The Collins Case - Critical Reasoning - PHI 169

Marcello Di Bello

People v. Collins (1968)

On June 18, 1964, Juanita Brooks returned home from the grocery store. While she was standing outside her building, someone pushed her down to the ground. Shortly thereafter, she discovered that the money in her purse was missing. At the time of the incident, John Bass, who lived on a nearby street, heard a lot of crying and screaming, and he saw a woman run down the alley and enter a yellow convertible, which left promptly. Bass testified that a black male, with mustache and a beard, was at the wheel, and he described the woman as caucasian, with a dark blonde ponytail, wearing dark clothing. The Los Angeles police, while investigating the robbery, came across Janet and Malcom Collins, who matched the description. They were placed under arrested, interrogated, and eventually tried for the robbery of Juanita Brooks. At trial, however, the prosecutor had difficulties in establishing the identity of the perpetrators: the victim had hardly seen Janet or Malcom, and the eyewitness testimony was found wanting because of inconsistencies with other evidence. To bolster his case, the prosecutor introduced statistical evidence. An expert witness testified that, according to his calculations, the frequency of couples in California who would match the description was 1 in 12 million. Since the frequency was so low, the prosecutor argued, the probability that the Collins were guilty was extremely high. The Collins were convicted. Do you agree?

Bayes's Theorem as the 'Hypothesis/Evidence Theorem'

Recall Bayes's theorem, where H stands for 'hypothesis' and E for 'evidence':

$$P(H|E) = \frac{P(E|H)}{P(E)}P(H) = \frac{P(E|H)}{P(E|H)P(H) + P(E|H^c)P(H^c)}P(H).$$

Bayes's theorem allows us to calculate the *conditional* probability of H given E from:
(i) the probability $P(H)$ regardless of E, called the *prior probability*;
(ii) the probability $P(E)$, where $P(E) = P(E|H)P(H) + P(E|H^c)P(H^c)$;
(iii) the *likelihood* $P(E|H)$, i.e. the probability of E given H.
Note the difference between $P(H|E)$ and $P(E|H)$.

Exercise: Estimate the Probability of Guilt

Keeping in mind the events in the Collins cases, let us agree that:
(a) the guilty couple, in fact, fit the description D (blond, ponytail, mustache, etc.);
(b) the Collins matched description D; and
(c) D had a frequency (in 1964) of 1 in 12,000,000, as asserted by the expert at trial.
Apply Bayes's theorem and find out the probability that the Collins were guilty. (*NB*: You will need to plug in the formula of Bayes's theorem some other numbers besides the ones given above).