Alternative Comparison in Underspecified Degree Operators

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- Revisit the recurrent ambiguities between

  Comparison, Additivity, and Continuation

- Demonstrate an analysis based on a comparative meaning that compares structurally derived alternatives

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Cross linguistic ambiguities

The amount comparative in English, *more*, has an additive reading:

(1) John bought three apples. ... Mary bought more (apples).

a. ⇝ Mary bought more than three apples. (comparative reading)

b. ⇝ Mary bought apples, in addition to what John bought. (additive reading)

In German, this additive meaning can be expressed by *noch*, which also has a different, continuative reading:

(2) Otto had **noch** einen Schnapps getrunken.
Otto had *noch* one Schnapps drunk
"Otto had another Schnapps." (additive reading)

(3) Es regnet **noch**.
It raining *noch*
"It is still raining." (continuative reading)

Romanian *mai* has a *three-way* ambiguitiy:

(4) Ion e **mai** intelligent decat Petre.
John is *mai* intelligent than Petre.
"John is more intelligent than Petre." (comparative reading)

(5) Ion va **mai** citi un roman.
John AUX *mai* read a novel
"John will read another nove." (additive reading)

(6) Ion **mai** merge la biblioteca.
John *mai* goes at library.
"John still goes to the library." (continuative reading)

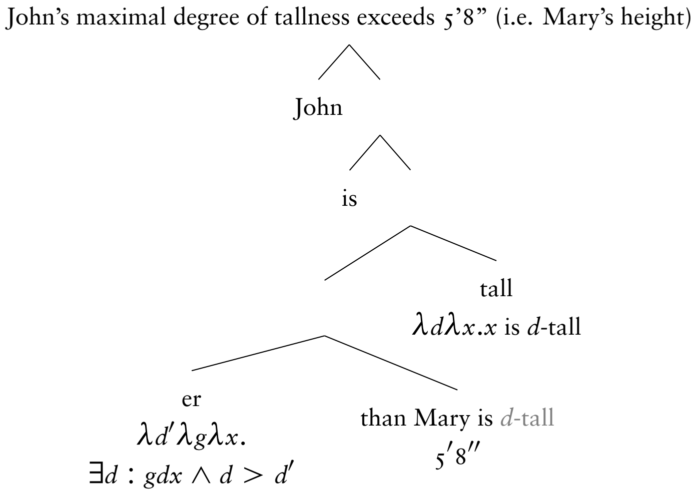
Empirical landscape (Thomas 2018):

- ▷ Ambiguitities between comparison, additivity, and continuation are attested in a diverse set of languages.
- ▷ None of these languages allows for ambiguity between comparison and continuation to the exclusion of additivity.

	comparison	additivity	continuation
✓ (Vietnamese)	A	B	C
✓ (English, French)	A		B
✓ (German, Hungarian)	A	B	
* (unattested)	A	B	A
✓ (Romanian)	A		

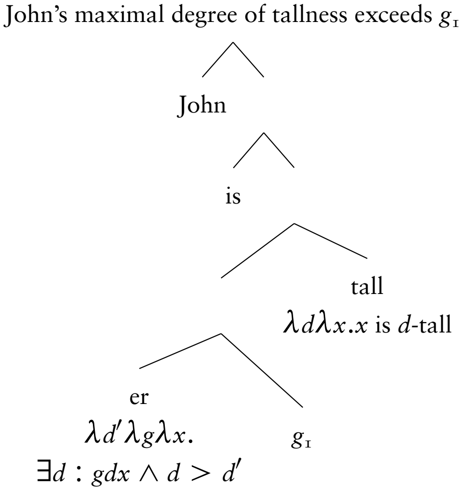
Brief review of the literature

For the majority of the linguistic literature, comparative constructions express a relation between two degrees:



Implication on *incomplete comparatives*?

A fair hypothesis is the overt standard is replaced by a degree pro-form:



- additive *more* can be captured as a derived measure function of events: (cf. Greenberg 2010, Thomas 2010)

(7) $[\![\text{more}]\!]^1 :=$
$$\lambda d \lambda Q \lambda P \lambda e. \exists x : [Qx \wedge P(x,e) \wedge \mu(h(e)) = d] \wedge$$
$$\partial(\exists e', P', d', y : [Qy \wedge P'(y,e') \wedge \mu(h(e')) = d']) \wedge$$
$$\exists e'' \exists P'' \exists z : [Qz \wedge P''(z,e'') \wedge z = x + y \wedge \mu(h(e'')) = d + d']$$

(8) $[\![\text{John bought two more apples}]\!] \rightsquigarrow$

- continuative operators like *still* are typically associated with a scale determined by its containing context:

(9) $[\![\text{noch/still}]\!] := \lambda S \lambda x' \lambda x \lambda P. \partial(x' \prec_S x \wedge Px') \wedge Px$

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[1] In this talk I use the partiality operator ∂ (Beaver & Krahmer 2001) to indicate presupposition: $\partial(p) = 1$ iff $p = 1$, otherwise $\partial(p) = \#$.

The issue:
wildly different lexical entries (but see Feldscher 2017[2], hard to see how to establish any logical connection between the three meanings and explain the recurrent ambiguities.

[2]Feldscher (2017) proposes a way to derive the additive reading from the comparative reading, but didn't discuss the continuative readings.

Previous proposal (Thomas 2010): a re-analysis of the comparative couched in scale segment semantics (cf. Schwarzschild 2013)

- ▷ A scale segment is an abstract entity, which provides a structured representation for degree-related meanings:

(10) A scale segment σ is a quadruple $\langle u, v, >_{\sigma}, \mu_{\sigma} \rangle$

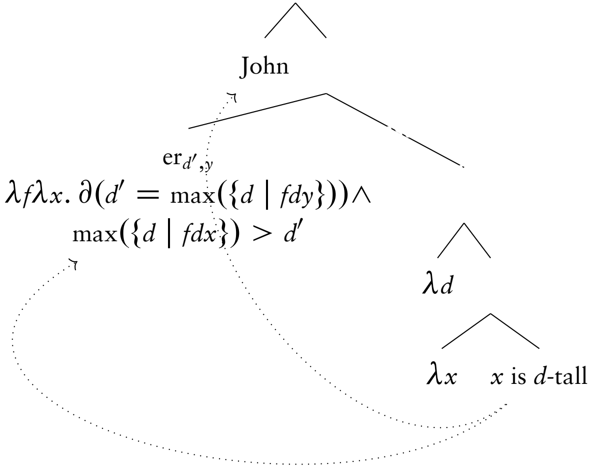
(11) ⟦ *Mary is taller than John* ⟧ :=
$\exists\sigma.\text{START}(\sigma, \mu_{\sigma}\text{j}) \wedge \nearrow \sigma \wedge \mu_{\sigma} = \text{HT} \wedge \text{END}(\sigma, \mu_{\sigma}\text{m})$

- ▷ We'll circle back to this proposal.
- ▷ It's still worthwhile to consider an apporach that does without scale segments.

Alternative comparisons

Li (2021): Comparatives compare two things of the same type (i.e. two alternatives) on a locally derived measurement dimension

(cf. Heim 1985, Bhatt & Takahashi 2007)



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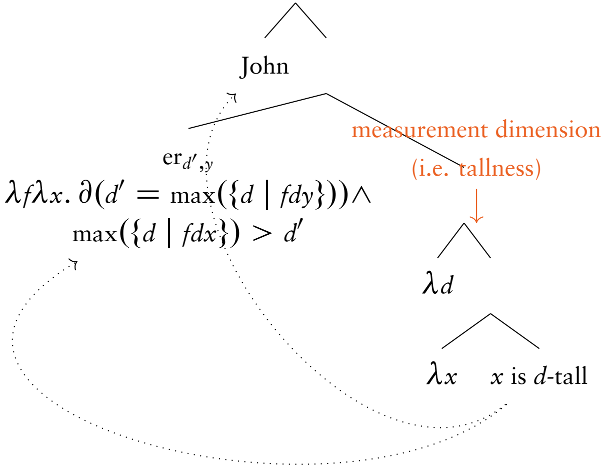

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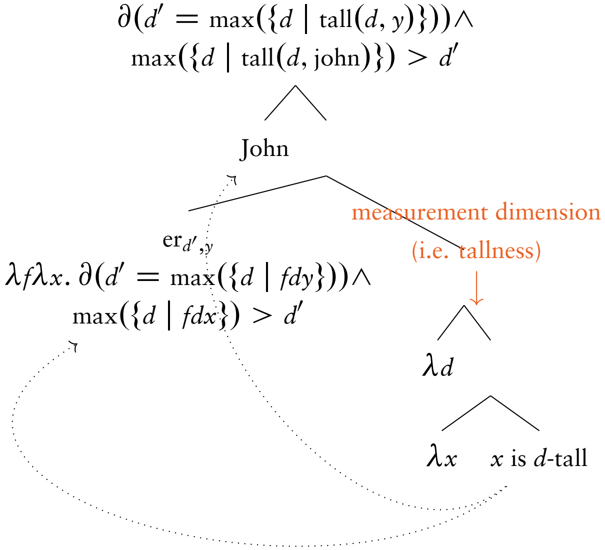


er may be licensed by any scope-takers in the sentence, generating a comparison about the variables they bind:

(12) Mary^{y} is 6 ft$^{d'}$ tall. ... Today I finally met a taller$_{d',y}$ woman. $\rightsquigarrow$
[a [er$_{d',y}$ $\lambda x \lambda d$ [x[d-tall woman]]] **determiner**

(13) John criticized^{P} five$^{d'}$ books. ... He PRAISED more$_{d',P}$. $\rightsquigarrow$
[PRAISED [er$_{d',P}$ $\lambda P \lambda d$ [d-many books λz[He P z]]] **predicate**

(14) This boat is 20 ft$^{d'}$ long. ... I thought it was longer$_{d',w@}$. $\rightsquigarrow$
[I thought$_{w@}$ [er$_{d',w@}$ $\lambda w \lambda d$ [it was$_{w}$ d-long]] **intensional Op**

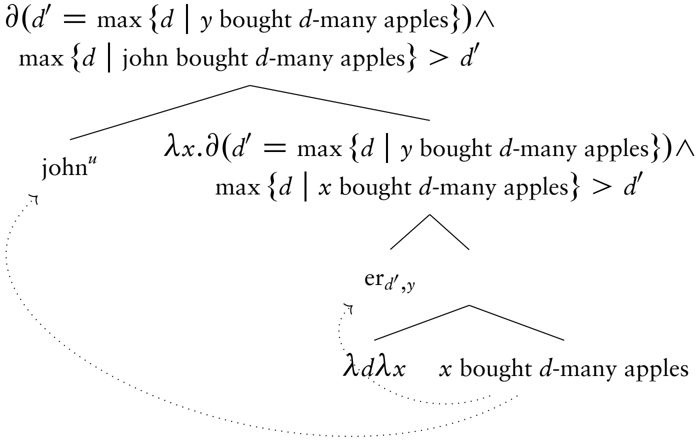
(15) John^{y} criticized^{P} five$^{d'}$ books. ... Mary PRAISED more$_{d',P,y}$. $\rightsquigarrow$
[Mary [PRAISED [er$_{d',P,y}$ λP λx λd [d-many books λz[x P z]]]] **multi licensors**[3]

[3] Technically, for this we need to adjust the meaning of *er* to a more general one:
$\partial(d' = \max(\{d \mid f d y_0 \ldots y_n\})) \wedge \lambda f \lambda x_0 \ldots \lambda x_n . \max(\{d \mid f d x_0 \ldots x_n\}) > d'$

Only restriction for possible comparisons: the standard degree must be the measurement of the standard alternative on the locally derived dimension.

Proposal for CAC ambiguities: we can compositionally derive the meaning of additive/continuative meaning from the comparative, because both meanings can be cashed out using alternative comparisons.

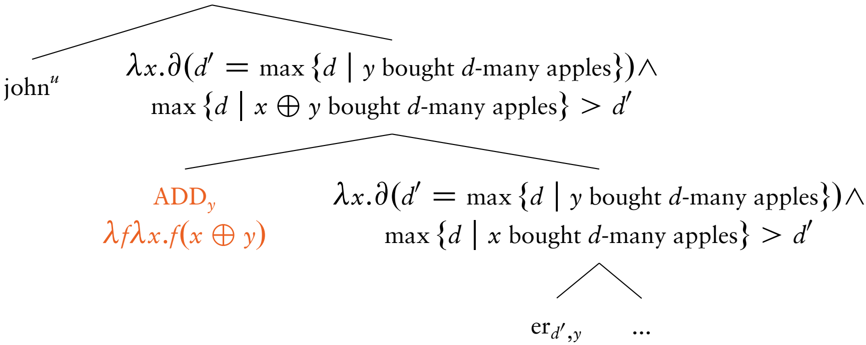
Deriving additivity by summing up the alternatives:



(Mary bought three apples. ...) John bought more apples.

$\rightsquigarrow$ John bought more apples than Mary.

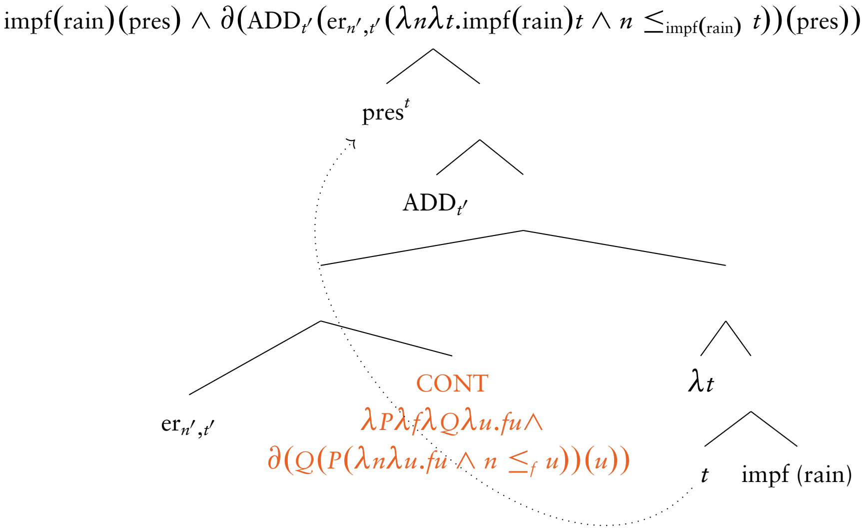
Deriving additivity by summing up the alternatives:



(Mary bought three apples. ...) John bought more apples.

$\rightsquigarrow$ John and Mary bought more apples than Mary alone.

Deriving continuation as a presupposed additive comparison:



$$\mathrm{ADD}_{t'}(\mathrm{er}_{n',t'}(\lambda n \lambda t.\mathrm{impf}(\mathrm{rain})t \wedge n \leq_{\mathrm{impf}(\mathrm{rain})} t))(\mathrm{pres})$$[4]
$$= \partial(n' = \max\left\{n \middle| \mathrm{impf}(\mathrm{rain})t' \wedge n \leq_{\mathrm{impf}(\mathrm{rain})} t'\right\}) \wedge$$
$$\max\left\{n \middle| \mathrm{impf}(\mathrm{rain})(\mathrm{pres} \oplus t') \wedge n \leq_{\mathrm{impf}(\mathrm{rain})} (\mathrm{pres} \oplus t')\right\} > n'$$

[4] $n \leq_f u := fu \models_c fn$; for any two propositions p, q, $p \models_c q$ iff $\forall w \in c : pw \rightarrow qw$.

$\text{ADD}_{t'}(\text{er}_{n',t'}(\lambda n \lambda t.\text{impf}(\text{rain})t \wedge n \leq_{\text{impf}(\text{rain})} t))(\text{pres})$[4]

$= \partial(n' = \max\{n | \text{impf}(\text{rain})t' \wedge n \leq_{\text{impf}(\text{rain})} t'\}) \wedge$
$\max\{n | \text{impf}(\text{rain})(\text{pres} \oplus t') \wedge n \leq_{\text{impf}(\text{rain})} (\text{pres} \oplus t')\} > n'$

$= \partial(n' = \max\{n | \exists e : \text{rain}e \wedge t' \subseteq \tau(e) \wedge n \text{ is a subinterval of } t'\}) \wedge \max$
$\{n | \exists e : \text{rain}e \wedge (\text{pres} \oplus t') \subseteq \tau(e) \wedge n \text{ is a subinterval of } (\text{pres} \oplus t')\} > n'$

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$n \leq_{\lambda t.\exists e:\text{rain}e \wedge t \subseteq \tau(e)} t$

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$= \partial(\exists e : \text{rain}e \wedge t' \subseteq \tau(e) \wedge n' = t') \wedge \exists e : \text{rain}e \wedge (\text{pres} \oplus t') \subseteq$
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$\exists e : \text{rain}e \wedge t \in \tau(e) \models_c \exists e : \text{rain}e \wedge n \subseteq \tau(e)$

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n is a sub-interval of t

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$= \partial(n' = \max\{n|\exists e : \text{rain} e \wedge t' \subseteq \tau(e) \wedge n \text{ is a subinterval of } t'\}) \wedge \max$ → $n' = t'$
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$\text{impf}(\text{rain})(\text{pres}) \wedge \partial(\text{ADD}_{t'}(\text{er}_{n',t'}(\lambda n \lambda t.\text{impf}(\text{rain})t \wedge n \leq_{\text{impf}(\text{rain})}$
$t))(\text{pres}))$
$= \exists e : \text{rain}e \wedge \text{pres} \subseteq \tau(e) \wedge$
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- ▷ Assertion: it is raining now.
- ▷ Presupposition: the raining has continued from an earlier time t'.
- ▷ Implicature: the speaker can't assert that the rain will continue to a time later than now.

Deriving the typology

Distributed Morphology (Halle & Marantz 1993):

- The terminals of syntactic structures are **morphemes**: sets of features without phonological content.
- **Subset Principle**: a morpheme, i.e. a set of features, is spelt out by the lexical item that matches its greatest subset of features (Halle 2000).

CAC operators (e.g. *more*, *noch*, *still*)

are phonological realizations of a deg head (cf. Thomas 2018).

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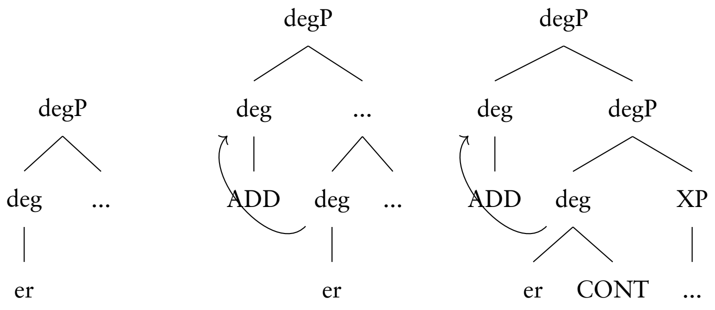

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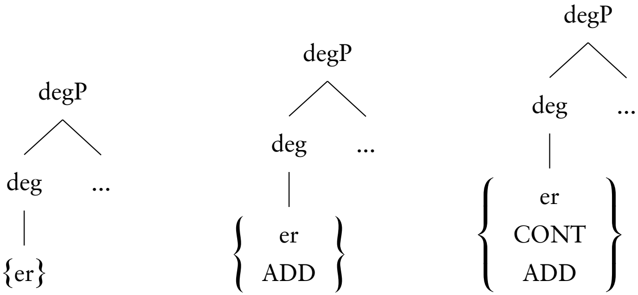


(a) comparison (b) additivity (c) continuation

Generating the typological distribution:

Comp./Add. | Cont.	English: $\{er\} \leftrightarrow$ er, $\{er, CONT, ADD\} \leftrightarrow$ still
Comp. | Add./Cont.	German: $\{er\} \leftrightarrow$ mehr, $\{er, ADD\} \leftrightarrow$ noch
Comp. /Add. /Cont.	Romanian: $\{er\} \leftrightarrow$ mai
Comp. | Add. | Cont.	Vietnamese: $\{er\} \leftrightarrow$ hon, $\{er, ADD\} \leftrightarrow$ nūa, $\{er, CONT, ADD\} \leftrightarrow$ van

Explaining the implicational universal:

- ▷ α is the phonological realization of both $\{er\}$ and $\{er, CONT, ADD\}$
  $\rightarrow \alpha$ is the item matching the biggest subset of $\{er, ADD\}$
- ▷ i.e. Comparison/Continuation $\rightarrow$ Comparison/Additivity/Continuation

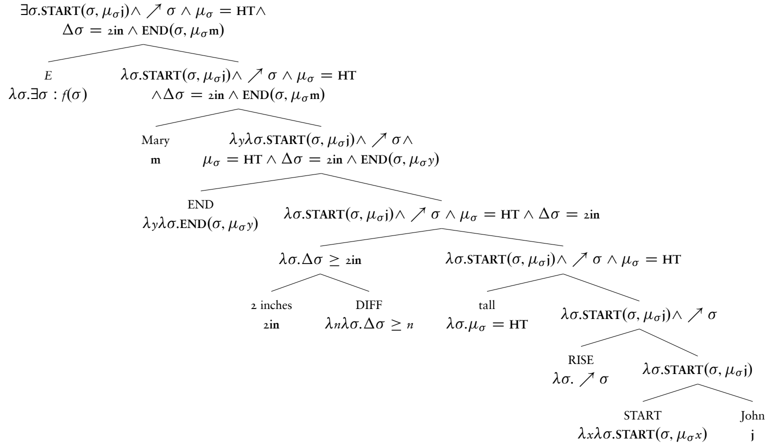
Comparing to scale segments

In scale segment semantics:

- ▷ Instead of denoting a relation between degrees and individuals, adjectives denote a predicate of scale segments.

  (16) $[\![\text{tall}]\!] := \lambda\sigma.\mu_\sigma = \text{HEIGHT}$

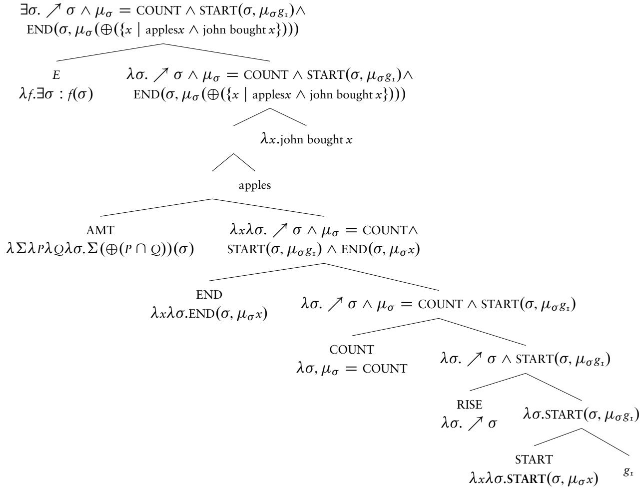
- ▷ Components of the comparison (i.e. the target and the standard of the comparison, the differential) are treated as modifiers of the scale segment.


$\exists\sigma.\mathbf{START}(\sigma, \mu_\sigma \mathbf{j}) \wedge \nearrow \sigma \wedge \mu_\sigma = \mathbf{HT} \wedge$
$\Delta\sigma = \mathbf{2in} \wedge \mathbf{END}(\sigma, \mu_\sigma \mathbf{m})$
E
$\lambda\sigma.\exists\sigma : f(\sigma)$
$\lambda\sigma.\mathbf{START}(\sigma, \mu_\sigma \mathbf{j}) \wedge \nearrow \sigma \wedge \mu_\sigma = \mathbf{HT}$
$\wedge \Delta\sigma = \mathbf{2in} \wedge \mathbf{END}(\sigma, \mu_\sigma \mathbf{m})$
Mary
$\mathbf{m}$
$\lambda y \lambda\sigma.\mathbf{START}(\sigma, \mu_\sigma \mathbf{j}) \wedge \nearrow \sigma \wedge$
$\mu_\sigma = \mathbf{HT} \wedge \Delta\sigma = \mathbf{2in} \wedge \mathbf{END}(\sigma, \mu_\sigma y)$
END
$\lambda y \lambda\sigma.\mathbf{END}(\sigma, \mu_\sigma y)$
$\lambda\sigma.\mathbf{START}(\sigma, \mu_\sigma \mathbf{j}) \wedge \nearrow \sigma \wedge \mu_\sigma = \mathbf{HT} \wedge \Delta\sigma = \mathbf{2in}$
$\lambda\sigma.\Delta\sigma \geq \mathbf{2in}$
$\lambda\sigma.\mathbf{START}(\sigma, \mu_\sigma \mathbf{j}) \wedge \nearrow \sigma \wedge \mu_\sigma = \mathbf{HT}$
2 inches
$\mathbf{2in}$
DIFF
$\lambda n \lambda\sigma.\Delta\sigma \geq n$
tall
$\lambda\sigma.\mu_\sigma = \mathbf{HT}$
$\lambda\sigma.\mathbf{START}(\sigma, \mu_\sigma \mathbf{j}) \wedge \nearrow \sigma$
RISE
$\lambda\sigma. \nearrow \sigma$
$\lambda\sigma.\mathbf{START}(\sigma, \mu_\sigma \mathbf{j})$
START
$\lambda x \lambda\sigma.\mathbf{START}(\sigma, \mu_\sigma x)$
John
$\mathbf{j}$

(17) $[\![$Mary is two inches taller than John$]\!]$

$:= \exists\sigma.\mathbf{START}(\sigma, \mu_\sigma \mathbf{j}) \wedge \nearrow \sigma \wedge \mu_\sigma = \mathbf{HT} \wedge$
$\Delta\sigma = \mathbf{2in} \wedge \mathbf{END}(\sigma, \mu_\sigma \mathbf{m})$

$\rightsquigarrow$ There is a rising scale segment of height that starts from John's measurement and ends at Mary's measurement and the difference value is two inches.


$\exists\sigma. \nearrow \sigma \wedge \mu_\sigma = \text{COUNT} \wedge \text{START}(\sigma, \mu_\sigma g_1) \wedge$
$\text{END}(\sigma, \mu_\sigma(\oplus(\{x \mid \text{apples}x \wedge \text{john bought } x\})))$
E
$\lambda f.\exists\sigma : f(\sigma)$
$\lambda\sigma. \nearrow \sigma \wedge \mu_\sigma = \text{COUNT} \wedge \text{START}(\sigma, \mu_\sigma g_1) \wedge$
$\text{END}(\sigma, \mu_\sigma(\oplus(\{x \mid \text{apples}x \wedge \text{john bought } x\})))$
$\lambda x.\text{john bought } x$
apples
AMT
$\lambda\Sigma\lambda P\lambda Q\lambda\sigma.\Sigma(\oplus(P \cap Q))(\sigma)$
$\lambda x\lambda\sigma. \nearrow \sigma \wedge \mu_\sigma = \text{COUNT} \wedge$
$\text{START}(\sigma, \mu_\sigma g_1) \wedge \text{END}(\sigma, \mu_\sigma x)$
END
$\lambda x\lambda\sigma.\text{END}(\sigma, \mu_\sigma x)$
$\lambda\sigma. \nearrow \sigma \wedge \mu_\sigma = \text{COUNT} \wedge \text{START}(\sigma, \mu_\sigma g_1)$
COUNT
$\lambda\sigma, \mu_\sigma = \text{COUNT}$
$\lambda\sigma. \nearrow \sigma \wedge \text{START}(\sigma, \mu_\sigma g_1)$
RISE
$\lambda\sigma. \nearrow \sigma$
$\lambda\sigma.\text{START}(\sigma, \mu_\sigma g_1)$
START
$\lambda x\lambda\sigma.\textbf{START}(\sigma, \mu_\sigma x)$
g_1

(18) $[\![$John bought more apples$]\!]$ (comparative reading)

$$:= \exists\sigma.\ \nearrow \sigma \wedge \mu_\sigma = \text{COUNT} \wedge \text{START}(\sigma, \mu_\sigma g_1) \wedge$$
$$\text{END}(\sigma, \mu_\sigma(\bigoplus(\{x \mid \text{apples}x \wedge \text{john bought } x\})))$$

⇝ There is a rising scale segment of quantity that starts from the measurement of the apples John bought and ends at the measurement of some antecedent apples.

(19) $\text{ADD} := \lambda\Sigma\lambda\Sigma'\lambda x\lambda\sigma.\Sigma(\sigma)(g_1) \wedge \Sigma'(\sigma)(x \oplus g_1)$

- $\exists\sigma.\nearrow\sigma \wedge \mu_\sigma = \text{COUNT} \wedge \text{START}(\sigma, \mu_\sigma(g_1)) \wedge$ $\text{END}(\sigma, \mu_\sigma(\oplus(\{x \mid \text{apples}x \wedge \text{john bought } x\})) \oplus g_1)$
  - E — $\lambda f.\exists\sigma : f(\sigma)$
  - $\lambda\sigma.\nearrow\sigma \wedge \mu_\sigma = \text{COUNT} \wedge \text{START}(\sigma, \mu_\sigma(g_1)) \wedge$ $\text{END}(\sigma, \mu_\sigma(\oplus(\{x \mid \text{apples}x \wedge \text{john bought } x\})) \oplus g_1)$
    - $\lambda x.\text{john bought } x$
    - apples
      - AMT — $\lambda\Sigma\lambda P\lambda Q\lambda\sigma.\Sigma(\oplus(P \cap Q))(\sigma)$
      - $\lambda x\lambda\sigma.\nearrow\sigma \wedge \mu_\sigma = \text{COUNT} \wedge$ $\text{START}(\sigma, \mu_\sigma(g_1)) \wedge \text{END}(\sigma, \mu_\sigma(x \oplus g_1)$
        - END — $\lambda x\lambda\sigma.\text{END}(\sigma, \mu_\sigma x)$
        - $\lambda\Sigma'\lambda x\lambda\sigma.\nearrow\sigma \wedge \mu_\sigma = \text{COUNT} \wedge$ $\text{START}(\sigma, \mu_\sigma(g_1)) \wedge \Sigma'(\sigma)(x \oplus g_1)$
          - ADD — $\lambda\Sigma_{e\to lt}\lambda\Sigma'_{e\to lt}\lambda x\lambda\sigma.\Sigma(\sigma)(g_1) \wedge \Sigma'(\sigma)(x \oplus g_1)$
          - COUNT [RISE [START]] — $\lambda x\lambda\sigma.\nearrow\sigma \wedge \mu_\sigma = \text{COUNT} \wedge \text{START}(\sigma, \mu_\sigma x)$

(20) $[\![\text{John bought more apples}]\!]$ (additive reading)

$$:= \exists\sigma.\ \nearrow \sigma \wedge \mu_\sigma = \text{COUNT} \wedge \text{START}(\sigma, \mu_\sigma(g_1)) \wedge$$
$$\text{END}(\sigma, \mu_\sigma(\bigoplus(\{x \mid \text{apples}x \wedge \text{john bought } x\})) \oplus g_1)$$

$\rightsquigarrow$ There is a rising scale segment of quantity that starts from the measurement of some antecedent apples and ends with the measurement of the antecedent apples and the apples John bought.

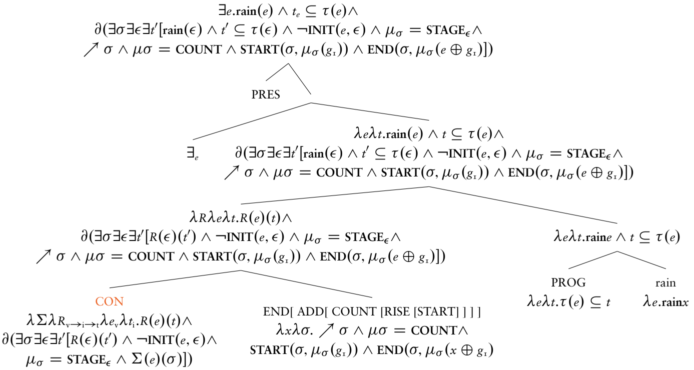
(21) $[\![\text{it is still raining}]\!] :=$

$$\exists e.\mathbf{rain}(e) \wedge t_e \subseteq \tau(e) \wedge$$
$$\partial(\exists \sigma \exists \epsilon \exists t' [\mathbf{rain}(\epsilon) \wedge t' \subseteq \tau(\epsilon) \wedge \neg \mathbf{INIT}(e, \epsilon) \wedge \mu_\sigma =$$
$$\mathbf{STAGE}_\epsilon \wedge \nearrow \sigma \wedge \mu_\sigma = \mathbf{COUNT} \wedge \mathbf{START}(\sigma, \mu_\sigma(g_1))$$
$$\wedge \mathbf{END}(\sigma, \mu_\sigma(e \oplus g_1))])$$

- ▷ Assertion: now is within the duration of a raining event.
- ▷ Presupposition: there is a rising scale segment of event development that starts from the measurement of some antecedent event and ends with the sum of this antecedent event and the current event.

(22) CON :=

$$\lambda\Sigma\lambda R\lambda e\lambda t.R(e)(t) \wedge \partial(\exists\sigma\exists\epsilon\exists t'[R(\epsilon)(t') \wedge \neg\text{INIT}(e,\epsilon)\wedge \mu_\sigma = \text{STAGE}_\epsilon \wedge \Sigma(e)(\sigma)])$$



Similarities with my proposal:

- ▷ The comparison meaning is captured as a comparison between two correlates.
- ▷ The logical connection between CAC meanings is derived by incrementally adding covert operators manipulating the correlates and the measurement dimension.

Difference: whether or not the measurement dimension is structurally derived.

Difference in prediction 1: infelicitous anaphoricity in amount comparatives.

Context: Mary bought three apples. $[\![$John bought more apples$]\!]$:=

(23) $\exists\sigma. \nearrow \sigma \wedge \mu_\sigma = \text{COUNT} \wedge \text{START}(\sigma, \mu_\sigma(g_1)) \wedge \text{END}$ $(\sigma, \mu_\sigma(\oplus(\{x \mid \text{apples}x \wedge \text{john bought } x\})) \oplus g_1)$ (Thomas 2018)
$\rightsquigarrow$ comparing the first-mentioned three apples $\oplus$ the apples John bought and the three apples.

(24) $\partial(d' = \max\{d \mid g_1 \text{ bought } d\text{-many apples}\}) \wedge$ $\max\{d \mid \text{john} \oplus g_1 \text{ bought } d\text{-many apples}\} > d'$ (my proposal)
$\rightsquigarrow$ comparing Mary $\oplus$ John and Mary in the apples they bought, presupposing the first mentioned quantity *three* is the number of apples Mary bought.

Only (24) makes the correct prediction in a context with added negation:

(25) Mary didn't buy those three apples. .... ?? John bought more apples.

- ▷ *More* in (25) doesn't have an additive (or comparative) reading.
- ▷ (23) still generates the same felicitous meaning.
- ▷ (24) doesn't: the presupposition can't be satisfied in this context!

Difference in prediction 2: varieties of the continuative reading

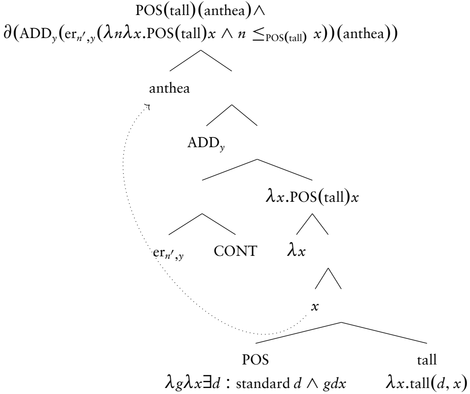
(26) Anthea is still tall.

a. $\rightsquigarrow$ Anthea was tall at some earlier time. (temporal reading)

b. $\rightsquigarrow$ Anthea is only marginally tall. (marginal reading)

- ▷ Continuative operators like *still* across languages are systematically ambiguous between a variety of flavors.
- ▷ The scale segment approach in Thomas (2018): unclear how to derive these different flavors of non-temporal continuation, as the measurement dimension (event development) is hard-wired into the meaning of CON.

- My proposal can derive the marginal reading of (26): change the scale of the presupposed comparison by changing the scope property of CONT.



(27) $\text{POS}(\text{tall})(\text{anthea}) \wedge \partial(\text{ADD}_y(\text{er}_{n',y}(\lambda n \lambda x.\text{POS}(\text{tall})x \wedge n \leq_{\text{POS}(\text{tall})} x))(\text{anthea}))$
$\rightsquigarrow \exists d : \text{standard } d \wedge \text{tall}(d, \text{anthea}) \wedge$
$\partial(\max\{n \mid \text{POS}(\text{tall})(\text{a} \oplus y) \wedge n \leq_{\text{POS}(\text{tall})} (\text{a} \oplus y)\} >$
$\max\{n \mid \text{POS}(\text{tall})y \wedge n \leq_{\text{POS}(\text{tall})} y\})$
$= \exists d : \text{standard } d \wedge \text{tall}(d, \text{anthea}) \wedge$
$\partial(\exists d : \text{standard } d \wedge \text{tall}(d, \text{anthea} \oplus y) \wedge y \text{ is taller than anthea})$

a. Assertion: Anthea is tall.

b. Presupposition: An alternative individual y is tall and taller than Anthea.

c. Implicature: People shorter than Anthea are not tall (i.e. Anthea is only marginally tall).

▷ We can generate different readings of the same sentence by having different scope configurations, explaining the ambiguity of (28).

(28) I can still explain Exercise two to Peter.

a. Focusing *Peter* $\rightsquigarrow$ Paul is beyond my help.

b. Focusing *two* $\rightsquigarrow$ Exercise three is too hard.

(29) $[\,\text{PETER}\,[\,\text{ADD}_y\,[\,[\,\text{er}_{n',y}\ \text{CONT}\,]\,\lambda x\,[\,\text{I can explain ex. two to } x\,]\,]\,]\,]$

a. presupposed additive comparison:
$\max\{n \mid \text{I can explain ex. 2 to p} \oplus y \wedge n \leq_{\text{I can explain ex. 2 to}} (\text{p} \oplus y)\}$
$> \max\{n \mid \text{I can explain ex. 2 to } y \wedge n \leq_{\text{I can explain ex. 2 to}} y\}$

b.
- ▷ Assertion: I can explain ex. 2 to Peter.
- ▷ Presupposition: I can also explain ex. 2 to an alternative individual *y*, and it is easier to do so than to Peter.
- ▷ Implicature: for people who are ranked even lower on the scale (i.e. harder to teach than Peter), I may not be able to explain ex. 2 to them.

(30) $[\,\text{TWO}\,[\,\text{ADD}_y\,[\,[\,\text{er}_{n',y}\ \text{CONT}\,]\lambda x\,[\,\text{I can explain ex.}x\text{ to Peter}\,]\,]\,]\,]$

a. presupposed additive comparison:
$\max\{n \mid \text{I can explain ex. } 2 \oplus y \text{ to p} \wedge n \leq_{\lambda x.\text{I can explain ex. } x \text{ to p}} (2 \oplus y)\}$
$> \max\{n \mid \text{I can explain ex. } y \text{ to p} \wedge n \leq_{\lambda x.\text{I can explain ex. } x \text{ to p}} y\}$

b.
- ▷ Assertion: I can explain ex. 2 to Peter.
- ▷ Presupposition: I can also an alternative exercise to Peter, which is easier to do so than exercise 2.
- ▷ Implicature: for exercises that are ranked even lower on the scale (i.e. harder to explain than exercise 2), I may not be able to Peter.

Conclusions

Cross linguistically, we have degree operators ambiguous between comparison, additivity, and continuation.

A comparative meaning that compares correlates on a structurally derived measurement dimension, combined with the subset principle in Distributed Morphology, can explain the these ambiguities and their cross-linguistic distributions.

The proposal crucially differs from the previous analysis (Thomas 2018) in how the correlates and the measurement dimension is determined, and I have shown a structural approach makes better predictions.

Thank you!

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