Hilary Clinton is not Mitt Romney rich: Nouns modifying degree and dimension of adjectives

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1   Introduction

- Adjectives normally modify nouns. In English, nouns can appear as attributive modifiers of adjectives.

- This construction has implications for a great number of issues in semantics and syntax.

  – Degree Semantics

  – The structure of gradable adjectives

  – (Plurality, definiteness, etc.)

- In (1) we have what I will call a **NP-modifier**. It is ambiguous between a variety of meanings. Here I will focus on two.

  (1)   Hilary Clinton is rich, but not *Mitt Romney rich.*

    a. DEGREE READING: Hilary Clinton's degree of wealth is not similar to Mitt Romney's (∼15 billion, vs. ∼200 billion).

    b. DIMENSION READING: Hilary Clinton is rich, but she is not the anti-tax kind of rich.

  (2)

(3)
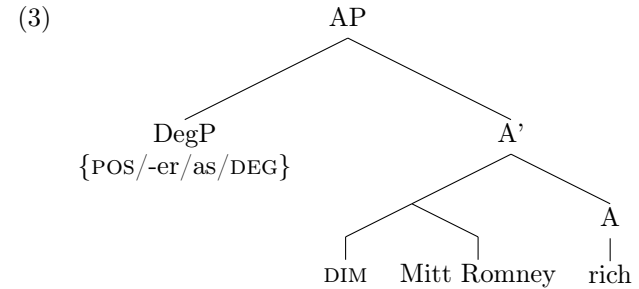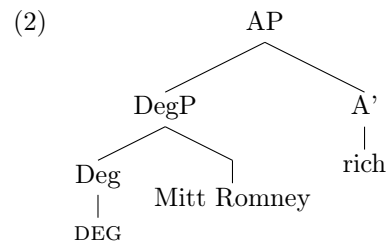
1.1   Important questions

- How productive are these constructions?

- What is the meaning of each of the constructions?

- Why must they be distinct?

2   Productivity

- These constructions are widely productive, working with many types of nominals (as in O'Hara (to appear)) and many sorts of adjectives.

2.1   Nominals

  (4)   a. Proper Nouns-
        Hilary Clinton is not *Mitt Romney rich.*

        b. Bare nouns-
        Tara is *NBA player tall.*

        c. Definite Descriptions-
        Obama is attractive, but not *the prime minister of Canada hot.*

        d. Pronouns-
        "Look out Usain Bolt! Mary is almost *you fast.*"

        e. More Complex Phrases-
        You'll never be *eating noodles, drinking beer and sitting on low plastic chairs while talking to Anthony Bourdain and Barack Obama in Vietnam-cool.*

    f. Non-distributive Plurals-

      i. Mary, paddling a canoe, is *three men fast*.

      ii. My best friend and I are *brothers close*

    g. *Indefinites -
*Vents at the bottom of the sea can be *a volcano hot*.

    h. *Quantified Noun Phrase-
*My cousin was mean, but not *some bully mean*.

    i. *Distributive Plurals-
*Mary, running, is *three men fast*.

    j. *Anaphoric Pronouns-
*Usain Bolt is Mary's hero, but she'll never be *him fast*.

- I will move forward presuming that the nominal is denoting an individual (of type e), but this is not crucial—we might instead presume that the nominals are acting as predicates (of type $< e, t >$, with no major consequences for the upcoming analysis.

- One crucial restriction is that the nominal must be such so that x is P, where x represents the (prototypical example of the) nominal, and P represents the adjective.

    (5) #That kid is Danny Devito tall.

    (6) (?) That baby is like not normal baby creepy, it's creepy as hell.

- For the rest of this presentation, I will usually use proper names but the same facts should be true for the

2.2 Adjectives

- NP-modifiers can appear with almost any adjective.

    (7) a. Scale Structure (as in Kennedy & McNally (2005))

      i. Minimal Standard-
The baby is *coked-up businessman awake*.

      ii. Maximal Standard-
The rod is *arrow straight*.

      iii. Totally Closed-
The door to the house was left *hole in the wall open*.

      iv. Relative- (1)

    b. Nongradable-

      i. Tupac is *Elvis dead*.

      ii. 91 is not *3 prime*, but it's close.

- Overall, we've seen NP-modifiers are widely productive, appearing with many predicative adjectives, and a large set of nominals.

3 Degree Reading

- The degree reading is very similar to the equative, but differs in some important ways.

  – The degree NP-modifier is implicitly relativized to comparison classes.

  – The degree NP-modifier has a different upper and lower bound than the equative.

3.1 Implicit Comparison Classes

- The degree reading allows for indirect comparison of different comparison classes, with both being implicit.

    (8) Mary, the Illinois middle school 100m champion, is Usain Bolt fast.

      a. $\neq$ Mary is as fast as Usain Bolt.

      b. $\sim$ Mary is as fast for a middle schooler as Usain Bolt is for an Olympian.

- Bale (2008, 2011) notes that constructions like that in (8b), INDIRECT COMPARISONS, cannot be represented as a comparison of two degrees on a plain scale.

  – When comparing the two degrees, their relative position within their comparison class is crucial.

    (9) Mary is faster for an elementary schooler than she is for a human.

– Clearly Mary's velocity is the same regardless of comparison class, but within the class of elementary schoolers, that velocity is more impressive than among humans.

– Bale (2008) instantiates this using a homomorphism that transforms a partial order on any scale to a universal comparison scale

– However, a simple partial order of the comparison class fails to capture that the distance between items in the class still matters in these cases.

   (10)   Katie Ledecky is faster for her event than Usain Bolt is for his.

– With this being said, even though Australian Mack Horton won gold in the men's 400m freestyle, he is not *Katie Ledecky fast* (if Katie Ledecky fast is being evaluated with the CC of women, not swimmers)[1]

– Thus, whatever sort of relativization that is available for comparison of incommensurable scales must also be available for degree NP-modifiers.

3.1.1   Using comparison classes to get positive-entailingness

- I follow the intuitions of Sassoon & van Rooij (2016) who implement a semantics for *for*-phrases that shifts the scale of the adjective from, in this case *speed*, to difference in speed from the norm of the comparison class.

   (11)   a. $[[\text{fast}]] = \lambda d.\lambda x.\mathbf{fast}(x, d)$
           b. $[[\text{fast for a kid}]] =$
               $\lambda d.\lambda x.\mathbf{fast}(x, d') \wedge$
               $d = (d' - \text{norm}(\mathbf{fast}, C_{kid}))/\text{st.dev}(\mathbf{fast}, C_{kid})$

- Where the standard equative requires overt comparison classes in order to get this relative reading, the degree NP-modifier always uses these relative scales—when it resembles the equative without comparison classes, it is because the comparison classes chosen are the same.

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[1](even though he beat her time by 15 seconds)

– Note that (12a) implies (12b).

   (12)   a. x is faster for a person than y is for a person.
           b. x is faster than y.

– The examples in (12) only differ in their positive-entailingness—(12a) feels strange if x and y do not exceed the norm speed for people.

– This could be simply explained as a constraint against negative degrees, which the relative reading would require if the NP's degree does not exceed the norm for their comparison class.

– The degree NP-modifier shares this positive-entailingness—we can't speak of *Danny Devito tall* unless we are using one of the few comparison classes where he does exceed the norm.

   (13)   a. $[[\text{tall for a man}]] = \lambda d.\lambda x.\mathbf{tall}(x, d') \wedge$
               $d = (d' - \text{norm}(\mathbf{tall}, C_{man}))/\text{st.dev}(\mathbf{tall}, C_{man})$
           b. $d = (d' - 70\text{in}))/4\text{in}$
           c. $\nexists d(> 0)[d = (d' - 70\text{in}))/4\text{in} \wedge \mathbf{tall}(\text{Danny Devito}, d')]$
           d. $d' : \mathbf{tall}(\text{Danny Devito}, d').d' \leq 52$

– Thus, I formulate the degree NP-modifier as only considering relative-comparison class based scales.
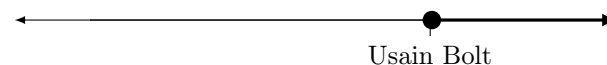
3.2   Different Bounds

- The equative has two readings, the strong *exactly-as* reading, and the weak *at least as* reading. The degree NP-modifier quantifies over a different set of degrees than either of these readings.

   (14)   a. STRONG EQUATIVE *(exactly) as fast as Usain Bolt*
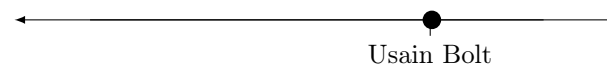
                    Usain Bolt

           b. WEAK EQUATIVE *(at least) as fast as Usain Bolt*

                    Usain Bolt

           c. DEGREE NP-MODIFIER *Usain Bolt fast*

                    Usain Bolt

3.2.1 Upper Bound

- The degree reading further differs slightly from the equative in which degrees are adequate.

(15) (Naseem is 20 ft tall, Yao Ming is a former NBA player who is 7'6")
  a. Is Naseem as tall as Yao Ming?
     Yes, he's actually way taller.
  b. Is Naseem Yao Ming tall?
     [F]Yes, he's actually way taller.

- This suggests that the degree reading of an NP-modifier is upper bounded in a way that equatives are not necessarily.

3.2.2 Lower Bound

(16) Andre de Grasse is Usain Bolt fast, but he's not as fast as Usain Bolt.

- (16) demonstrates that the degree NP-modifier is lower bounded differently than equatives are.

3.2.3 Deriving the difference

- Usain Bolt fast is true for individuals of a different range of degrees of speed than as fast as Usain Bolt is.

- Whether *as* denotes a greater than or equal to relation or a simple equal to relation has been a topic of debate (Bhatt & Pancheva, 2007; Rett, 2007), both readings must somehow be available.

- The possibility for degree NP-modifiers to accept a range of degrees that are not exactly equal seems to be a matter of imprecision.

- We could formulate this through some sort of pragmatic halo (Lasersohn, 1999).

- Individuals that are Usain Bolt fast are those that have degrees that are within a certain contextually determined degree of precision of Usain Bolt's degree of speed.

- Of course, the equative also allows for imprecision, but the degree NP-modifier receives a larger amount of imprecision.

- Whether this is just due to pragmatics, or if it has something more to do with the inherent coarseness of relative scales (One can be *very* tall for a kid, but not 2 ft tall for a kid.), is difficult to tell at this point.

3.3 Distribution with degree morphology

- The degree NP-modifier appears mostly in complementary distribution with degrees and degree morphology.

- Unlike the dimension reading, the degree reading cannot appear below any overt degree morphology.

(17) *too Osama Bin Laden famous* ∼ too infamous

(18) # Mary is (very, quite, super, too, more, 27mph, way) Usain Bolt fast...

- Degree NP-modifiers can appear in differential comparatives and *too* phrases, while the dimension reading cannot appear here.

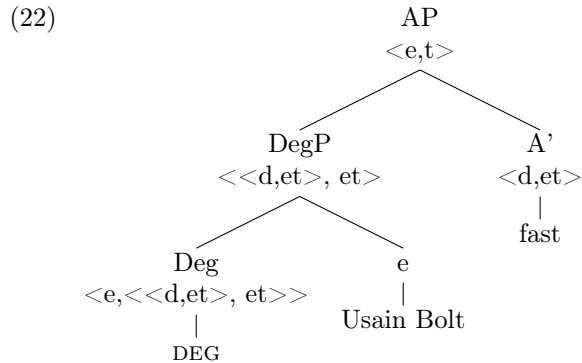(19) *Osama Bin Laden too famous* ∼ as too famous as Osama Bin Laden is.

(20) Man be glad you're not Yao Ming—You're too tall for this room, but you're not (Yao Ming/way) too tall for this room.

(21) You're taller than Kevin, but you're not Yao Ming taller than Kevin, so the picture doesn't look too funny.

3.4 Null Operator

- Syntactically, I will presume a small DegP, appearing as a specifier to gradable predicates, following a tradition of work including Chomsky (1965); Bresnan (1973); Heim (2000); Bhatt & Pancheva (2004, 2007).

- The NP-Modifier appears in the DegP, as it is in complementary distribution with degree morphology.

- However, the nominal on its own cannot serve as the degree—an individual (or for the bare nouns a kind) simply is not a degree, and a typeshift that would select a degree for it would have some difficulty, considering there are many potential scales the nominal would have degrees on.

- Therefore, I propose a null operator, here called DEG that serves as a degree head.

(22)

```
                          AP
                         <e,t>
               ┌───────────┴───────────┐
             DegP                       A'
        <<d,et>, et>                  <d,et>
         ┌─────┴─────┐                  │
       Deg            e                fast
  <e,<<d,et>, et>>    │
         │         Usain Bolt
        DEG
```

(23) Mary is [DEG Usain Bolt fast].

(24) $[[fast]] = \lambda d.\lambda x.\mathbf{fast}(x, d)$

(25) $[[\text{DEG}]] =$
$\lambda y.\lambda P_{<d,<e,t>} : [[\text{y is P}]].$
$\lambda x.\mathbf{max}(P(x, d, CC_x)) = \mathbf{max}(P(y, d, CC_y)^2$

(26) $[[\text{DEG Usain Bolt}]] =$
$\lambda P_{<d,<e,t>} : [[\text{UB is P}]].$
$\lambda x.\mathbf{max}(P(x, d, CC_x)) = \mathbf{max}(P(UB, d, CC_{UB})$

(27) $[[\text{DEG Usain Bolt fast}]]$
$= \lambda x.\mathbf{max}(\mathbf{fast}(x, d, CC_x)) = \mathbf{max}(\mathbf{fast}(UB, d, CC_{UB}))$

- I do not make this a degree quantifier in order to prevent QR–this explains the positioning of the NP in the sentence, and prevent a greater-than-or-equal-to reading, which Bhatt & Pancheva (2007) show would be predicted by a equals relation with early merger.

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[2]Here $P(x, d, CC_x)$ stands for $P(x, d') \wedge d = (d' - norm(P, CC_x))/st.dev(P, CC_x)$.

4 Dimension Reading

- Dimension NP-modifiers in many ways resemble manner adverbials.

- The dimension NP-modifier can be paraphrased like (28a).

  (28) Osama Bin Laden famous
    a. famous like how OBL is.

- Bierwisch (1989) contrasts dimensional and evaluative adjectives— The former are associated with a simple measurable physical seeming scale, whereas the latter tend to be more vague, and allow for more faultless dissagreement.

- Evaluative adjectives are often easier to see dimension readings of NP-modifiers than dimensional adjectives, perhaps because the degree NP-modifier is so simple to understand in the well measured dimensional adjectives scale. However, dimension readings appear for both kinds of adjectives.

  (29) I know you're fast, but are you Usain Bolt fast or Almaz Ayana fast?

  (30) At 6'1", Lydia is Usain Bolt fast, saving her steps in the race.

4.1 Gradability

- Unlike the degree NP-modifiers, the resulting predicate when dimension NP-modifiers are added to an adjective is gradable.

  (31) He's way too Osama Bin Laden famous to hire.

- The degree morphology is not applying to the scale of the adjective, but instead some other scale.

  (32) too Osama Bin Laden famous $\nRightarrow$ too famous

  (33) more Almaz Ayana fast $\nRightarrow$ faster

- These readings do require that the subject is fast, but do not say anything about the comparison between the degrees of the modifying nominal and the subject (even allowing for comparison class relativism.)

(34)   # Andre the Giant was rather slow moving, but he was Usain Bolt fast.

(35)   With the critical disdain for Paul Blart Mall Cop 2, it's safe to say that Kevin James is Guy Fieri famous. (Even though Kevin James is arguably way more famous than Guy Fieri)

4.2   Dimensions of adjectives

- It has been noted that the lexical entry of many words encode a variety of dimensions (Sassoon, 2013, in progress; Moltmann, 2009; Morzycki, 2012).

  - *Big* seems indeterminate or polysemous between several dimensions of size, allowing both of the following sentences to be true.

    (36)   a. The US is bigger than Canada (Population)
           b. Canada is bigger than the US (Area)

  - Thus big is thought to have both dimensionals available to it somehow.

- The dimension NP-modifier can select these kinds of meanings

  (37)   a. The US is more China big than Canada.
         b. Canada is more Russia big than the US.

- For these dimensions of big the dimension is also available from the plain adjective, resulting in an implication from the sentences in (37) to those in (36).

- This isn't necessarily the case for the dimensions selected however

  (38)   Maria is more Stephen Hawking intelligent than Kira.
         ↛ Maria is more intelligent than Kira.

  (39)   Our best runner is more Usain Bolt fast (fast in a tall way) than the state champion
         ↛ Our best runner is faster than the state champion.

- In (38), *Stephen Hawking intelligent* selects particularly the dimensions of intelligence (a multidimensional adjective (Sassoon, in progress)) that Stephen Hawking is known for being intelligent on. But following Sassoon (in progress), *intelligent* is evaluated based on a contextually determined weighting of all the dimensions it considers.

- (39) instead shows that using a typically considered (uni-)dimensional adjective like *fast*, the dimension NP-modifier can select dimensions that have little bearing on the scale that the adjective is typically evaluated with.

- While the dimension selected might not have these implications, it must be related to the adjective—*Usain Bolt fast* cannot select a scale of fame derived from speed or money donated to charity earned from speed.

- Exactly how these scales are derived is an important question, but one beyond this study. At this point I will simply use a **dimension** function that creates a set of potential scales from an adjective.

  (40)   **dimension**([[fast]]) = {fast-in-a-sprinter-way, fast-in-a-tall-way, etc. }

- Thus we have seen that Dimension NP-modifiers select some gradable property of the state of being P such that the modifying nominal has a significant and well-known value on that property.

4.3   Null Operator

- Note that the dimension reading cannot appear over degree morphology that is in turn gradable, like *-er* or *too*, and as shown before can appear below degree morphology.

  (41)   #Maria is Stephen Hawking more intelligent than Kira. (cannot get science intelligence).

  (42)   #The package is pane-of-glass too cumbersome, not cumbersome because it's heavy.

- Thus, the dimension NP-modifier attaches below the DegP (and in turn the degree NP-modifier).

– I assume a null operator DIM that supports the NP-modifier.

(43)
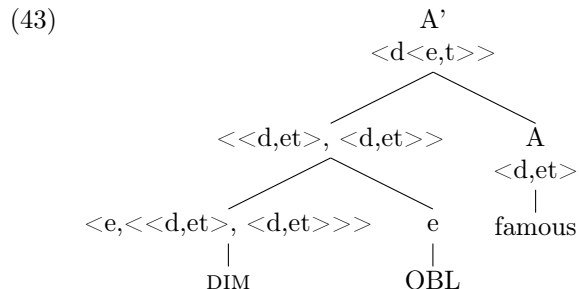
(44) $[[famous]] = \lambda d.\lambda x.\mathbf{famous}(x, d)$

(45) $[[\textsc{dim}]] =$
$\lambda y.\lambda P : [[y \text{ is } P]].\lambda d.\lambda x : [[x \text{ is } P]].\exists D[D \in \mathbf{dimension}(P) \wedge$
$\exists d'[D(y, d') \wedge d' > norm(D, CC_y)] \wedge D(x, d)]$

(46) $[[\textsc{dim OBL}]] =$
$\lambda P : [[\text{OBL is } P]].\lambda d.\lambda x : [[x \text{ is } P]].\exists D[D \in \mathbf{dimension}(P) \wedge$
$\exists d'[D(OBL, d') \wedge d' > norm(D, CC_{OBL})] \wedge D(x, d)]$

(47) $[[\textsc{dim OBL famous}]] =$
$\lambda d.\lambda x : [[x \text{ is } P]].\exists D[D \in \mathbf{dimension}(\mathbf{famous}) \wedge$
$\exists d'[D(OBL, d') \wedge d' > norm(D, CC_{OBL})] \wedge D(x, d)]$

- Thus, we see that the dimension NP-modifiers appear lower than the degree NP-modifiers, and select some dimension relevant to the individual in the NP-modifier. At this point I have left the formulation of the DIMENSION function, as well as the source of norm-relatedness up to future work.

5 How do the readings differ?

- One crucial difference between the two readings comes from the fact that degree NP-modifiers truly seem to be degree modifiers and dimension ones appear to be lower.

  – Degree NP-modifiers cannot appear below degree morphology, but can appear above scalable degree modifiers like *too* and *many*, whereas dimension NP-modifiers can appear below degree morphology but cannot appear above any degree modifiers.

– This can be seen in how NP-modifiers stack— degree NP-modifier must be above the dimension NP-modifier.

(48)   Mika is *Stephen Hawking smart*, but she's not *Einstein Stephen Hawking smart*.

- Relative clause paraphrases and the questions that ask for the different readings are different.

(49)   DEGREE READING
a. Mary is how famous Osama Bin Laden is.
b. How famous is Mary? Osama Bin Laden famous

(50)   DIMENSION READING
a. Mary is famous like how Osama Bin Laden is.
b. How is Mary famous? (What kind of famous is Mary?) She's Osama Bin Laden famous.

- The syntax of these (especially the dimension reading) isn't particularly telling, because the wh-word is unlikely exactly replacing the dimension NP-modifier, but instead a more typical higher adverbial.

  – Yet, if one reading was just a special case of the other, we might expect that there would be a uniform syntax here.

6 Conclusion

	Degree Reading	Dimension Reading
Appear below degree modifiers	✗	✓
Appear as differential	✓	✗
NP is Adj	✓	✓

- NP-modifiers have shown light on two of the fundamental pieces of a gradable adjective, the degree and the scale.

  – Offered what might be a new degree quantifier.
  – Showed even "(mono)dimensional" adjectives have multiple scales accessible somehow.

- Other readings of NP-modifiers seem to affect other important pieces of gradable adjectives, for example their comparison classes, or their scales.

(51) COMPARISON CLASS READING
   a. My room isn't clean, but it's dormroom clean.
   b. MEANING: The room isn't clean for rooms in general, but it is clean for the comparison class of dorm rooms.

(52) JUDGE READING
   a. It wasn't spicy to me, but the salsa was Alex spicy.
   b. MEANING: The salsa wasn't spicy for me, but Alex found it spicy, with low spice tolerance.

 – Neither of these readings are positive-entailing for the NP on the base adjective.
 – Neither are positive-entailing for the subject on the base adjective.

• However, degree, dimension, comparison class and judge are all considered to be crucial components of at least a subset of adjectives, and thus it is not surprising that all of them are capable of being modified similarly.

 – I leave it to future work to further explore these readings and their relation to the two I discuss here.

References

BALE, ALAN CLINTON. 2008. A universal scale of comparison. *Linguistics and Philosophy*, **31**(1), 1–55.

BALE, ALAN CLINTON. 2011. Scales and Comparison Classes. *Natural Language Semantics*, **19**(2), 169–190.

BHATT, RAJESH, & PANCHEVA, ROUMYANA. 2004. Late merger of degree clauses. *Linguistic Inquiry*, **35**(1), 1–45.

BHATT, RAJESH, & PANCHEVA, ROUMYANA. 2007. Degree quantiviers, position of merger effects with their restrictors, and conservativity. *In:* BARKER, CHRIS, & JACOBSON, PAULINE (eds), *Direct compositionality*. Oxford Studies in Theoretical Linguistics, vol. 14. Oxford University Press.

BIERWISCH, MANFRED. 1989. The semantics of gradation. *In:* BIERWISCH, MANFRED, & LANG, EWALD (eds), *Dimensional Adjectives*. Springer-Verlag.

BRESNAN, JOAN. 1973. The Syntax of the Comparative Clause Construction in English. *Linguistic Inquiry*, **4**, 275–343.

CHOMSKY, NOAM. 1965. *Aspects of the Theory of Syntax*. MIT Press.

HEIM, IRENE. 2000. Degree Operators and Scope. *Pages 40–64 of: Proceedings of SALT X*. Ithaca, NY: Cornell University, for Cornell Linguistics Club.

KENNEDY, CHRISTOPHER, & MCNALLY, LOUISE. 2005. Scale Structure, Degree Modification, and the Semantics of Gradable Predicates. *Language*, **81**, 345–381.

LASERSOHN, PETER. 1999. Pragmatic Halos. *Language*, **75**(3).

MOLTMANN, FRIEDERIKE. 2009. Degree Structure as Trope Structure: A Trope-Based Analysis of Positive and Comparative Adjectives. *Linguistics and Philosophy*, **32**(1), 51–94.

MORZYCKI, MARCIN. 2012. The Several Faces of Adnominal Degree Modification. *In:* CHOI, JAEHOON, HOGUE, E. ALAN, PUNSKE, JEFFREY, TAT, DENIZ, SCHERTZ, JESSAMYN, & TRUEMAN, ALEX (eds), *Proceedings of WCCFL29*. Somerville, Mass.: Cascadilla Press.

O'HARA, CHARLIE. to appear. Nouns Attributively Modifying Adjectives in English. *In: WCCFL 34*.

RETT, JESSICA. 2007. Evaluativity and antonymy. *In: Proceedings of SALT 17*.

SASSOON, GALIT. 2013. A typology of multidimensional adjectives. *Journal of Semantics*, **30**, 335–380.

SASSOON, GALIT. in progress. *A degree approach account of multidimensional gradability*. ms. Bar Ilan University.

SASSOON, GALIT, & VAN ROOIJ, ROBERT. 2016. *The Semantics and Pragmatics of* for *Phrases*. ms.