has approximately $D(a)/a^2 \sim 324$ and where C is a universal constant (≤ 10 for large $D(a)$).

One would then expect that, for a loss function $H^2(t, \theta)$, and for prior measures μ that are sufficiently well spread out, the Bayes estimates β_n would satisfy a similar inequality: $E_\theta H^2(\beta_n, \theta) \leq C'D(a)$. This is indeed the case. However, we could not find measures μ that are sufficiently well spread out except under a severe growth restriction on $D(\tau)$ as $\tau \to 0$. Roughly, the growth restriction is that $D(\tau)$ increases slower than $\tau^{-1/3}$ as $\tau \to 0$. This rules out interesting cases, such as the case where Θ is the set of bounded densities satisfying a Lipschitz condition on the unit square of the plane. The nonparametric sets used by Diaconis and Freedman have dimensions that increase very rapidly as $\tau \to 0$, even if the distances used are much weaker than our H. Most small open sets have positive but essentially negligible probabilities.

To obtain better results, it seems necessary to take into account features of the statistical problem that are not summarized by the distance H. Which features are most important is presently a matter of conjecture. Here, Diaconis and Freedman suggest a direction of study that may be very important: They investigate the derivative of the posterior measure viewed as a function of the prior measure. Now, let $\mu \cdot P$ be the marginal measure $\int P_\theta \mu(d\theta)$, let $\mu \otimes P$ be the joint distribution, and let K_x be the conditional distribution of θ given x. Then, with the present symbolism

$$(\mu \cdot P) \otimes K(\mu, P) = \mu \otimes P.$$

This relation can be differentiated not only in μ but also in P. For instance, retaining only first order terms in ε, one would have

$$(\mu \cdot P) \otimes \{K(\mu, P + \varepsilon\Delta) - K(\mu, P)\} \sim \varepsilon\{\mu \otimes \Delta - \Delta \otimes K(\mu, P)\},$$

a relation analogous to the one given by Diaconis and Freedman. It may be feasible from such relations to find out which features of μ or $\{P_\theta\colon \theta \in \Theta\}$ influence the posterior distributions and the attached risks. However, as far as we know the subject has not yet been studied in sufficient detail.

Perhaps my formerly Bayesian colleagues will tell us in the near future what pairs (μ, P) are "safe" and what pairs are bound to give trouble.

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My own view of statistics is that it is a way of studying some aspects of the real world, namely the uncertainty present in any study, and of expressing my beliefs about the world. The subject is not primarily mathematical but mathematics plays an essential role because it enables me to pursue the logical