DISCUSSION BY PROFESSOR BRUCE M. HILL

(University of Michigan)

I should like to congratulate Berger and Wolpert on their lucid and informative presentation of the history and substance of the likelihood principle, and their extension of the likelihood principle. Although I found their extension interesting, and hope that it may resolve some doubts concerning the status of the likelihood principle in the infinite case, my own view is that the likelihood principle really stands or falls in the finite case. The part of their article that I would like to discuss is that concerning the various examples that have been presented against the likelihood principle, where my views are perhaps different from those of Berger and Wolpert (BW), and in the course of the discussion my approach to the infinite case should become clear. Before doing so I want to preface my remarks with two comments. First, I think that we Bayesians should be grateful to Stein, Stone, Fraser and Monette, for their interesting examples, all of which have some real substance to them. Theories require good criticism in order to grow, and the lack of such criticism has been detrimental to the Bayesian theory. Secondly, I think it is essential that we keep in mind the distinction between the likelihood principle (by which I mean the formal likelihood principle of BW) and various implementations or interpretations of the likelihood principle. I shall try to demonstrate that none of the examples speak against the likelihood principle as such, but rather that they constitute frequentistic arguments against the use of specific improper (or diffuse finitely additive) prior distributions. I shall then explain why I think such arguments have no real teeth to them.