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Comment

Nozer D. Singpurwalla

In the introduction to this admirably written paper, Professor Good states that his focus is on influences that Poisson's work has had on statistics and probability "interpreted in a broad sense." The author then highlights three topics: (i) the law of large numbers and the distinction between kinds of probability, (ii) the Poisson summation formula, and (iii) the Poisson distribution. In what follows I shall direct my comments to (i), mainly because this topic is of current interest to me. However, before doing this, I would like to give the following additional information pertaining to Poisson's work on statistics and probability, which appears to have escaped Professor Good's mention, but which may be of historical interest to many of the readers of this journal.

According to Sheynin (1981) it is Poisson who introduced the concept of a *random quantity* and a *cumulative distribution function.* Poisson's influence on Chebychev, the originator of the Russian school of probability (whose most prominent representatives are Markov, Voroni, Lyapunov, Steklov, and Kolmogorov), is beyond any question. It is also of interest to note that Poisson qualitatively connected his law of large numbers with the existence of a stable mean interval between molecules (Gillispie, 1963, p. 438). If the above is true then is it possible that it was Poisson who paved the way for Einstein and von Smoluchowski (see Maistrov, 1974, p. 225) to develop in 1905, probabilistic arguments for a theory of Brownian motion? If such be the case then a proper eponymy for Brownian motion could be *Poissonian-Brownian motion.* After all, it was only 1827, 17 years after Poisson (as Editor for *Mathematics of the Bulletin of the Philomatic Society*) was involved in probability theory (see Bru, 1981), that the English botanist Robert Brown observed the phenomenon named after him. Another noteworthy aspect of Poisson's interest in statistics and probability, and one which appears to have escaped Professor Good's notice (also see Good, 1983a, Part V), is his use of the calculus of probability to clarify Hume's notion of *causality* (see p. 163 of Poisson, 1837). Incidentally, Bru (1981) regards the material on page 163 of Poisson (1837) as a "strengthening of the 'philosophical probability' of the theory of chances and its applications to nature." By "philosophical probability" I take it to mean *logical probability* or *credibility*, and if this be so, then Bru's view would lend support to Professor Good's interpretation that Poisson's concept of probability was that of logical probability.

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In Section 2 of the paper under discussion, Professor Good states that "The empirical evidence that gives some support for the existence of logical probabilities, or at least multipersonal probabilities, is that, for many pairs (A, B) the judgments of $P(A \mid B)$ by different people do not differ very much." Recognizing that the existence of logical probabilities is controversial, I would all the same, like to add a supplement to the above statement. With the recent work by DeGroot (1974) on reaching a consensus, and by Lindley et al. (1979) on the reconciliation of probability judgments, it appears to me, by analogy with Good (1983a, p. 197), that *insofar as logical probabilities can be measured, they can be done only in terms of subjective probability.*

Professor Good's remark about quantum mechanics and Einstein's statement that "God does not play dice" prompted me to do some searching about the physicists' view of probability, and what may have prompted Einstein to make the above, now famous, comment. For this I found the book by Pagels (1983) most informative and fascinating to read. My understanding of the material there, particularly that in