A conjecture on why Bayes did not send off his Essay

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This year is the 250th anniversary of the posthumous publication of Thomas Bayes' self-contained paper, entitled "An Essay towards Solving a Problem in the Doctrine of Chances," after it was read on 23 December 1763 in a meeting of the Royal Society of London. The main thrust of the paper is what is now called Bayes' Theorem, or Bayes' Formula, which is among the basic theorems about conditional probability and is the foundation of the very popular Bayesian paradigm of inference in the last 30 years or so. Bayes did not send off the manuscript for publication or for circulation among his close friends in his lifetime and died on 17 April 1761. The manuscript found its way into the hands of his friend, Richard Price, who communicated it (probably with Price's editing and modification) to the Royal Society for the aforesaid meeting. It is still a mystery as why Bayes, himself a Fellow of the Royal Society since 1742, withheld the manuscript. There have been interesting conjectures, including those offered by R.A. Fisher in his writings and by S. M. Stigler in the 1983 article in *The American Statistician*, and those earmarked or implied in the quotations or analyses in the books by Andrew I. Dale (1991, 2003), D. R. Bellhouse (2007) and S.B. McGrayne (2011). In this presentation we consider the plausibility of one more to the collection. Namely that Bayes saw the converse of his own theorem, together with the implied two-way nature of the very process in the inference paradigm to be proposed in the paper, and so he wanted to refine it before sending off. As the Converse of Bayes Theorem seems not yet well known, this presentation will demonstrate that the Converse can be totally free from any modern mathematics invented after Bayes' time so that he was squarely in the position to see the Converse with his mathematical capability and his familiarity with the subject.

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