

TOWARD A GENERAL THEORY OF NONLOCAL READINGS OF ADJECTIVES

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Sept. 12, 2015

INTRODUCTION

Adverbial readings of adjectives (Bolinger 1967, Stump 1981):

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

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

- (2) $\left\{ \begin{array}{l} \text{An} \\ \text{The} \\ \text{Your} \end{array} \right\}$ occasional sailor strolled by.
'Occasionally, a sailor strolled by.'

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

(3) $\left\{ \begin{array}{l} \text{Every} \\ \text{Some} \\ \text{Several} \\ \text{Many} \\ \text{Most} \end{array} \right\}$ occasional sailor(s) strolled by.

- a. **internal**: '*D* person/people who sail(s) occasionally strolled by.'
- b. #**external**: 'Occasionally, *D* sailor(s) strolled by.'

Why does this reading disappear here?

Other ‘frequency adjectives’ (*infrequent*, *rare*, etc; Larson 1999) behave similarly.

Common conclusion:

- *occasional* is a cool peripheral little puzzle

But 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!

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
- nonlocal adjectives trigger QR of the NP
- their crucial properties follow largely from this

ROADMAP

✓ Introduction

■ **Nonlocal readings are widespread**

■ Patterns and subclasses

■ Toward an analysis

■ Conclusion

NONLOCAL READINGS ARE WIDESPREAD:

COMMON PROPERTIES OF NONLOCAL READINGS

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

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

There are more ...

Obligatory high position on the external reading:

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

Inability to coordinate with ordinary adjectives on the external reading:

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

Incompatibility with degree modification on the external reading:

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

NONLOCAL READINGS ARE WIDESPREAD: AVERAGE

Ambiguity (Carlson & Pelletier 2002, Kennedy & Stanley 2009, others):

- (7) 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.'

Unexpected interpretation of determiner:

- (8) $\left\{ \begin{array}{c} \text{The} \\ \text{Your} \end{array} \right\}$ average American has 2 children.
- a. **internal**: ‘ $\left\{ \begin{array}{c} \text{The} \\ \text{Your} \end{array} \right\}$ American that’s a typical one has 2 children.’
- b. **external**: ‘On average, an American has 2 children.’

Restrictions on determiner:

- (9) # $\left\{ \begin{array}{l} \text{Every} \\ \text{Most} \\ \text{Some} \\ \text{Several} \\ \text{Two} \end{array} \right\}$ average American(s) has/have 2.3 children.

High position:

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

Inability to coordinate:

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

Incompatibility with degree modifiers:

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

NONLOCAL READINGS ARE WIDESPREAD: WRONG

Ambiguity (Haïk 1985, Schwarz 2006):

- (13) 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.'

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

NONLOCAL READINGS ARE WIDESPREAD: WRONG

Unexpected interpretation of determiner:

- (13) 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.'

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

Restrictions on determiner:

(15) #Floyd opened $\left\{ \begin{array}{l} \text{every} \\ \text{most} \\ \text{some} \\ \text{several} \\ \text{two} \end{array} \right\}$ wrong envelope.

High position:

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

Inability to coordinate:

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

Incompatibility with degree modifiers:

(18) #Floyd opened the very wrong envelope.

NONLOCAL READINGS ARE WIDESPREAD: WHOLE & ENTIRE

Ambiguity (Moltmann 1997, 2005, Morzycki 2002):

- (19) A whole ship was submerged.
- a. **internal**: 'A structurally intact ship was submerged.'
 - b. **external**: 'A ship was wholly submerged.'

Restrictions on determiner:

$$(20) \left\{ \begin{array}{l} \# \text{Every} \\ \# \text{Most} \\ \text{Many} \\ \text{Several} \\ \text{Two} \end{array} \right\} \text{ whole ship(s) } \left\{ \begin{array}{l} \text{was} \\ \text{were} \end{array} \right\} \text{ submerged.}$$

NB: Different from before. Weak quantifiers now good.

High position:

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

Inability to coordinate:

- (22) A whole and enormous ship was submerged.

Incompatibility with degree modifiers:

- (23) #An entirely whole ship was submerged.

NONLOCAL READINGS ARE WIDESPREAD: EPISTEMIC ADJECTIVES

Ambiguity (Abusch & Rooth 1997):

- (24) Solange is staying at an unknown hotel.
- 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.'

Restrictions on determiner (on the external reading):

(25) 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:

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

Inability to coordinate:

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

Incompatibility with degree modifiers:

- (28) #Solange stayed at a very unknown hotel.

NONLOCAL READINGS ARE WIDESPREAD: GLANCE AT OTHER EXAMPLES

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):

- (29) Floyd and Clyde read the same book.
 ‘Floyd and Clyde read a book in common.’

Determiners:

(30) #Floyd and Clyde read $\left\{ \begin{array}{l} \text{every} \\ \text{most} \\ \text{some} \\ \text{several} \\ \text{two} \end{array} \right\}$ same book(s).

Position:

- (31) 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):

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

Novel (so far as I know) potential examples:

- (33) An unlikely chiropractor discovered the solution.
'A chiropractor discovered the solution and it was unlikely that that chiropractor (or a chiropractor?) would do so.'
- (34) Clyde asked a random linguist.
'Clyde asked a linguist at random.'
- (35) Floyd received an unfortunate grade.
'Floyd received a grade such that it was unfortunate to receive it.'

NONLOCAL READINGS ARE WIDESPREAD:

SUMMARY

- Not just a cute peripheral puzzle about *occasional* and maybe a few other things.
- Not an assortment of idiosyncratic curiosities. Curious in parallel ways.

ROADMAP

- ✓ Introduction
- ✓ Nonlocal readings are widespread
- **Patterns and subclasses**
- Toward an analysis
- Conclusion

Three classes of nonlocal adjectives:

- ellipsis class/‘modal superlatives’: *possible* (will set aside here)
- weak-determiner class: *whole, unknown*
- quantifier-resistant class: *occasional, average*

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

(36) **Strong Quantifier Resistance**

Nonlocal readings don't arise with strong inherently quantificational determiners (*every, most, no*).

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

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

(37) **Quantifier Resistance**

For some adjectives, nonlocal readings don't arise with any inherently quantificational determiners.

(38)

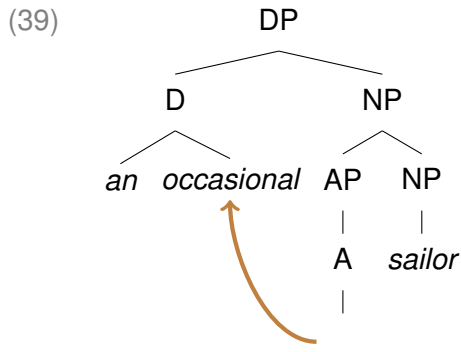
	<i>every, most</i>	<i>three, many</i>
<i>occasional</i>	X	X
<i>average</i>	X	X
<i>wrong</i>	X	X
<i>same</i>	X	X
<i>whole</i>	X	✓
<i>unknown</i>	X	✓
<i>inevitable</i>	X	✓
<i>unlikely</i>	X	✓
<i>different</i>	X	✓
<i>possible</i>	✓	X

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TOWARD AN ANALYSIS: INCORPORATION

Larson (1999), Zimmermann (2000): In the *occasional* construction, adjective incorporates into D ('complex quantifier formation'):



‘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

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:

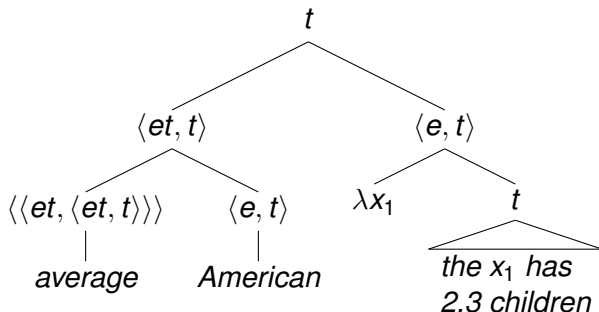
- violates Head Movement Constraint
- why *a*, *the*, and *your* and not other determiners?
- why are D+A interpretations not unpredictable?
- how do weak-determiner-compatible adjectives (*whole*, *inevitable*, *unlikely*, *different*) fit in?

Nevertheless, probably the most flexible option on the market.

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

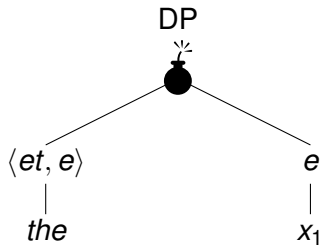
The NP QRs:

(40)



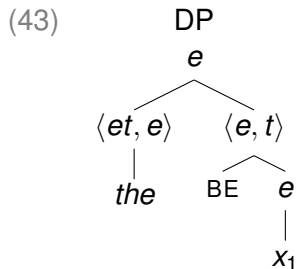
The remnant DP needs help:

(41)



The BE type shift (Partee 1987):

$$(42) \quad \llbracket \text{BE} \rrbracket = \lambda x \lambda y [x = y]$$



TOWARD AN ANALYSIS: DETERMINERS THAT WORK

The, *a*, and *your* all work here and contribute the same thing: nothing.

$$(44) \quad \llbracket \textit{the} \text{ BE } x \rrbracket = \iota y[x = y] = x$$

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

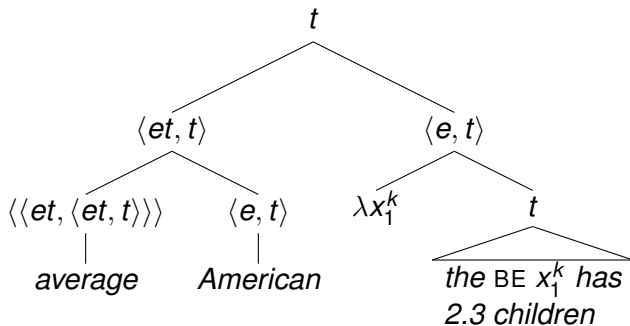
Toy version of *average* (can't be nearly this simple; Kennedy & Stanley 2009):

- (45) a. $\llbracket \textit{average} \rrbracket = \lambda P_{\langle e, t \rangle} \lambda Q_{\langle e, t \rangle} . Q(\cap P)$
b. $\llbracket \textit{The average American has 2.3 children} \rrbracket$
 $= \textbf{has-2.3-children}(\cap \textbf{American})$

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

Updated tree:

(46)



(47) $\llbracket \text{average American } \lambda k_1 \text{ the } [BE \ k_1] \text{ has 2.3 children} \rrbracket$
 $= \text{has-2.3-children}(\cap \text{American})$

DETERMINERS THAT DON'T WORK

Strong determiners like *every/most* presuppose that their domain has more than one member.

$$(48) \quad \llbracket \text{every} \rrbracket (\llbracket \text{BE } x_1^k \rrbracket) = \llbracket \text{every} \rrbracket (\lambda y [x_1^k = y])$$

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

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

$$(49) \quad \llbracket \text{three BE } x_1^k \rrbracket = \lambda y [x_1^k = y \wedge |y| = 3]$$

Kinds don't have cardinalities (*#three cheese*).

Occasional also involves kinds (Gehrke & McNally 2010).

Reminder: many nonlocal readings are compatible with weak determiners (and not just *a*).

- (50)
- a. Three whole houses were submerged.
 - b. Solange stayed at three unknown hotels.
 - c. Three unlikely chiropractors invented robot goats.
 - d. Three different books were sold.

Without kinds, the problem of cardinalities of kinds doesn't arise.

Approximately:

$$(51) \quad \llbracket \textit{unknown hotel} \rrbracket = \lambda f_{\langle e, t \rangle} \lambda g_{\langle e, t \rangle} \cdot$$

$$\exists x \left[f(x) \wedge g(x) \wedge \neg \textbf{known}(\text{which } y \text{ is such that } g(y)) \right]$$

$$(52) \quad \llbracket \textit{Solange stayed at three unknown hotels} \rrbracket =$$

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

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

No need to stipulate (in at least some cases):

- which determiners support incorporation
- the interpretations that result
- why *the*, *a*, and *your* wind up identical
- all this repeatedly for each frequency adjective
- why resistance to strong quantifiers occurs
- why some adjectives resist all quantificational determiners

TOWARD AN ANALYSIS: SUMMARY OF THE PROPOSAL

- nonlocal adjectives trigger QR of the NP, stranding the D
- ... so their traces must be type-shifted
- Strong Quantifier Resistance follows from this
- *average* and *occasional* involve kinds, which rules out weak quantifiers
- far from a complete solution
- but it's modular in a way that might scale up

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- **Conclusion**

Setting aside merits of the proposal:

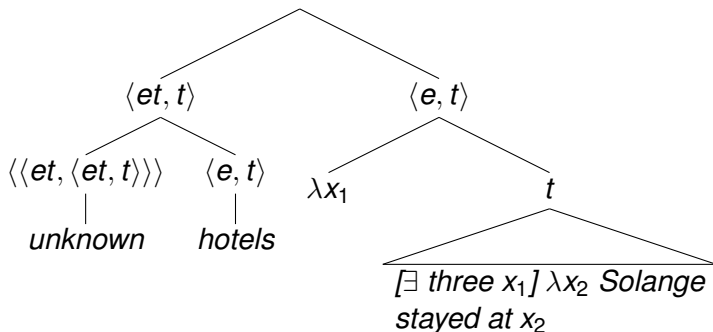
- nonlocal readings are not just a collection of curiosities
- they are a systematic and important fact about adjectival modification
- we should pursue a general understanding

Thanks!

Also, thanks to Ai Kubota, Ai Taniguchi, Anne-Michelle Tessier, Bernhard Schwarz, Biyao Wang, Cara Feldscher, Curt Anderson, Daniel Gutzmann, Gabriel Roisenberg Rodrigues, Galit Sassoon, Haley Farkas, Hannah Forsythe, Karl Schreur, Kay Ann Schlang, Norbert Hornstein, Omer Preminger, Paul Pietroski, Taehoon Hendrik Kim, Tom Orr, Yi-Chen Lin, and members of an audience at the University of Maryland.

APPENDIX: COMPUTATION WITH AN EPISTEMIC ADJECTIVE

(53)



- (54)
- a. $\llbracket \text{BE} \rrbracket = \lambda x \lambda y [x = y]$
 - b. $\llbracket \text{BE } x_1 \rrbracket = \lambda y [x_1 = y]$
 - c. $\llbracket \text{three BE } x_1 \rrbracket = \lambda y [x_1 = y \wedge |x_1| = 3]$
 - d. $\llbracket \exists \text{ three BE } x_1 \rrbracket = \lambda g_{\langle e, t \rangle} . \exists y [x_1 = y \wedge |x_1| = 3 \wedge g(y)]$
 - e. $\llbracket [\exists \text{ three } x_1] \lambda x_2 \text{ Solange stayed at } x_2 \rrbracket$
 $= \lambda x_1 . \exists y [x_1 = y \wedge |x_1| = 3 \wedge$
 $\text{stay-at}(y)(\text{Solange})]$

- (55) a. $\llbracket \textit{unknown hotel} \rrbracket = \lambda g_{\langle e, t \rangle} . \exists x[\textbf{hotel}(x) \wedge g(x) \wedge \neg \textbf{known}(\text{which } y \text{ is such that } g(y))]$
- b. $\llbracket \textit{unknown hotel } \lambda x_1 [\exists \textit{three } x_1] \lambda x_2 \textit{ Solange stayed at } x_2 \rrbracket$
 $= \exists x[\textbf{hotel}(x) \wedge [\lambda x_1 . \exists y[x_1 = y \wedge |x_1| = 3 \wedge \textbf{stay-at}(y)(\textbf{Solange})]](x) \wedge \neg \textbf{known}(\text{which } y \text{ is such that } [\lambda x_1 . \exists z[x_1 = z \wedge |x_1| = 3 \wedge \textbf{stay-at}(z)(\textbf{Solange})]](x)(y))]$
 $= \exists x[\textbf{hotel}(x) \wedge \exists y[x = y \wedge |x| = 3 \wedge \textbf{stay-at}(y)(\textbf{Solange})] \wedge \neg \textbf{known}(\text{which } y \text{ is such that } \exists z[y = z \wedge |y| = 3 \wedge \textbf{stay-at}(z)(\textbf{Solange})])]$
 $= \exists x[\textbf{hotel}(x) \wedge |x| = 3 \wedge \textbf{stay-at}(x)(\textbf{Solange}) \wedge \neg \textbf{known}(\text{which } y \text{ is such that } \textbf{stay-at}(y)(\textbf{Solange}))]$

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