

PROBABILITY AND THE LAW

MARCELLO DI BELLO – STANFORD UNIVERSITY

READING GUIDE – WEEK #4

The plan for the Jan 31st class is threefold: uniqueness of DNA profiles; the disagreement between NCR and Donnelly about cold-hit cases (this will allow us to talk about Devlin's paper more closely); Nesson's article on whether legal evidentiary standards can be probabilistically quantified.

Nesson. Please read (at least) until page 1199 (or after that, if you've got time). Nesson begins with a discussion of presumptions in criminal cases (pp. 1187–1192). Next, he argues that the criminal standard of proof cannot be probabilistically quantified (pp. 1192–1199). You will recognize a familiar example (i.e. the prisoner case) which we discussed during our first class meeting (by the way, Nesson is the one who came up with the example).

Response paper. For your response paper, you should do TWO things:

FIRST. Apply Bayes' theorem to a DNA evidence case (for instance, a rape or homicide case). You should follow what we did for the Collins case in class. Suppose that the estimated frequency of the DNA profile in question is 1 in 100,000,000 and that the initial population of suspects is 10,000,000 people. What is the probability of guilt of a suspect whose DNA matches with the crime scene traces? What happens if the population of suspects becomes 50,000,000? Please make sure you list the assumptions you have made in your calculations (e.g. that the frequency was correctly calculated; that there was no framing, etc.).

SECOND. Answer one of the following questions:

A. On page 1194, Nesson talks about a "truly puzzling" question that arises from a variation on the prisoner case. What is this truly puzzling question? What is Nesson's response to the puzzle?

B. According to Nesson, what are the objectives of trial proceedings which would be undermined if the criminal standard of proof were to be probabilistically quantified? And what are the objectives which would *not* be undermined by a probabilistic quantification? Why does Nesson think so?