Continuations for Comparatives

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Overview

I use continuations to model clausal comparatives like (1):

(1) Mary is 6′ taller than Bill is wide.

• I define continuation-friendly operators for the comparative and a scoping degree operator
• This derives the right truth conditions without QR or LF movement

Continuations

• Continuations are type-lifters for scope-taking
• Barker and Shan (2014) use them for quantifiers
• Behave as some type locally, but take scope
• For example, a generalized quantifier, rather than being type t/(e\(\lambda x.\))t, is expressed with type:

\[ t \not\rightarrow (e \otimes t) \]

• Other words are lifted to combine with continuations

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• Or, in a derivation:

\[ (\beta v. \lambda x.\lambda y.\lambda k.\beta x.\) y) \]

Movement Analysis

• Movement accounts like Heim 2000 require two post-surface movements before interpretation
  - Move the comparative standard before the adjective
  - “wh”-movement of a covert operator from the degree-argument position of an adjective... the trace [being] interpreted as a variable over degrees” (Heim 2000: 51)

• For a sentence like (1), then, the following LF and truth conditions:

(2) \[ [\text{Mary is } 6′ - \text{er than } [\text{wh } \text{Bill is } t_1 \text{ wide}] \text{ tall}] = \text{MAX}(\text{height}, m) \geq \text{MAX}(\text{width}, b) + 6′ \]

Moving to Continuations

I replace “wh”-movement with a scoping degree operator of type (d \(\exists\) (d\(\exists\)))
acts locally like a degree takes scope at t (Bill is wide) returns a degree getting the right truth conditions without movement.

A Full Derivation

\[ \text{The comparative operator takes: } \]

- a degree d, the comparative standard (Bill’s width)
- an adjective A, type d\(\lambda x.\) (tall)
- another degree d’, the differential (6’)
- an individual x, the subject being compared (Mary) and returns true iff the maximum degree that x is A is greater than or equal to the sum of the comparative standard and the differential

\[ \text{We get a much simpler LF and derive the right truth conditions:} \]

(3) \[ [\text{Mary is } 6′ - \text{er than } \text{Bill is } 7d \text{ wide}] = \text{MAX}(\text{height}, m) \geq \text{MAX}(\text{width}, b) + 6′ \]

Scope of Continuation

Scoping over Quantifiers

• Heim’s MAX account requires a third type of (non-local) movement (e.g., of a H operator) to handle quantified standards, as in (4):

(4) \[ \text{Mary is } 6′ - \text{er than } \text{every boy is} \]

• Because comparatives and quantifiers both use continuations, they interact without modification

\[ \text{Still need the Heim-Kennedy constraint to prevent certain scope combinations, though...} \]

Conclusion

• We can use continuations to handle comparatives without movement
• No additional mechanisms needed for scope interactions
• Compatible with a Containment Hypothesis denotation for the superlative -est
• Compatible with differential-modifying exactly less, more than, which change interpretations of MAX (Fleisher 2014)

Selected References


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