

arbitrary

Comparison to Fuzzy Standards

Stephanie Solt
ZAS Berlin

Sinn und Bedeutung 16
Utrecht, 6 September 2011

Three Assymetries

2

- (1) a. The rug is a slightly/a little/a bit dirty
b. *John is a slightly/a little/a bit tall
- (2) a. Red wine isn't exactly healthy
b. *Red wine is exactly healthy
- (3) a. John doesn't have much money
b. ??John has much money

Today's Talk

3

- Analysis of facts in (1) and (2) (and some preliminary remarks on (3))
- Argument for connection between them
 - ▣ Derive from restrictions on comparison to a standard whose location is **arbitrary**
- Implications for scales, standards, vagueness

Slightly

4

Slightly/a little/a bit

5

- (4) a. The rug is slightly/a little/a bit **dirty**
b. The towel is slightly/a little/a bit **wet**
c. That neighborhood is slightly/a little/a bit **dangerous**
- (5) a. ??John is slightly/a little/a bit **tall**
b. ??The lake is slightly/a little/a bit **deep**
c. ??The rod is slightly/a little/a bit **long**
- (6) a. ??The rug is slightly/a little/a bit **clean**
b. ??The towel is slightly/a little/a bit **dry**
c. ??That neighborhood is slightly/a little/a bit **safe**

Very

6

- (7) a. The rug is very **dirty**
b. The towel is very **wet**
c. That neighborhood is very **dangerous**
- (8) a. John is very **tall**
b. The lake is very **deep**
c. The rod is very **long**
- (9) a. ?The rug is very **clean**
b. ??The towel is very **dry**
c. That neighborhood is very **safe**

Comparatives

7

- (10) a. The rug is slightly **dirtier** than the floor
 b. The towel is a slightly **wetter** than the rag
 c. That neighborhood is slightly more **dangerous** than this one
- (11) a. John is slightly **taller** than Fred
 b. The lake is slightly **deeper** than the pond
 c. The rod is slightly **longer** than the box
- (12) a. The rug is slightly **cleaner** than the floor
 b. The towel is slightly **drier** than the rag
 c. That neighborhood is slightly **safer** than this one

Excessives

8

- (13) a. The rug is slightly too **dirty**
 b. The towel is a slightly too **wet**
 c. That neighborhood is slightly too **dangerous**
- (14) a. John is slightly too **tall**
 b. The lake is slightly too **deep**
 c. The rod is slightly too **long**
 □ Cf. *slightly long* 'slightly too long'
- (15) a. ?The rug is slightly too **clean**
 b. The towel is slightly too **dry**
 c. ?That neighborhood is slightly too **safe**
 □ Cf. *slightly dry* 'slightly too dry'

“Excessive” interpretation

9

- (16) Our rig holds Kriss, P90, and UMP mags perfectly. MP5 mags will sit **a little deep**, but we can fit pockets with an internal spacer to sit them at the perfect height. (<http://www.originalsoegear.com/smgrig.html>)
- (17) However, if you end up with a less-than-perfect joint, you can cope with this situation by recutting the joint (you did cut the board **slightly long**, right?) (http://www.woodbin.com/misc/cope_molding.htm)
- (18) You can make these up to 5 days ahead, and they reheat beautifully. If they're **a bit dry**, just stir in water. (Prevention, 61(11), p. 154, 2009; sourced from COCA, Davies 2008-)

Russian -ovat

10

- (19) a. grijaznovatyj 'slightly dirty'
 b. vlažnovatyj 'slightly wet'
- (20) a. vysokovatyj 'slightly too tall'
 b. dlinnovatyj 'slightly too long'
- (21) a. *čistovatyj 'slightly (too) clean'
 b. suxovatyj 'slightly too dry'

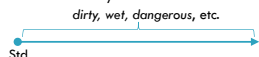
(Kagan & Alexeyenko 2010)

Scale Structure

11

Slightly/a bit

Lower closed/minimum standard (partial) ✓



Upper closed/maximum standard (total) ??



Open/contextual standard (relative) ??

Rotstein & Winter 2004;
Kennedy & McNally 2005;
Kennedy 2007

Frequencies

12

Slightly/a little/a bit Adj
per '000 Adj**Lower closed scale**dirty, wet, bumpy, rough, dangerous,
bent, crooked, uncertain

12.5

Upper closed scaleclean, dry, flat, smooth, safe, straight,
certain

0.6

Open scaletall, long, big, expensive, deep, rich, wide,
strong, fat, thick, short, small, inexpensive,
cheap, shallow, poor, narrow, weak, thin

1.4

Source: COCA, Davies 2008-

Rotstein & Winter 2004

13

- *Slightly Adj*: an interval, open at one end, of some arbitrary length, at the beginning of the denotation of Adj on scale A
 - ▣ **Minimum standard (partial)**: felicitous
 - ▣ **Maximum standard (total)**: infelicitous when Adj point-denoting (default)
 - *Slightly closed* = 'closed but not completely closed'?
 - ▣ **Relative**: ??

Kennedy 2007

14

- *Slightly* as diagnostic for scalar minimum
 - ▣ **Lower-closed scale (dirty)**: felicitous
 - ▣ **Upper-closed scale (clean)**: infelicitous
 - ▣ **Open scale (tall)**: infelicitous
- Explanation for felicity with comparative, *too*: derived scale
 - clean* ←-----→
 - cleaner than the floor* ←-----→
 - ↑
μ_{cleaness}(the floor)

Kennedy 2007

15

- *Slightly* with open scale (relative) adjectives on excessive reading must also involve coercion to interpretation w.r.t. lower closed scale
 - ▣ Covert *too*?
- *Slightly* with totally closed scales predicted to be felicitous (cf. Sassoon 2011):
 - empty ----- full
 - (22) a. ??The glass is slightly full
 - b. ??The glass is slightly empty

Frequencies




16

	<i>Slightly/a little/a bit Adj</i> per '000 Adj
Lower closed scale dirty, wet, bumpy, rough, dangerous, bent, crooked, uncertain	12.5
Upper closed scale clean, dry, flat, smooth, safe, straight, certain	0.6
Open scale tall, long, big, expensive, deep, rich, wide, strong, fat, thick, short, small, inexpensive, cheap, shallow, poor, narrow, weak, thin	1.4
Totally closed scale full, open, opaque, empty, closed, transparent	1.0

Source: COCA, Davies 2008-

Kennedy 2007

17

- Unwelcome conclusions about scale structure for relative adjectives:
 - tall*: lower open/bounded 
 - taller than Fred*: lower closed 
 - too tall*: lower closed 
- ▣ In fact, no evidence for lower closed vs. lower bounded distinction beyond occurrence with *slightly*, type of standard

An alternative characterization

18

- *Slightly* sensitive to nature of **standard of comparison**, not (only) to structure of scales
 - ▣ Felicitous with certain types of standards, not others
- Scalar endpoints may – but do not necessarily – provide standard
 - ▣ **Corollary**: No need to posit lower closed/lower bounded distinction → simpler typology of scale structures

Kagan & Alexeyenko 2010

19

- Distinct types of standard
 - **Scalar minimum** } absolute
 - **Scalar maximum** }
 - **Distributional**: relative to comparison class
 - (23) John is tall (for an 8-year-old, a jockey, an adult man)
 - **Functional**: maximum degree compatible with requirements of situation (cf. Bylina 2011)
 - (24) These heels are too high (to be comfortable, look good)
 - > **Also available for bare (unmodified) adjective**
- Suffix *-ovat* compatible with scalar minimum & functional standards

Analysis

20

- Adjectives denote measure functions (Kennedy 2007)
 - $[[dirty]] = \lambda x_e \cdot \mu_{dirtiness}(x)$
 - $[[clean]] = \lambda x_e \cdot \mu_{cleanness}(x)$
 - $[[long]] = \lambda x_e \cdot \mu_{length}(x)$
- Degree modifiers map adjective denotations to properties of individuals
 - $[[slightly]] = \lambda P_{(ed)} \lambda x_e \cdot P(x) > Std_p \wedge \text{diff}(P(x), Std_p) < d_c$

Minimum/maximum standard

21

$[[slightly\ dirty]] = [[slightly]] ([[dirty]]) =$
 $= \lambda x_e \cdot \mu_{dirtiness}(x) > Std_{dirty} \wedge \text{diff}(\mu_{dirtiness}(x), Std_{dirty}) < d_c$

$Std_{dirty} = \min(S_{dirtiness})$

$[[slightly\ clean]] = [[slightly]] ([[clean]]) =$
 $= \lambda x_e \cdot \mu_{cleanness}(x) > Std_{clean} \wedge \text{diff}(\mu_{cleanness}(x), Std_{clean}) < d_c$

$Std_{clean} = \max(S_{cleanness})$

Comparative

22

- Maps measure functions to measure functions

$[[\text{-er than } d_{COMP}]] = \lambda P_{(ed)} \lambda x_e \cdot \begin{cases} \text{If } P(x) > d_{COMP}: & \text{diff}(P(x), d_{COMP}) \\ \text{Else:} & 0 \end{cases}$

$[[cleaner\ than\ the\ floor]] =$
 $= \lambda x_e \cdot \begin{cases} \text{If } \mu_{cleanness}(x) > \mu_{cleanness}(\text{floor}): & \text{diff}(\mu_{cleanness}(x), \mu_{cleanness}(\text{floor})) \\ \text{Else:} & 0 \end{cases}$

$Std_{cleaner\ \text{-than}\ \text{floor}} = \min(S_{cleanness\ \text{-wrt}\ \text{floor}})$

Totally closed scales

23

- Acceptability of *slightly Adj* correlated with possibility of interpretation relative something other than scalar maximum as standard

(25) He'd lean his head back, his eyes **slightly closed** (Ploughshares, Winter 97/98, Vol. 23 Issue 4, p12)

(26) Helene ... had been in the bathroom, door cracked **slightly open**, peeking out through the small gap (Analog Science Fiction & Fact, Vol. 122, Iss. 10, pg. 108)

(27) As soon as the rice is hot and **slightly transparent**, add about 1 cup of warmed wine. (Chicago Sun Times, 14/2/1999)

(28) The Safeway store ... hadn't received a truck delivery, and the shelves were looking **a little empty**. (Denver Post, 22/6/2006)

Source: COCA, Davies 2008-

Relative adjective

24

$[[slightly\ tall]] = [[slightly]] ([[tall]]) =$
 $= \lambda x_e \cdot \mu_{height}(x) > Std_{tall} \wedge \text{diff}(\mu_{height}(x), Std_{tall}) < d_c$

Scalar minimum: $Std_{tall} = \min(S_{height})$ ✗

Distributional: $Std_{tall} = \text{norm}_{height}(C)$ ✗

Functional: $Std_{tall} = \max\{d: \exists w_{Acc} [\mu_{height}(x) \text{ in } w = d]\}$ ✓

What is wrong with distributional standard?

25

- Standards that support *slightly* can be reduced to single non-arbitrary point:

Scalar minimum: Minimum point on scale

Functional: Maximum degree compatible with requirements of situation

- What are distributional standards?

(29) John is tall (for an X)

- Greater than average height (for an X) – but by how much?
- Arbitrary** – multiple equally acceptable choices
 - Cf. contextualist, supervaluationist theories of vagueness (Raffmann 1996; Kamp 1975); probabilistic view (Lassiter 2011)

What is wrong with distributional standards?

26

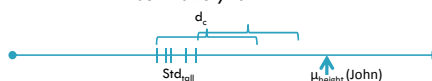
- 'Small' distances cannot be felicitously measured from an origin point whose location is arbitrary

??John is slightly tall



- 'Large' distances do not present the same problem

John is very tall



Other types of standards

27

- Deviation-based

(30) a. John is slightly overweight/underweight
b. The train arrived slightly early/late

- Norm/expectation-based (=functional?)

(31) My son is a bit tall for his age
(32) Did you ever consider maybe you're a bit fat?
(33) Costa was in his late forties, and the years showed around his middle but not in the thick dark hair that he left cut just slightly long. (Linda Grant, Love nor Money, 2002)
(34) ...the shelves were looking a bit empty
cf. The theater is empty tonight (Kennedy 2007)

Relative adjectives and minimum standards

28

- If relative adjectives (*tall*) make use of lower-closed scales, why can't scalar minimum serve as standard, as it does for absolute adjectives (*clean*, *dirty*)?

- Toledo & Sassoon (2011):** Two classes denote different types of properties

- Relative (*tall*): Individual level - comparison class over individuals
- Absolute (*clean*, *dirty*): Stage level – comparison classes over stages of the same individual

- For relative class, scalar minimum as standard would be completely uninformative – everything in comparison class would have property

Summary

29

- Slightly* sensitive to nature of standard of comparison, not (only) to structure of scale
- Distributional standards are different – arbitrary
 - Comparison to arbitrary standards restricted – large differences can be measured, but not small differences
- Scale structure does not fully determine standard
 - Allows simpler typology of scale structures
- More types of standards than 'endpoint' and 'contextual'

(Not) Exactly

(Not) exactly

31

□ Scalar exactly

- (35) a. John is exactly 30 years old
 b. It's exactly noon
 c. The circle is exactly in the center of the square
 d. Your answer is exactly right

□ NPI exactly

- (36) a. Red wine is *(not) exactly healthy
 b. John is *(not) exactly tall
 c. That is *(not) exactly a mountain

A broader pattern

32

□ Sauerland & Stateva (2007): English *exactly* ambiguous between scalar modifier and NPI

- (37) *Der Rotwein ist (nicht) genau gesund German

□ But...

- (38) Delivery pizza is *(not) precisely healthy English

- (39) Der Rotwein ist *(nicht) gerade gesund German

- (40) bediyuk esrim anashim Hebrew
 'exactly 20 people'

- (41) yai'n adom ze *(lo) bedii'uk bari
 'red wine is *(not) exactly healthy'

NPI exactly

33

□ If *exactly* has a secondary use as an NPI, something about its semantics must predispose this to develop

- Cf. cross-linguistic tendency of minimizers (*lift a finger, drink a drop, etc.*) to become NPIs (Horn 1989)

□ Claim: NPI *exactly* derives from scalar *exactly*, and has the same basic meaning

- Restriction to negative contexts relates to how alternate predicate interpretations may be ordered in strictness – maximum element arbitrary

Distribution

34

□ Sentential negation

- (42) Red wine isn't exactly healthy

□ Quantifiers

- (43) a. None of the dishes on the menu was exactly healthy
 b. Few of the dishes on the menu were exactly healthy
 c. ?Everything that was exactly healthy was expensive

□ Interrogatives

- (44) Is that sauce exactly healthy?
 ■ Negative bias/rhetorical

□ Antecedent of conditional

- (45) If John brings something exactly healthy, I'll be amazed
 ■ Negative bias

Two types of readings

35

□ "Literal"

- (46) Sure, they're not exactly healthy, but they're much healthier than your typical cookie, have a soft but slightly chewy texture that I adore, and they are vegan
 (<http://catesworldkitchen.com/2010/09/maple-almond-butter-cookies/>)

□ Strengthened

- (47) Being comfort food, grilled cheese burgers are not exactly healthy. And that's okay, you're not eating them everyday. So you'll want a side dish that's equally comforting... and unhealthy. (<http://www.squidoo.com/Grilled-Cheese-Burger>)

- Parallels strengthening of Neg+intensifier+Adj (Horn 1989); but these not all NPIs

- (48) Not exceedingly/very/too/overly bright
 'fairly stupid'

Emphatic vs. Understating NPIs

36

□ Israel (1996): Polarity items characterized in terms of quantitative value and informative value

□ Low scalar value / emphatic

(drink) a drop, lift a finger, (budge) an inch, sleep a wink, at all, in the slightest

- (49) Sue didn't drink a drop → Sue didn't drink a glass/a bottle/a lot/etc.

□ High scalar value / understating

much, all that, long (it didn't last long)

- (50) Sue didn't drink much → Sue didn't drink a glass/a bottle/a lot/anything/etc.

Emphatic vs. Understating NPIs

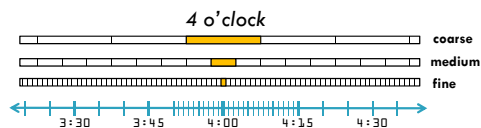
37

- Exactly patterns with high scalar/understating group
(51) Red wine isn't exactly healthy →
Red wine isn't healthy at all, in the slightest, etc.
- Analyses developed for the 'drink a drop' class (e.g. Krifka 1995) do not transfer directly
- Israel 1996: high-scalar/understating forms conventionally encode understating informative value, and therefore can only be used in propositions that express understatement, specifically negation
- But scalar exactly (e.g. exactly 20 people) not understating

Scalar exactly

38

- Sauerland & Stateva 2007: exactly sets granularity parameter to finest level under consideration



$$[[\text{exactly}]](G) = G(\text{gran}\{\text{finest}\})$$

$$[[\text{exactly}]](4 \text{ o'clock}) = \text{gran}_{\text{finest}}(4 \text{ o'clock})$$

$$= [4 \text{ o'clock} \pm 30 \text{ sec}]$$

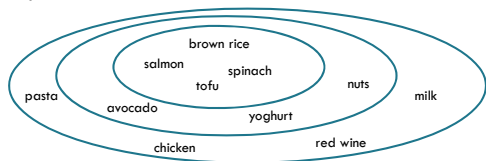
Proposal

39

- Scalar exactly operates on alternative interpretations of scalar expressions ordered in terms of their **granularity**, i.e. interval width

$$\text{gran}_{\text{fine}}(4 \text{ o'clock}) < \text{gran}_{\text{med}}(4 \text{ o'clock}) < \text{gran}_{\text{coarse}}(4 \text{ o'clock})$$

- NPI exactly operates on alternative interpretations of predicates ordered in terms of **strictness**



Support

40

- Not exactly infelicitous with predicates which do not allow stricter/less strict interpretations

(52) ??Sue isn't exactly pregnant

- (53) a. My laptop isn't exactly dead (but it will cost so much to fix that I might as well but a new one)
b. ?Mr. Jones isn't exactly dead

- Similar pattern with *strictly speaking*:

(54) Red wine *is/ isn't strictly speaking healthy

- Metalinguistic feel

Analysis

41

- Vague predicate (e.g. healthy) interpreted relative to contextual parameter that specifies one way of making predicate precise

$$[[\text{healthy}]]^{c1} = \{\text{tofu, salmon, spinach}\}$$

$$[[\text{healthy}]]^{c2} = \{\text{tofu, salmon, spinach, brown rice}\}$$

$$[[\text{healthy}]]^{c3} = \{\text{tofu, spinach, nuts}\}$$

$$[[\text{healthy}]]^{c4} = \{\text{tofu, salmon, spinach, nuts, brown rice}\}$$

etc.

- Alternative interpretations ordered in strictness

$$[[\text{healthy}]]^c >_{\text{strict}} [[\text{healthy}]]^c \text{ iff } [[\text{healthy}]]^c \subset [[\text{healthy}]]^c$$

- Partial order

Analysis

42

- Exactly would pick out strictest interpretation

$$[[\text{exactly healthy}]]^c = [[\text{healthy}]]^{c(\text{strictest})}$$

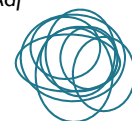
$$= \{P.P \in \{[[\text{healthy}]]^c \mid c \in C\} \wedge \forall Q \in \{[[\text{healthy}]]^c \mid c \in C\} [P \leq_{\text{strict}} Q]\}$$

- But what is strictest interpretation?

- Partially ordered set
- Maximum element **arbitrary**

- Exactly Adj undefined - but not exactly Adj nonetheless assertable

- Not exactly healthy = 'not within the strictest definition of healthy (whatever that is)'



Summary

43

- NPI *exactly* conventionalized, but based on semantics of *scalar exactly*
 - Ranking of alternatives based on inclusion relationship
 - Scalar: coarser/finer interpretations of scalar term
 - NPI: predicate interpretations
- Restriction to negative contexts because selection of strictest interpretation arbitrary
 - We may not be able to say what is in the strictest extension of *healthy* – but we can say of something that it isn't in that extension
- A related case: *not even approximately healthy*
- Potential problem: *not exactly dry*
 - Scalar standard vs. (metalinguistic) choice of extension

And possible parallel

44

- *Much* – like *exactly* – has NPI and non-NPI uses
 - (55) John is much taller than Fred
 - (56) a. ??John has much money
b. John doesn't have much money
- Felicity in positive contexts correlated with flexibility of interpretation
 - (57) a. ??Sue lost much money in the stock market crash
b. Sue lost much of her money in the stock market crash
c. Stock lost much more than \$1 million in the stock market crash
- *Potential explanation*: standard for *much* in (57a) too arbitrary – can specify what doesn't exceed the standard, but not what does exceed it

Final Remarks

45

- Vagueness (of different sorts) associated with arbitrariness of extension
 - One way of drawing boundary as good as another
- Statements made relative to arbitrary boundaries restricted
 - Large distances not small distances (*slightly*)
 - Outside of the strictest interpretation, but not within it (*exactly*)
- Still work to do on nature of standards and how speakers apply them

46

Thank you!

stephanie.solt@gmail.com

References

47

- Bylina, E. (2011). Functional standards. *Proceedings of the 2011 ESSLLI Student Session*.
- Davies, M. (2008-). *Corpus of Contemporary American English (COCA)*.
- Horn, L. R. (1989). *A Natural History of Negation*, Chicago, University of Chicago Press.
- Israel, M. (1996). Polarity sensitivity as lexical semantics. *Linguistics and Philosophy*, 19(6), 619-666.
- Kagan, O. and Alexeyenko, S. (2010). Degree modification in Russian morphology: the case of the suffix -ovat. In *Proceedings of the 26th Annual Meeting of the Israel Association for Theoretical Linguistics (IATL26)*, Bar-Ilan University.
- Kamp, H. (1975). Two theories about adjectives. In E.L. Keenan (Ed.), *Formal semantics for natural languages*, Cambridge, UK: Cambridge University Press. (pp. 123-155).
- Kennedy, C., & McNally, L. (2005). Scale structure and the semantic typology of gradable predicates. *Language*, 81(2), 345-381.
- Kennedy, C. (2007) Vagueness and grammar: The semantics of relative and absolute gradable adjectives, *Linguistics and Philosophy*, 30(1), 1-45.

References

48

- Krifka, M. (1995). The semantics and pragmatics of polarity items. *Linguistic Analysis*, 25,1-49.
- Lassiter, D. (2011). Vagueness as probabilistic linguistic knowledge. In R. Nouwen et al. (eds.) *Vagueness in Communication (LNAI 6517)*, Heidelberg, Springer
- Morzycki, M. (2011). Metalinguistic comparison in an alternative semantics for imprecision. *Natural language Semantics*, 19, 39-86.
- Raffman, D. (1996). Vagueness and context relativity. *Philosophical Studies*, 81, 175-192.
- Rotstein, C., & Winter, Y. (2004). Total adjectives vs. partial adjectives: Scale structure and higher order modifiers. *Natural Language Semantics*, 12, 259-288.
- Sauerland, U. and P. Stateva (2007). Scalar vs. epistemic vagueness. In Masayuki Gibson & Tova Friedman (eds.), *Proceedings of Semantics and Linguistic Theory (SALT) 17*, 11. Cornell U: CLC Publications.
- Sassoon, G. (2011). A slightly modified economy principle. *Workshop on Degree Semantics and its Interfaces*, Utrecht 5 September 2011.
- Sassoon, G.W. and A. Toledo (2011). Absolute vs. relative adjectives - variance within vs. between individuals. with Galit W. Sassoon. In *Proceedings of Semantics and Linguistic Theory (SALT) 21*, Rutgers University.