Philosophy 148 — Assignment #5

04/17/08

This assignment is due Thursday, May 1 at 3pm. If you work in a group, list your group members at the top of your submitted work.

1 Some Important Aspects of Hempelian Confirmation

Recall that E *directly-Hempel-confirms* H relative to K, just in case $E \,\&\, K \vDash dev_I(H)$ for the class I of individuals mentioned in E. E *Hempel-confirms* H relative to K iff E directly Hempel confirms (relative to K) every member of a set of sentences S such that $S \,\&\, K \vDash H$. And, recall that $dev_I(H)$ is obtained by (i) looking at all the I-instances of H, (ii) conjoining them if H is a universal claim, (iii) disjoining them if H is an existential claim. When E Hempel-confirms H relative to a tautology $\top$, we say simply that E *Hempel-confirms* H. With that in mind, some exercises:

1. Explain why $E_1 = Raa \,\&\, Rab \,\&\, Rba \,\&\, Rbb$ Hempel-confirms $H = (\forall x)(\forall y)Rxy$, but $E_2 = Raa \,\&\, Rab \,\&\, Rba$, and $E_3 = Raa \,\&\, Rab$ do not. Finally, explain why $E_4 = Raa$ *does* Hempel-confirm H.

2. Consider the hypothesis $H' = (\forall x)(Ex \supset (Ox \equiv Gx))$. This is one way to write the Grue hypothesis. Show that $\mathcal{E} = Ea \,\&\, Oa \,\&\, Ga$ Hempel-confirms H'. And, show $\mathcal{E}' = Ea \,\&\, {\sim}Oa \,\&\, {\sim}Ga$ Hempel-confirms H'. Do $\mathcal{E}$ and $\mathcal{E}'$ Hempel-confirm the Green hypothesis $H = (\forall x)(Ex \supset Gx)$? Now, look at the six other logical combinations of Ea, Oa, and Ga, and determine which of these Hempel-confirm H and/or H'. That is, complete the following truth-table (you only need to explain in detail your answers for the first four rows of this table, where Ea is true):

Ea	Oa	Ga	Hempel-confirms H?	Hempel-confirms H'?
T	T	T	Yes	Yes
T	T	F	?	?
T	F	T	?	?
T	F	F	?	Yes
F	T	T	?	?
F	T	F	?	?
F	F	T	?	?
F	F	F	?	?

3. Can this table, once completed, shed any light on the Grue Paradox (from a Hempelian perspective)? Explain.

4. **Extra Credit** (5% each). Answer one or both of the following (credit won't be given for partial answers).

   - Explain why Hempel-confirmation must satisfy the consistency condition (CC). Recall that the (CC) says: If E confirms H, and E confirms H', then H and H' are logically consistent.

     OR

   - Explain why Hempel-confirmation must satisfy the special consequence condition (SCC). Recall that the (SCC) says: If E confirms H, and $H \vDash H'$, then E confirms H'.

2 Proving the "Standard Bayesian Ravens Theorem"

Let $H = (\forall x)(Rx \supset Bx)$. Recall that the standard Bayesian resolution of the ravens paradox involves showing that the following argument in the probability calculus is valid:

(0) $\Pr(Ra \,\&\, {\sim}Ba) > 0$
(i) $\Pr({\sim}Ba) > \Pr(Ra)$
(ii) $\Pr(Ra \mid H) = \Pr(Ra)$
(iii) $\Pr(Ba \mid H) = \Pr(Ba)$
Therefore, (iv) $\Pr(H \mid Ra \,\&\, Ba) > \Pr(H \mid {\sim}Ra \,\&\, {\sim}Ba)$

1. Prove that (iv) follows from (0)–(iii). You may prove this either axiomatically or algebraically. If you choose to do this axiomatically, you may use any theorems that have been proven in class or in previous homeworks or exams.
   [**Hint**: keep in mind the *logical* relations set-up by the definition of H, *e.g.*, $H \,\&\, Ra \vDash Ba$.]
2. Briefly explain the significance of this theorem. That is, precisely how does this result bear on the ravens paradox?