8.4.s. Summary

8.4.1. A famous analysis of definite descriptions was first proposed early in the 20th century by Bertrand Russell. According to Russell's analysis, a sentence *The* C *is such that (... it ...)* amounts to *Something such that it and only it is a* C *is such that (... it ...)*. This analysis is equivalent to the conjunction of *Some* C *is such that (... it ...)* and *There is at most one* C, so, according to Russell, the effect of using a definite rather than an indefinite article is to imply the latter conjunct. Russell's analysis treats a definite description as a kind of quantifier phrase and leads to scope ambiguities in negative sentences involving definite descriptions.

8.4.2. An alternative approach avoids this suggestion of ambiguity by treating definite descriptions as individual terms and analyzing them by the use of a description operator, which applies to predicate abstracts to form terms. We use a sans-serif capital I as notation for the description operator, abbreviating I[λx ρx] by Ix ρx. A term formed in this way has the sole member of the predicate's extension as its reference value if that extension has a unique member; otherwise, its reference value is the nil value. We fix a logically constant term, the nil, which always has the nil value and use the notation ∗ (asterisk operator) for it. The content of *... the* C *...* on this analysis can be expressed using a branching conditional as *if there is exactly one* C*, then some* C *is such that (... it ...); otherwise, ... the nil ...*.

8.4.3. Each of the two approaches to analyzing definite descriptions can be used to exhibit the difference between a restrictive and a non-restrictive relative clause when these modify a common noun governed by the article *the*. Although both analyses point to differences between such sentences, their accounts of the relations between them differ.

8.4.x. Exercise questions

1. Analyze the following in as much detail as possible; analyze definite descriptions in two ways, using Russell's approach and using the description operator.

- **a.** *Sam guessed the winning number*.
- **b.** *The winner who spoke to Tom was well-known*.
- **c.** *The winner, who spoke to Tom, was well-known*.
- **d.** *Every number greater than one is greater than its (own) positive square root*.

2. Synthesize idiomatic English sentences that express the propositions associated with the logical forms below using the intensional interpretations that follow them. You may use definite descriptions to express the sort of logical forms Russell's analysis produces.

- **a.** (∃x: Oxs ∧ (∀y: ¬ y = x) ¬ Oys) Cx
  [C: λx (x *called*); O: λxy (x *owns* y); s: *Spot*]
- **b.** Fj(Ix (Hx ∧ Ex(Iy Pyj)))
  [E: λxy (x *enlarged* y); F: λxy (x *found* y); H: λx (x *is a photographer*); P: λxy (x *is a picture of* y); j: *John*]

Homework assigned Mon 12/5 and due Wed 12/7

Analyze the following using each of the two approaches to definite descriptions and by treating the relative clause as restrictive and as non-restrictive (so you should provide 4 analyses):

The book which was long was good

That is, use both Russell's analysis and the description operator to analyze each of:

The book that was long was good
The book, which was long, was good