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Contents

Degree concepts and narrow scope illusions

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In (1), from Schwarzchild (To appear), the differential, *one boxcar*, is evaluated in the worlds quantified over by the attitude verb *expect.*

(1) {Jack and Jill are train enthusiasts. They've been discussing a high-speed freight train planned for their region. They wonder whether the boxcars will be 60 ft. long, like on the Santa Fe line, or 50 ft. long, like on the Caroliner. As far as the engine is concerned, Jack and Jill disagree. Jack's expectation is that the engine will be 2 boxcars long. Jill expects it to be one boxcar long.}

Jack expects the engine to be one boxcar longer than Jill does.

Suppose that this de-dicto interpretation requires the differential to be interpreted within the scope of the attitude verb. This leads to an obvious puzzle: (1) should be unacceptable, under the standard assumption that the phrase headed by *-er* contains both the differential and the *than* clause (and must QR over the attitude verb for ACD resolution).

Schwarzschild uses this observation, among many others, to argue against the standard assumption. While I will not challenge Schwarzschild's other arguments, I would like to suggest that (1) argues, instead, against the assumption that de-dicto interpretations always indicate narrow scope (See Szabó 2010 and Keshet and Schwarz 2019). Consider a version of *-er* that quantifies over degree concepts.

(2) $[\![\text{-er}]\!](C)(\delta_{sd})(A_{sd,t})(B_{sd,t}) \Leftrightarrow \forall d \in C \cap A \exists d' \in C \cap B[d' \geq (d +_c \delta)]$
where $d'_{sd} \geq d_{sd}$ iff $\forall w \in \text{domain}(d) \cap \text{domain}(d')[d'(w) \geq d(w)]$
and $d +_c \delta = (\iota d^* \in C)(\forall w \in \text{domain}(d) \cap \text{domain}(\delta)[d(w) +_c \delta(w) = d^*(w)])$

Now, consider a standard logical form for (1), as in (3).

(3) $\text{-er}_{13}\, C$ one boxcar
$\text{than}\, \lambda d\, \text{expects}(\text{Jill}, \lambda w.\, \text{the engine}_w\, \text{is}\, d(w)\, \text{long})$
$\lambda d\, \text{expects}(\text{Jack}, \lambda w.\, \text{the engine}_w\, \text{is}\, d(w)\, \text{long})$
True iff
$\forall d \in C \cap \{d_{sd} : \text{expects}(\text{Jill}, \lambda w.\, \text{the engine}_w\, \text{is}\, d(w)\, \text{long})\}$
$\exists d' \in C \cap \{d_{sd} : \text{expects}(\text{Jack}, \lambda w.\, \text{the engine}_w\, \text{is}\, d(w)\, \text{long})\}$
$[d' \geq (d +_c \lambda w.\, \text{the-length-of-the-boxcar in } w)]$

To evaluate the predicted meaning, we need to know what C is. If we assume that the differential makes the following set of degree concepts salient $\{\lambda w.\, \text{the length of } r \text{ boxcars in } w :$

r a rational number} (hence a candidate for the denotation of C), the right truth conditions can be derived.

Such an analysis can be extended to other degree constructions, some of which cannot be covered by Scwarzschild's proposal, as illustrated in the examples below.

(4) {Regulations for a high-speed freight train require the engine to be at least two boxcars long. Other than that, there are no length requirements. In particular the engine can be as short as planners want it to be, provided that the boxcars are shortened accordingly.}

How long is the boxcar required to be?
Possible answers (depending on the set of salient degree concepts):

a. Two boxcars long
b. Any length is allowed (as long as the required proportion with boxcars is adhered to).

(5) {Jack and Jill's expectations are as in Schwarzchild's scenario. But here's how things turned out. The boxcar was built to be 50 ft. long, and the engine was built to be twice the size of the boxcar as expected by Jack, but not by Jill}

a. The engine is one boxcar longer than Jill expected it would be. True
b. The engine is 50 feet longer than Jill expected it would be. False

(6) {Jill is an engineer who needs to approve plans for a high-speed freight train. She is told by the planners that the boxcars will be either all 60 ft. long or all 50 ft. long. She demands that the engine be at least 2 boxcars long and that the caboose be at least one boxcar long}

The engine is required to be one boxcar longer than the caboose is.

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