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Of human institutions, legal systems are some of the most influential and quite often, the least well understood. In addition to economic and cultural motivations, legal systems, particularly formalized and precedent based ones, tend to generate endogenous motivations. That is, motivations that arise not out of some broader societal need, but rather out of the legal system itself. Previous research has focused on characterization of certain aspects of some of these systems, from legal code and citations, to professional influence between judges. Of course, there is also a great deal of legal analysis in the form of legal reviews and court opinions. However, the vast bulk of it is qualitative, rather than quantitative. It is our goal to supplement previous qualitative work by quantifying the behavior of legal systems in order to form a more coherent model of legal decision making.

The Proceedings of the Old Bailey present a rich source of data about the historical evolution of the English legal system. As a record of most cases that were heard in the Old Bailey from 1674 till 1913, the Proceedings provide data about the function of a criminal justice system with a jurisdiction including millions of people. We intend to examine judicial decision-making by employing information theoretic methods to look for signals given by various factors encoded in the Proceedings (e.g. the alleged offense, the victim's gender, and the defendant's gender), and how they change over time. We conceptualize the court as a black box process which maps the information encoded in the transcript to the verdict space of guilty or not guilty. We further consider how the court may be self-observing, meaning how past decisions may change present decision-making. By examining these factors, we hope to reverse engineer the English criminal justice system.