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HUME'S MAXIM AND ACCEPTING TESTIMONIES OF MIRACLES

The aim of this paper is to examine so-called Hume's Maxim through the lens of attempts at its formalization made by representatives of contemporary analytic philosophy. Hume's Maxim is a culmination point of the famous argument against miracles from the essay "Of Miracles" that constitutes section 10 of David Hume's *Enquiry Concerning Human Understanding*. An analysis of the maxim will allow us to evaluate Hume's argument as it is traditionally interpreted. It will also enable us to indicate the conditions the satisfaction of which favours a positive assessment of given testimony of a miracle (i.e. accepting it as credible). In this way the paper will contribute to a debate within the field of analytic philosophy of religion and epistemology of testimony.

As to the analytic philosophy of religion, the analyses carried out here may provide us with some general principles that would facilitate an assessment of truth claims from particular religious traditions. Applying the results obtained in the course of our discussion in an assessment of historical sources concerning credibility of Christian testimonies of Christ's resurrection seems very promising. After all, it is in this very context, defined also by previous discussions,[1] that Hume himself formulated his argument against miracles. When we consider in turn the epistemology of testimony, it would be interesting to apply the principles formulated here to testimonies of

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[1] From a historical point of view, Hume's argument against miracles appears, on the one hand, in the context of John Locke's epistemological enquiries into the value of knowledge based on testimony, and on the other of religious disputes during the Age of Enlightenment in which Anglican Thomas Sherlock and deist Peter Annet, among others, figured prominently. For more information on this topic, including relevant source material, see EARMAN (2000).

events being the subject matter of numerous conspiracy theories, such as reports of encounters with Yeti, UFO, etc. It is also worth mentioning that the argumentation developed here may prove useful also for the assessment of testimonies of extraordinary events in everyday life.

In the first part of the paper I will give a brief account of the argument against miracles from Hume's essay and explain what is considered to be its traditional interpretation. Next, in the second part I will provide analyses of three attempts at the formalization of Hume's Maxim by Jordan H. Sobel, John Earman and Peter Millican. Taking these as a starting point, I will put forward my own formal interpretation of Hume's Maxim. The results of the analyses will be used in the third part of the paper, where I will give an assessment of the argument against miracles. I will also indicate the conditions that make a testimony of a miracle more credible.

1. HUME'S ARGUMENT AGAINST MIRACLES AND ITS TRADITIONAL INTERPRETATION

1.1 HUME'S ARGUMENT

The argument against miracles[2] appears in the first part of the essay "Of Miracles". It is called an "a priori" argument in the literature of the subject (MILLICAN 2011, 171), because Hume is not concerned with the specific historical examples of testimonies of miracles, but rather presents some general principles for assessing credibility of testimonies.[3]

Hume begins with a claim that in reasoning concerning facts we are guided by experience, and thus such a reasoning can attain different degrees of assurance. "A wise man, therefore, proportions his belief to the evidence. In such conclusions as are founded on an infallible experience, he expects the event with the last degree of assurance, and regards his past experience as a full proof of the future existence of that event. In other cases, he proceeds with more caution: He weighs the opposite experiments: He considers which side is supported by the greater number of experiments: To that side he in-

[2] For Hume a miracle is "a transgression of a law of nature by a particular volition of the Deity, or by the interposition of some invisible agent" (HUME 2007, 127).

[3] Supporting arguments against miracles presented in part 2 of the essay "Of Miracles" are called "a posteriori" arguments (MILLICAN 2011, 171). Their purpose is to show that historical examples of testimonies of miracles do not meet the standards demanded by Hume and that their credibility is low.

clines…; and when at last he fixes his judgment, the evidence exceeds not what we properly call *probability*" (HUME 2007, 80; emphasis in the original). It is in keeping with these principles that human testimonies should be assessed. Our trust in a testimony is based on our past experience, in which "our assurance in any argument of this kind is derived from no other principle than our observation of the veracity of human testimony, and of the usual conformity of facts to the reports of witnesses" (HUME 2007, 81).[4]

Next, Hume analyses the relationship between past experience and miracles. He states that "a miracle is a violation of the laws of nature; and as a firm and unalterable experience has established these laws, the proof against a miracle, from the very nature of the fact, is as entire as any argument from experience can possibly be imagined" (HUME 2007, 83). "There must, therefore, be a uniform experience against every miraculous event.… And as an uniform experience amounts to a proof, there is here a direct and full proof, from the nature of the fact, against the existence of any miracle; nor can such a proof be destroyed, or the miracle rendered credible, but by an opposite proof, which is superior" (HUME 2007, 83).

When a testimony of a miracle occurs, we're dealing with a proof in favour of a miracle's occurrence, opposite to the proof from uniform experience just described. Thus, accepting a testimony of a miracle as credible depends on weighing the arguments for and against (experiences confirming credibility of witnesses and experiences confirming uniformity of the laws of nature). Such weighing must be done by employing a general principle known as *Hume's Maxim*: "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 endeavours to establish: And even in that case there is a mutual destruction of arguments, and the superior only gives us an assurance suitable to that degree of force, which remains, after deducting the inferior" (HUME 2007, 83). Therefore, "if the falsehood of his testimony would be more miraculous, than the event which he relates; then, and not till then, can he pretend to command my belief or opinion" (HUME 2007, 83).

It is apparent that Hume's a priori argument is not an argument aimed directly against the possibility of *existence* of miracles. Hume is not suggesting that the notion of a miracle is self-contradictory nor does he believe that occurrences of miracles would be inconsistent with, for example, the Crea-

[4] "The reason, why we place any credit in witnesses and historians, is not derived from any connexion, which we perceive a priori, between testimony and reality, but because we are accustomed to find a conformity between them" (HUME 2007, 82).

tor's perfection. Hume's argument is rather against the possibility of *identifying* miracles as such. It is an epistemological argument against testimonies of miracles as credible source of knowledge about their occurrence.

1.2 TRADITIONAL INTERPRETATION OF THE ARGUMENT

In this paper I will employ a formalization of Hume's Maxim to assess the argument against miracles in its traditional interpretation. On this interpretation, in part 1 of his essay Hume wants to present an epistemological argument that will make it possible to reject *a priori* any testimonies of miracles as insufficient for establishing a miracle's veracity. Other possible approach is a revised interpretation, according to which Hume *allows a possibility* of a credible testimony of a miracle's occurrence, but *simply sets a very high requirement for the testimony in question* (its falsity needs to be "more miraculous, than the fact, which it endeavours to establish").

The argument will be assessed as interpreted in a traditional way for two main reasons:

(i) the traditional interpretation seems to be better supported;[5]

(ii) the traditional interpretation allows an unequivocal assessment of the argument's validity after Hume's Maxim has been formalised.

As it will turn out in what follows, formalization of Hume's Maxim allows one to determine that Hume's argument in its traditional interpretation is not valid, as it is possible to indicate circumstances under which the maxim is satisfied by a particular testimony of a miracle. In the case of the revised interpretation finding such circumstances is not sufficient for a conclusive assessment of Hume's argument's validity.

2. FORMALIZATION OF HUME'S MAXIM

The tool used for formalization of Hume's Maxim in contemporary analytic philosophy is probability theory, especially Bayes' Theorem and the general assumptions of Bayesian epistemology.[6] In what follows I will dis-

[5] See LARMER (2009), where the traditional interpretation is defended convincingly, for example by pointing out that it was endorsed by commentators contemporary to Hume.

[6] John Earman (2000, 26–27) names three such assumptions, and considers the first two indispensable: (1) epistemological matters are discussed most effectively when one talks about degrees of belief instead of binary believing or not; (2) rational degrees of belief should be governed by the laws of probability theory; (3) the conditionality principle needs to be accepted, whereby newly

cuss three attempts at such a formalization: those by Jordan H. Sobel, John Earman and Peter Millican. These analyses will allow me to propose my own attempt at a formalization of Hume's Maxim.

2.1 SOBEL'S PROPOSAL

The first part of Hume's Maxim ("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 endeavours to establish") is formalized by Sobel as follows:

$$[(P[t(M)] > 0) \,\&\, (P[M/t(M)] > ½)] \supset (P(M) > P[t(M) \,\&\, \sim M])$$

where M stands for the occurrence of a miraculous event, "t(M)" for an appearance of a testimony reporting the occurrence of M, and "P[M/t(M)]" represents the conditional probability of M given that t(M) is the case. Sobel calls this formalization "Hume's theorem" and demonstrates that it is a theorem of probability theory (SOBEL 2003, 331–33).

We will begin with some general remarks concerning all three formalizations discussed here. First, in every one of them the "greater miraculousness" a testimony's falsehood than the "miraculousness" of the fact that the testimony is to establish is understood in a way that the falsehood of the testimony is less probable than the fact to be prove. Such an understanding is necessary for a formalization of Hume's Maxim. Second, in each formalization an assumption is made that the probability that a testimony of miracle will appear is non-zero: $P[t(M)] > 0$. Third, a testimony "is sufficient to establish a miracle" when $P[M/t(M)] > ½$.[7]

As regards Sobel's formalization, notably, it implies that $(P(M) > P[t(M) \,\&\, \sim M])$ does not imply $P[M/t(M)] > ½$. It is so because in Sobel's formali-

acquired data E should influence the probability of a belief A according to the definition of conditional probability $P(A/E) = P(A\&E)/P(E)$, where $P(E) \neq 0$.

[7] William Vanderburgh notes that it this threshold is not high, and therefore, e.g., if $P[M/t(M)] = 0.51$, this is in the range where a good skeptic should suspend judgment, since both the assertion and its denial are nearly equally likely" (VANDERBURGH 2005, 47). Hume could therefore find such a threshold unacceptable. To this objection one could respond like Pascal did that in the case of one's attitude to religion one cannot "suspend judgement", and that if $P[M/t(M)] = 51\%$, then the religion that the miracle in question is to give witness to should rather be practiced than not (of course unless there are some other factors that might undermine the veracity of that religion). Moreover, apologists of miracles usually are striving to have $P[M/t(M)]$ close to 1 rather than to 0.5.

zation (P(M) > P[t(M) & ∼M]) becomes a necessary condition for P[M/t(M)] > ½ and not a sufficient one. It seems, however, that Hume intended that the veracity of a miracle should be sufficiently justifiable by the maxim being satisfied.[8] What's more, Sobel's formalization renders "falsehood of a testimony" as P[t(M) & ∼M], which does not seem accurate, for, as Millican points out, Hume is not concerned with *the probability of an appearance of a testimony*, but with the probability of a miracle, *as long as a testimony appears* (MILLICAN 2003, 4). Testimony's falsehood is therefore more accurately rendered, like Earman does, as P[t(M)/∼M] or as P[∼M/t(M)] (EARMAN 2000, 40–41).

Now, the second part of Hume's Maxim ("and even in that case there is a mutual destruction of arguments, and the superior only gives us an assurance suitable to that degree of force, which remains, after deducting the inferior"), Sobel finds its formalization problematic:

> Hume *seems* to be saying that whenever P[t(M) & ∼M] < P(M), then P(M) = P(M) − P[t(M) & ∼M]. That would mean that whenever P[t(M) & ∼M] < P(M), then P[t(M) & ∼M] = 0, which Hume could not have thought is so. (SOBEL 2003, 319; emphasis in the original)

Sobel comments thus: "I despair of a 'saving' symbolization of Hume's 'second-part' words" (SOBEL 2003, 319). He suggests a different formula instead:

$$P[M/t(M)] = \frac{P[t(M) \,\&\, M])}{P[t(M) \,\&\, M] + P[t(M) \,\&\, \sim M]}$$

Here, he is expressing an intuition that Hume's "deducting the inferior" is not a simple operation of subtraction of probabilities P(M) and P[t(M) & ∼M], but consists in calculating some *proportionality* between P[t(M) & M] and P[t(M) & M] + P[t(M) & ∼M]. We can notice that this proportionality is characteristic of Bayes' theorem, and Sobel's formula itself boils down to

[8] Hume claims: "If the falsehood of his testimony would be more miraculous, than the event which he relates; then, and not till then, can he pretend to command my belief or opinion" (HUME 2007, 83). What's interesting, Sobel himself is aware that in his formalization (P(M) > P[t(M) & ∼M]) becomes a necessary condition for P[M/t(M)] > ½ and consequently introduces another formula, one containing a sufficient condition for P[M/t(M)] > ½. This new formula will turn out to be equivalent to a formalization of Hume's Maxim put forward by Earman, however Sobel does not identify Hume's Maxim with Earman's proposal (SOBEL 2003, 318).

this very theorem.[9] On Sobel's reading the second part of Hume's maxim enables thus a precise calculation of the probability of a miracle occurring given the appearance of a testimony.

2.2 EARMAN'S PROPOSAL

Earman begins with a remark that "Hume describes a situation in which it is known that the witness has testified to the occurrence of a miraculous event. Thus, we should be working with probabilities conditioned on t(M)" (EARMAN 2000, 41). Hence Earman's formalization of the first part of Hume's Maxim is as follows:

$$[(P[t(M)] > 0) \,\&\, (P[M/t(M)] > ½)] \equiv (P[M/t(M)] > P[\sim M/t(M)])^{10}$$

This formalization is devoid of problems Sobel's formalization has. The fact that a testimony's falsehood is "more miraculous" than the fact it testifies to is in this case a sufficient condition for P[M/t(M)] > ½, that is, for the miracle to be credible. He also renders "testimony's falsehood" more accurately as P[~M/t(M)].

The interpretation of the probability (miraculousness) of "the fact, which the testimony endeavours to establish" as P[M/t(M)] seems rather unconvincing, however. Hume's text reveals that the Scottish philosopher wanted to compare the probability (miraculousness) of a testimony of a certain miracle being false with the a priori probability (miraculousness) of the miracle testified to *considered independently of the testimony testifying to it*. Therefore, the miraculousness of the attested fact should not be rendered as P[M/t(M)], like Earman does, but in the way suggested by Sobel, namely as P(M).

Moreover, in the case of Earman's proposition "the first part of Hume's Maxim is just the unhelpful tautology that no testimony is sufficient to establish the credibility of a miracle unless it is sufficient to make the occurrence more probable than not" (EARMAN 2000, 41). He concludes that "those

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[9] Having converted the definition of conditional probability P(A/B) = P(A&B)/P(B) into the form P(A&B) = P(A/B) x P(B), we conclude that P[t(M) & M] = P(M) x P[$t(M)/M$), and P[t(M) & ~M] = P(~M) x P[t(M)/~M]. It follows that the left side of Sobel's formula P[M/t(M)] equals $\frac{\text{P(M) x P}[t(M)/M)}{\text{P(M) x P}[t(M)/M) + \text{ P(}\sim\text{M) x P[t(M)/}\sim\text{M]]}}$. Sobel's formula is therefore equivalent to Bayes' theorem.

[10] For the purpose of unifying mathematical formulas discussed here I adapted Earman's formulas using Sobel's notation. These simplifications have no bearing on the contents of our analyses. All the mathematical formulas that follow are similarly adapted, so that they can be rendered in the notation chosen by Sobel.

commentators who have been impressed by the first half of Hume's Maxim have been impressed not by content but by the nice ring of the language of Hume's formulation" (EARMAN 2000, 42). That's one of the reasons why Earman claims that Hume's argument against miracles is an "abject failure".

As regards the formalization of the second part of Hume's Maxim, Earman runs int the problems Sobel struggled with. If Earman's formalization is applied to the first part of the maxim, the second part "appears to be nonsensical" and involves "an illicit double counting" (EARMAN 2000, 43). It is illicit double counting because Hume wants to subtract the strength of the weaker argument from that of the stronger argument *after* the testimony under consideration has already satisfied the condition described by the first part of his maxim. But, as Earman points out, "the weighing up of the countervailing factors … has already been done, and if the result is that $Pr[M/t(M)] > ½$, then that's the way it is, and no further subtraction is called for" (EARMAN 2000, 43). Earman does not, however, make any attempt at formulating a "saving symbolization" of the other part of the maxim, happy with finding it nonsensical.

Millican's proposal of a formalization of Hume's Maxim seeks to eliminate the problems Earman's version suffers from.

2.3 MILLICAN'S PROPOSAL

In his attempt at a formalization of Hume's Maxim (MILLICAN 2003, 11–20) Peter Millican's focus is on Hume's statement that a testimony is sufficient to establish a miracle *when it is of a certain kind* (namely "*of such a kind*, that its falsehood would be more miraculous, than the fact, which it endeavours to establish"). In Millican's opinion the interpretations put forward by Sobel and Earman are "'token' interpretations"—that is, they attempt to estimate the probability of a miracle by considering a concrete, particular token testimony (concrete particular testimony *taken together with its contents*) and its influence on the probability of a miracle occurring. However, according to Millican, Hume's remark concerning a *kind of a testimony* may lead to a different interpretation of his maxim—"type" interpretation.

According to the "type" interpretation the set of all testimonies may be divided into subsets—"types" of testimonies, and thus every particular testimony would fall under certain "type" of testimony. Each of these types would be distinguished by the character and number of witnesses, the way of delivering the testimony, etc. Significantly, each type would be accompanied

by its inherent probability, one that appertains to it *regardless of the contents* of testimonies that fall under this type. Having all that in mind, Millican formalizes Hume's Maxim in a following way:

$$(P[M/t(M)] > ½) \supset (f < m)$$

where "f" stands for the probability that a testimony of a certain type (kind) is false, and "m" for the probability of a miracle occurring (certain type of event).

Millican formalizes then the other part of Hume's Maxim as: $(f - m)/(f + m)$; the value resulting from calculations made by employing this formula he calls "credibility" and transforms into the value of "probability" by employing formula $P = ½ \times (C + 1)$.[11] The second part of Millican's formalization is rather complicated[12] and is an extrapolation of what is explicitly said in Hume's work (MILLICAN 2003, 16). It has however an advantage of making the other part of Hume's Maxim sensible. When we accept Millican's interpretation, both parts of Hume's Maxim come together to form one coherent whole—the first part of the maxim formulates a condition for testimony's credibility, and the second presents a way that allows us, when the condition $f < m$ is satisfied, to calculate that "credibility" and then to translate it into the value of probability.[13] In this respect, Millican's solution is similar to Sobel's.

It may be useful to observe at the start of our analysis of Millican's formalization that on its grounds $f < m$ becomes a necessary condition for $P[M/t(M)] > ½$, which is similar to what happened in the case of Sobel's formalization. In Millican's case, it's rather odd, because he criticizes some "token" interpretations for not providing a sufficient condition for $P[M/t(M)] > ½$, and presents his own interpretation as distinguished by providing such a condition (MILLICAN 2003, 5–6, 15).

We also need to add that this formalization assumes, of course, that it is possible to distinguish the types of testimonies described by Millican. This assumption, however, seems at least problematic, because the criteria for

[11] P in the formula stands for "probability", and C for "credibility".

[12] This formalization requires, as Millican remarks, developing a "credibility calculus" of a kind based on the principles of probability theory and whose particular values ("credibilities") will correspond to the values from probability theory ("probabilities").

[13] Millican observes that the probability thus obtained will be a close approximation of a result obtained by employing Bayes' theorem, as long as values m and f respectively are small enough (MILLICAN 2003, 20).

distinguishing them are (apart from the criterion of the number of witnesses) qualitative. That leaves the question of whether we should, for example, distinguish one type of testimony of 5 witnesses given in a "fully credible" way, second type of testimony of 5 witnesses given in a "half-credible" way, and a third type of testimony of 5 witnesses given in a "completely incredible" way, or rather more types of testimonies attested by 5 witnesses. Or, perhaps, less? How to determine it in a way that would not be purely arbitrary?

What's more, the succedent of implication ($f < m$), appearing in the formalization at hand, is according to Milican a simplification of the formula $f(1 – m) < m(1 – f)$. The $f(1 – m)$ part represents the possibility "the testimony is false and the miraculous event did not happen", and $m(1 – f)$ represents the possibility of "the testimony is true and the miraculous event did happen". The second one corresponds then to the formula $P[M \& t(M)]$. And yet, as I've already noted while discussing Earman's formalization, the probability of a testimony's falsity should rather be compared to the probability $P(M)$, that is, to the general probability of a miraculous event.[14]

2.4 My proposition

The analysis of three ambitious attempts at a formalization of Hume's maxim just carried out shows that each of them runs into some problems. However, on the basis of the analyses carried out so far we can formulate four directives to follow in attempting such a formalization:

(i) the difficulty with distinguishing the types suggests that it is rather the "token" interpretation that should be preferred;
(ii) satisfaction of Hume's Maxim by a testimony is to be a sufficient condition for the testimony's credibility (i.e., a condition for $P[M/t(M)] > ½$), and thus the main logical connective in a proposed formalization should be equivalence;
(iii) in case of the "token" interpretation the probability of a testimony's falsity is better rendered as $P[\sim M/t(M)]$ (as Earman does) rather than $P[t(M) \& \sim M]$ (as in Sobel's version);

[14] This objection is even more interesting when we notice that Millican himself formulates it in reference to Earman's formalization (Millican 2003, 7).

(iv) the probability of a testimony's falsity is compared by Hume to the a priori probability of a miracle's occurrence, that is to P(M).

The four directives just formulated lead to the conclusion that our final version of Hume's Maxim should look as follows:

$$[(P[t(M)] > 0) \,\&\, (P[M/t(M)] > ½)] \equiv (P(M) > P[\sim M/t(M)]).^{15}$$

However, such a formalization corresponds only to the first part of Hume's Maxim ("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 endeavours to establish"). And yet the second part of the maxim ("and even in that case there is a mutual destruction of arguments, and the superior only gives us an assurance suitable to that degree of force, which remains, after deducting the inferior") needs to be formalized as well. Here one may formulate two helpful directives:

(i*) the second part of Hume's Maxim needs to be formalized in such a way that the proposed formula would accurately represent the "balancing out" of the probability of a miracle with the probability of the testimony's veracity. In this manner we can ensure that "the evidence, resulting from the testimony, admits of a diminution, greater or less, in proportion as the fact is more or less unusual" (HUME 2007, 82).

(ii*) it would be helpful, if we could, when "a mutual destruction of arguments" have already happened, know the precise value of P[M/t(M)], so that we can truly have "an assurance suitable to that degree of force, which remains, after deducting the inferior" (HUME 2007, 83).

It should be seen that both directives are satisfied when the value of P[M/t(M)] is determined within the framework provided by Bayes' theorem.

[15] Something like this interpretation seems to be endorsed by Richard Price, one of Hume's adversaries (EARMAN 2000, 39). Millican criticises this attempt at formalization, arguing that it sets too high requirements for a potential testimony (MILLICAN 2003, 6–7). In response to this objection we should point out that, in fact, it does not concern the proposed formalization as such but rather Hume's Maxim in general. If the analyses carried out are correct, this is what the formalization of Hume's Maxim looks like, and the formal tools applied to it simply allow to make its excessive restrictiveness apparent. In my paper, however, I'm not concerned with the issue of correctness of Hume's Maxim itself, my aim being rather to attempt its most faithful reconstruction.

Then the second part of Hume's Maxim would be expressed by means of the formula

$$P[M/t(M)] = \frac{P(M) \times P[t(M)/M]}{P(M) \times P[t(M)/M] + P(\sim M) \times P[t(M)/\sim M]}$$

In this case the probability of a miracle occurring P(M) would balance out the probability of the veracity of the testimony P[t(M)/M], and the formula itself would allow make it possible to precisely determine the value of P[M/t(M)]. It is then the direction chosen in the attempt at formalizing the second part of the maxim by Jordan H. Sobel.

3. AN ASSESSMENT OF HUME'S ARGUMENTATION. CIRCUMSTANCES THAT FAVOUR A TESTIMONY TO A MIRACLE AS CREDIBLE

Let's begin our assessment of Hume's argumentation by recalling the argument. A particular testimony to a miracle can be accepted as credible when the proof in favour of the miracle's occurrence following from the testimony outweighs the proof against it following from uniform experience. Yet, according to Hume, the proof from a testimony will never outweigh the proof from uniform experience, because (1) the proof from a testimony and the proof from uniform experience are both provided by experience; (2) the proof from uniform experience is the strongest possible proof experience can give us.

Let's apply this to the formalized version of Hume's Maxim. In accordance with it, establishing a miracle's authenticity, i.e. $P[M/t(M)] > ½$, is equivalent to the satisfaction of the condition $P(M) > P[\sim M/t(M)]$. In this context, Hume's argumentation can be understood as showing, that on the basis of the past uniform experience the value of P(M) should be estimated as very small, so small that the value of $P[\sim M/t(M)]$ will never be smaller. The extremely small value of P(M) may either mean that $P(M) = 0$, or that $P(M) > 0$ while taking a positive but very low value (say, $P(M) = 0.1$). Let's consider both.

(1) P(M) = 0

In the first case there is no possibility of P(M) > P[~M/t(M)], as by definition P[~M/t(M)] cannot be smaller than 0.[16] Therefore, if "uniform experience" proves that P(M) = 0, Hume's argument will be valid. *The trouble is uniform experience cannot prove it*. For it to be the case we would have to agree that it is valid to infer from a finite number of past occurrences of events of—which none was a miracle—that the next event *certainly* won't be a miracle, and that the probability of a general law L stating "there is no miracles", when assessed on the basis of our knowledge K obtained from past experience, is 1—that is, P(L/K) = 1 (see EARMAN 1993, 296–97; EARMAN 2000, 31). Yet such an inference leads to absurdity—as John Earman points out, such an attitude would put a stop to scientific research (EARMAN 2000, 30–32), while Jacek Wojtysiak adds that were it the case[17] we wouldn't be allowed to accept testimonies of rare events, couldn't trust our own new experiences, couldn't start exploring any new scientific fields or detect any important changes in nature, and consequently we couldn't start looking for new, deeper laws describing such changes (WOJTYSIAK 2011). What's more, the approach described here is at odds with Hume's critique of inductive reasoning. Such an argument assumes, unjustifiedly, that experience to date was truly uniform, and therefore none of known testimonies of miracles is credible, which could well be a bone of contention.[18] Therefore, we cannot assume that P(M) = 0.

(2) P(M) > 0 and has a positive but very small value

Let us consider now a case where P(M) > 0 and has a positive but very small value, e.g. P(M) = 0.1. Let us assume that a full proof from "uniform experience" demonstrates that the probability of a miraculous event occurring is in fact very low. Yet since it is not equal to 0, *in principle it is possible* that in some situation, e.g. P[~M/t(M)] = 0.01, and thus P(M) > P[~M/t(M)], which would mean Hume's Maxim is satisfied for a given testimony t(M). In this case uniform experience makes the possibility of a miraculous event occurring very low, but it doesn't entirely exclude such a possibility, and

[16] The probability of event A has to satisfy condition $0 \leq P(A) \leq 1$.

[17] Wojtysiak argues against what he calls "external criterion K2" and against the "principle of the majority of experiences", that are roughly equivalent to the inductive reasoning just presented.

[18] A similar objection is raised by George Campbell in his early polemic with the essay "Of Miracles". See CAMPBELL (1762, 184–85).

thus in principle it is possible that there will be a situation when that miracle is attested by a very strong testimony. Therefore if $P(M) > 0$, then even when P(M) is very low one cannot exclude *a priori* a possibility that some testimony of a miracle could appear that would satisfy Hume's Maxim.

In order to illustrate that claim I will present the four circumstances already mentioned that favour Hume's Maxim being satisfied by a certain testimony. The first three make P[~M/t(M)] lower. The fourth one makes P(M) higher. The catalogue of these circumstances is not, of course, closed and further circumstances favouring Hume's Maxim being satisfied by a certain testimony can be looked for.

(i) Independence of witnesses

The importance of the independence of witnesses is shown very convincingly by John L. Mackie in his discussion of Hume's argumentation:

> The agreement of two (or more) independent witnesses constitutes very powerful evidence. Two independent witnesses are more than twice as good as each of them on his own. The reason for this is plain. If just one witness says that p, one explanation of this would be that it was the case that p and that he has observed this, remembered it, and is now making an honest report; but there are many alternative explanations, for example that he observed something else which he mistook for its being that p, or is misremembering what he observed, or is telling a lie. But if two witnesses who can be shown to be quite independent of one another both say that p, while again one explanation is that each of them has observed this and remembered it and is reporting honestly, the alternative explanations are not now so easy. They face the question "How has there come about this agreement in their reports, if it was not the case that p?" (MACKIE 1982, 25)

John Earman (1993, 301–2) provides, in turn, a formalized representation of the import of independent witnesses. Let's take $[t(M)]^n$ to mean that *n* witnesses testified to an occurrence of a miracle M. Let us also assume for simplicity's sake that the witnesses are equally credible, that is, that for each of them P[t(M)/M] = p, and P[t(M)/~M] = q. We will represent the witnesses' independence with the formula $(P([t(M)]^n/M) = p^n)$ & $(P([t(M)]^n/\sim M) = q^n)$. Then, as per Bayes' theorem, we have:

$$P(M/[t(M)]^n) = \frac{1}{1+\left[\frac{P(\sim M)}{P(M)} \times \left(\frac{q}{p}\right)^n\right]}$$

As Earman remarks regarding this formula, when we assume that the witnesses are saying the truth, i.e. that $p > q$, and that $P(M) > 0$, then if $n \to \infty$, $(q/p)^n \to 0$, and consequently $P(M/[t(M)]^n) \to 1$. It means, that *the more witnesses, the closer we are to establishing the miracle as a certain event*. Because of that "no matter how small Pr(M) is as long as it is non-zero, it is possible to choose the number n of independent witnesses such that Pr(M/t(M)) > 5" (EARMAN 1993, 302).

(ii) Additional evidence other than testimonies

It should be stressed that so far we've been making our estimations of a miracle's probability just on the basis of testimonies of people reporting its occurrence. Richard Swinburne (SWINBURNE 1968, 324) observes:

> What Hume seems to suppose is that the only evidence about whether an event E happened is the written or verbal testimony of those who would have been in a position to witness it, had it occurred. And as there will be only a finite number of such pieces of testimony, the evidence about whether or not E happened would be finite.… Nor is testimony the only type of evidence. All the effects of what happened at the time of the alleged occurrence of E are also relevant.

Because of that Swinburne remarks:

> There is no end to the amount of new evidence which can be had. The evidence that the event E occurred can go on mounting up in the way that evidence that L is a law of nature can do. The wise man in these circumstances will surely say that he has good reason to believe that E occurred, but also that L is a true law of nature and so that E was a violation of it. (SWINBURNE 1968, 325)

In this context we could think of, for example, some potential archaeological research that would confirm the credibility of the historical and geographical circumstances of events described in the Gospels, which would certainly increase the probability of narrations they contain, and, consequently, the probability of miracles described therein. Similarly, if some person was miraculously cured of a terminal illness, we can imagine that the illness would still leave some mark—it would then be possible to conduct medical tests and confirm that this person had indeed suffered from that illness. One could say that additional evidence of this kind together with testi-

monies form a "cumulative argument" of sorts in favour of certain miracle's occurrence and makes its probability higher.[19]

(iii) Very low probability of P[t(M)/~M]

We should observe, that the probability of a testimony's falsity P[~M/t(M)] is estimated in accordance with Bayes' theorem in a following way:

$$P[\sim M/t(M)] = \frac{P(\sim M) \times P[t(M)/\sim M]}{P(\sim M) \times P[t(M)/\sim M] + P(M) \times P[t(M)/M]}$$

P[t(M)/~M] is particularly important for calculating P[~M/t(M)]. The former represents the probability of a certain testimony appearing if the event it purports to establish *does not occur*. If P[t(M)/~M] is very low and lower than P(M), for example, P[t(M)/~M] = 0.01, then even if P(M) = 0.1, and consequently P(~M) = 0.9,[20] then, assuming for simplicity's sake that P[t(M)/M] = 1,[21] P [~M/t(M)] = 0.08, which means that P(M) > P[~M/t(M)], and thus Hume's Maxim is satisfied.

An everyday example of a situation where a very low value of P[t(M)/~M] makes a testimony more credible is a press announcement of the results of a lottery. In this case the probability of drawing a particular combination of numbers is usually very low. It does not, however, make us lose trust in the information that a particular combination of numbers was winning. It follows that *the probability of a newspaper or the radio giving this particular combination of numbers if no such a combination was drawn* is astronomically small, even smaller than the probability of a given combination of numbers winning the lottery.[22]

In the case of miracles, particularly those of religious character, the credibility of a testimony being raised in this way seems relatively rare, nonetheless. As Jordan H. Sobel points out, the difference between testimonies of

[19] When we represent this additional evidence as D, according to this argumentation P[M/t(M)] < P[M/t(M)&D].

[20] Because 1–P(M) = P(~M)

[21] This assumption is justified when we claim that an occurrence of an event is almost always accompanied by an appearance of a testimony reporting it. In some contexts (e.g. when news in newspapers or miracles of religious character are concerned) this assumption seems plausible.

[22] The example of employing Bayes' theorem to calculate the credibility of a testimony reporting certain result of a lottery is provided by Sobel (SOBEL 2003, 324–26).

miracles and testimonies reporting the results of a lottery lies in the fact that in the case of reports of miracles P[t(M)/~M] *is not low* (SOBEL 2003, 326–27). Even when the miracle did not in fact occur, a particular religious person may be motivated to experience something he or she takes to be a miracle, or else can be a victim of a fraud, etc.[23]

And yet it seems that in spite of Sobel's total scepticism we could imagine some examples of reports of religious miracles for which P[t(M)/~M] would be very low. Christian apologists argue for example that the appearance of testimonies to Christ's resurrection given by the apostles in case the resurrection did not happen is extremely improbable, because the notion of resurrection, common among the Jews in those times, was restricted to the resurrection at the end of time; and when a messiah believed to be a potential leader of the rebellion against the Roman occupiers died, he fell into oblivion.[24] Regardless of this argumentation's validity, the assessment of which would merit a larger historical study, we can observe, that a very low value of P[t(M)/~M] seems at least worth taking into consideration in case of some religious miracles.

(iv) Increasing the probability of P(M)

The last of ways to raise the chances of a certain testimony of a miracle satisfying Hume's Maxim that we discuss here is to make the probability of P(M) higher. If, for example, both sides of a dispute already assume that God or some other supernatural being capable of interventions into the natural world and, consequently, into the workings of the laws of nature, exists, then the probability of a miracle's occurrence will be higher for such a person than for one not assuming the existence of God (see also CRAIG 2008, 274–76). As John L. Mackie points out (1982, 27):

> In this context supernatural intervention, though prima facie unlikely on any particular occasion, is, generally speaking, on the cards: it is not altogether outside the range of reasonable expectation for these parties. Since they agree that there is an omnipotent deity, or at any rate one or more powerful supernatural beings, they cannot find it absurd to suppose that such a being will occasionally interfere with the course of nature, and this may be one of these occasions.[25]

[23] The same is stressed by Hume in the second of his particular arguments against miracles.

[24] See, e.g., the argumentation in CRAIG (2008, 387–95).

[25] Hence Mackie's opinion that argumentation "from miracles" is more likely to be convincing when it aims at justification of some concrete religious doctrine already *after* God's

4. CONCLUSIONS

The analyses carried out in the paper allow us to conclude that Hume's argument against miracles from part 1 of his essay "Of Miracles", interpreted in a traditional way, should be deemed invalid. Hume's aim was to discredit a priori all testimonies of miracles. He wanted to do that by demonstrating that no testimony of a miracle could satisfy the conditions defined by Hume's Maxim, because the full proof from "uniform experience" speaks against miracles. As we have seen, that full proof is not enough to make the probability of a miracle's occurrence equal to 0. And if we assume that it is greater than 0, then it is possible to imagine for any non-zero value such a testimony of a miracle that would satisfy Hume's Maxim. It should be especially favoured by, among other things, the four factors I have characterised. Testimonies of miracles cannot then be a priori rejected. Any further conclusions (both concerning testimonies of miracles and concerning testimonies of unusual events mentioned at the beginning) require, however, more detailed enquiries that could not have been carried out here due to the paper's character and scope.

Translated by Joanna Frydrych

REFERENCES

CAMPBELL, George. 1762. *A Dissertation on Miracles*. In *Hume's Abject Failure: The Argument Against Miracles*, by John Earman, 176–93. New York: Oxford University Press, 2000.

CRAIG, William Lane. 2008. *Reasonable Faith: Christian Truth and Apologetics*. Wheaton, IL: Crossway.

EARMAN, John. 1993. "Bayes, Hume and Miracles." *Faith and Philosophy* 10 (3): 293–310. https://doi.org/10.5840/faithphil19931039.

EARMAN John. 2000. *Hume's Abject Failure: The Argument Against Miracles*. New York: Oxford University Press.

HUME, David. 2007. *An Enquiry concerning Human Understanding*. Edited with an introduction and notes by Peter Millican. New York: Oxford University Press.

LARMER, Robert A. 2009. "Interpreting Hume on Miracles." *Religious Studies* 45 (3): 325–38. https://doi.org/10.1017/S0034412509009962.

MACKIE, John Leslie. 1982. *The Miracle of Theism. Arguments for and against the Existence of God*. New York: Oxford University Press.

existence have been accepted, than in case the argumentation is supposed to justify God's existence (MACKIE 1982, 27).

McGrew, Timothy. 2019. "Miracles." *The Stanford Encyclopedia of Philosophy* (Spring Edition), ed. Edward N. Zalta. https://plato.stanford.edu/entries/miracles.

Millican, Peter. 2003. "Hume, Miracles, and Probabilities: Meeting Earman's Challenge." Hume Conference. University of Las Vegas (July–August). https://davidhume.org/scholarship/papers/millican/2003%20Hume%20Miracles%20Probabilities.pdf.

Millican, Peter. 2011. "Twenty Questions about Hume's 'Of Miracles'." *Royal Institute of Philosophy Supplement* 68:151–92. https://doi.org/10.1017/S1358246111000105.

Sobel, Jordan Howard. 2003. *Logic and Theism. Arguments for and against Beliefs in God*. Cambridge: Cambridge University Press. https://doi.org/10.1017/CBO9780511497988.

Swinburne, Richard. 1968. "Miracles." *Philosophical Quarterly* 18 (73): 320–28. https://doi.org/10.2307/2217793.

Vanderburgh, William L. 2005. "Of Miracles and Evidential Probability: Hume's 'Abject Failure' Vindicated." *Hume Studies* 31 (1): 37–61. https://doi.org/10.1353/hms.2011.0312.

Wojtysiak, Jacek. 2011. "Davida Hume'a 'O cudach'. Analiza krytyczna." *Przegląd Filozoficzny – Nowa Seria* 20 (4): 221–41. https://pf.uw.edu.pl/images/NUMERY_PDF/080/PF_2011-R20_4_19_Wojtysiak-J_Davida.pdf.

HUME'S MAXIM AND ACCEPTING TESTIMONIES OF MIRACLES

Summary

David Hume's well known argument against miracles has its culmination in the so called Hume's Maxim. According to the maxim "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 endeavours to establish: And even in that case there is a mutual destruction of arguments, and the superior only gives us an assurance suitable to that degree of force, which remains, after deducting the inferior." In this paper I present and give a critical assessment of the attempts at a formalization of Hume's Maxim made by representatives of contemporary analytic philosophy. On this basis I will put forward my own formalization of Hume's Maxim. The formal analyses carried out I employ in an assessment of Hume's argument against miracles as it is traditionally interpreted. I also point out four circumstances that favour credibility of a miracle's testimony. The analysis leads to a conclusion, that the formalization of Hume's Maxim allows us to reject Hume's argument against miracles in its traditional interpretation as invalid and leaves open, under certain conditions, a possibility of accepting a testimony of a miracle.

Keywords: David Hume; argument against miracles; Hume's Maxim; testimony; formalization; miracle

MAKSYMA HUME'A A UZNAWANIE ŚWIADECTW O CUDACH

Streszczenie

Znany argument przeciwko cudom Davida Hume'a znajduje swoją kulminację w tzw. maksymie Hume'a. Zgodnie z ową maksymą, „żadne świadectwo nie wystarcza do wykazania autentyczności cudu, jeżeli nie jest ono tego rodzaju, że jego fałszywość byłaby większym cudem

aniżeli fakt, który ma być na jego podstawie wykazany; a nawet w tym wypadku argumenty wzajemnie się niweczą i silniejszy daje nam pewność odpowiadającą jedynie temu stopniowi siły, który pozostaje po odjęciu siły argumentu słabszego". W niniejszym artykule przedstawiam i krytycznie oceniam próby formalizacji maksymy Hume'a podejmowane we współczesnej filozofii analitycznej. Na tej podstawie proponuję własną formalizację maksymy Hume'a. Przeprowadzone analizy formalne wykorzystuję w ocenie argumentu Hume'a przeciwko cudom, rozumianego według tradycyjnej interpretacji. Wskazuję także cztery okoliczności, których spełnienie sprzyja wiarygodności świadectwa o cudzie. Analiza prowadzi do wniosku, iż sformalizowanie maksymy Hume'a pozwala odrzucić Hume'owski argument przeciwko cudom w jego tradycyjnej interpretacji i otwiera pod pewnymi warunkami możliwość uznania świadectwa o zajściu cudu.

Słowa kluczowe: David Hume; argument przeciwko cudom; maksyma Hume'a; świadectwo; formalizacja; cud