Quantity and the Individual-/ Stage-Level Contrast: Comments on “Decomposing States”

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Discussion Day “The Individual-/ Stage-Level Contrast”

24th October 2019
Some key innovations for the architecture of grammar:

- The distinction between s-level and i-level predicates is one of homogeneity and cuts across eventuality type.

- Scale structure determines the s/i distinction of an adjective through homogeneity.

- The interpretative component of the grammar makes use of extensive mapping mechanisms between different type domains located in the voice head as well as in case marking and degree operators.

- The domain of entities is really the domain of s-level singularities $D_{e \text{(stage)}}$.

- The domain of eventualities is more uniform than often assumed, that is, states are not that different from events in their composition.
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Examples: *deep, tall, brown* (open scale, i-level adjective)

*full, empty, drunk* (closed scale, s-level adjective)
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Examples: *deep, tall, brown* (open scale, i-level adjective)  
*full, empty, drunk* (closed scale, s-level adjective)  
*dry* (variable behaviour)

1. **Empirical validity** of this observation: Are all open-scale adjectives i-level?  
2. **Accounting for variability**: Does this boil down to lexical ambiguity (and variability in the underlying scale structure)?
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Examples: *deep, tall, brown* (open scale, i-level adjective)

*full, empty, drunk* (closed scale, s-level adjective)

3. Dealing with cross-linguistic variation:
   Building i-level predicates and the Degree Semantics Parameter
4. How is the *i-level versus s-level distinction* conceptualised? And how is it derived?

5. The *mapping mechanisms* and their syntactic realisation: Thinking about the role of voice and degree heads.
1. Are all open-scale (= relative) adjectives i-level? Are all types of closed-scale (= absolute) adjectives s-level?


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<td>Relative: long, short, small, narrow, shallow, ugly, inexpensive, young, tall, wide, deep, beautiful, expensive, old.</td>
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Total: STD = MAX  
Partial: STD > MIN

Discussion

Scales and the s/i distinction

1. Are all open-scale (= relative) adjectives i-level?
   Are all types of closed-scale (= absolute) adjectives s-level?


Acceptability judgment study with 25 participants and 30 different adjectives of English:

“…the acceptability ratings of stage modifiers (rarely, saw) positively correlate with those of degree modifiers characteristic of absolute adjectives (completely, slightly), meaning that the more acceptable and adjective is with the former, the more likely it is to be acceptable with the latter, or vice versa. …

In sum, experimental examination of examples from the literature on absolute versus relative adjectives supports the hypothesized connection between stage vs. individual level properties and absolute vs. relative interpretations.”

So, yes, it appears!
### Discussion

Scales and the s/i distinction

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(✓ *perfectly A*) | +min (✓ *slightly A*) | −min (*slightly A*) |
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| −max  

(*perfectly A*) | **Partial:** dirty, sick, wet, late, early, nervous. |

Total: STD = MAX  
Partial: STD > MIN

How does the analysis derive the s/i distinction in the case of partial adjectives?
(The discussion in section 3.2.2 crucially builds on STD=MAX.)

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Total: STD = MAX
Partial: STD > MIN

2. Accounting for variability: Does this boil down to lexical ambiguity (and variability in the underlying scale structure)?

Variable-behavior can also be demonstrated for some adjectives.

(9)  a. The desert is (*completely) dry. (open scale)
    b. The glass is (completely) dry. (closed scale)

(10) a. Deserts are dry. (generic only)
     b. Glasses are dry. (existential possible)


The positive form of all types of adjectives is evaluated with respect to a comparison class. “…a core semantic difference between subclass of adjectives lies in the nature of the comparison class employed…”

Within comparison classes (= based on stages) versus across comparison classes (= based on individuals).
3. Dealing with cross-linguistic variation:
   Building i-level predicates and the Degree Semantics Parameter

Certain properties of the degree argument of the gradable predicate are projected onto the noun phrase argument of the predicate.


**Degree Semantics Parameter \([\pm \text{DSP}]:\)**
A language \{does/does not\} have gradable predicates (type \(\langle d, \langle e, t \rangle \rangle\) and related), i.e., lexical items that introduce degree arguments.
3. Dealing with cross-linguistic variation:
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**Degree Semantics Parameter** $\pm$DSP:
A language {does/does not} have gradable predicates (type $\langle d, \langle e, t \rangle \rangle$ and related), i.e., lexical items that introduce degree arguments.

$\pm$DSP languages: Motu, Warlpiri, Washo, Nez Perce, Early Written Samoan

$[tall]^C = \lambda x. x$ is considered tall with respect to $C$ (type $\langle e, t \rangle$)

Is the s/i distinction lexicalised in $\pm$DSP languages?
Do other elements allow us to transparently built i-level predicates?

**Washo copula hypothesis:**

a. presence of $k$- $\rightarrow$ individual-level predication

b. absence of $k$- $\rightarrow$ stage-level predication

R. Bochnak, T. Grinsell & A. C. Yu (2011),
4. How is the *i*-level versus *s*-level distinction conceptualised? And how is it derived?

I-level predicates are homogeneous, s-level predicates quantised properties of eventualities.

a. *Quantized:* \( P \) is quantized iff \( P \) is not homogeneous.

b. *Homogeneous:* \( P \) is homogeneous iff \( P \) is cumulative and divisive.

i. \( P \) is *cumulative* iff \( \forall x, y[P(x) \land P(y) \rightarrow P(x \cup y)] \)

   \( P \) is *cumulative* iff for all \( x \) and \( y \) with property \( P \), the union of \( x \) and \( y \) also has property \( P \).

ii. \( P \) is *divisive* iff \( \forall x[P(x) \rightarrow \exists y[P(y) \land y < x] \land \forall x, y[P(x) \land P(y) \land y < x \rightarrow P(x - y)]] \)

   \( P \) is *divisive* iff for all \( x \) with property \( P \) there is a proper part \( y \) of \( x \) which also has property \( P \), and for all \( x \) and \( y \) with property \( P \) if \( y \) is a proper part of \( x \) then the subtraction of \( y \) from \( x \) also has property \( P \).
Applied to an example:

(1) Building i-level predicates from scale structure:

Martina is tall.

\[
\begin{align*}
\lambda x \in D_{\text{stage}} \cdot \lambda s \in D_v . \text{HEIGHT}(x, s)
\end{align*}
\]

What does it mean to give a measure function a state argument? Would it make sense to sever the e-type argument (type \(v,d\))?
Applied to an example:

(1) Building i-level predicates from scale structure:

Martina is tall.

\[
\begin{align*}
\left[ \sqrt{\text{tall}}_{\langle e_{\text{stage}}, \langle v, d \rangle \rangle} \right] &= \lambda x \in D_{e_{\text{stage}}}. \lambda s \in D_v. \text{HEIGHT}(x, s) \\
\left[ \text{pos}_v \right] &= \lambda g \in D_{m_{\Delta}} \lambda s \exists x [g(x)(s) \geq \text{stnd}(g) \land \\
&\forall d'[d' \leq g(x)(s) \land d' \geq \text{stnd}(g) \rightarrow \exists s'[s' < s \land g(x)(s') = d']]]
\end{align*}
\]

Mapping to Eventualities

Selectional restriction?

\[
\begin{align*}
\left[ \text{Voice}_s \right] &= \lambda x \lambda s [\text{Holder}(s)(x) \land \\
&\forall s'[s' \leq s \rightarrow \exists x'[x' \leq x \land \text{Holder}(s')(x')]]
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Event-to-Object Mapping

Selectional restriction?
Applied to an example:

(1) Building i-level predicates from scale structure:

*Martina is tall.*

\[
\sqrt{\text{tall}} = \lambda x \in D_{e_{\text{stage}}} \cdot \lambda s \in D_v \cdot \text{HEIGHT}(x, s)
\]

Why existentially quantify off this argument?!

\[
\begin{align*}
|pos_v| = & \lambda g \in D_{m_{\Delta}} \lambda s \exists x [g(x)(s) \geq \text{stnd}(g) \& \\
& \forall d'[d' \leq g(x)(s) \& d' \geq \text{stnd}(g) \rightarrow \exists s'[s' < s \& g(x)(s') = d']] | \\
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Mapping to Eventualities

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|\text{Voice}_s| = \lambda x \lambda s [\text{Holder}(s)(x) \& \forall s'[s' \leq s \rightarrow \exists x'[x' \leq x \& \text{Holder}(s')(x')]]
\]

Event-to-Object Mapping
Applied to an example:

(1) Building i-level predicates from scale structure:

Martina is tall.

\[ \lambda s \in D_v. \exists x [\text{HEIGHT}(x, s) \geq \text{STD} \land \forall d [d \leq \text{HEIGHT}(x, s) \land d \geq \text{STD} \rightarrow \exists s' [s' < s \land \text{HEIGHT}(x, s') = d]]] \]

If you’re in a state of 1,80m tall, you’re also in a state of being 1,70m tall. In how far is this a proper sub-state, though?
Applied to an example:

(1) Building i-level predicates from scale structure:

Martina is tall.

\[ \lambda s \in D_v. \mathrm{HOLDER}(M, s) \land \forall s' \leq s \rightarrow \exists y [y \leq M \land \mathrm{HOLDER}(s', y) \land \exists x [\mathrm{HEIGHT}(x, s) \geq \mathrm{STD} \land \forall d [d \geq \mathrm{HEIGHT}(x, s) \land d \geq \mathrm{STD} \rightarrow \exists s'' [s'' < s \land \mathrm{HEIGHT}(x, s'') = d]]] \]

As these stages compose the individual itself, no particular spatiotemporal stage of the individual is individuated...
Applied to an example:

(1) Building i-level predicates from scale structure:

*Martina is tall.*

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\lambda s \in D_v. \ \text{HOLDER}(M, s) \land \forall s' \leq s \rightarrow \exists y [y \leq M \land \text{HOLDER}(s', y) \land \exists x [\text{HEIGHT}(x, s) \geq \text{STD} \land \forall d [d \geq \text{HEIGHT}(x, s) \land d \geq \text{STD} \rightarrow \exists s'' [s'' < s \land \text{HEIGHT}(x, s'') = d]]]]
\]

Factoring out states:

For every degree \(d\) by which some s-level entity exceeds the standard for height, there is a spatio-temporal slice of Martina such that she is \(d\)-tall at that stage.
5. The **mapping mechanisms** and their syntactic realisation: Thinking about the role of voice and degree heads.

Locating the mapping in the Voice head and the Pos-operator makes the prediction that i-level predicates rely on the syntactic presence of these heads.

What about attributive uses of relative adjectives? How do s-level and i-level predicates combine? What about the comparative, the superlative, and measure phrases?

(1) *Upolu is a beautiful island.*
(2) *a [s-level full] [i-level glass]*
(3) *Vera is taller than Amy Rose.*
(4) *David is the tallest.*
(5) *Khoi is 28 years old.*
1. What are the predictions for partial absolute adjectives, where it is not the case that STD = MAX?

2. What’s the deal with dry? How does the proposal handle interpretative variability between i/s?

3. Any cool predictions to explore for cross-linguistic variation, and in particular regarding degreeless languages?

4. How does mapping degrees to different temporal-spatial slices make an i-level predicate?

5. What are the consequences for the syntax-semantics interface? Do i-level interpretation rely on the presence of Voice and POS?
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