PROBABILITY & THE LAW – MEETING # 1

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Below are three examples of uses of statistics/probability in criminal trials.

1. Drug trafficking – profiling

Charles Shonubi is found with **100 g. of heroin** at JFK airport. He is arrested and tried.

At sentencing, prosecutor argues that Shonubi carried **800 g. of heroin** on the ground that:

(-) **Actuarial evidence**:

$$99 \text{ ouf of } 100 \text{ people who } \textbf{(profile)} \left\{ \begin{array}{l} \text{- travel often between US-Nigeria} \\ \text{- have no explanation for the trips} \\ \text{- stay for a short time in the US} \\ \text{- are poor} \end{array} \right\} \begin{array}{l} \text{carry 100 g.} \\ \text{of heroin} \\ \text{per trip} \end{array}$$

(-) Shonubi **matches the profile** and made **8 trips**.

Thus, it is 0.99 likely that Shonubi carried 800 grams over 8 trips (*we'll learn why later in the course*).

2. A rape case – DNA evidence

DNA evidence establishes:

(-) semen from victim **matches** the defendant's DNA profile;
(-) DNA profile **frequency** is **1 in 100 million**.

Thus, the defendant is the source of the semen with a 0.99 probability (*we'll learn why later in the course*).

3. Prisoners hypothetical

In a prison yard the only guard on duty is brutally killed. A video recording establishes:

(-) **100 prisoners** were in the yard at the time of the killing.
(-) **99 prisoners** deliberately **participated** in the killing.

Thus, a prisoner picked at random participated in the killing with a 0.99 probability (why?).

QUESTION: What can/should we conclude from the statistical/probabilistic evidence in these cases?

Any discussion on the role of statistics and probability in legal proceedings raises more general questions. What is the goal of trial proceedings? Is it the truth? And what does that mean?

4. Dershowitz on the O.J. Simposon case

> The jurors in the Simpson case were not asked to vote on whether they believed "he did it." They were asked whether the prosecutor's evidence proved beyond a reasonable doubt that he did it (p. 38)

> There are different kinds of truth at work in our adversary system. At the most basic level, there is the ultimate truth involved in the particular case: "Did he do it?" Then there is the truth produced by cases over time, which may be in sharp contrast (p. 42) ... Even in an individual case, there are different types—or layers—of truth. The defendant may have done it—ultimate truth!–but the police may have lied in securing the search warrant. (p.43)

> What does it say about our system of justice that so many judges would pretend to believe policemen they know are lying, rather than follow the unpopular law excluding evidence obtained in violation of the Constitution? (p.47)

> Neither the prosecutor nor the judges were searching very hard for the truth of why the detectives went to the Simpson residence. They apparently thought that the disclosure of that truth would make the proving of what they believed was a more important truth—that the defendant was guilty—more difficult. (p. 48)

QUESTIONS: Does statistical evidence promote the ultimate truth? The truth in the long run? Which trial goals does statistical evidence promote? Which goals does it demote?

5. Some quotations from Tribe (1970), Trial by Mathematics, Harvard Law Review

> It would be a terrible mistake to forget that a typical lawsuit, either civil or criminal, is **only in part an objective search for historical truth**. It is also, and no less importantly, **a ritual**.

> One element of that ritual is the jury, an institution calculated **to mediate between the law in the abstract and the human needs**.

> Guided and perhaps **intimidated by the seeming inexorability of numbers**, induced by the persuasive force of formulas and the precision of decimal points to perceive themselves as performing a largely mechanical and automatic role, **few jurors ... could be relied upon to recall, let alone to perform, this humanizing function**.