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David Hume's no-miracles argument begets a valid No-Miracles Argument

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ABSTRACT

Hume's essay 'Of Miracles' has been a focus of controversy ever since its publication. The challenge to Christian orthodoxy was only too evident, but the balance-of-probabilities criterion advanced by Hume for determining when testimony justifies belief in miracles has also been a subject of contention among philosophers. The temptation for those familiar with Bayesian methodology to show that Hume's criterion determines a corresponding balance-of-*posterior* probabilities in favour of miracles is understandable, but I will argue that their attempts fail. However, I show that his criterion generates a valid form of the so-called No-Miracles Argument appealed to by modern realist philosophers, whose own presentation of it, despite their possession of the probabilistic machinery Hume himself lacked, is invalid.

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1. Introduction

In his essay 'Of Miracles' forming section X of the *Enquiry* (1748), Hume enunciated this maxim (he called it a 'general maxim worthy of our attention'):

> that no testimony is sufficient to establish a miracle, unless the testimony be of such a kind, that its falsehood would be more miraculous, than the fact, which it endeavors to establish (1748, p.115–116)

This seems to assert a necessary condition: that *only if* the testimony's falsity would be more miraculous than the occurrence of the miracle testified to, can the miracle's occurrence be taken to be established by the testimony. But shortly after this passage Hume makes it clear that he regards the condition as both necessary and sufficient:

> if the falsehood of [an individual's] testimony would be more miraculous, than the event which he relates; then, and not till then, can he pretend to commend my belief or opinion. (X, Part II)

Hume famously – for most contemporary Christians, infamously - exploited his maxim to justify the rejection of all testimony-based claims of miracles, possibly the main pillar of support for faith, since according to him the possibilities for the testimony to be false, because the testifiers were lying, deceived or otherwise mistaken, vastly outweigh the minuscule likelihood he claimed for a miracle[1]: 'we may establish it as a maxim, that no human testimony can have such force as to prove a miracle, and make it a just foundation for any such system of religion' (X, Part II).

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[1] Hume inferred the extreme smallness of P(M) from his definition of a miracle as an event which violates the laws of nature (X, Part 1): as such, according to him, it merits a minuscule probability given the vast and varied experience on which those laws are based. Hume's critics were not slow to point out that even granted his distinctive definition, it does not follow that the prior probability of a miracle must be regarded as minute: the Catholic Church, for example, views it as quite the normal thing for God to intervene in this way given suitably justifying circumstances. And Hume's claim that experience warrants denying a miracle anything but a negligible probability is strongly in tension, to put it mildly, with his celebrated sceptical arguments in the *Enquiry* that to claim that anything is learned by experience involves the claimer in a vicious circularity.

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That triumphant dismissal of testimony-based miracles has since been subjected to a great deal of critical comment. Above all, there is the question of the status of the maxim itself. Is it valid, and if so why? The issue has been hotly debated by philosophers pretty much since Hume's essay was published, and still remains the subject of philosophical controversy.[2] Since the maxim almost begs to be parsed as a claim about relative probabilities, it might seem a simple matter to check its validity by seeing whether or not it follows from the basic rules of probability. But the matter has turned out to be not so simple after all, with scholarly opinion equally divided over the form the parsing should take, and over whether the maxim is actually a valid thesis of probability theory. In Part I of this paper I will argue that the attempts to prove that it is a theorem of probability theory all fail, but that the relation between the two types of probability he points to, the prior probability of a hypothesis and the probability of the evidence on the assumption that the hypothesis is false, plays a crucial role in evaluating the probative power of evidence. In Part II I will show that in neglecting one of those two factors whose importance Hume had highlighted, a highly influential modern argument for scientific realism, as the No-Miracles Argument, is fallacious. I will also show that the inequality that figures in his maxim is the key to a valid and important no-miracles argument.

2. Part I

2.1. Balancing probabilities

Directly following Hume's statement of his maxim, he informs us of the inferential mechanism by which he arrived at it:

> When anyone tells me, that he saw a dead man restored to life, I immediately consider with myself, whether it be more probable, that this person should either deceive or be deceived, or that the fact, which he relates, should really have happened. I weigh the one miracle against the other; and according to the superiority, which I discover, I pronounce my decision, and always reject the greater miracle (X, Part I)

That inferential mechanism is thus a simple decision-rule based on a corresponding balance of probabilities. After considering which probability 'weighs' the greater—of the testimony being false (because the testifier is deceived or deceiving) against the probability, considered independently of the testimony, of the miracle having occurred—one should, according to Hume, reject the alternative with the lesser probability and accept that with the greater. In using this balance of probabilities to reject or accept the miracle's occurrence, Hume seems to have thought it equivalent to balancing the probabilities of the miracle occurring versus it not occurring, possibly reasoning thus: the testimony is false just in case the miracle did not occur; hence weighing the probability that the testimony is false against the probability of the miracle occurring is simply weighing the probability that the miracle did not occur against the probability that it did.

The reasoning may seem plausible but it is fallacious. 'The testimony is false' is not logically equivalent to 'the miracle did not occur': the left-hand side contains information about a testimony being made while the right-hand side does not, and indeed we have seen that for Hume the probability of the testimony being false is sensitive to the likelihood of alternative 'non-miraculous' explanations (e.g. the alleged witnesses were deceiving or being deceived). Hence the probability that the testimony is false cannot simply be equated with the probability of the miracle's non-occurrence, and the chain of inferences 'the probability that the testimony is false is less than (greater than) the independent probability of the miracle' => 'the probability that the miracle did not occur is less than (greater than) the probability that it did' => 'reject (accept) the hypothesis of the miracle's occurrence' is broken at the first link. If the decision to accept or reject the occurrence of a miracle *in the light of testimony* is to reflect a balance of the probabilities of occurrence and non-occurrence in the way Hume seems to have thought, then it is clear (at any rate post-Bayes) that those probabilities have to be *posterior probabilities given that testimony*. But Hume did not have access to the conceptual apparatus required to make that distinction: it was only just being developed by his contemporary, the mathematician and clergyman Thomas Bayes, around the time Hume was writing, in work not published until after Bayes's death in 1763 and of which the scholarly consensus is that Hume knew nothing.[3]

Comfortably post-Bayes we, unlike Hume, are in a position to answer the question he could not: does an inequality between the probability that the testimony is false and the prior probability of the miracle translate into a corresponding inequality between the posterior probability that the miracle occurred, given the testimony, and the posterior probability that it did not? Curiously enough, it was only late in the twentieth century that the question seems to have been addressed and an answer offered – indeed, more than one answer. That given by the Bayesian analysis of Gillies (1991) is a partial affirmative: the probability that the testimony is false is less than the prior probability of the miracle *if* the posterior odds on the miracle exceed the posterior odds against. However if, as Sobel (1987) and Howson (2000) assume, $P(T|M) = 1$, then the 'if' becomes 'if and only if'. Earman's analysis (1998) gives a fully affirmative answer but at the cost, as he himself admits, of turning Hume's maxim into a triviality (1998, p.41).

In part I of this paper I will argue that all these answers are incorrect. In so doing I will make extensive use of Bayes's Theorem in its possibly less familiar odds form (because in that form it leads to a simplified treatment), so that is where we shall start.

2.2. Bayes's theorem

Let 'P(X)', where X is any event/proposition, signify the probability of X, relative to whatever background information is being assumed. Some authors write this as P(X|K), where K refers to that information. Since K occurs uniformly, however, there is no need for its explicit mention and so it will be regarded as implicit in the symbolism.

Bayes's Theorem is the classic Bayesian tool for evaluating the probability of a hypothesis H in the light of evidence E. An elementary consequence of the probability axioms, it assumes a

[2] Though according to Boswell, even Dr Johnson was convinced of its correctness, if not of the conclusion Hume drew from it:

> Talking of Dr. Johnson's unwillingness to believe extraordinary things I ventured to say, 'Sir, you come near Hume's argument against miracles, "That it is more probable witnesses should lie, or be mistaken, than that they should happen." JOHNSON. 'Why, Sir, Hume, taking the proposition simply, is right. But the Christian revelation is not proved by the miracles alone, but as connected with prophecies, and with the doctrines in confirmation of which the miracles were wrought.' (1791, p.194).

[3] Earman claims that even if Hume had known of Bayes's work it is unlikely that he would have understood it (1998, p.25). That might be true for Bayes's derivation of the posterior distribution of a binomial parameter which makes up the major part of his paper, but there is little doubt that Hume could have followed Bayes's derivation of the probability axioms without difficulty, employing as it does only elementary arithmetic (it is essentially a piece of so-called Dutch Book reasoning which anticipates by two and a half centuries de Finetti's).