

Philosophy 148 — Assignment #3

03/20/08

This assignment is due Thursday, April 3. If you work in a group, list your group members at the top of your submitted work.

Analogy & Carnapian Logical Probability

I. Restricted to the language $\mathcal{L}_Q^{2,2}$ containing two predicates F and G and two constants a and b , prove the following claims concerning “analogical effects” for Carnap’s two logical probability functions \mathfrak{m}^\dagger and \mathfrak{m}^* . It would be useful to write down a stochastic truth-table for both \mathfrak{m}^\dagger and \mathfrak{m}^* over $\mathcal{L}_Q^{2,2}$ as part of your answer.

1. $\Pr^\dagger(Gb | Ga) = \Pr^\dagger(Gb | Fa \& Ga \& Fb)$
2. $\Pr^\dagger(Gb | Ga) = \Pr^\dagger(Gb | Fa \& Ga \& \sim Fb)$
3. $\Pr^\dagger(Gb | Ga) = \mathfrak{m}^\dagger(Gb)$
4. $\Pr^*(Gb | Fa \& Ga \& Fb) > \Pr^*(Gb | Ga)$
5. $\Pr^*(Gb | Ga) > \Pr^*(Gb | Fa \& Ga \& \sim Fb)$
6. $\Pr^*(Gb | Fa \& Ga \& \sim Fb) = \mathfrak{m}^*(Gb)$

II. Explain why Carnap thought facts like #3 above ruled out \mathfrak{m}^\dagger as the logical probability function. And, explain why Carnap thought facts like #6 above ruled out \mathfrak{m}^* as the logical probability function.

III. Consider the language $\mathcal{L}_Q^{2,3}$ containing three predicates F , G , and H and two constants a and b . Write down a stochastic truth-table for \mathfrak{m}^* over $\mathcal{L}_Q^{2,3}$, and prove the following three claims concerning “analogical effects”. [Hint: there are 64 state descriptions and 36 structure descriptions in $\mathcal{L}_Q^{2,3}$.]

7. $\Pr^*(Hb | Ha) > \Pr^*(Hb | Fa \& Ga \& Ha \& Fb \& \sim Gb)$
8. $\Pr^*(Hb | Fa \& Ga \& Ha \& Fb \& \sim Gb) = \Pr^*(Hb | Fa \& Ga \& Ha \& \sim Fb \& \sim Gb)$
9. $\Pr^*(Hb | Fa \& Ga \& Ha \& \sim Fb \& \sim Gb) = \mathfrak{m}^*(Hb)$