Assignment Schedule #2

A8: Read RRB chapter 9. Respond to study question #2. Then read Hume in PR 473 - 480. Respond to study questions #1 and 2.

A9: Read Mackie in PR 488 - 495. Respond to study questions #1.

A10: 1. Suppose 1/1000 people in some community have AIDS. A test is 99% accurate in the sense that the chance of a false positive (a person testing positive when they do not have AIDS) is 1/100; and the chance of a false negative (a person testing negative when they do have AIDS) is 1/100. A person tests positive for AIDS. What is the probability that they have it?

\[
\begin{align*}
P(A) &= 1/1000; \\
P(\neg A) &= 999/1000 \\
P(tA | \neg A) &= 1/100 \\
P(tA | A) &= 99/100 \\
P(A | tA) &= ? 
\end{align*}
\]

2. Explain your result. In a sample of 1,000,000 people, how many with AIDS will there be? How many true positives? How many false positives? What fraction of positives actually have AIDS?

A11: 1. Using the setup from A10, suppose each person is subjected to two independent tests. (a) What is \( P(A | t_1 A \& t_2 A) \)? (b) What consequences, if any does this have for Hume’s argument?

2. Suppose the test actually checks for varieties of AIDS, A1, A2... A9. It remains 99% accurate in the sense that if a person has a variety of AIDS Ax, the test is 99% likely to say that they have that variety, and if healthy, it is 99% likely to say that as well. In case of a mistake, errors are spread equally over all the 10 different options. 1/1000 people in the community has A1. (a) The test identifies a person as having A1. What is the probability that they have it? (b) What consequences, if any does this have for Hume’s argument?

A12: Suppose \( .5 >> P(M \mid tM \& K) > P(M \mid K) \). Explain Earman’s argument according to which Hume win’s the battle but loses the war. Do you think he is right? Explain.