Degrees as Kinds, Degrees Across Scales, and Correlative Constructions

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joint work with

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Introduction

A simple picture: comparison across adjectives is not possible in general (e.g. Kennedy 1997):

(1) #My copy of *The Brothers Karamazov* is heavier than my copy of *The Idiot* is old.

The scales of weight and age are simply incommensurable.

There are, of course, principled exceptions . . .

Comparison of deviation (Kennedy 1997) involves different adjectives, but the same scale:

(2) Floyd is as short as Clyde is tall.

Metalinguistic comparison (Giannakidou & Stavrou 2008, Morzycki 2009, Giannakidou & Yoon 2011) probably same scale of appropriateness or imprecision:

(3) Floyd is more dumb than crazy.

Pretty plausibly, a different problem. But . . .

Indirect comparison (Bale 2006, 2011):

(4) a. Esme is more beautiful than Einstein is intelligent.
b. Hildy is larger for a terrier than
Marmaduke is for a Great Dane.
(does not entail Hildy is larger than Marmaduke)

Apparently unavoidably, across scales.

An important point: these readings **EXIST**. There seems to have been some skepticism on this point.

A similar challenge may be posed by a famously tricky construction, the **COMPARATIVE CORRELATIVE** (Post (1980), Beck (1997), Jackendoff (2000), den Dikken (2005), Abeillé et al. (2006), Lin (2007), Brasoveanu (2008), Taylor (2013), Kapetangianni & Taylor (2007), Smith (2011), Borsley (2011)):

(5) The slimier a lawyer is, the more successful she is.

Here, comparison isn't directly across scales, but two scales are correlated or aligned.

The Cross-Scalar Comparison Problem:

- Why does comparison across scales work in indirect comparison and comparative correlative?

A corresponding puzzle (Bale 2011, Schwarzschild 2013):

(6) The rattlesnake is more aggressive and poisonous than the copperhead.

A conjoined scale for aggressiveness and poisonousness? Unless these sentences involve a lot of deletion, seems to be necessary.

A corresponding puzzle (Bale 2011, Schwarzschild 2013):

(7) The rattlesnake is more aggressive and poisonous than the copperhead, and my mutant death scorpion is even **more so**.

Hard not to view this as reference to (degrees on a) a conjoined scale.

Mystery that belongs on this slide but is too scary to ever mention again (in this talk):

(8) a. The rattlesnake is more aggressively poisonous than the copperhead.

b. ?The rattlesnake is more poisonously aggressive than the copperhead.

Even the truth conditions aren't clear here, much less how the scales interact.

The Cross-Scalar Conjunction Problem:

- Why does conjunction across scales work at all?

We don't know the answer to either of these questions.

Aims:

- explore them in light of the idea that degrees as (sometimes?) made of kinds (Anderson & Morzycki 2015; see also Scontras 2014)
- argue that this provides a new perspective on the Cross-Scalar Conjunction Problem
- shrug about the Cross-Scalar Comparison Problem, confess distress at the dichotomy

Roadmap

- **Degrees as kinds (Anderson & Morzycki 2015)**
- Conjoined adjectives and conjoined scales
- Correlatives and degree constructions across scales
- Final word

Degrees as kinds (Anderson & Morzycki 2015): Preview

The idea:

- no need for a separate degree argument for adjectives
- let's leverage their state argument instead
- degrees are Carlsonian kinds of Davidsonian states (Landman & Morzycki 2003, Landman 2006)
- this explains cross-categorial parallels across languages

Degrees as kinds (Anderson & Morzycki 2015):
Cross-categorial parallels across languages

Polish anaphors:

(9) a. **kind:**
taki pies
such-MASC dog
'such a dog', 'a dog of that kind'

b. **manner:**
tak się zachowywać
such REFL behave
'behave that way'

c. **degree:**
tak wysoki
such tall
'that tall'

Same *wh*-word across domains:

(10) a. **kind:**
jaki pies
WH-MASC dog
'what kind of dog'

b. **manner:**
Jak się zachowywał?
WH REFL behaved-3MASC
'How did he behave?'

c. **degree:**
Jaki wysoki jest Clyde
WH-MASC tall is Clyde?
'How tall is Clyde?'

Combined, *tak* and *jak* abstract over the three domains:

(11) a. **kind:**
taki pies jak ten
such-MASC dog WH this
'such a dog as this', 'a dog of this kind'

b. **manner:**
zachowywać się tak jak Clyde
behave REFL such WH Clyde
'behave like Clyde'

c. **degree:**
taki wysoki jak Clyde
such-MASC tall WH Clyde
'as tall as Clyde'

Same word for ‘same’:

(12) a. **kind:**
taki sam pies
such-MASC same dog
‘a dog of the same kind’

b. **manner:**
zachowywać się tak samo
behave REFL such same-ly
‘behave the same way’

c. **degree:**
tak samo wysoki jak Clyde
such same-ly tall WH Clyde
‘as tall as Clyde’, ‘of the same height as Clyde’

Least appealing account possible:

- *tak*, *jak*, and *sam* are each 3-ways ambiguous
- ambiguity happens to be precisely the same for all of them

But on standard assumptions, what's the alternative?

German works the same way:

- *so* alone is anaphoric to kinds, manners, or degrees (Umbach & Ebert 2009)
- *wie* is an *wh*-word over kinds, manners, and degrees

English *as* is also cross-categorial:

(13) a. **kind:** such a dog as this
b. **manner:** Clyde behaved as I did.
c. **degree:** Clyde is as tall as Floyd.

English also has some two-way parallels (Landman 2006, Anderson 2010):

(14) a. **kind:** a dog like this
b. **manner:** behave like this

(15) a. **degree:** how tall is he?
b. **manner:** how did he behave?

Lots of other evidence, but best-documented and most important two-way parallel (Haspelmath & Buchholz 1998, Rett 2011): homophony in morphemes that mark . . .

- equative clauses (same degree: *as tall as Clyde is*)
- similative clauses (same manner: *die as Clyde did*)

Languages with this parallel (in Europe alone, but not all Indo-European):

(16)
a. Romance: Spanish, Portuguese; Catalan; Occitan; Italian
b. Balto-Slavic: Slovene; Russian; Slovak; Lithuanian
c. Germanic: Dutch; Yiddish; Danish, Swedish; Icelandic; Faroese
d. Modern Greek
e. Romani
f. Finnish
g. Georgian
h. Armenian
i. Turkish
j. Lezgian
k. Abkhaz
l. Kabardian

Of 43 they examined, 27 had identical morphemes.

Overall picture:

- similar expressions for kinds, manners, & degrees in lots of places in lots of languages
- too systematic and too widespread to be an accident
- suggests a profound connection among these domains

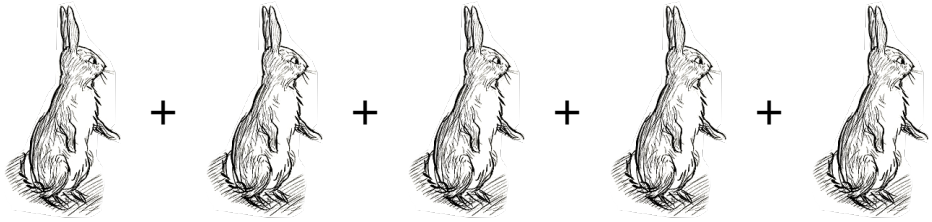
Degrees as kinds (Anderson & Morzycki 2015):
How can degrees be kinds?

Steps:

- Chierchia (1998) view of Carlson (1977) kinds
- this is inherently crosscategorial
- with states, a model of degrees falls out

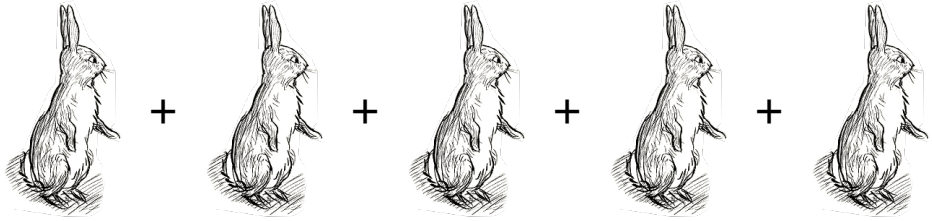
The plurality of actual rabbits:

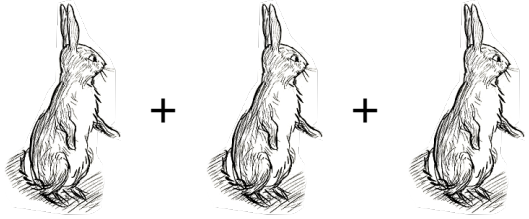
ACTUAL WORLD:

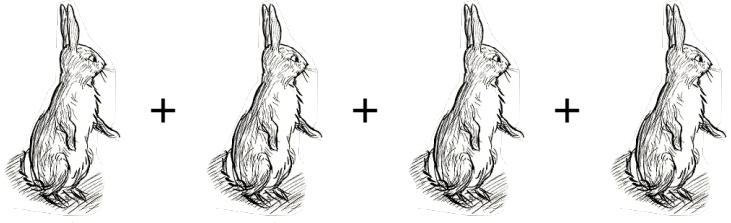


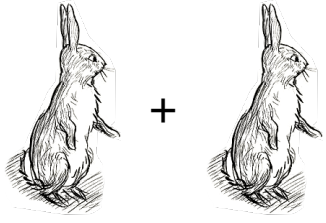
Might be the denotation of *all the rabbits* (more or less).

Chierchia: The kind RABBIT consists of all possible rabbits:

ACTUAL WORLD: 

WORLD 1: 

WORLD 2: 

WORLD 3: 

Denotation of kind-denoting *rabbits*.

Kinds of states and events come for free.

Then:

- Event-kinds are (or can represent) manners (Landman & Morzycki 2003, Landman 2006, Gehrke 2011).
- State-kinds are (or can represent) represent degrees.

To get there, start with a Cresswell-style equivalence class of people who are precisely 6 feet tall:

ACTUAL WORLD: Floyd + Clyde + Bertha + Edna

To get there, start with a Cresswell-style equivalence class of people who are precisely 6 feet tall. Then intensionalize it:

ACTUAL WORLD:	Floyd + Clyde + Bertha + Edna
WORLD 1:	Floyd + Clyde + Gertrude
WORLD 2:	Bugs + Bertha + Daffy + Tweety
WORLD 3:	Sam + Sylvester

This is a Chierchia-style individual kind (possibly denotation of *?the six-foot tall*).

Davidsonian spin on this: the kind SIX-FEET-TALL consists of all possible **STATES** of being six feet tall:

ACTUAL WORLD: $\left(\begin{array}{c}\text{Floyd's-}6'\\ \text{tallness}\end{array}\right) + \left(\begin{array}{c}\text{Clyde's-}6'\\ \text{tallness}\end{array}\right) + \left(\begin{array}{c}\text{Bertha's-}6'\\ \text{tallness}\end{array}\right) + \left(\begin{array}{c}\text{Edna's-}6'\\ \text{tallness}\end{array}\right)$

WORLD 1: $\left(\begin{array}{c}\text{Floyd's-}6'\\ \text{tallness}\end{array}\right) + \left(\begin{array}{c}\text{Clyde's-}6'\\ \text{tallness}\end{array}\right) + \left(\begin{array}{c}\text{Gertrude's-}6'\\ \text{tallness}\end{array}\right)$

WORLD 2: $\left(\begin{array}{c}\text{Bugs's-}6'\\ \text{tallness}\end{array}\right) + \left(\begin{array}{c}\text{Bertha's-}6'\\ \text{tallness}\end{array}\right) + \left(\begin{array}{c}\text{Daffy's-}6'\\ \text{tallness}\end{array}\right) + \left(\begin{array}{c}\text{Tweety's-}6'\\ \text{tallness}\end{array}\right)$

WORLD 3: $\left(\begin{array}{c}\text{Sam's-}6'\\ \text{tallness}\end{array}\right) + \left(\begin{array}{c}\text{Sylvester's-}6'\\ \text{tallness}\end{array}\right)$

All possible ways of being 6 feet tall.

Degrees as kinds (Anderson & Morzycki 2015): Sketch of the grammar

Assumptions:

- $^{\cup}k$ is the property correlate of the kind k (Chierchia)
- so $^{\cup}k(x)$ is true iff x realizes the kind k
- I will use type k for kinds (individuals, states, events) and variables $k, k', \ldots$
- I will use type o for non-kind objects (individuals, states, events) and variables $o, o', \ldots$

(17) Floyd is six feet tall.

(18) $[\![\textit{tall}]\!] = \lambda x \lambda s \,.\, \textbf{tall}(s, x)$

NB: **tall**(s, x) means s is a state of x having a certain tallness, not necessarily of being tall.

(19) $[\![\textit{six feet}]\!] = \lambda s \,.\, {}^{\cup}\textsc{six-feet}(s)$

(20) $[\![\textit{[six feet] [Floyd tall]}]\!]$
$= \lambda s \,.\, \textbf{tall}(s, \textbf{Floyd}) \wedge {}^{\cup}\textsc{six-feet}(s)$

Polish *tak* and German *so* take a kind argument:

(21) $[\![\textit{tak}]\!] = \lambda k \lambda o \, . \, {}^{\cup}k(o)$

Often, it's supplied by context:

(22) $[\![\textit{tak}\ k]\!] = \lambda o \, . \, {}^{\cup}k(o)$

In equatives, this kind argument is supplied by a *wh*-phrase, interpreted in the same way Caponigro (2003, 2004) interprets free relatives:

- inherently denote properties
- often would trigger type clashes,but
- type shifts rescue them (ι if defined, $\exists$ otherwise)

Polish equative:

(23) Floyd jest tak wysoki jak Clyde.
Floyd is TAK tall JAK Clyde
'Floyd is as tall as Clyde.'

With elided clause:

(24) tak SHIFT λk is [$_{AP}$ [$_{DegP}$ jak k] Clyde ~~tall~~

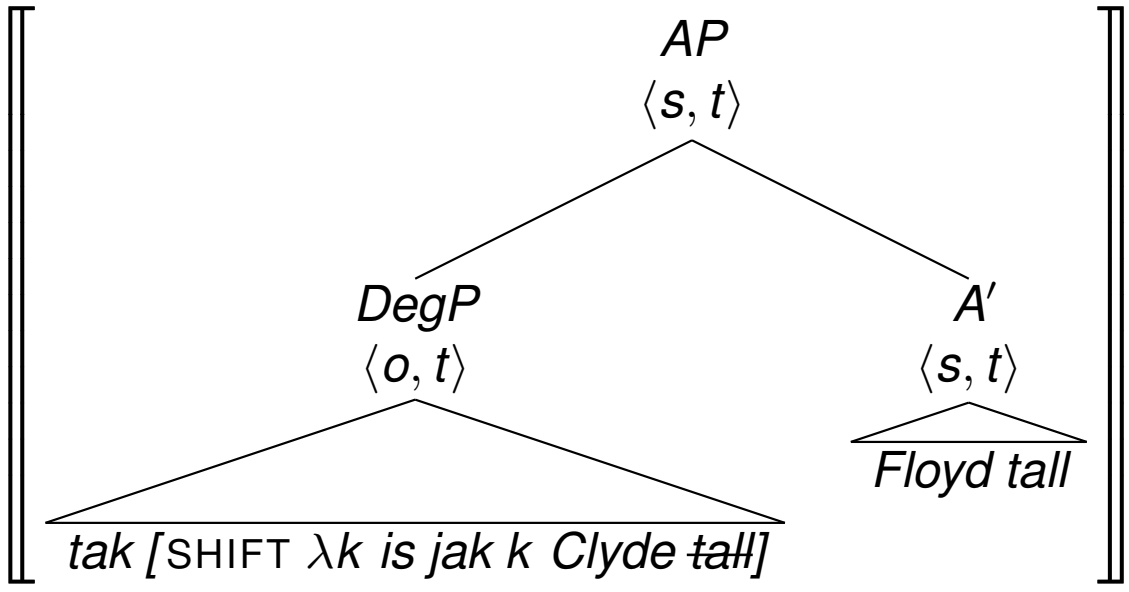
Equative clause denotes property, but complement to *tak* needs a kind.

Iota Shift maps equative clause to definite description of a (degree-)state-kind of tallness:

(25) $[\![\text{SHIFT } \lambda k \textit{ is } [_{AP} [_{DegP} \textit{ jak k }] \textit{ Clyde } \sout{\textit{tall}}]]\!]$
$= \iota k[\exists s[{}^{\cup}k(s) \wedge \textbf{tall}(s, \textbf{Clyde})]]$

The degree state-kind which Clyde's height realizes. (Interpret ι as a supremum operator.)

(26)



$$= \lambda s' \,.\, {}^{\cup}\iota k \left[\exists s \left[\begin{array}{l} {}^{\cup}k(s) \wedge \\ \textbf{tall}(s, \textbf{Clyde}) \end{array} \right] \right] (s') \wedge$$

$$\textbf{tall}(s', \textbf{Floyd})$$

A property of states of Floyd's tallness that also realize the degree state-kind Clyde's height realizes.

Roadmap

- ✔ Degrees as kinds (Anderson & Morzycki 2015)
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Conjoined adjectives and conjoined scales:
The problem

Reminder: how to get a single scale for (27)?

(27) The rattlesnake is more aggressive and poisonous than the copperhead.

On most theories, conjoining the adjectives is problematic:

(28) $[\![\textit{aggressive and poisonous}]\!]$
$= \lambda d \lambda x \,.\, \textbf{aggressive}(d, x) \wedge \textbf{poisonous}(d, x)$

But **aggressive** works on aggressiveness degrees, and **poisonous** on poisonousness degrees, and there's no degree on both scales.

One response: this is a syntax problem. Underlyingly closer to (29):

(29) The rattlesnake is more aggressive than the copperhead and the rattlesnake is more poisonous than the copperhead.

Perhaps conjunction is higher, above the DegP, which moves out of AP across-the-board:

(30) more [than d'] λd the rattlesnake is d aggressive and d poisonous

But this doesn't actually help. The degree abstract still requires that d be a degree on two scales.

Perhaps, this is evidence for the Abney-Grimshaw-Kennedy big DegP theory, in which the comparative clause is an adjunct?

No. The same problem would arise in the comparative clause itself, at least in clausal cases:

(31) a. than λd the copperhead ~~is *d*-aggressive and *d*-dangerous~~

b. $\mathbf{max}\{d : \mathbf{aggressive}(d)(x) \wedge \mathbf{poisonous}(d)(x)\}$

This is very hard to syntax one's way out of.

Anaphora seems to be fatal to any purely syntactic approach, though:

(32) The rattlesnake is more aggressive and poisonous than the copperhead,
   a. . . . and my mutant death scorpion is even **more so**.
   b. . . . but **less so** than my mutant death scorpion.

Importantly, because of the presence of *more*, it wouldn't be sufficient to say that the antecedent of *so* is type $\langle e, t \rangle$.

English does have a canonical type $\langle e, t \rangle$ proform, but it's *that* (Partee 1987):

(33) You said he'd be a jerk, . . .

a. and he was $\left\{ \begin{array}{l} \text{that} \\ \text{*so} \\ \text{*it} \end{array} \right\}$.

b. and he was very much $\left\{ \begin{array}{l} \text{*that} \\ \text{so} \\ \text{*it} \end{array} \right\}$.

What to do? Faced with the conjunction problem, Schwarzschild (2013), building on Bale (2006, 2011), proposes:

- adjectives are predicates of possible individuals (an idea with antecedents going back to at least Hoeksema 1983)
- then build scales from from equivalence classes of individuals

Schwarzschild's denotation:

(34) a. $[\![\textit{tall}]\!] = \lambda w \lambda x \lambda \langle y, w' \rangle$. x's height in w meets or exceeds y's height in w'

b. $[\![\textit{Floyd tall}_w]\!] = \lambda \langle y, w' \rangle$. **Floyd**'s height in w meets or exceeds y's height in w'

Using set-talk, (34b) is a set of possible individuals as tall as Clyde—an equivalence class, and so (on one view) a degree.

This helps because it makes possible mixed equivalence classes:

(35) $[\![$ *the copperhead dangerous*$_w$ *and aggressive*$_w$ $]\!]$

= $\lambda\langle y, w'\rangle$. COPPERHEAD's aggressiveness in w meets or exceeds y's aggressiveness in w' $\wedge$ COPPERHEAD's poisonousness in w meets or exceeds y's poisonousness in w'

What does the degrees-as-kinds approach predict?

(36) a. $[\![\textit{aggressive}]\!] = \lambda x \lambda s \, . \, \textbf{aggressive}(s, x)$

b. $[\![\textit{the copperhead is aggressive and poisonous}]\!]$
$= \lambda s \, . \, \textbf{aggressive}(s, \text{COPPERHEAD}) \wedge$
$\textbf{poisonous}(s, \text{COPPERHEAD})$

A predicate of states of being aggressive and poisonous.

What does the degrees-as-kinds approach predict?

(36) a. $[\![\textit{aggressive}]\!] = \lambda x \lambda s \, . \, \textbf{aggressive}(s, x)$

b. $[\![\textit{the copperhead is aggressive and poisonous}]\!]$
$= \lambda s \, . \, \textbf{aggressive}(s, \text{COPPERHEAD}) \wedge$
$\textbf{poisonous}(s, \text{COPPERHEAD})$

A predicate of states of being aggressive and poisonous.

Is this nonsense, or precisely what we want? We're not sure.

Events have internal structure. Why not states?

Treating English equatives as identical to Polish and German (for convenience):

(37) a. SHIFT λk is [$_{\text{AP}}$ [$_{\text{DegP}}$ as k] the copperhead ~~aggressive and poisonous~~]

b. $$\iota k \left[\exists s \left[\begin{array}{l} {}^{\cup}k(s) \wedge \\ \textbf{aggressive}(s, \text{COPPERHEAD}) \wedge \\ \textbf{poisonous}(s, \text{COPPERHEAD}) \end{array} \right] \right]$$

The degree state-kind realized by the copperhead's aggressive poisonousness.

Treating English equatives as identical to Polish and German (for convenience):

(38) a. the rattlesnake is as aggressive and poisonous
SHIFT λk is [$_{\text{AP}}$ [$_{\text{DegP}}$ as k] the copperhead ~~aggressive and poisonous~~]

b. $$\lambda s' \,.\, {}^{\cup}\iota k \left[\exists s \left[\begin{array}{l} {}^{\cup}k(s) \wedge \\ \textbf{aggressive}(s, \text{COPPERHEAD}) \wedge \\ \textbf{poisonous}(s, \text{COPPERHEAD}) \end{array} \right] \right] (s') \wedge$$
$$\textbf{aggressive}(s', \text{RATTLESNAKE}) \wedge$$
$$\textbf{poisonous}(s', \text{RATTLESNAKE})$$

A property of states of RATTLESNAKE's aggressiveness and poisonousness that also realize the degree state-kind COPPERHEAD's aggressiveness and poisonousness realize.

So anpahora to conjoined degrees would work however it works generally for degrees.

Advantages:

- No need for extrinsic appeal to possible individuals.
- No need to stipulate that adjective denotations are relations between individuals.
- No need to build an ordering relation into every adjective.

Disadvantages:

- Ontological thin ice?

Roadmap

- ✔ Degrees as kinds (Anderson & Morzycki 2015)
- ✔ Conjoined adjectives and conjoined scales
- **Correlatives and degree constructions across scales**
- Final word

Equatives and correlatives

Brasoveanu (2008) observes that Romanian equatives and correlative comparatives are both correlatives:

- They both have a grammar similar to (38b).
- They set up a particular variety of topic-comment referential dependency.

Penka 2017 argues persuasively that German equatives are also correlative constructions too.

Definition of correlatives from Bittner (2001), cited by Brasoveanu:

> "topic-comment structures . . . [in which] the dependent clause introduces one or more topical referents to be commented on by the matrix clause, where each topical referent must be picked up by—correlated with—an anaphoric proform"

Our treatment of equatives had essentially this structure. But what comparative correlatives?

Correlatives and degree constructions across scales:
Polish comparative correlatives

(39)
a. **Im** bardziej pada śnieg,
IM more falls snow
'The more it snows'
b. Bim-bom
BIM-BOM
'Tiddly pom'
c. **Im** bardziej prószy śnieg,
IM more sprinkles snow
'The more it ≈snows'
d. Bim-bom
BIM-BOM
'Tiddly pom'
e. **Tym** bardziej sypie śnieg,
TYM more pours snow
'The more it ≈snows'

Several correlative structures possible in Polish, with a similar shape:

(40)

im ...	tym
as-much	that-much
jak ...	tak
as	as/so/such
ile ...	tyle
how-many	that-many

Also individual, spatial, and temporal counterparts.

In all cases, picked up by a morphologically related demonstrative element (as is typical in correlatives) starting with *t-*.

Correlatives and degree constructions across scales: English

Even in English, there is evidence of correlative degree equatives:

(41) a. As tall as Floyd is, Clyde is taller.
b. As hard as Floyd worked, Clyde worked (even) harder.
c. #As hard as Floyd worked, Clyde works that hard.

It's also worth noting that English *as*-phrases can explicitly be used for topic-setting:

(42) As for elephants, I like them.

Speculation

One of the issues we'd like to keep in view is the connection to how different scales relate.

- The standard analysis of comparative conditionals (Beck 1997) doesn't focus on this point and doesn't consider equatives.
- Brasoveanu (2008) simply uses a contextually-supplied relation between degrees.

The usual thing for comparative correlatives is to treat them as essentially conditional-like:

(43) a. The slimier a lawyer is, the more successful she is.

b. $\forall x, w : \textbf{lawyer}_w(x) \left[\begin{array}{l} x \text{ is } d\text{-slimy in } w \rightarrow \\ x \text{ is } d\text{-successful in } w \end{array} \right]$

If equatives are often correlatives, and correlatives are fundamentally topic-comment structures, is there a way of leveraging that fact more directly—maybe even for indirect comparison?

Perhaps the topic-clauses in comparative correlatives (or indeed equatives) set up a degree QUD (Roberts 1998)?

A natural way to implement this would be to take the comment-clause to denote a functional answer:

(44) a. Who does everyone resent most? Their parents.
b. How slimy is a lawyer? Well, exactly that successful.

But Beck (1997) shows convincingly that there needn't be a function:

(45) The hotter it was, the higher the score.

Can be true even if in two games the temperature stayed the same but the score went up. Just use a relation instead?

Even so, the most natural use of demonstratives is to **REFER**, not to express narrow-scope bound variables.

- It would be odd if many languages systematically preferred a demonstrative to lexicalize a bound variable.
- On the other hand, less mysterious if its denotation were abstract and higher type, closely associated with the topic clause.

This would represent a fundamentally different direction, though:

- not clear degree-kinds would add anything in this sort of analysis
- this might be extendable to indirect comparison . . .
- . . . but to that extent, all the worse for such an analysis

This outcome would be disappointing. Doesn't do justice to an intuition:

- a longstanding intuition about comparative correlatives is that they are 'conditional' (and indeed have been called that)
- it's a little unclear why a degree construction should have this intensional element, especially if the degree domain is very ontologically impoverished
- precisely the same thing can be said for excessives (*too*) and sufficiency constructions (*enough, so . . . that*)
- yet, on the degree-kind approach, degrees are **INHERENTLY** intensional, so we might expect such properties

Roadmap

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- ✔ Conjoined adjectives and conjoined scales
- ✔ Correlatives and degree constructions across scales
- ■ **Final word**

Final word

The aim here was to build on the state-kind approach to degrees by wrestling with two related puzzles:

- the Cross-Scale Conjunction Problem
- the Cross-Scale Comparison Problem

In the first case, the outcome was at least a novel approach to an ill-understood problem.

In the second, it was inconclusive.

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References

Abeillé, Anne, Robert D. Borsley, & Maria-Teresa Espinal. 2006. 'The syntax of comparative correlatives in French and Spanish'. In Stefan Müller (ed.), *Proceedings of the 13th International Conference on Head-Driven Phrase Structure Grammar*, pp. 6–26. CSLI, Stanford.

Anderson, Curt. 2010. 'Manner modification and 'like that''. Handout, Semantics Workshop of the American Midwest and Praries (SWAMP).

Anderson, Curt & Marcin Morzycki. 2015. 'Degrees as kinds'. *Natural Language and Linguistic Theory* **33**(3), 791–828.

Bale, Alan. 2006. *The Universal Scale and the Semantics of Comparison*. Doctoral dissertation, McGill University.

Bale, Alan. 2011. 'Scales and comparison classes'. *Natural Language Semantics* **19**(2), 169–190.

Beck, Sigrid. 1997. 'On the semantics of comparative conditionals'. *Linguistics and Philosophy* **20**(3), 229–271.

Bittner, Maria. 2001. 'Topical referents for individuals and possibilities'. In Rachel Hastings, Brendan Jackson, & Zsófia Zvolenszky (eds.), *Proceedings of Semantics and Linguistic Theory (SALT) 11*, pp. 36–55. CLC Publications, Ithaca, NY.

Borsley, Robert D. 2011. ‘Constructions, functional heads, and comparative correlatives’. In Patricia Cabredo Hofherr & Olivier Bonami (eds.), *Empirical Issues in Syntax and Semantics 8*, pp. 7–26.

Brasoveanu, Adrian. 2008. ‘Comparative and equative correlatives as anaphora to differentials’. In *Proceedings of Semantics and Linguistic Theory (SALT) 18*. CLC Publications, Ithaca, NY.

Caponigro, Ivano. 2003. *Free Not to Ask: On the Semantics of Free Relatives and Wh-words Cross-linguistically*. Doctoral dissertation, UCLA.

Caponigro, Ivano. 2004. ‘The semantic contribution of wh-words and type shifts: Evidence from free relatives crosslinguistically’. In Robert B. Young (ed.), *Proceedings of Semantics and Linguistic Theory (SALT) 14*, pp. 38–55. CLC Publications, Ithaca, NY.

Carlson, Greg. 1977. *Reference to Kinds in English*. Doctoral dissertation, University of Massachusetts Amherst. Published in 1980 by Garland.

Chierchia, Gennaro. 1998. ‘Reference to kinds across languages’. *Natural Language Semantics* **6**(4), 339–405.

den Dikken, Marcel. 2005. ‘Comparative correlatives comparatively’. *Linguistic Inquiry* **36**(4), 497–532.

Gehrke, Berit. 2011. ‘Stative passives and event kinds’. In Reich et al. (2011), pp. 1–16.

Giannakidou, Anastasia & Melita Stavrou. 2008. ‘On metalinguistic comparatives and negation in Greek’. In *Proceedings of the Workshop*

on Greek Syntax and Semantics. MIT Working Papers in Linguistics, Cambridge, MA.

Giannakidou, Anastasia & Suwon Yoon. 2011. 'The subjective mode of comparison: Metalinguistic comparatives in greek and korean'. *Natural Language and Linguistic Theory* **29**(3), 621–655.

Haspelmath, Martin & Oda Buchholz. 1998. 'Equative and similative constructions in the languages of Europe'. In Johan van der Auwera & Dónall Ó Baoill (eds.), *Adverbial constructions in the languages of Europe*, pp. 277–334. Mouton de Gruyter, Dordrecht.

Hoeksema, Jack. 1983. 'Negative polarity and the comparative'. *Natural Language and Linguistic Theory* **1**(3), 403–434.

Jackendoff, Ray. 2000. 'Curiouser and curiouser'. *Snippets* **1**.

Kapetangianni, Dina & Heather Taylor. 2007. 'Comparative correlatives in greek: The syntax of oso'. In *Workshop on Greek Syntax and Semantics*. MIT.

Kennedy, Christopher. 1997. *Projecting the Adjective: The Syntax and Semantics of Gradability and Comparison*. Doctoral dissertation, UC Santa Cruz. Published in 1999 by Garland, New York.

Landman, Meredith. 2006. *Variables in Natural Language*. Doctoral dissertation, University of Massachusetts Amherst.

Landman, Meredith & Marcin Morzycki. 2003. 'Event-kinds and the representation of manner'. In Nancy Mae Antrim, Grant Goodall, Martha Schulte-Nafeh, & Vida Samiian (eds.), *Proceedings of the*

Western Conference on Linguistics (WECOL) 2002, vol. 14, pp. 136–147. California State University, Fresno.

Lin, Jo-Wang. 2007. 'On the semantics of comparative correlatives in Mandarin Chinese'. *Journal of Semantics* **24**(2), 169–213.

Morzycki, Marcin. 2009. 'Metalinguistic comparison in an alternative semantics for imprecision'. In Muhammad Abdurrahman, Anisa Schardl, & Martin Walkow (eds.), *Proceedings of the North East Linguistic Society (NELS) 38*, pp. 149–164. GLSA Publications, Amherst.

Partee, Barbara. 1987. 'Noun phrase interpretation and type-shifting principles'. In Jeroen Groenendijk, Dick de Jongh, & Martin Stokhof (eds.), *Studies in Discourse Representation Theory and the Theory of Generalized Quantifiers*, pp. 115–143. Foris, Dordrecht. Reprinted in Partee & Portner (2002).

Partee, Barbara H. & Paul Portner (eds.). 2002. *Formal Semantics: The Essential Readings*. Blackwell Publishing, Oxford.

Post, Michał. 1980. 'English *the-the* constructions and their Polish equivalents'. In Jacek Fisiak (ed.), *Papers and Studies in Contrastive Linguistics*. Adam Mickiewicz University, Poznań.

Reich, Ingo, Eva Horch, & Dennis Pauly (eds.). 2011. *Proceedings of Sinn und Bedeutung 15*. Universaar: Saarland University Press, Saarbrücken, Germany.

Rett, Jessica. 2011. ‘Exclamatives, degrees and speech acts’. *Linguistics and Philosophy* **34**, 411–442.

Roberts, Craige. 1998. ‘Information structure in discourse: Towards an integrated formal theory of pragmatics’. Revised version of a paper that appeared in the 1996 *Ohio State University Working Papers in Linguistics 49: Papers in Semantics*.

Schwarzschild, Roger. 2013. ‘Degrees and segments’. In Todd Snider (ed.), *Proceedings of Semantics and Linguistic Theory (SALT) 23*. eLanguage.

Scontras, Gregory. 2014. *The Semantics of Measurement*. Doctoral dissertation, Harvard.

Smith, E. Allyn. 2011. ‘English comparative correlatives, conditionals, and adverbs of quantification’. In Reich et al. (2011), pp. 547–563.

Taylor, Heather. 2013. *Grammar deconstructed: Constructions and the curious case of the comparative correlative*. Doctoral dissertation, University of Maryland.

Umbach, Carla & Cornelia Ebert. 2009. ‘German demonstrative ‘so’: intensifying and hedging effects’. *Sprache und Datenverabeitung (International Journal for Language Data Processing)* **1-2**, 153–168.