

DISCUSSION: AUXILIARY PARAMETERS AND  
SIMPLE LIKELIHOOD FUNCTIONS  
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We are grateful to our friends Jim Berger and Robert Wolpert for giving us this opportunity to contribute to their valuable and comprehensive study of the likelihood principle. Our prior distribution was highly concentrated on their writing an excellent monograph, and the evidence provided by the data we now have confirms our prior opinion. Their treatment is careful and thoughtful (this means that we agree with them) and leaves little room for further discussion. Nevertheless, haremos todo lo posible; we will try.

Our comments will be restricted to the material in Section 3.5 pertaining to the construction of a likelihood function to be used in statistical problems involving nuisance variables, nuisance parameters, and future observations. We will use the notation  $x$ ,  $y$ ,  $w$ ,  $\xi$ , and  $\eta$  to represent the same quantities as in Section 3.5.2. Here,  $x$  is the observation and all the other quantities are unobserved,  $y$  and  $w$  are regarded as variables,  $\xi$  and  $\eta$  are regarded as parameters, and  $y$  and  $\xi$  are of interest. It will be convenient for us to use the notation  $f(x,y,w|\xi,\eta)$  rather than  $f_{(\xi,\eta)}(x,y,w)$  to denote a conditional density.

The basic purpose of a likelihood function is to serve as a function that relates observed and unobserved quantities, and conveys all the relevant information provided by the observed data about the unobserved quantities. From the Bayesian point of view, which we shall adopt in this discussion,