How Do You Know What the Right Logic Is?

Graham Priest

Some Crucial Distinctions

A Little History

A Model for Theory-Choice

Comments or the Model

A Problem for the Model?

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September 17, 2015

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1 Some Crucial Distinctions

Pure and Applied

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Geometry

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Pure and Applied

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No As are Bs Some Bs are As So: All As are As

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Criteria of Goodness

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- adequacy to the data
- simplicity
- consistency
- power
- avoidance of ad hoc elements

A Formal Model; Components

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- Criteria: $\{c_1, ..., c_n\}$.
- Measuring scale: $[-10, +10] \subseteq \mathbb{Z}$.
- Measure function: μ_c
 - for any theory, T, $\mu_c(T) \in [-10, +10]$.
- Weights: w_c
 - for any criterion, c, $w_c \in [-10, +10]$.

A Formal Model. Definitions

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Rationality index: ρ

•
$$\rho(T) = w_{c_1}\mu_{c_1}(T) + ... + w_{c_n}\mu_{c_n}(T)$$

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A Formal Model. Definitions

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Rationality index: ρ

•
$$\rho(T) = w_{c_1}\mu_{c_1}(T) + ... + w_{c_n}\mu_{c_n}(T)$$

If the theories on the table are T₁, ..., T_k, the rationally preferable one is that with the highest rationality index.

An Example

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From traditional logic to classical logic

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Fallibilism

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Fallibilism

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Data

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Data

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John is in Rome. If John is in Rome he is in Italy. John is in Italy.

John is either in Rome or in Florence. If John is in Rome he is in Italy. If John is in Florence he is in Italy. John is in Italy.

Intuitively Invalid Inferences



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<u>John is either in Rome or in Florence.</u> John is in Rome.

If John is in Rome he is in Italy. John is not in Rome. John is not in Italy.

Another Intuitively Valid Inference



Mary is taller than John. John is taller than Betty. Mary is taller than Betty.

Another Intuitively Valid Inference

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Mary is taller than John. John is taller than Betty. Mary is taller than Betty.

For all people, x, y, and z, if x is taller than y and y is taller than z, then x is taller than z.

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Logic is required to revise logic

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How much logic?

A Problem?

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How much logic?

What can go wrong?

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