procedure performed on the original data. As with many statistical methods of the past 50 years, this one became widely useful because of an explosion in computing power that allowed simulations to replace mathematical analysis.

5. Alan Gelfand and Adrian Smith (1990). Sampling-based Approaches to Calculating Marginal Densities. Journal of the American Statistical Association.

Another way that fast computing has revolutionized statistics and machine learning is through open-ended Bayesian models. Traditional statistical models are static: fit distribution A to data of type B. But modern statistical modeling has a more Tinkertoy quality that lets you flexibly solve problems as they arise by calling on libraries of distributions and transformations. We just need computational tools to fit these snapped-together models. In their influential paper, Gelfand and Smith did not develop any new tools; they demonstrated how Gibbs sampling could be used to fit a large class of statistical models. In recent decades, the Gibbs sampler has been replaced by Hamiltonian Monte Carlo, particle filtering, variational Bayes, and more elaborate

these methods, which is why there's so much interest in interpretable machine learning.