The Annals of Statistics
1980, Vol. 8, No. 1, 1–24

L. J. SAVAGE—HIS WORK IN PROBABILITY AND STATISTICS

BY D. V. LINDLEY
University College London

Leonard Jimmie Savage was born in Detroit on November 20, 1917 and died in New Haven on November 1, 1971. He spent almost all his working life in the two fields that we today call (for example, in the titles of our journals) probability and statistics. He made important contributions to both subjects and discussed, more than his published works indicate, applications of them to many other branches of knowledge. He was interested in so many things in life, and saw in them the relevance of statistical and probabilistic ideas, so that he came, as near as it is today possible to become, a polymath, in marked contrast to the behaviour of most of us who are content to become experts in a narrow field. He was too a scholar, a man who respected the depository of knowledge of earlier workers and who carefully credited others with what he generously saw as their achievements. (We shall see a striking instance of this below.) But above all he was a revolutionary, in the sense of Kuhn (1970), a man who replaced the accepted paradigm of inference by another, without, at first, realising what he had done. This paper is an attempt by a statistician to describe Savage's technical achievements.

In writing this appreciation of his work I have benefited enormously from some material provided by David Blackwell and Lester Dubins, portions of which, particularly on the more mathematical aspects of Savage's work, have been incorporated into the text. Others who have helped in providing information include W. A. Ericson, J. W. Pratt, R. A. Olshen and I. R. Savage. Unpublished material by W. H. Kruskal, F. Mosteller, W. Allen Wallis, F. J. Anscombe and Paul Feder has been of great assistance. I apologise to the statistical community for the delay in producing the paper caused by my own sense of inadequacy for the task, a sense which increased as the work progressed, and I appreciated the magnitudes of his contributions to our subject.

He was trained as a mathematician and an early paper (1943) testifies to this. It generalizes "a result from an analytic Finsler space and analytic hypersurface to a F-space of class C''' and hypersurface of class C''''". Here we see a dominant feature of modern mathematics, the effort spent in generalization so that a result becomes available under increasingly wider conditions and the essence of the result is more easily appreciated. He was later to exploit this feature in his study of decision-making under uncertainty, so that the results of the probability calculus were seen to hold very generally. This latter generalization was to have important practical consequences. A later paper (1946b) is in a similar mathematical vein. The conditions under which a metric, or more generally, a distance, space M can be embedded isometrically as a subset of a Euclidean space, is a question that had been studied in the 1930's. For instance, Wilson had shown that if M is suitably

Received October 1978.
AMS 1970 subject classifications. Primary 01A70; secondary 00A15.