectives (Bolinger 1967):

(1) An occasional sailor strolled by.
'Occasionally, a sailor strolled by.'

How does the adjective get interpreted as though it were an adverb?

(2) An occasional sailor strolled by.
‘Occasionally, a sailor strolled by.’

(3) **The** occasional sailor strolled by.
‘Occasionally, a sailor strolled by.’

Why does *the* mean the same thing as *a*?

(2) An occasional sailor strolled by.
‘Occasionally, a sailor strolled by.’

(3) **Your** occasional sailor strolled by.
‘Occasionally, a sailor strolled by.’

Why do *the* and *your* mean the same thing as *a*?

(4) An occasional sailor strolled by.
‘Occasionally, a sailor strolled by.’

(5) **This** occasional sailor strolled by.
#‘Occasionally, this sailor strolled by.’
‘This person strolled by who sails occasionally.’

A number of ‘frequency adjectives’ pattern with *occasional* (Larson 1999):

(6) A sporadic shot was heard.
‘Sporadically, a shot was heard.’

(7) An {infrequent / rare} visitor was seen.
‘{Infrequently / Rarely}, a visitor was seen.

Common conclusions:

- *occasional* is a cool peripheral little puzzle
- *occasional* is a stupid irrelevant little puzzle

Both mistaken. It may be the tip of an iceberg.

Other ‘nonlocal’ readings (term due to Schwarz 2006) surprisingly common:

- *average* (Kennedy & Stanley 2009)
- *wrong* (Haïk 1985, Schwarz 2006)
- *whole* (Moltmann 1997, 2005, Morzycki 2002)
- *possible* (Larson 2000, Schwarz 2005, Romero 2013, Leffel 2014)
- *unknown* (Abusch & Rooth 1997)
- perhaps *same* and *different* (a cottage industry)
- there are others!

This seems to be generally overlooked.

Big picture questions:

- Why do adjectives get nonlocal readings?
- What does this tell us about adjectival modification?
- Why would the grammar do such a thing to us?

The empirical argument:

- phenomenon is more general than usually recognized
- it's (at least partly) systematic: nonlocal adjectives divide into 3 classes according to properties of the determiner
- we therefore need to take a wider view of the problem

The theoretical argument:

- prevailing approaches don't yield a general understanding
- adjectives can be quantificational (but not necessarily therefore determiners)
- nonlocal adjectives trigger QR
- their crucial general properties follow chiefly from this

Roadmap

- ✔ Introduction
- **Nonlocal readings are widespread**
- Some patterns and some subclasses
- Available theories won't suffice
- Quantificational adjectives
- Conclusion

Common properties of nonlocal readings

Key characteristics of *occasional*, which other nonlocal adjectives often share.

We've already encountered two:

- an unexpectedly wide-scope interpretation
- unexpected interpretation of determiner

Ambiguity:

(8) The occasional sailor strolled by.

a. **external**: ‘Occasionally, a sailor strolled by.’

b. **internal**: ‘Someone who sails occasionally strolled by.’

Restrictions on determiners on the external reading:

(9) { Every / Some / Several / Many / Most } occasional sailor(s) strolled by.

a. #**external**: 'Occasionally, *D* sailor(s) strolled by.'

b. **internal**: '*D* person/people who sail(s) occasionally strolled by.'

Obligatory high position on the external reading:

(10) The angry occasional sailor strolled by.

a. #**external**: 'Occasionally, an angry sailor strolled by.'

b. **internal**: 'Someone angry who sails occasionally strolled by.'

Inability to coordinate with ordinary adjectives on the external reading:

(11) The occasional and angry sailor strolled by.

a. #**external**: 'Occasionally, an angry sailor strolled by.'

b. **internal**: 'Someone angry who sails occasionally strolled by.'

Incompatibility with degree modification on the external reading:

(12) The very occasional sailor strolled by.

a. #**external**: 'Very occasionally, a sailor strolled by.'

b. **internal**: 'Someone who sails very occasionally strolled by.'

Average

Ambiguity (Kennedy & Stanley 2009):

(13) An average American has 2 children.

a. **external**: 'On average, an American has 2 children.'

b. **internal**: 'An American that's a typical one has 2 children.'

Nonlocal readings are widespread:
Average

Unexpected interpretation of determiner:

(13) **The** average American has 2 children.

a. **external**: 'On average, an American has 2 children.'

b. **internal**: 'The American that's a typical one has 2 children.'

Nonlocal readings are widespread:
Average

Unexpected interpretation of determiner:

(13) **Your** average American has 2 children.

a. **external**: 'On average, an American has 2 children.'

b. **internal**: 'Your American that's a typical one has 2 children.'

Restrictions on determiner:

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

High position:

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

Inability to coordinate:

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

Incompatibility with degree modifiers:

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

Nonlocal readings are widespread:

Wrong

Ambiguity (Haïk 1985, Schwarz 2006):

(18) Floyd gave the wrong answer.

a. **external**: 'Floyd gave an answer that it was wrong of him to give.'

b. **internal**: 'Floyd gave an answer that was incorrect.'

(19) Floyd killed the wrong person.

a. **external**: 'Floyd shot a person that it was wrong of him to kill.'

b. **internal**: 'Floyd killed a person that was just a wrong person in general'

Nonlocal readings are widespread:

Wrong

Unexpected interpretation of determiner:

(18) Floyd gave **the** wrong answer.

a. **external**: 'Floyd gave **an** answer that it was wrong of him to give.'

b. **internal**: 'Floyd gave **an** answer that was incorrect.'

(19) Floyd killed **the** wrong person.

a. **external**: 'Floyd shot **a** person that it was wrong of him to kill.'

b. **internal**: 'Floyd killed **a** person that was just a wrong person in general'

Restrictions on determiner:

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

High position:

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

Inability to coordinate:

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

Incompatibility with degree modifiers:

(23) #Floyd opened the very wrong envelope.

Nonlocal readings are widespread:
Whole

Ambiguity (Moltmann 1997, 2005, Morzycki 2002):

(24) A whole ship was submerged.
   a. **external**: ‘A ship was wholly submerged.’
   b. **internal**: ‘A structurally intact ship was submerged.’

Restrictions on determiner:

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

NB: Different from before. Weak quantifiers now good.

High position:

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

Inability to coordinate:

(27) A whole and enormous ship was submerged.

Incompatibility with degree modifiers:

(28) #An entirely whole ship was submerged.

Nonlocal readings are widespread:

Epistemic adjectives

Ambiguity (Abusch & Rooth 1997):

(29) Solange is staying at an unknown hotel.

a. **external**: 'Solange is staying at a hotel and it is not known which hotel she is staying at.'

b. **internal**: 'Solange is staying at a hotel no one has heard of.'

Restrictions on determiner (on the external reading):

(30) Solange stayed at $\left\{\begin{array}{l} \#\text{every} \\ \#\text{most} \\ \text{some} \\ \text{several} \\ \text{two} \end{array}\right\}$ unknown hotel(s).

Like *whole* rather than *occasional*. Weak determiners now good.

High position:

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

Inability to coordinate:

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

Incompatibility with degree modifiers:

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

Nonlocal readings are widespread:

Other examples people have encountered

People have run into other adjectives with nonlocal readings, sometimes noting the connections.

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):

(34) Floyd and Clyde read the same book.
'Floyd and Clyde read a book in common.'

Determiners:

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

Position:

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

Possible and *conceivable* ('modal superlatives'; Bolinger 1967, Larson 2000, Schwarz 2005, Cinque 2010, Romero 2013, Leffel 2014):

(37) 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.'

Nonlocal readings are widespread:

Additional examples

Obscure or (to my knowledge) novel potential examples:

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

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

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

(41) Clyde asked a random linguist.
‘Clyde asked a linguist randomly.’

(42) Floyd received an unfortunate grade.
‘Floyd received a grade such that it was unfortunate to receive it.’

Summary

- There's a hell of a lot going on here.
- This isn't just a cute peripheral local puzzle about *occasional* and maybe a few other things.
- This isn't a assortment of random curiosities. They are curious in parallel ways.
- Must be telling us something important.

Roadmap

- ✔ Introduction
- ✔ Nonlocal readings are widespread
- **Some patterns and some subclasses**
- Available theories won't suffice
- Quantificational adjectives
- Conclusion

Some patterns and some subclasses

There is lots of heterogeneity in nonlocal readings, but I think there's some order amid the madness.

Three classes of nonlocal adjectives:

- the ellipsis class: *possible*
- the weak-determiner class: *whole*, *unknown*
- the quantifier-resistant class: *occasional, average*

The *possible* class is weird. Requires *every*, *only*, or superlatives:

(43) We interviewed { every / the only / the best / #the / #a / #no / #three } possible candidate.

Ellipsis analysis (Larson 2000):

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

Romero (2013) shows that an account can be built from standard assumptions about superlatives.

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

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

People have noted this individually for specific classes. True of all of them.

A few nonlocal adjectives—*occasional*, *average*, and *wrong*—are even more constrained:

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

(47)

	every, most	*three, many*
occasional	✗	✗
average	✗	✗
wrong	✗	✗
same	✗	✗
whole	✗	✓
unknown	✗	✓
inevitable	✗	✓
unlikely	✗	✓
different	✗	✓
possible	✓	✗

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Available theories won't suffice:

Movement of adjective

A simple story:

- Adjective is interpreted as in an adverb position.
- Let's move it there.

(48) occasional$_1$ [the t_1 sailor] strolled by

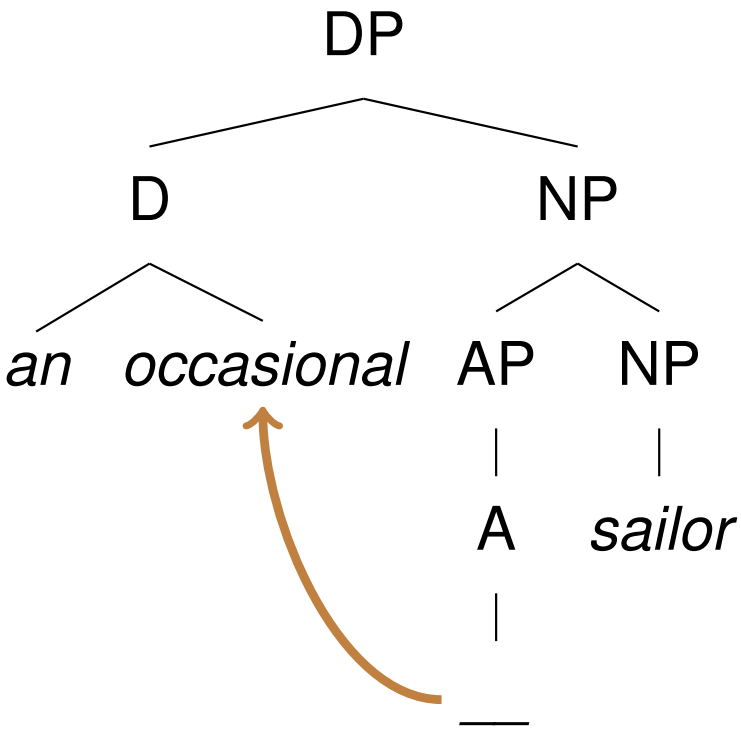
No one likes this.

- Unenlightening. Why should this movement happen?
- Why would an adjective have an adverb meaning?
- How would this explain interaction with determiner?
- Since when do things move out of definite DPs anyway?

Available theories won't suffice:
Incorporation

Larson (1999): In occasional construction, adjective incorporates into D.

(49)



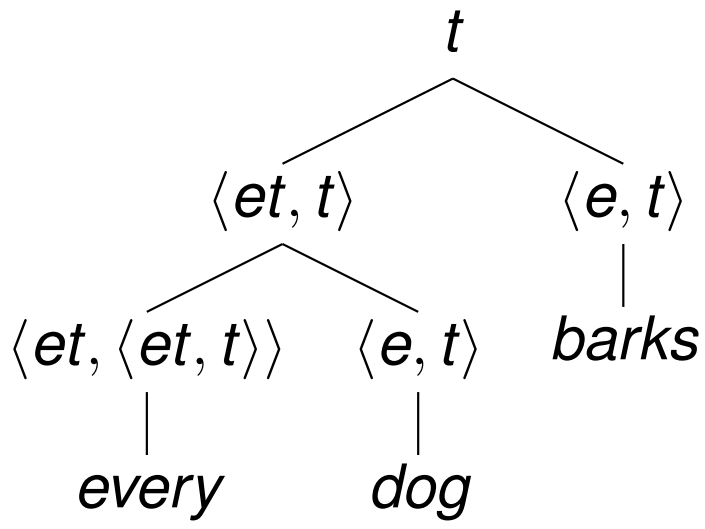
'Complex quantifier formation':

- D+A become a single quantificational determiner, *an+occasional*.
- A quantificational-determiner denotation stipulated in the lexicon.
- Stipulate in the lexicon identical denotations for:
  - *an+occasional*
  - *the+occasional*
  - *your+occasional*
  - combinations of *a*, *the*, *your* with other frequency adjectives
  - . . . and for nothing else

How does this help?

Quantificational determiners have access to the VP:

(50)



(51) $[\![\textit{every dog}]\!] = \lambda Q_{\langle e,\, t\rangle} \,.\, \forall x[\mathbf{dog}(x) \rightarrow Q(x)]$

They can therefore do adverb-like things.

Accounts for:

- adverbial scope
- idiosyncratic interpretation of determiner
- restrictions on determiner
- coordination restrictions
- obligatory high position
- incompatibility with degree modifiers
- Zimmermann (2003): external readings absent when QR is blocked

Can be extended to *average* (Kennedy & Stanley 2009), *wrong* (Schwarz 2006), *same*, maybe others.

Worries:

- violates Head Movement Constraint
- why should frequency adjectives have D-A counterparts?
- why *a*, *the*, and *your* and not other determiners?
- why are D+A interpretations not unpredictable?
- how do weak-determiner-compatible adjectives (*whole, inevitable, unlikely, different*) fit in?

Nevertheless, the most flexible option on the market.

The kind analysis

Cool alternative (Gehrke & McNally 2010), very approximately:

(52) The occasional sailor strolled by.
'Realizations of an occasionally-realized sailor-kind strolled by.'

Advantages:

- doesn't require hinky compositional backflips
- doesn't violate Head Movement Constraint
- insight into why *a*, *the*, and *your*: these have a special role with respect to kinds
- may explain why determiner interpretations don't vary freely

Worries:

- DeVries (2010): not enough sensitivity to VP
- how to extend this beyond the quantifier-resistant class?

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Quantificational adjectives:

Only vaguely adjectives

Why do we think nonlocal adjectives are adjectives?

- don't pass standard diagnostics for adjectives: *very*, comparatives, *seem*
- don't conjoin with adjectives
- don't occur in same positions as adjectives (obligatorily high)
- suggests at least that these are adjectives with an unusual type

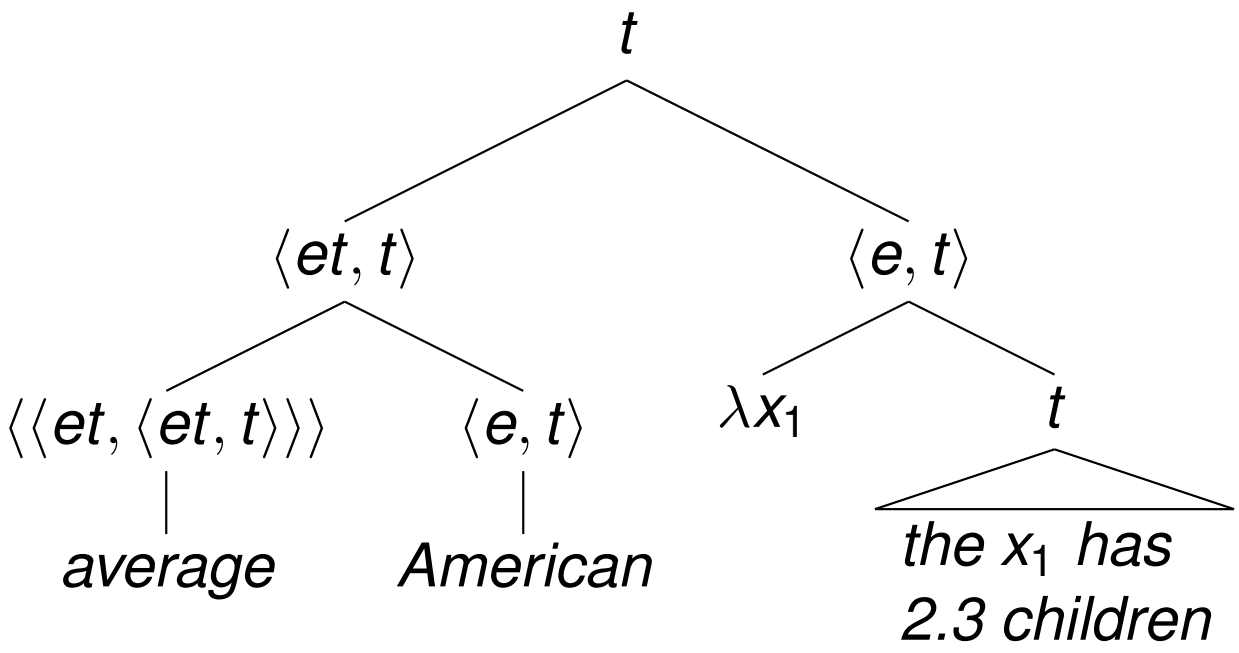
Properties we can't escape:

- adjectives can supply quantificational force (especially clear with *occasional*)
- adjectives need access to VP

Conclusion:

- these adjectives have quantificational determiner denotations, type $\langle et, \langle et, t \rangle \rangle$.

(53)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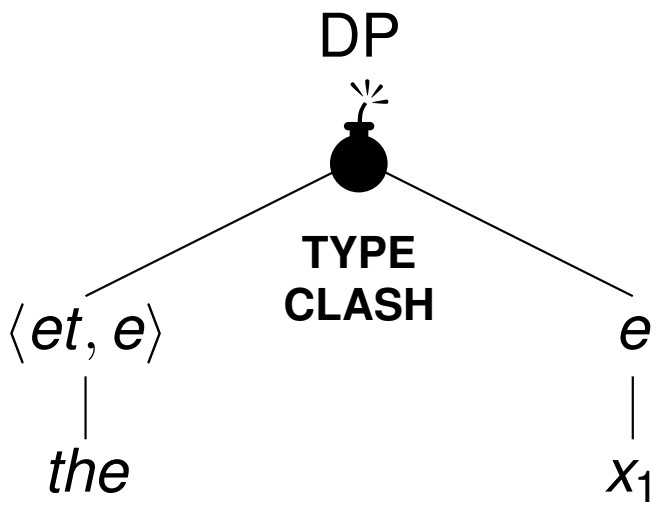
λx1
t
average
American
the x1 has
2.3 children

DETERMINERS THAT WORK

The remnant DP needs help:

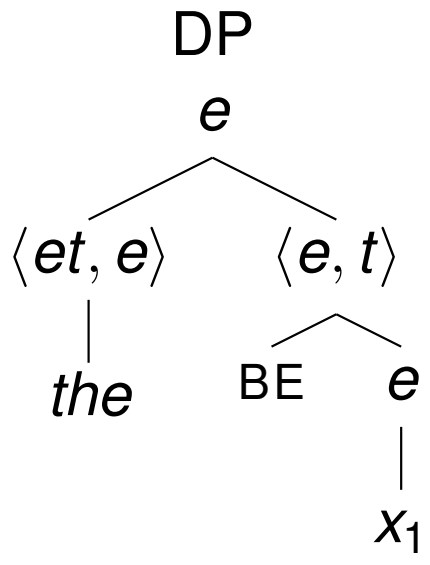
(54)



The BE type shift (Partee 1987):

(55) $[\![\text{BE}]\!] = \lambda x \lambda y [x = y]$

(56)



The, *a*, and *your* will all work here and wind up not meaning much:

(57) $[\![\textit{the}\ \textsc{be}\ x]\!] = \iota y[x = y] = x$

- bleached *your* is basically just *the* with a kind-flavor
- *a* will be similar because $\exists y[x = y \wedge P(y)] = P(x)$.

THE DENOTATION

Toy version of *average* (can't be nearly this simple; Kennedy & Stanley 2009):

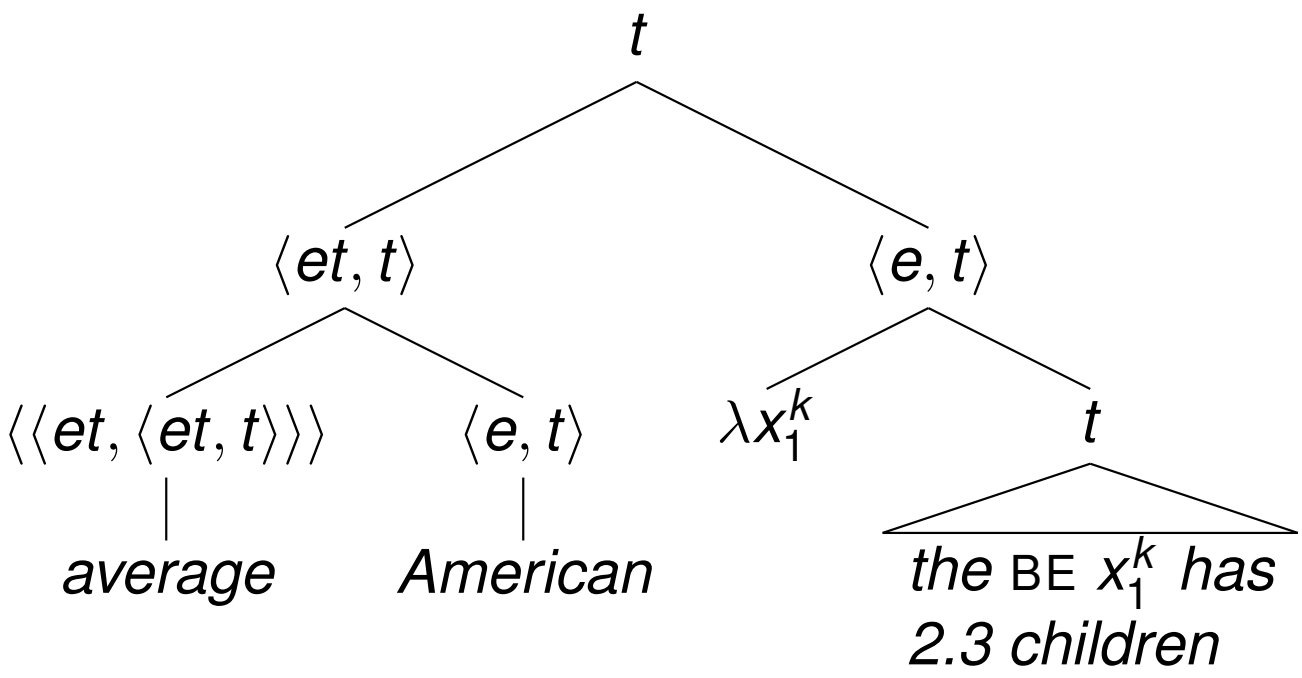
(58) a. $[\![\textit{average}]\!] = \lambda P_{\langle e,\, t\rangle} \lambda Q_{\langle e,\, t\rangle} \,.\, Q(\textbf{kind}(P))$

b. $[\![$ *The average American has 2.3 children* $]\!]$
$= \textbf{has-2.3-children}(\textbf{kind}(\textbf{American}))$

Shifts NP to its corresponding kind à la Chierchia (1998).

Updated tree:

(59)



(60) a. $[\![\ \textit{the}\ \textsc{be}\ x_1^k\ ]\!] = x_1^k$

b. $[\![\ \lambda x_1^k\ \textit{the}\ \textsc{be}\ x_1^k\ \textit{has 2.3 children}\ ]\!]$

$= \lambda x_1^k\ .\ \mathbf{has\text{-}2.3\text{-}children}(x_1^k)$

c. $[\![\ \textit{average American}\ ]\!]$

$= \lambda Q_{\langle e,\,t\rangle}\ .\ Q(\mathbf{kind}(\mathbf{American}))$

d. $[\![\ \textit{average American}\ \lambda k_1\ \textit{the [}\textsc{be}\ k_1\textit{]] has 2.3 children}\ ]\!]$

$= \mathbf{has\text{-}2.3\text{-}children}(\mathbf{kind}(\mathbf{American}))$

DETERMINERS THAT DON'T WORK: STRONG

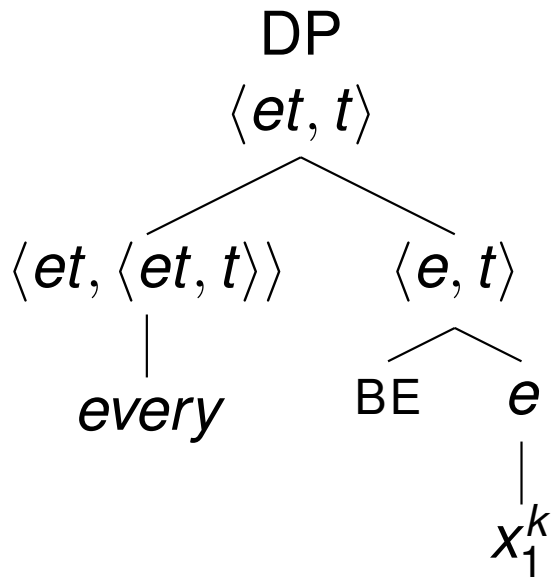
Strong determiners like *every* presuppose that their domain has more than one member:

(61) # {Every person / Most people} who {is / are} me is tired.

Assume there's only one guy in that corner...

(62) # {Every guy / Most guys} in that corner should probably leave.

(63)



(64) $[\![\textit{every}]\!]([\![\text{BE } x_1^k]\!]) = [\![\textit{every}]\!](\lambda y[x_1^k = y])$

There's only one individual that satisfies the singleton property $\lambda y[x_1^k = y]$, so the presupposition of *every* fails.

DETERMINERS THAT DON'T WORK: WEAK

Weak determiners like *many* and *three* are also incompatible with *average*.

Not clear these also have this presupposition, but they go wrong independently:

(65) $[\![\textit{three} \text{ BE } x^k_1]\!] = \lambda y[x^k_1 = y \wedge |y| = 3]$

This requires that cardinality of the kind y be 3. Kinds don't have cardinalities (Chierchia 1998): that's why $^{\#}$*three cheese* is bad.

What about *occasional*?

- Also involves kinds, as Gehrke & McNally (2010) argued.

What about *wrong*? Requires another approach.

- Ask if interested.

The weak-determiner class

Reminder: many nonlocal readings are compatible with weak determiners (other than *a*).

(66) a. Three whole houses were submerged.
b. Solange stayed at three unknown hotels.
c. Three inevitable counterexamples were discovered.
d. Three unlikely chiropractors invented robot goats.
e. Three different books exploded.

These work out fine:

- without kinds, the problem of cardinalities of kinds doesn't arise
- nothing rules out singleton properties of pluralities

Computation is hairy, but approximately:

(67) $[\![\textit{unknown hotel}]\!] = \lambda f_{\langle e,t\rangle}\lambda g_{\langle e,t\rangle} \,.\, \exists x[f(x) \wedge g(x) \wedge \neg\textbf{known}(\text{which } y \text{ is such that } g(y))]$

(68) $[\![\textit{Solange stayed at three unknown hotels}]\!]$

$$= \exists x \left[\begin{array}{l} \textbf{hotel}(x) \wedge \\ |x| = 3 \wedge \\ \textbf{stay-at}(x)(\textbf{Solange}) \wedge \\ \neg\textbf{known}\left(\begin{array}{r}\text{which } y \text{ is such that} \\ \textbf{stay-at}(y)(\textbf{Solange})\end{array}\right) \end{array}\right]$$

Points worth noting:

- *unknown* provides its own existential
- a little unclear how *the* works here:
  - the judgment itself isn't clear
  - prediction would be that uniqueness element of *the* should be eliminated (salience remains)

Returning to incorporation

No need for incorporation:

- adverbial scope because of QR
- interpretation of determiner is standard
- restrictions on determiner follow independently
- lack of coordination because quantifier type
- no degree modifiers for same reason

. . . except that something must be said about high position:

- quantificational adjectives are heads in the nominal extended projection
- their position is therefore fixed
- an intermediate step on the diachronic road from A to D

No need to stipulate (well, not in general):

- which determiners support incorporation
- the interpretations that result
- why *the*, *a*, and *your* wind up identical
- all this repeatedly for each frequency adjective
- why Strong Quantifier Generalization holds
- why some adjectives resist all quantificational determiners

Summary of the proposal

- adjectives can have quantificational denotations
- they can trigger QR
- . . . so their traces must be type-shifted
- the Strong Quantifier Generalization follows from this
- *average* and *occasional* involve kinds, which independently rules out weak quantifiers
- certainly ***not*** a theory of everything
- but hopefully a general framework for nonlocal readings

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- ■ **Conclusion**

Conclusion

Setting aside merits of the proposal:

- nonlocal readings are not a collection of curiosities
- they are a systematic and important fact about adjectival modification
- they are heterogeneous, of course, but we should pursue a general understanding of their scope properties

Gratitude

Thanks!

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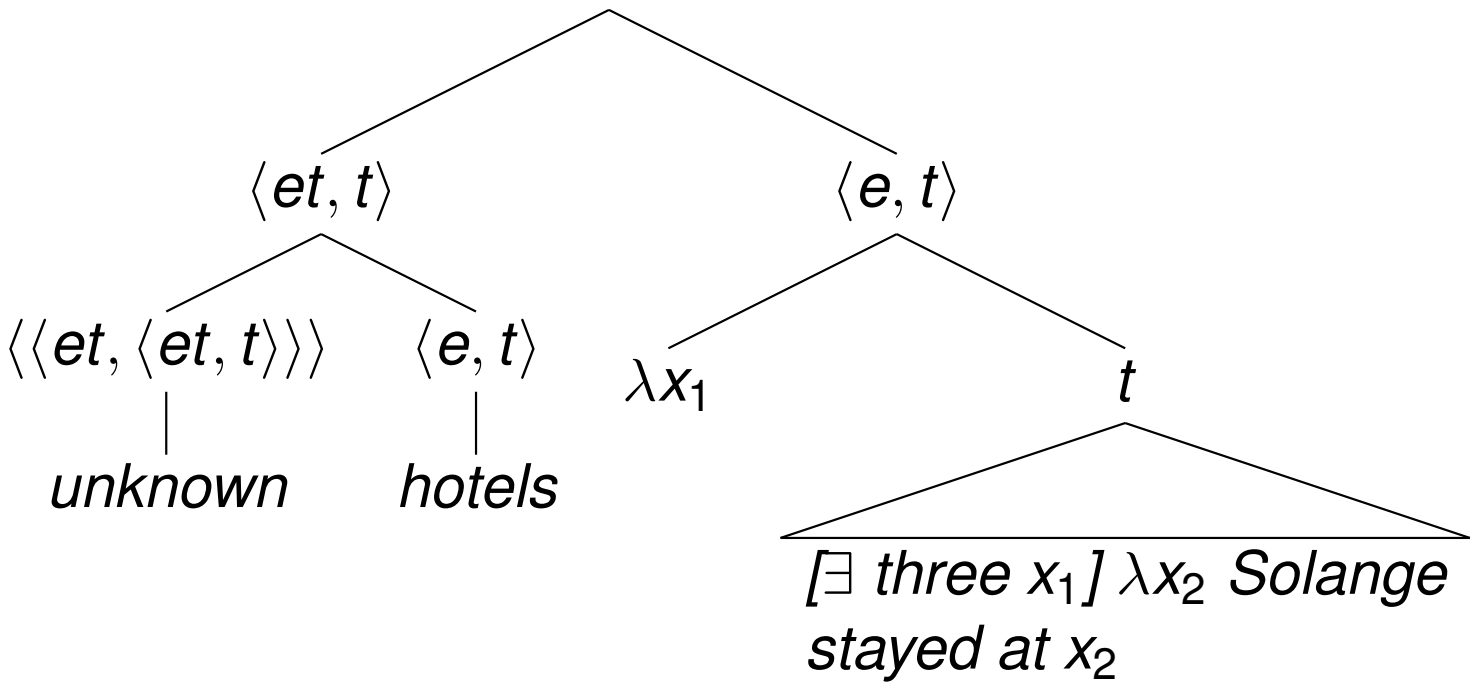
Appendix: Computation with an epistemic adjective

(69)



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

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

c. $[\![\textit{three} \text{ BE } x_1]\!] = \lambda y [x_1 = y \wedge |x_1| = 3]$

d. $[\![\exists \textit{ three} \text{ BE } x_1]\!] = \lambda g_{\langle e, t \rangle} \,.\, \exists y [x_1 = y \wedge |x_1| = 3 \wedge g(y)]$

e. $[\![\textit{[}\exists \textit{ three } x_1\textit{]} \, \lambda x_2 \textit{ Solange stayed at } x_2]\!]$

$= \lambda x_1 \,.\, \exists y [x_1 = y \wedge |x_1| = 3 \wedge$
stay-at(y)(**Solange**)$]$

(71) a. $[\![\textit{unknown hotel}]\!] = \lambda g_{\langle e,t\rangle} . \exists x[\textbf{hotel}(x) \wedge g(x) \wedge \neg\textbf{known}(\text{which } y \text{ is such that } g(y))]$

b. $[\![\textit{unknown hotel } \lambda x_1 \textit{ [}\exists \textit{ three } x_1\textit{]} \lambda x_2 \textit{ Solange stayed at } x_2]\!]$

$= \exists x[\textbf{hotel}(x) \wedge [\lambda x_1 . \exists y[x_1 = y \wedge |x_1| = 3 \wedge \textbf{stay-at}(y)(\textbf{Solange})]](x) \wedge \neg\textbf{known}(\text{which } y \text{ is such that } [\lambda x_1 . \exists z[x_1 = z \wedge |x_1| = 3 \wedge \textbf{stay-at}(z)(\textbf{Solange})]](x)(y))]$

$= \exists x[\textbf{hotel}(x) \wedge \exists y[x = y \wedge |x| = 3 \wedge \textbf{stay-at}(y)(\textbf{Solange})] \wedge \neg\textbf{known}(\text{which } y \text{ is such that } \exists z[y = z \wedge |y| = 3 \wedge \textbf{stay-at}(z)(\textbf{Solange})])]$

$= \exists x[\textbf{hotel}(x) \wedge |x| = 3 \wedge \textbf{stay-at}(x)(\textbf{Solange}) \wedge \neg\textbf{known}(\text{which } y \text{ is such that } \textbf{stay-at}(y)(\textbf{Solange}))]$

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