function $\phi(i)$ proportional to $1/i(\log i)^2$. The true probability mass function is taken to be θ^* which differs from ϕ for small i and is equal to ϕ for all large i. The posterior has the unfortunate property of concentrating at ϕ rather than in neighborhoods of θ^*. From this inconsistency, we conclude that the Dirichlet prior does not locally match θ^*. Moreover, the Dirichlet prior assigns zero mass to the relative entropy neighborhood $\{\theta: \sum_i \theta^*(i) \log \theta^*(i)/\theta(i) < \varepsilon\}$ for ε sufficiently small.

Freedman and Diaconis have pointed out that ϕ and θ^* have infinite entropy $H(\theta^*) = \sum_i \theta^*(i) \log 1/\theta^*(i)$. One might think that the inconsistency is a result of the infinite entropy; however, even if certain finite entropy mass functions are used in the construction, inconsistency will still result. It is enough that θ^* and ϕ have tails proportional to $1/i^\alpha$ where $1 < \alpha < \frac{4}{3}$. (The verification of inconsistency closely parallels Sections 2 and 3 of Freedman and Diaconis, 1983). In Freedman (1963), finite entropy appears as part of a condition for consistency. We now know that the finite entropy assumption is extraneous. It is the *relative* entropy that matters for Bayes consistency.

In summary we have discussed some inadequacies of the Dirichlet prior as revealed by the analysis of Diaconis and Freedman and we have pointed toward stronger consistency and merging results obtainable for other priors.

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The references to Diaconis, Freedman, and Schwartz are the same as in the paper under discussion.

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The very lucid paper of Diaconis and Freedman is full of stimulating ideas and discussion. The ideas fall roughly into three categories: (i) inconsistency of Bayes rule, (ii) frequentist-Bayesian interrelationships including the "what if" method, and (iii) new Bayesian devices and techniques. My comments will be grouped by these categories, and will be restricted (because of space considerations) solely to a Bayesian view of the situation.