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Comment

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I. J. Good has done a service in highlighting some of Simeon Denis Poisson's (1781–1840) contributions to statistics and probability. While his name is a commonplace to us, the breadth and variety of Poisson's work is neglected in formal courses undertaken by even the most advanced students. It is good to view Poisson as a member of the French school of probabilists who thrived from the late 18th century to the middle of the 19th century. Laplace overwhelms this group but the contributions of Condorcet, Cournot, and Bienaymé, as well as Poisson, among others, must receive attention. This is especially so in model building and estimation in the behavioral sciences. Applying the calculus of probabilities to important societal problems such as jury behavior was not beneath them. All lived in dramatically changing times in France where individual rights had assumed an importance that did not exist before the late 18th century.

Unfortunately, this kind of endeavor was frowned upon in the latter half of the 19th century by European mathematicians and it was not until the middle of this century that we found this activity again receiving the attention it deserves. For some reason or other, R. A. Fisher also refers in a rather negative manner to that earlier era when probabilists concerned themselves with the veracity of witnesses and group decisions. Yet one of Poisson's most important works was his 1837 volume on the *Calculus of Probability Applied to Civil and Criminal Proceedings*—the book in which

what we now call the Poisson distribution first appears; albeit as a mathematical approximation artifice.

Much as we wish that Good would have elaborated more on the themes in his paper, editorial constraints and his own tastes no doubt limited the size of his effort. Let us now look into the Poisson jury model in some detail to catch the flavor of the statistical thinking and the concern with moral and societal values demonstrated by Poisson.

It is important to note that Poisson in developing his model paid heed to the data available in his day. For the period 1825–1830, jury decisions were based on 7 or more out of 12 jurors favoring either conviction or acquittal. Cases based on verdicts of exactly 7 out of 12 went to a higher court which could change the verdict. For each year, the number of trials and number of convictions were registered and listed for crimes against persons and crimes against property. Note here that this distinction in crimes is definitely drawn over 150 years ago. In the period 1831–1833, listings were also available, except the majority required was 8 or more out of 12. In 1832 and 1833, the jury could find extenuating circumstances in a conviction that would then lead to a lighter penalty.

What impressed Poisson was the stability of the conviction ratios over each of the years 1825–1830 and 1832–1833. He felt this was a basis for developing a model that in some parsimonious way could reproduce the data, and if so, lead to the computation of the probabilities of the two kinds of errors important in judging the effects of size and decision-making rules of a jury, namely, the probability of acquitting a guilty defendant, and the probability of convicting an innocent defendant.

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