- Hill, B. M. (1980b). Robust analysis of the random model and weighted least squares regression. In Evaluation of Econometric Models (J. Kmenta and J. Ramsey, eds.) 197–217. Academic, New York.
- Hill, B. M. (1988). On the validity of the likelihood principle. In Statistical Decision Theory and Related Topics IV (S. S. Gupta and J. O. Berger, eds.) 1 119-132. Springer, Berlin.
- HILL, B. M. (1990). A theory of Bayesian data analysis. In Bayesian Analysis in Econometrics and Statistics: Essays in Honor of George Barnard (S. Geisser, J. Hodges, S. J. Press and A. Zellner, eds.) 383–395. North-Holland, Amsterdam.
- HILL, B. M. and LANE, D. (1985). Conglomerability and countable additivity. Sankhyā Ser. A 47 366-379.
- Kolmogorov, A. N. (1950). Foundations of Probability. Chelsea, New York.
- LINDLEY, D. and SMITH, A. F. M. (1972). Bayes estimates for the linear model. J. Roy. Statist. Soc., Ser. B 34 1-41.
- RAMAKRISHNAN, S. and SUDDERTH, W. (1988). A sequence of coin-toss variables for which the strong law fails. *Amer. Math. Monthly* **95** 939-941.
- RUSSELL, B. (1937). The Principles of Mathematics. Allen and Unwin, London.
- SAVAGE, L. J. (1972). The Foundations of Statistics, 2nd rev. ed. Dover, New York.
- Schervish, M., Seidenfeld, T. and Kadane, J. (1984). The extent of nonconglomerability. Z. Wahrsch. Verw. Gebiete 66 205-226.
- Scozzafava, R. (1984). A survey of some common misunderstandings concerning the role and meaning of finitely additive probabilities in statistical inference. Statistica 44 21-45.
- WHITROW, G. J. (1980). The Natural Philosophy of Time, 2nd ed. Oxford Univ. Press.

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In Section 5 of his thought-provoking paper, Professor Brown discusses Cox's ancillarity example and draws a distinction between point estimation and confidence procedures. He argues for the conditional validity of his proposed point estimation procedures, since in point estimation no conditionally interpretable stochastic claim is made.

It is, however, possible to make a data-dependent stochastic statement concerning a point estimate without going so far as to provide a confidence set. This may be done by estimating the (squared) error  $(\tilde{\alpha} - \alpha)^2$ . The issue has been considered in various point estimation settings recently by Rukhin (1988), Lu and Berger (1989) and Johnstone (1988) (the last hereafter denoted by J). Here I shall indicate briefly how some of these ideas extend to Brown's context.

In the setting and notation of Section 3, let  $L = L(\{V_i\}, \{Y_i\})$  be an estimate of the squared error  $(\delta - \alpha)^2$  of a point estimator  $\delta = \delta(\{V_i\}, \{Y_i\})$ . The quality of L may be evaluated in turn by using (for simplicity) a quadratic loss  $E[L - (\delta - \alpha)^2]^2$ , where the expectation is taken over the joint distribution of  $(V_i, Y_i)$ .

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