REPLY TO THE DISCUSSION

We are very grateful to the discussants for their stimulating comments. Besides describing interestingly different perspectives, the comments serve to highlight a number of important issues we inadequately discussed in the text.

REPLY TO PROFESSORS BAYARRI AND DEGROOT

It is indeed a pleasure to thank Professors Bayarri and Degroot for their careful reading of our manuscript and the deep insight reflected in their discussion. In the manuscript we tried to explore the implications of the LP and the issues it raises without endorsing any particular mode of inference (until the final chapter); in particular we tried hard not to let our Bayesian point of view color the basic arguments enough to make them unpersuasive to followers of the frequentist tradition. Thus our emphasis was not on "what is the likelihood function?" Rather, we took the likelihood function as given, and argued that the LP would follow no matter what reasonable definition of the likelihood function is used. The definitions in (3.5.1) and (3.5.2) are both reasonable, and serve different purposes.

But we are Bayesians, and are in essentially complete agreement with the basic issues raised by Bayarri and DeGroot. We agree that there is no clear distinction between "parameters" and "variables", and that definition of the likelihood function is ambiguous. As Bayarri and DeGroot observe, any partition of the parameters and variables into two disjoint sets s_1 and s_2, with s_1 containing the observed quantity x, leads to an acceptable likelihood function $\ell_x(s_2) = f(s_1|s_2)$ (providing this function is accepted as "known"). As long as one also keeps track of all known marginal and conditional information about the variables and parameters, any such partition leads to a likelihood function which contains all evidence from the experiment (at least to a