

Manner implicature in modified numerals*

Jessica Rett

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1 Overview

- my goal: to probe the extent to which unexpected properties of (some) modified numerals can be explained using manner implicature
- part 1: a review of the manner-implicature analysis of measure phrase equatives in Rett 2014a (§2-3)
- part 2: an exploration of the extent to which we can use manner implicature to explain the unexpected behavior of Class B modifiers (Nouwen 2010; §4)
- conclusion: while the superlative seems to need distinct treatment (Coppock and Brochhagen, 2013), there are at least a few modified numerals whose behavior can be explained by manner implicature

2 Comparison constructions with MP standards

- object of study:

(1) MP comparison constructions

- a. Some barrel organs are heavier than 100kg. *comparative*
- b. Some barrel organs are as heavy as 100kg. *equative*¹

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¹An aside about measure phrase equatives (MPEs) crosslinguistically: I know of no language other than English that allows MPEs, although some dialects of Spanish seem to tolerate them. In order to have MPEs, a language would need to i) have a degree-quantifier equative strategy, ii) which doesn't require that the correlate and standard be of the same syntactic category; iii) which doesn't require that the standard be a clause; and iv) which doesn't require that its standard denote an individual (cf. genitive-marking constructions, Haspelmath and Buchholz 1998).

- as opposed to:

(2) clausal comparison constructions

- a. Some organs are heavier than the organ grinder (is). *comparative*
- b. Some organs are as heavy as the organ grinder (is). *equative*

term	definition	example from (1)/(2)
correlate	external argument of CCs	<i>some barrel organs</i>
standard	internal argument of CCs	<i>100kg/the organ grinder</i>
parameter	dimension of measurement of CCs	heaviness
correlate value	parameter measure of the correlate	example: [20kg,100kg]
standard value	parameter measure of the standard	examples: 100kg, 200kg

FIGURE 1: Some terminology

- relative to MP comparatives and clausal equatives, MP equatives (MPEs) have a restricted distribution.
 - the correlate value must be a range (**the range restriction**); inclusive-or
 - the standard value must count as high (**the evaluativity restriction**)
 - the range restriction is typically satisfied by a plural or modal correlate
- ### (3)
- a. The Watts Towers are as tall as 30m.
 - b. The river is as wide as 20ft at points.
 - c. The baby wakes up as many as 5 times a night.
 - d. The price of gold is expected to go as high as \$2,000.
 - e. The newest wetsuit is capable of going as deep as 1,000 meters.
- clausal positive-antonym equatives are not evaluative (Rett, 2008)

- the evaluativity restriction is shown for these ‘punctual-correlate’ examples²:

- (4) a. I know 5 other DJs personally, one is as old as 55 and he doesn’t even use vinyl any longer.†
 b. Hutchison hasn’t always scored a zero. In fact, she once scored as high as 50.†
 c. With a collection to rival famous shoe addict Imelda Marcos, the 27-year-old owns as many as 100 pairs of Christian Louboutin heels, each worth around £600.†

- additional evidence for these distributional restrictions:

– punctual-correlate MPEs without evaluative standards are unacceptable:

- (5) a. ??A hexagon has as many sides as 6.
 b. ??This hamburger is as cheap as \$40.
 c. ??Sue leaves her house as often as once a year.

– evaluative MPEs have metalinguistic interpretations (Barker, 2002)

- (6) Australian: It gets hot in Australia. For instance, it was as hot as 35° today in Melbourne!
 American: Oh, so 35° is hot in Celsius. 35° is cold in Fahrenheit!

- when licensed, **MPEs are interpreted differently than clausal equatives** (they receive an ‘inclusive at most’ interpretation, i.e. ‘including and up to’)

- (7) The kids dove as deep as their parents (did).
 a. ...Each parent dove 15m and their kid dove 20m. ‘at least’
 b. #...Each kid dove 15m and their parent dove 20m. #‘at most’
- (8) (Over the course of the day,) The kids dove as deep as 20m.
 a. #...For instance, Michael dove 25m. #‘at least’
 b. ...For instance, Michael dove 15m. ‘at most’

- additional evidence for this idiosyncratic interpretation:

²†indicates examples that have been taken with minimal modification from the internet.

- (9) Holocaust deniers say **as many as 250,000 people** were killed in the Dresden air raid. ...Irvin asserted that the figure was “between a minimum of 100,000 and a maximum of 250,000.”†

- (10) Q: Does anyone know what ‘100m Water Resistant’ means?
 A: 100 meters means “up to a depth of 100 meters”.
 A’: Yep, it can go **as deep as 100 metres**.†

- (11) Heat index up to 100°. [...] On the bright side, humidity levels will be moderate.... Combine this with highs in the mid-90s and the heat index could still go **as high as 100 degrees**.†

- (12) The details in the story let us know that Sarah is **as old as 60** and no younger than 40 when they marry.†

- these data pose big challenges to semantic theories of comparison constructions:

– what’s the meaning of the equative degree quantifier *as*?

- * the equative is thought to encode a non-strict linear order \geq , and the comparative a strict linear order $>$ (Klein, 1980; Bierwisch, 1989).

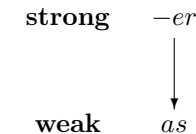


FIGURE 2: The traditional scale for comparatives and equatives

- * from this perspective, the ‘exactly’ interpretation of clausal equatives is a (Q-) strengthened interpretation, parallel to the exclusive interpretation of *or* (relative to *and*).

- (13) a. John is taller than Mary. → John is as tall as Mary.
 b. John and Mary went to the party. → John or Mary...

– what of the distributional restrictions (cf. Rett 2010)?

– why do MPs condition these differences?

- * (It’s not a phrasal/clausal distinction:)

- (14) This camera is as heavy as the lens itself (*is).†
 a. ...In fact, it is heavier. ‘at least’
 b. #...In fact, it is lighter. #‘at most’

3 A manner-implicature analysis of MPEs

- central claims:

- MPEs, like clausal equatives, are formed from *as*, which encodes a non-strict linear ordering \geq (nothing new here)
- in addition to being the weak member on a quantity scale with the corresponding MP comparative, MPEs are weak members on a manner scale with the corresponding MP construction, as in (15).³

- (15) a. The linguists are taller than 6ft.
 b. The linguists are as tall as 6ft.
 c. The linguists are 6ft tall.

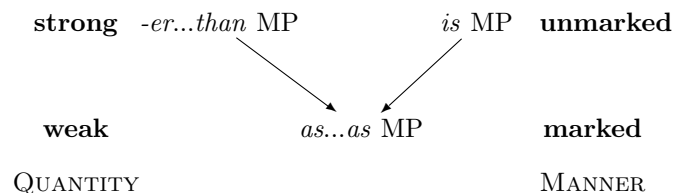


FIGURE 3: The proposed scale for measure phrase equatives

- crucially, clausal equatives have no such unmarked alternatives:

- (16) a. *John is Bill tall. (cf. *John is as tall as Bill.*)
 b. *Hutchison once scored Jones high. (cf. *...as high as Jones*)

- this additional manner implicature (relative to MP comparatives, clausal equatives) explains the distributional restrictions on MPEs as well as their tendency to receive an ‘at most’ interpretation

3.1 Some technical details

- gradable adjectives relate degrees and individuals (Heim, 2000);

$$(17) \quad \llbracket \text{tall} \rrbracket = \lambda d \lambda x. \text{tall}(x, d)$$

³While not all adjectives can form an MP construction (**Bowling balls are 20lbs heavy*, **She scored 50 points high*, Lehrer 1985), MP constructions without adjectives (*Bowling balls are 20lbs*, *She scored 50 points*) also count as less marked alternatives.

- MPs can be type-shifted to denote sets of degrees (ibid.)

$$(18) \quad \llbracket 6\text{ft} \rrbracket = 6\text{ft} \text{ (type-raises to)} \lambda d. d = 6\text{ft}$$

- *-er* and *as* denote degree quantifiers (Kamp, 1975; Cresswell, 1976; Hellan, 1981; Hoeksema, 1983), with MAX sensitive to the scale ordering (Heim, 2000)

$$(19) \quad \begin{array}{l} \text{a. } \llbracket \text{er} \rrbracket = \lambda D' \lambda D. \text{MAX}(D) > \text{MAX}(D') \\ \text{b. } \llbracket \text{as} \rrbracket = \lambda D' \lambda D. \text{MAX}(D) \geq \text{MAX}(D') \end{array}$$

$$(20) \quad \text{John is as tall as/taller than Sue (is).}$$

$$\begin{array}{l} \text{a. } \text{MAX}(\lambda d. \text{tall}(j, d)) > \text{MAX}(\lambda d'. \text{tall}(s, d')) \quad \text{comparative} \\ \text{b. } \text{MAX}(\lambda d. \text{tall}(j, d)) \geq \text{MAX}(\lambda d'. \text{tall}(s, d')) \quad \text{equative} \end{array}$$

$$(21) \quad \text{John is as tall as Sue (is).}$$

$$\begin{array}{l} \text{a. } \text{MAX}(\lambda d. \text{tall}(j, d)) \geq \text{MAX}(\lambda d'. \text{tall}(s, d')) \\ \text{b. } \rightsquigarrow_Q: \neg(\text{MAX}(\lambda d. \text{tall}(j, d)) > \text{MAX}(\lambda d'. \text{tall}(s, d'))) \\ \text{c. } \text{strengthened: } \text{MAX}(\lambda d. \text{tall}(j, d)) = \text{MAX}(\lambda d'. \text{tall}(s, d')) \end{array}$$

- lots of complications with plurals in comparison constructions (Stateva, 2005; Fitzgibbons et al., 2009); they receive maximal (“all of”) or non-maximal (“some of”) interpretations (Krifka, 1996; Malamud, 2012).

$$(22) \quad \begin{array}{l} \text{a. } \text{The linguists are taller than the philosophers.} \\ \text{b. } \text{The linguists are as tall as the philosophers.} \\ \text{c. } \text{The linguists are the tallest professors.} \end{array}$$

- I use Link’s (1983) supremum operator σ and a context-sensitive relation \sqsubseteq to approximate the analysis in Fitzgibbons et al. 2009

- ‘ $x \sqsubseteq \sigma y$ ’ means ‘ x is a representative subgroup of the maximal plurality of y ’

$$(23) \quad \text{The linguists are as tall as John.}$$

$$\begin{array}{l} \text{a. } \exists x[x \sqsubseteq \sigma y. * \text{linguist}(y) \wedge \text{MAX}(\lambda d. * \text{tall}(x, d)) \geq \text{MAX}(\lambda d'. \text{tall}(j, d))] \\ \text{b. } \rightsquigarrow_Q \neg(\exists x[x \sqsubseteq \sigma y. * \text{linguist}(y) \wedge \text{MAX}(\lambda d. * \text{tall}(x, d)) > \text{MAX}(\lambda d'. \text{tall}(j, d))]) \\ \text{c. } \text{strengthened: } \exists x[x \sqsubseteq \sigma y. * \text{linguist}(y) \wedge \text{MAX}(\lambda d. * \text{tall}(x, d)) = \text{MAX}(\lambda d'. \text{tall}(j, d))] \end{array}$$

- manner scales and quantity scales are defined in terms of meaning and structural complexity (\sim for equally complex, $<$ for less complex than; Katzir 2007):

- (24) Q ALTERNATIVES: Let ϕ be a parse tree. The set of Q alternatives for ϕ , written as $A_{Qstr}(\phi)$, is defined as $A_{Qstr}(\phi) := \{\phi' : \phi' \sim \phi\}$.
- (25) THE Q PRINCIPLE:
Do not use ϕ if there is another weakly assertable⁴ sentence $\phi' \in A_{Qstr}(\phi)$ such that $\llbracket \phi' \rrbracket \subset \llbracket \phi \rrbracket$.
- (26) M ALTERNATIVES: Let ϕ denote a semantic object of type $\langle \omega, t \rangle$. The set of M alternatives for ϕ is defined as $A_{Mstr}(\phi) := \{\phi' : \llbracket \phi' \rrbracket = \llbracket \phi \rrbracket\}$.
- (27) THE M PRINCIPLE:
Do not use ϕ if there is another weakly assertable sentence $\phi' \in A_{Mstr}(\phi)$ such that $\phi' < \phi$.

3.2 The influence of manner implicature

- an MPE's Q- and M-implicatures interact to create three possible uses: i) evaluative 'at most'; ii) range 'at most'; or iii) 'at least'.

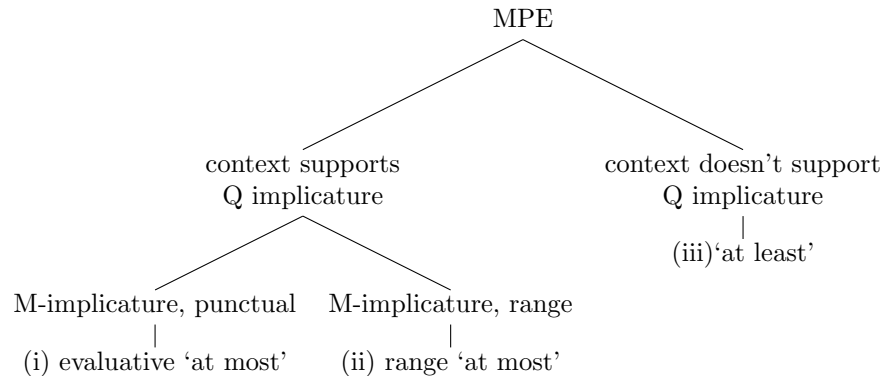


FIGURE 4: Possible implicatures calculated for MPEs

- scenario 1:** punctual MPE uttered in a Q-implicature-supporting context
 - the punctual MPE will have a strengthened, 'exactly' interpretation...

- (28) $\llbracket \text{John is as tall as } 6'3'' \rrbracket = \text{MAX}(\lambda d. \text{tall}(j, d)) \geq 6'3''$
- $\neg(\text{MAX}(\lambda d. \text{tall}(j, d)) > 6'3'')$
 - strengthened: $\text{MAX}(\lambda d. \text{tall}(j, d)) = 6'3''$

⁴ ϕ is weakly assertable by a speaker S iff S believes ϕ is true, relevant, and justified.

- and so will a corresponding MP construction.

- (29) $\llbracket \text{John is } 6'3'' \text{ tall} \rrbracket = \text{tall}(j, 6'3'')$ (Q-strengthened: *and no taller*)

- the constructions are M-alternatives, so the use of the complex alternative triggers the implicature that the marked construction describes a marked scenario; evaluativity results (Rett, 2014b)
- like other Manner implicatures (Levinson, 2000), the evaluativity associated with MPEs isn't cancelable: it's tied to the form, not the content

- (30) a. One of the DJs I know is as old as 55 and even he doesn't use vinyl any longer. #He's one of the youngest DJs I know.
b. Hutchison once scored as high as 50 on the Scorecard. #That is a very low score.

- scenario 2:** speaker utters a range MPE in a Q-implicature-supporting context

- plural or range MP constructions with an 'exactly' reading carry a homogeneity presupposition...

- (31) The linguists are 5ft tall.
- 'at least': the linguists are all d -tall for some $d \geq 5\text{ft}$, or the shortest is 5ft tall.
 - 'exactly': the linguists are all exactly 5ft tall, ~~or the shortest is exactly 5ft tall.~~

- (32) a. The linguists are exactly 5ft tall. (*all the linguists*)
b. It's false that the linguists are exactly 5ft tall. (*not any*)

- ...but plural or range MPEs receiving an 'exactly' interpretation don't (recall the range restriction).

- (33) The linguists are as tall as 5ft.
- 'at least': the linguists are all d -tall for some $d \geq 5\text{ft}$, or the shortest is 5ft.
 - 'exactly': the linguists are all exactly 5ft tall, or the shortest is exactly 5ft.

- (34) a. The linguists are exactly as tall as 5ft. (*all the linguists*)
b. It's false that the ling. are exactly as tall as 5ft. (*not all*)

- so plural MP constructions and range MPEs are not M-alternatives:

- * in a context in which the linguists are equally tall, (31) and (33) are licensed, but the MPE is marked, therefore evaluative
 - * in a context in which the linguists are not equally tall, (31) is not licensed, so (33) does not have a less marked M-alternative
- option 1: stipulate the HP for MP constructions, derive the range restriction for MPEs accordingly
 - option 2: assume the HP is the unmarked, stereotypical interpretation and the range restriction is the marked, atypical situation (cf. McCawley 1978; Horn 1984 on periphrasis, e.g. *kill* and *cause to die*)
 - this has the potential to explain why universal individual quantifiers (but not universal modals) are unacceptable as MPE correlates: universal DPs must scope outside DegPs (Kennedy, 1999; Heim, 2000), requiring a homogenous interpretation (“All linguists are such that...”).

- (35) a. ??Every linguist is as tall as 5ft.
b. ??All mature labradors are as heavy as 30lbs.

- it also derives the ‘inclusive at most’ interpretation, as a combination of the truth-conditional restrictions, the Q- and M-implicatures:
 - * the Q-implicature prevents the linguists from exceeding 5ft;
 - * the M-implicature requires that they differ in height;
 - * and the TCs require that the tallest be at least 5ft

- (36) The linguists are as tall as 5ft.
- a. $\exists x[x \sqsubseteq \sigma y.*\text{linguist}(y) \wedge \text{MAX}(\lambda d.*\text{tall}(x, d)) \geq 5\text{ft}]$
 - b. $\rightsquigarrow_Q \neg(\exists x[x \sqsubseteq \sigma y.*\text{linguist}(y) \wedge \text{MAX}(\lambda d.\text{tall}^*(x, d)) > 5\text{ft}])$
 - c. $\rightsquigarrow_M \neg(\forall x[x \subset \sigma y.*\text{linguist}(y) \rightarrow *\text{tall}(x, 5\text{ft})])$

	S ₁	S ₂	S ₃	S ₄	S ₅
linguist 1	4ft	6ft	4ft	5ft	4ft
linguist 2	4ft	6ft	4½ft	5ft	5ft
linguist 3	4ft	6ft	5ft	5ft	6ft
TCs: MAX ≥ 5ft	F	T	T	T	T
$\rightsquigarrow_Q: \neg(\text{MAX} > 5\text{ft})$	T	F	T	T	F
$\rightsquigarrow_M: \neg(\forall x \subset y[\text{tall}(x, 5\text{ft})])$	F	F	T	F	T
<i>MPE acceptability</i>	X	X	✓	X	X

FIGURE 5: Interpretive possibilities, *The linguists are as tall as 5ft*

• **scenario 3:** Q-implicature is not supported

- in contexts that don’t promote Q-implicature calculation:
 - * neither MP constructions nor MPEs mean ‘exactly’; but
 - * MP constructions don’t carry a homogeneity presupposition, so they’re always M-alternatives for MPEs
- the analysis predicts that, in such contexts, MPEs will be evaluative...
- ...but will have an ‘at least’ interpretation! These are unusual but attested.

- (37) with overt *at least*:
- a. [T]here were little old ladies, probably at least as old as 70, on the machines.†
 - b. The temperature has to be at least as low as 20 degrees to make snow. On a cold day, the snow machines are going full blast at Sunset Ski.†

- (38) disjoined with a comparative:
- a. A deluxe hot chocolate could be as much as 500 or more calories....†
 - b. Most of them are at least as tall as 6’4” or taller....†

- (39) when MP is salient:
- A: I just saw a nature documentary, and it left me truly terrified of snakes. Is it true that they grow as long as 40 feet?†
 - B: Yes, snakes grow as long as 40 feet... in fact, they grow to be 42 feet! *at least*
 - B’: Yes, snakes grow as long as 40 feet... #in fact, they grow to be 38 feet! *#at most*

- (40) in DE environments:
- a. Wolters said his height has helped him lead South Dakota State’s offense. “Most point guards aren’t as tall as 6’4”, and I can definitely see over the defense a little better than smaller guards can,” he said.†
 - b. “How many (cicadas) you have will depend on how long your trees have been there,” said Nixon. “If your trees are as old as 100 years you will have more and if your trees are 50 years or less you won’t have many.”†

4 A manner account of other modified numerals

4.1 The standard data

- the above account is based on:
 - a) the observation that MPEs can be formed with any dimension of measurement and MP, not just quantity and numerals; and
 - b) independent evidence that the equative is the weak, non-strict counterpart of the comparative.

Class A	Class B
<i>more/fewer/less than n</i> (comparative)	<i>at least/most n</i> (superlative)
<i>many/no more than n</i> (differential)	<i>n or more/fewer/less</i> (disjunctive)
<i>between n and m, over/under n</i> (locative)	<i>from n to m, from/up to n</i> (directional)
	<i>maximally/minimally n, n tops</i> (other)

FIGURE 6: Nouwen’s (2010) original modified numeral typology

- question: to what extent can we extend a manner-implicature approach to the differences between Class A and B modifiers generally (especially given considerations in Westera and Brasoveanu, 2014)?
- some of the observed differences:
 - compatibility with exact knowledge (i.e., ignorance implicature cases, Geurts and Nouwen 2007)

(41) I know exactly how many sides a hexagon has...

 - a. A hexagon has more than 3 sides. *Class A*
 - b. #A hexagon has up to 4 sides. *Class B*
 - compatibility with permission modals (Geurts and Nouwen, 2007)

(42) a. You may have fewer than three beers... but of course, you may have four.

 - b. You may have up to three beers... #but of course, you may have four.
 - context-sensitive ‘bottom-of-scale effects’ (Cummins et al., 2012; Schwarz et al., 2012)

- (43) a. More than one person died in the crash. *Class A*
 b. #Up to one person died in the crash. *Class B*

4.2 A new perspective

- I can only address a subset of Geurts and Nouwen’s (2007) modified numerals:
 - some of them seem relatively unacceptable in English: ??*John owns beginning with 10 shoes*;
 - the superlative has been argued to behave distinctly from other Class B modifiers, thus requiring an independent treatment (Coppock and Brochhagen, 2013). It:
 - * can modify implicit scales (Krifka, 1999);
 - * can act as a sentential modifier (Coppock and Brochhagen, 2013);
 - * is more semantically complex than the comparative and other modified numerals (Heim, 1995; Sharvit and Stateva, 2002)
 - * doesn’t display BOS effects (cf. (43)): *At most one person died...*
 - claim: the superlative aside (although see Coppock and Brochhagen, 2013), Class A and B modifiers differ in strictness, like the comparative and equative

Class A (strict)	Class B (non-strict)
<i>more/fewer/less than n</i> (comparative)	<i>as many/few/much/little as</i> (equative)
<i>between n and m</i> (open interval)	<i>from n to m</i> (closed interval)
<i>over/under n</i> (locative)	<i>up to n</i> (directional)
<i>n and more/higher/less</i> (conjunctive)	<i>n or more/higher/less</i> (disjunctive)

FIGURE 7: A new perspective on the Class A/Class B distinction

- Class A modifiers asymmetrically entail Class B modifiers

(44) (I’m not sure how many shoes John owns, but...)

 - a. He owns under 15 pairs. \rightarrow / \leftarrow He owns up to 15 pairs.
 - b. He owns 15 and more pairs. \rightarrow / \leftarrow He owns 15 or more...
- Class B (but not A) modifiers overlap in meaning with MP constructions

(45) John owns exactly 5 pairs of shoes.

 - a. \rightarrow John owns {5 and more/under 5} pairs of shoes. *Class A*
 - b. \rightarrow John owns {5 or more/up to 5} pairs of shoes. *Class B*

- notice: while they've been called 'modified numerals' and traditional examples only involve the dimension of quantity, these constructions are compatible with any dimension of measurement and MP

- (46)
- Sue is over/up to 6ft tall.
 - John weighs between/from 150lbs and/to 200lbs.
 - Mary scored 50 points and/or higher.

- it's therefore unappealing to encode the difference semantically, in e.g. null quantity adjectives (Nouwen, 2010)
- an approach to the difference that appeals to M-implicature is pragmatic and therefore appropriately broad (Westera and Brasoveanu, 2014);
- it also follows (in spirit) a major aspect of the approach in Nouwen 2010: the idea that Class B modifiers compete with their MP construction counterparts
- the restrictions on MPEs subsume those for Class B modified numerals

– the ignorance implicature as the range restriction

- * the observation is that Class B modifiers are unacceptable in contexts in which the speaker knows the precise value... these are contexts in which the correlate value is punctual
- * the manner implicature account correctly predicts that Class B modifiers are compatible with speaker knowledge if the correlate value is a range for other reasons (Büring, 2007):

- (47) I know how many players a volleyball team can have...
- A team can have up to 6 players. *directional Class B*
 - A team can have 2 players or more. *connective Class B*

– bottom-of-scale effects as the evaluativity restriction

- * Class Bs cannot modify a relatively low number (Schwarz et al., 2012)
- * if this were evaluativity (instead of some similar restriction), the manner-implicature account would predict that Class B modifier constructions could have a metalinguistic interpretation

- (48)
- [My blood pressure] has also been up to 120/103 which is mind-blowing.†
 - It certainly makes me think that if these ordinary, everyday people can lose 100 pounds or more, I should be able to lose a few pounds myself.†

– permission modals and the Q-implicature (42)

- * a typical generalization: Class A modifiers seem to be granting permission without prohibiting other options, while Class B modifiers describe constraints on all possible scenarios.
- * the Class B Q-implicature is calculated at the VP level (Chierchia et al., 2009); so the Class B version is less permissive semantically⁵

$$(49) \quad \begin{aligned} & \llbracket \text{The book may be longer than 200 pages} \rrbracket \\ & = \exists w \in \text{Acc} [\text{MAX}(\lambda d. \text{long}_w(\mathbf{b}, d)) > 200] \end{aligned}$$

$$(50) \quad \begin{aligned} & \llbracket \text{The book may be as long as 200 pages} \rrbracket \\ & = \exists w \in \text{Acc} [\text{MAX}(\lambda d. \text{long}_w(\mathbf{b}, d)) \geq 200] \end{aligned}$$

- $\rightsquigarrow_Q \neg(\exists w \in \text{Acc} [\text{MAX}(\lambda d. \text{long}_w(\mathbf{b}, d)) > 200])$
- strengthened: The book can be 200p but it not longer.

- * note that we don't predict a similar complication with necessity modals (Büring, 2007), because these are non-monotonic, and thus don't trigger scalar implicature

5 Summary

- MPEs behave bizarrely relative to MP comparatives and clausal equatives:
 - they often mean 'at most';
 - they must describe a range of values **or** be evaluative
- traditionally, equatives are weak Q-alternatives to comparatives; I propose that MP equatives are additionally marked M-alternatives to MP constructions
- where MPEs compete with MP constructions, they carry an M-implicature: evaluativity (Rett, 2014b)
 - whenever the correlate/subject value is a point instead of a range;
 - whenever the Q-implicature is not calculated, in which case the 'at most' interpretation disappears
- MP constructions and MPEs with plural subjects/correlates are in complementary distribution: the former describe homogenous plurals (punctual values), the latter heterogenous plurals (range values)

⁵This Q-implicature doesn't seem cancelable; this is plausibly the result of additional manner implications arising from competition with the MP construction *The book may be 200 pages long*.

- these relatively broad restrictions extend to the Class A/B distinction as well, modulo superlatives:
 - the range restriction results in the ignorance implicature;
 - the evaluativity restriction results in bottom-of-scale effects
 - the Q-implicature calculated under permission modals makes Class B modifiers more restrictive
- unlike some proposals, this proposal relies on independently-motivated compositional semantics and pragmatic considerations and is thereby general across dimensions of measurement and across languages
- remaining issues:
 - can superlatives and Class Bs occur in DE environments? I predict so (cf. Cohen and Krifka, 2011): *You have entered a password that is not at least 8 characters in length*†
 - what’s the right analysis of the superlative, given that it isn’t a weak Q-alternative to the comparative (cf. Krifka, 1999; Büring, 2007)
 - what’s going on with plural correlates in comparison constructions (and how should we implement the homogeneity presupposition)?
 - why aren’t MPEs more widespread cross-linguistically?

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