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

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