Eventualities and Differential Measurement

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Events workshop, Stuttgart
20 November 2015
Degree achievements:

(1)  a. The gap widened three inches.
    b. The gap widened *by* three inches.

Other verbal measure phrases:

(2)  a. Floyd ran three miles.
    b. #Floyd ran *by* three miles.
Adjectival analogue of these facts:

(3)  a. Floyd is six feet taller (than Clyde).
    b. Floyd is taller (than Clyde) **by** six feet.
    c. This paper is two weeks overdue.
    d. This book is overdue **by** two weeks.

(4)  a. Floyd is six feet tall.
    b. #Floyd is tall **by** six feet.
Empirical points:

- differential measurement & differential degrees should be distinguished from other sorts (building on Kennedy & Levin 2008, Schwarzschild 2005)
- degree achievements are related to AP differentials
- differential constructions should be decomposed into smaller building blocks (Schwarzschild 2012, 2013) in a neo-Davidsonian style
Theoretical points:

- a concept of ‘differential eventualities’ (meaning events, states, or tropes [Moltmann 2009, 2015])
- natural if degrees are kinds of eventualities (Landman & Morzycki 2003, Anderson & Morzycki 2015)
Roadmap

✓ Introduction
  - Kennedy & Levin on degree achievements
  - Schwarzschild on the architecture of comparatives
  - An analysis of differential constructions
  - Measuring differentials
  - Tentative extensions
  - Final remarks

(5)  

a. **telic**: The soup cooled in 10 minutes.  
   ‘The soup was fully cooled in 10 minutes.’

b. **atelic**: The soup cooled for 10 minutes.  
   ‘The soup got cooler than before, and did so for 10 minutes.’
Progressive as a diagnostic for telicity:

(6)  
   a. **telic:** Floyd is killing Clyde.  
       **entails:** Floyd killed Clyde.  
   b. **atelic:** Floyd is looking at Clyde.  
       **doesn’t entail:** Floyd looked at Clyde.  

Diagnostic gives weird result for degree achievements:

(7)  
    The soup is cooling.  
    **does and doesn’t entail:** The soup has cooled.
Telic reading depends on scale structure of corresponding adjective:

(8)  
   a. The soup cooled \( \{ \text{for} \} \) five minutes.
   
   b. The gap widened \( \{ \text{for} \} \) five minutes.

*Cool* has a closed scale (more or less?) and *wide* on open one (Kennedy & McNally 2005, Rotstein & Winter 2001):

(9)  
   a. The soup is \( \{ \text{fully} \} \text{completely} \) cool.
   
   b. #The gap is \( \{ \text{fully} \} \text{completely} \) wide.
With measure phrase, necessarily telic:

(10) The soup cooled 6 degrees \{in \#for\} an hour.

Result is not measurement of the theme itself:

(11) \[ \lbrack (10) \rbrack \neq 6\text{-degrees}(\text{the-soup}) \]
K&L’s intuition: we need a specialized way to measure change.

The core of the verb *cool* is a measure function, \( \text{cool} \):

\[
\text{cool} = \lambda x \lambda t \left[ \text{the maximal degree to which } x \text{ is cool at } t \right]
\]

Alongside \( \text{cool} \), there is a **DIFFERENCE FUNCTION**: \( \text{cool}_{d}^{\uparrow} \)

- just like \( \text{cool} \), except . . .
- measures on a scale that begins at \( d \)
Alongside \texttt{cool} and \texttt{cool}^\uparrow_d, there is a \textbf{MEASURE OF CHANGE FUNCTION}: \texttt{cool}_\Delta

- maps an individual $x$ and an event $e$ to a measure of how much $x$ changed in $e$
- $\texttt{cool}_\Delta = \lambda x \lambda e . \texttt{cool}^\uparrow_{\text{cool}(x)(\text{start}(e))}(x)(\text{end}(e))$
Degree achievements denote measure of change functions:

(13) \[
[\text{widen}] = \text{wide}_\Delta
\]

This is of type \(\langle e, \langle s, d \rangle \rangle\), so can’t combine with a subject to yield a truth value. Need one more ingredient.
A $\text{POS}_V$ morpheme, verbal counterpart of the $\text{POS}$ standardly assumed for adjectives (von Stechow 1984 and many others):

\begin{equation}
[\text{POS}_V] = \lambda g_{\langle e, \langle s, d \rangle \rangle} \lambda x \lambda e . \ g(x)(e) \geq \text{standard}(g)
\end{equation}

So:

\begin{equation}
[\text{the soup POS}_V \text{ cooled}] = \exists e . \ \text{cool}_\Delta(\text{the-soup})(e) \geq \text{standard(cool}_\Delta)
\end{equation}

‘The measure of the change in the coolness of the soup during $e$ exceeds the contextual standard for changes in coolness.’
How does this provide a theory of variable telicity?

- Standard for $\text{cool}_\Delta$ can vary depending on the context.
- Sometimes, it is the maximum on the scale of $\text{cool}_\Delta$, which yields a telic reading.
- Otherwise, it is the minimum on the scale, which is the coolness at the start of the event. This yields an atelic reading.
To incorporate measure phrases, an abstract functional head, \( \mu \) (Svenonius & Kennedy 2006):

\[
(16) \quad \llbracket \mu \rrbracket = \lambda g_{\langle e, \langle s, d \rangle \rangle} \lambda d \lambda x \lambda e . \ g(x)(e) \geq d
\]

\[
(17) \quad \llbracket \text{The soup } \mu \text{ cooled three degrees.} \rrbracket = \\
\quad \exists e[\text{cool}_\Delta(\text{the-soup})(e) \geq 3\text{-degrees}]
\]
How to use this to help with *by* facts?

(18)  a. The soup cooled three degrees.
      b. The soup cooled by three degrees.

(19)  a. Floyd ran six miles.
      b. #Floyd ran by six miles.

Intuitively, it matters that degree achievements involve difference scales.

An MP can’t determine if it’s measuring on a difference scale, though.
The analytical approach in K&L:

- manipulate scales and measure functions
- divide up the work of doing so among functional heads and components of meaning
Roadmap

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Unrelated to K&L in substance.

Comparatives and other degree constructions are built up from smaller parts.

Resembles neo-Davidsonian event semantics.

Approximately Schwarzschild (2012, 2013):

(20) \[ \text{[Floyd is taller than Clyde]} \]

\[
= \exists \sigma \left[ \mu_\sigma = \text{height} \land \right.
\]

\[
\left. \text{upward}(\sigma) \land \text{start}(\sigma) = \mu_\sigma(\text{Clyde}) \land \text{end}(\sigma) = \mu_\sigma(\text{Floyd}) \land \right] 
\]

Where \( \sigma \) is a scale segment and \( \mu_\sigma \) is a measure function associated with it.
Composition is mostly intersective:

(21)

```
 e
  /
Floyd
 /  
 ⟨⟨σ, t⟩, ⟨e, ⟨σ, t⟩⟩⟩
     /
    END
```

-er ⟨σ, t⟩

tall ⟨σ, t⟩

than Clyde
(22) a. $[[tall]] = \lambda \sigma [\mu_\sigma = \text{height}]$

b. $[[\text{-er}]] = \lambda \sigma [\text{upward}(\sigma)]$

c. $[[\text{than Clyde}]] = \lambda \sigma [\text{start}(\sigma) = \mu_\sigma(\text{Clyde})]$

d. $[[\text{END}]] = \lambda f_{\langle \sigma, t \rangle} \lambda x \lambda \sigma \left[ \text{end}(\sigma) = \mu_\sigma(x) \land f(\sigma) \right]$

e. $[[\text{END}]] ([[\text{-er tall}][\text{than Clyde}]])([[\text{Floyd}]])$

$$= \lambda \sigma \left[ \mu_\sigma = \text{height} \land \text{upward}(\sigma) \land \text{start}(\sigma) = \mu_\sigma(\text{Clyde}) \land \text{end}(\sigma) = \mu_\sigma(\text{Floyd}) \right]$$
This can handle typologically different comparatives elegantly.

(23) Hindi

anu raaj se lambii hai
Anu Raj FROM tall.FEM PRES.SNG
‘Anu is taller than Raj.’
Roughly, $Anu_1 [[from Raj] [t_1 tall]].$ Denotation in this spirit (not actually Schwarzschild’s):

(24)  
\begin{align*}
\text{a. } [tall] &= \lambda x \lambda \sigma [\text{end}(\sigma) = \mu_\sigma(x) \land \mu_\sigma = \text{height}] \\
\text{b. } [from \ Raj] &= \lambda \sigma \left[ \text{upward}(\sigma) \land \text{start}(\sigma) = \mu_\sigma(\text{Raj}) \right] \\
\text{c. } [from \ Raj \ Anu \ tall] &= \exists \sigma \left[ \text{upward}(\sigma) \land \text{start}(\sigma) = \mu_\sigma(\text{Raj}) \land \text{end}(\sigma) = \mu_\sigma(\text{Anu}) \land \mu_\sigma = \text{height} \right]
\end{align*}
The analytical approach in Schwarzschild (2012, 2013):

- build up properties of an object incrementally
- divide up work among many distinct building blocks
- do things intersectively
Introduction
Kennedy & Levin on degree achievements
Schwarzschild on the architecture of comparatives
- **An analysis of differential constructions**
- Measuring differentials
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Aim:

- yield a general analysis of what I’ll call **DIFFERENTIAL CONSTRUCTIONS**
Standard, uncontroversial claim:

- a change of state is a sort of event

Possibly more controversial claim:

- being taller than someone, cooler than something, etc., is a sort of state

So let’s recognize **DIFFERENTIAL EVENTUALITIES**.
(25) Floyd is taller than Clyde.

conceptually: ‘Floyd is in a state of being taller than Clyde’

\[
\exists s \left[ \text{tallness}(s) \land \text{bearer}(s) = \text{Floyd} \land \ldots \right]
\]

(26) \exists s \left[ \text{differential}(s) \land \ldots \right]

Not clear that \text{differential}(s) means anything other than \text{start-state}(s) is defined.
(25) Floyd is taller than Clyde.  
conceptually: ‘Floyd is in a state of being taller than Clyde’

(26) \( \exists s \left[ \text{tallness}(s) \land \text{bearer}(s) = \text{Floyd} \land \right. \)

\( \left. \text{differential}(s) \land \exists s' \left[ \text{bearer}(s') = \text{Clyde} \land \right. \right. \)

\( \left. \left. \exists s' \left[ \text{start-state}(s) = s' \right. \right. \right. \)

Not clear that \textit{differential}(s)\ means anything other than \textit{start-state}(s)\ is defined.
(27) The gap widened.

$$\exists e \left[ \text{theme}(e) = \text{the-gap} \land \text{differential}(e) \land \ldots \right]$$

(28) $$\exists e \left[ \right]$$
(27) The gap widened.

\[ \exists e \left[ \text{theme}(e) = \text{the-gap} \land \text{differential}(e) \land \ldots \right] \]

(28) \[ \exists e \left[ \text{width}(\text{the-gap})(s) \land \exists s \left[ \text{start-state}(e) = s \land \text{bearer}(s) = x \right] \right] \]
Adjectives relate individuals and eventualities:

(29) \[
\begin{array}{ll}
[\text{tall}] = & \lambda x \lambda s[\text{tallness}(s) \land \text{bearer}(s) = x] \\
\end{array}
\]

Not too shocking. More or less standard (neo-)Davidsonian approach (Parsons 1990).
Comparative morpheme imposes the requirement that a state be differential:

\[(30) \quad \text{[-er]} = \lambda g_{e, st} \lambda x \lambda s \cdot g(x)(s) \land \text{differential}(s)\]

\[(31) \quad \text{[Floyd -er tall]} = \lambda s \left[ \text{tallness}(s) \land \text{bearer}(s) = \text{Floyd} \land \text{differential}(s) \right]\]
The comparative phrase (in a phrasal comparative):

\[(32) \quad \llbracket \text{than Clyde} \rrbracket = \lambda s . \exists s' \left[ \begin{array}{c}
\text{start-state}(s) = s' \\
\text{bearer}(s') = \text{Clyde}
\end{array} \right] \]

Introduces a start state, of which Clyde is the bearer.
No independent indication that the start state is a tallness.

- If $s$ has $s'$ and $s$ is a tallness state, $s'$ must be too.
- How to state this as a general principle?
Combine intersectively at top. Then existential closure.
(34) $\left[ [Floyd\ -er\ tall]\ [\text{than}\ Clyde] \right] =$

$$\exists s \left[ \text{tallness}(s) \land \text{bearer}(s) = Floyd \land \right.$$ 
$$\left. \text{differential}(s) \land \exists s' \left[ \text{start-state}(s) = s' \land \right. \right.$$ 
$$\left. \text{bearer}(s') = Clyde \right] \right.$$
AN ANALYSIS OF DIFFERENTIAL CONSTRUCTIONS: BUILDING A DEGREE ACHIEVEMENT

(35) The gap widened.

Begin with a bare adjective:

(36) $\lbrack \text{wide} \rbrack = \lambda x \lambda s [\text{width}(s) \land \text{bearer}(s) = x]$
A verbalizing morpheme -en (common in degree achievements; blacken, darken, dampen, etc.):

(37)
(38) \[ [-en] ([wide]) ([the\ gap]) \]
\[ = \lambda e . \text{differential}(e) \land \]
\[ \exists s \left[ \text{width}(\text{the-gap})(s) \land \begin{align*}
&\text{start-state}(e) = s \land \\
&\text{bearer}(s) = \text{theme}(e) = x
\end{align*} \right] \]

Atelic reading only. The telic reading is yet to come.
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Measuring differentials: Measure phrases

The facts we began with:

(39)  
  a. The gap widened three inches.
  b. The gap widened by three inches.

(40)  
  a. Floyd ran three miles.
  b. Floyd ran by three inches.

Two questions:

- How do measure phrases work?
- How does by work?
MPs denote properties of eventualities (states or events):

\[(41) \ [three\ inches] = \lambda s . 3\text{-inch}(s)\]

Contra the standard idea that MPs denote degrees directly.

\[
\{ \begin{array}{l}
\text{six feet} \\
\text{over a meter} \\
\text{the height of a bear} \\
\text{this height} \\
\text{every height}
\end{array} \}
\]

(43) Floyd is three inches taller than Clyde.

(44) \[
\begin{array}{c}
\langle s, t \rangle \\
\langle s, t \rangle \\
\langle s, t \rangle \\
\langle s, t \rangle \\
\langle s, t \rangle \\
\langle s, t \rangle \\
\langle s, t \rangle \\
\langle s, t \rangle \\
\langle s, t \rangle \\
\langle s, t \rangle \\
\langle s, t \rangle \\
\langle s, t \rangle \\
\langle s, t \rangle \\
\langle s, t \rangle \\
\end{array}
\]
\text{three inches} \quad \text{than Clyde} \\
\text{Floyd -er tall}
Intersective interpretation:

(45) \[ [\text{Floyd -er tall}] = \lambda s \left[ \text{tallness}(s) \land \text{bearer}(s) = \text{Floyd} \land \text{differential}(s) \right] \]

(46) \[ [\text{three inches Floyd -er tall}] = \lambda s \left[ \text{tallness}(s) \land \text{bearer}(s) = \text{Floyd} \land \text{differential}(s) \right] \land \lambda s \left[ \text{3-inches}(s) \right] \]
(47) \[
\lambda s \left[ \text{tallness}(s) \land \text{bearer}(s) = \text{Floyd} \land \text{differential}(s) \land \text{3-inches}(s) \land \\
\exists s' \left[ \text{start-state}(s) = s' \land \text{bearer}(s') = \text{Clyde} \right] \right]
\]
(47)  \[
\lambda s \begin{bmatrix}
\text{tallness}(s) \land \text{bearer}(s) = \text{Floyd} \land \\
\text{differential}(s) \land \\
3\text{-inches}(s) \land \\
\exists s' \left[ \text{start-state}(s) = s' \land \\
\text{bearer}(s') = \text{Clyde} \right]
\end{bmatrix}
\]

Correctly, measurement is differential.
Degree achievements:

\[(48)\]

\[
\begin{array}{c}
\langle s, t \rangle \\
\langle s, t \rangle \\
\langle e, st \rangle \\
the\ gap \\
\langle e, st \rangle \\
\langle s, t \rangle \\
three\ inches
\end{array}
\]
Simple intersective interpretation again:

\[
\lambda e \left[ \exists s \left[ \begin{array}{c}
\text{differential}(e) \land \\
\text{width}(\text{the-gap})(s) \land \\
\text{start-state}(e) = s \land \\
\text{bearer}(s) = \text{theme}(e) = x \\
\text{3-inches}(e)
\end{array} \right] \right]
\]
Non-differential constructions:

(50) a. Floyd is six feet tall.
    b. Floyd ran six miles.
(51) \( \langle s, t \rangle \)

\( \langle s, t \rangle \)

\( six \text{ feet} \)

\( \langle s, t \rangle \)

\( e \)

\( \langle e, st \rangle \)

\( Floyd \)

\( tall \)

(52) a. \([ Floyd \ tall] = \lambda s [\text{tallness}(s) \land \text{bearer}(s) = Floyd]\)

b. \([ six \ feet \ Floyd \ tall] = \lambda s \left[ \text{tallness}(s) \land \begin{array}{c} \text{bearer}(s) = Floyd \land \\ \text{6-feet}(s) \end{array} \right] \)
(53) \[ \langle s, t \rangle \]

\[ \langle s, t \rangle \quad \langle s, t \rangle \]

\[ e \quad \langle e, st \rangle \quad six \, miles \]

\[ Floyd \quad ran \]

(54) a. \[ \llbracket Floyd \, ran \rrbracket = \lambda e [ running(e) \land agent(e) = Floyd ] \]

b. \[ \llbracket Floyd \, tall \, six \, miles \rrbracket = \lambda e \left[ running(e) \land \begin{array}{c}
agent(e) = Floyd \\
6 \text{-miles}(e)
\end{array} \right] \]
By just imposes a presupposition that an eventuality is differential:

(55) a. $\llbracket \text{by} \rrbracket = \lambda m_{s,t} \lambda s : \text{differential}(s) \cdot m(s)$

b. $\llbracket \text{by 3 inches} \rrbracket = \lambda s : \text{differential}(s) \cdot 3\text{-inches}(s)$

(The variable $s$ here is for both events or states.)
Floyd is taller than Clyde by three inches.

Interpretation is, again, intersective, so same reading as the bare MP version.
Interpretation is still intersective, so still the same reading as the bare MP version.
(59) # Floyd is tall by six feet.

(60) \[
\begin{array}{c}
\langle s, t \rangle \\
\langle s, t \rangle \\
e \\
\langle e, st \rangle \\
Floyd \quad \text{tall} \\
\end{array}
\]

(61) $[[\text{Floyd tall by six feet}]] = 
\lambda s \left[ \text{tallness}(s) \land 
\begin{array}{c}
\text{bearer}(s) = \text{Floyd} \land \\
[\lambda s' : \text{differential}(s') \cdot \text{6-feet}(s')] (s)
\end{array} \right]$
(62) #Floyd ran by six miles.

(63) \[
\begin{array}{c}
\langle s, t \rangle \\
\langle s, t \rangle \\
e \\
\langle e, st \rangle \\
Floyd \\
rans \\
\langle s, t \rangle \\
by six miles
\end{array}
\]

(64) \[
\left[ \text{Floyd ran by six miles} \right] = \\
\lambda s \left( \text{running}(e) \land \text{agent}(e) = \text{Floyd} \land \left[ \lambda s' : \text{differential}(s') \cdot 6\text{-miles}(s') \right](e) \right)
\]
Stipulative?

- Not really. *For* and *in* may need similar stipulations wrt telicity.
- Accords with intuitions about what *by* means.
- But a deeper explanation might be available . . .
  - MPs might be by default differential (Schwarzschild 2005)
  - The outliers may be MPs that *lack* *by*. 
In all this, no role for degrees.

- That’s striking.
- But we can’t do without them completely.
- How to do it in a neo-Davidsonian style?
Anderson & Morzycki (2015): degrees can be understood as kinds of states.

Some languages use the same morphemes . . .

- . . . for kinds when in NP
- . . . for degrees when in AP
Measuring differentials: Degrees as state kinds

(65) **German so**

a. so einen Hund
   such a dog
   ‘a dog of that kind’

b. so groß
   such tall
   ‘this tall’

(66) **German wie**

a. so ein Hund wie dieser
   such a dog WH this
   ‘a dog such as this’

b. so groß wie Peter
   such tall WH Peter
   ‘as tall as Peter’
(67) **Polish ** _tak_  
  a. taki pies  
      such-MASC dog  
      ‘a dog of that kind’  
  b. taki wysoki  
      such-MASC tall  
      ‘this tall’  

(68) **Polish ** _jak_  
  a. taki pies jak ten  
      such-MASC dog _WH_ this  
      ‘such a dog as this’  
  b. taki wysoki jak Clyde  
      such-MASC tall _WH_ Clyde  
      ‘as tall as Clyde’
(69) French *comme* (Desmets & Moline 2007)

a. un chien *comme* Hildy
   a dog like Hildy
   ‘a dog like Hildy’

b. *Comme* il travaille!
   like he works
   ‘How he works!’

Older forms of English too: *such* is cognate with the *so* of *so tall.*
Anderson & Morzycki (2015):

- Degrees can be understood as kinds of states.
- Modeled using Chierchia (1998)-style kinds. A degree is a plurality of possible states.
- This amounts to an equivalence-class notion of degrees (Cresswell 1976).
- To be six feet tall is to be in a state that realizes the kind SIX FEET TALL.
- German so and its analogues are just kind anaphors across domains (individuals and eventualities).
Can recapitulate Kennedy & Levin (2008)'s insights in this framework using degrees as state kinds.

(70) The gap widened.

(71) $\begin{align*}
 [\text{-en}] ([\text{wide}])([\text{the gap}]) &= \lambda e . \text{differential}(e) \wedge \\
 &\left[ \text{width}((\text{the-gap}))(s) \wedge \\
 &\text{start-state}(e) = s \wedge \\
 &\exists s \left[ \text{bearer}(s) = \text{theme}(e) = x \wedge \ldots \right] \right]
\end{align*}$
Can recapitulate Kennedy & Levin (2008)’s insights in this framework using degrees as state kinds.

(70) The gap widened.

(71) \[ -en \]([[\text{wide}]])([[\text{the gap}]]))
    \[ = \lambda e . \text{differential}(e) \land \]
    \[ \left[ \text{width(\text{the-gap})(s)} \land \text{start-state}(e) = s \land \exists s \text{ bearer}(s) = \text{theme}(e) = x \land \right. \]
    \[ \left. \exists d \in \text{deg-kinds}(s) \left[ \text{realize}(e, d) \land d \geq \text{standard}_c(\text{scale}(e)) \right] \right] \]
But what about the telic reading?

(72) The soup cooled.

(73) \([\text{-en]}(\text{[cool]})(\text{[the soup]}))
    = \lambda e . \text{differential}(e) \land
    \begin{cases}
    \text{cool(the-soup)}(s) \land \\
    \text{start-state}(e) = s \land \\
    \exists s \bigg[ \text{bearer}(s) = \text{theme}(e) = x \land \\
    \exists d \in \text{deg-kinds}(s) \left[ \text{realize}(e, d) \land d \geq \text{standard}_c(\text{scale}(e)) \right] \bigg]
    \end{cases}
(74) \[[ -en] ([\text{cool}]) ([\text{the soup}]) \]
\[= \lambda e . \text{differential}(e) \land \]
\[\text{cool(the-soup)}(s) \land \text{start-state}(e) = s \land \]
\[\exists s \text{ bearer}(s) = \text{theme}(e) = x \land \]
\[\exists d \in \text{deg-kinds}(s) \left[ \text{realize}(e, d) \land d \geq \text{standard}_c(\text{scale}(e)) \right] \]

This inherits the Kennedy & Levin (2008) reasoning:

- Scale of \text{cool} bounded on both ends.
- If \text{standard}_c(\text{scale}(e)) = \text{min}(\text{scale}(e)), atelic.
- If \text{standard}_c(\text{scale}(e)) = \text{max}(\text{scale}(e)), telic.
ROADMAP

✅ Introduction
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☐ Tentative extensions
☐ Final remarks
Some expressions inherently differential:

(75) a. Floyd overstayed his welcome by twenty minutes.
    b. Floyd’s score exceeded Clyde’s by 20%.

(76) a. The paper is overdue by six weeks.
    b. The paper is six weeks overdue.
(77) \[ \text{Floyd overstayed his welcome by twenty minutes} \]

\[
= \exists s \left[ \exists s' \left[ \begin{array}{c} \text{differential}(s) \land \\
\text{start-state}(s) = s' \land \\
\text{bearer}(s') \equiv \text{Floyd} \land \\
\text{welcome}(s') \\
\text{20-minutes}(s) \end{array} \right] \right]
\]
The paper is overdue by six weeks.

\[ \exists s \left[ \text{differential}(s) \land \\
\text{due}(x)(s') \land \\
\text{start-state}(s') = s \land \\
\text{bearer}(s) = \text{the-paper} \land \\
\text{6-weeks}(s) \right] \]
Tentative extensions: Hindi comparatives

Hindi comparative:

(79)  

a. $\llbracket \text{tall} \rrbracket = \lambda x \lambda s [\text{tallness}(s) \land \text{bearer}(s) = x]$  
b. $\llbracket \text{Anu tall} \rrbracket = \lambda s [\text{tallness}(s) \land \text{bearer}(s) = \text{Anu}]$  
c. $\llbracket \text{from Raj} \rrbracket = \lambda s . \exists s' \left[ \text{start-state}(s) = s' \land \text{bearer}(s') = \text{Raj} \right]$  
d. $\llbracket \text{from Raj Anu tall} \rrbracket$  

$$= \lambda s \left[ \text{tallness}(s) \land \text{bearer}(s) = \text{Anu} \land \exists s' \left[ \text{start-state}(s) = s' \land \text{bearer}(s') = \text{Raj} \right] \right]$$
ROADMAP

☑ Introduction
☑ Kennedy & Levin on degree achievements
☑ Schwarzschild on the architecture of comparatives
☑ An analysis of differential constructions
☑ Measuring differentials
☑ Tentative extensions

▪ Final remarks
Summary:

  - measurement of difference
  - decomposition
  - intersective interpretation
- let’s recognize differential eventualities
- allows a simple neo-Davidsonian analysis of degree achievements
- also, a neo-Davidsonian analysis of comparatives
- may be extendable to typologically diverse comparatives à la Schwarzschild
Big-picture observations:

- bears on what kind of information is encoded in an eventuality
- if eventualities are crucial to degree semantics, we might expect it to resemble neo-Davidsonian intersective modification
- . . . and indeed it may
Thanks!

Also, thanks to Ai Taniguchi, Anne-Michelle Tessier, Cara Feldscher, Curt Anderson, Gabriel Roisenberg Rodrigues, Josh Herrin, and Kay Ann Schlang.
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