The Logical Geometry of Russell’s Theory of Definite Descriptions

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"throughout modern times, practically every advance in science, in logic, or in philosophy has had to be made in the teeth of opposition from Aristotle’s disciples”

On Denoting “finest philosophical essay”

theory of definite descriptions = "paradigm of philosophy"

ARISTOTELIAN DIAGRAMS FOR DEFINITE DESCRIPTIONS

the two interpretations of "the A is B" stand in different Aristotelian relations to "the A is B:
- [EX] x:A and Bx (modus ponens)
- (UN) AxBx (modus tollens)

natural addition:
- [EX] x:A and Bx
- (UN) AxBx

≡ weak version of "the A is B": FOL-equivalent to [(EX) x:A] → [x: A]Bx

importance for self-predication principles: [¬[x: A]¬AxBx] is a FOL-tautology

DEFINITE DESCRIPTIONS AND THE CATEGORICAL STATEMENTS

ARISTOTELIAN DIAGRAMS

ordered along two semi-independent dimensions:

bitstring semantics/partition of logical space induced by this octagon:

unsurprising connection with another logical system: Public Announcement Logic

other topics addressed in the full paper:

what happens if we move from FOL to syllogistics (i.e. assume that (EX) is a tautology)?

dually, what happens if we assume that (UN) is a tautology?

unexpected connection with another logical system: Public Announcement Logic

topics for future research:

what is a plausible recursive partitioning sequence for the octagon-induced partition?

more fine-grained versions of this partition, by splitting up the “2” region into “>3” and “2” (cf. the words “both” and “neither” in English)

further connections with other logical systems


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