



# MIRACLES AND SCIENCE

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A secular narrative assumes that scientists are not supposed to believe in miracles. However, those who established the foundations for modern science nearly all did. Furthermore, scepticism often stems from the philosopher David Hume's definition of miracles, but his definition is very different from the biblical understanding of miracles. This paper explores these issues and concludes that it is rational for a person to believe in miracles within the biblical understanding of the term, whilst at the same time encouraging critical assessment of miraculous claims that are poorly supported by evidence.

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Scientists are not supposed to believe in miracles. If they did, whatever would happen to the scientific enterprise? This secular mantra is repeated so often that it can be absorbed unthinkingly without considered analysis. Outside of the academic philosophical and theological literature, in which definitional issues have been discussed for centuries, the debate too often assumes that the meaning of 'miracles' is obvious. In reality it is not<sup>1</sup>. To clarify this point we first need to summarise the philosopher David Hume's (1711-1776) ideas about miracles, ideas which have often framed the discussion for the past two centuries, and we will then present a brief critique of Hume's thesis, followed by a description of the distinctly different understanding of miracles that characterises the biblical literature. Finally we will consider the question as to whether miracles still happen today.

## David Hume and Miracles<sup>2</sup>

Hume's influential essay 'Of Miracles' is a mere twenty pages tucked away in his *Enquiry Concerning Human Understanding* (1748)<sup>3</sup>. It is written against a background of Deistic arguments which had been thoroughly aired in the decades before 1748<sup>4</sup>.

Hume's essay is separated into two parts. The first part summarises his *a priori* arguments for the impossibility of miracles, referring to those arguments which, Hume thought, ruled miracles out of court as a matter of principle. Hume's opening gambit is to underline the point that experience 'is our only guide in reasoning concerning matters of fact'. However, experience is not an infallible guide as nature is not always predictable and neither do we know all the possible range of natural causes. Therefore 'A wise man... proportions his belief to the evidence'. The observer should balance the type of evidence which is available to him and establish a kind of certainty-uncertainty scale in which beliefs will vary in their position on the scale depending on the available data. In presenting this argument, Hume also reiterated his notorious critique of cause-effect relationships, maintaining that the connection between causes and effects is not something which is strictly observable, but rather causal connection is something that 'we feel in the mind' as the product of the 'imagination'

<sup>1</sup> Brown, C. *Miracles and the Critical Mind*. Grand Rapids: Eerdmans (1984).

<sup>2</sup> This and the following sections are largely dependent on Alexander, D.R. *Rebuilding the Matrix – Science and Faith in the 21st Century*, Oxford: Lion (2001), chap. 13.

<sup>3</sup> Hume, D. *Enquiries Concerning Human Understanding and Concerning the Principles of Morals*, Selby-Bigge, I.A. (ed.), 3rd edn. with text and notes, Oxford: Oxford University Press (1975).

<sup>4</sup> Burns, R.M. *The Great Debate on Miracles - from Joseph Glanvill to David Hume*, Lewisburg: Bucknell University Press (1981).



## About the Author

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due to the 'constant and regular conjunction' of causes and effects. Fortunately scientists have always cheerfully ignored this particular Humean argument, since cause-effect relationships are precisely what they spend their time investigating.

Nevertheless the fact of our experience of the 'constant and regular conjunction' between events (even though, according to Hume, we cannot actually see causes in themselves but only the succession of events) plays a key role in Hume's argument as to how testimony should be evaluated. All evidence based on testimony is founded on past experience and we will tend to believe that testimony to the degree that it accords with our own previous experience of events, or the extent to which we can make an analogy between the alleged event and our own experience:

**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<sup>5</sup>.**

Things are much more probable when we have observed them to happen frequently in conjunction. Hume therefore goes on to propose 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<sup>6</sup>.**

<sup>5</sup> Hume, D. *op.cit.*, p.113.

<sup>6</sup> Hume, D. *op.cit.* p.114. Wikipedia uses Hume for its definition: 'A miracle can be defined as a violation of natural law by a supernatural being.'

A 'law of nature' for Hume was something in which our own experience had established a regularity of concurrence between events to such a high degree that not a single occasion had ever been observed when this concurrence was lacking, so giving rise to this high level of certainty based on 'firm and unalterable experience'. Given such a high level of certainty, Hume then argues that no level of testimony would in practice be sufficient to persuade him that a miracle could in fact happen, since the probability that the testimony of the event is mistaken will always be so much higher than the probability that a 'law of nature' has been violated.

So Part 1 of Hume's essay aims to establish that in principle no testimony under any circumstances would be sufficient to establish the veracity of any miraculous event. Natural laws are built on uniformity of experience which, for Hume, is what makes something into a 'proof'. Miracles are alleged violations of natural laws. Therefore the 'proof' of natural laws always outweighs the 'proof' of the testimony relating to any particular alleged miracle. The wise person should always choose to believe what has the greater weight of evidence. Therefore miracles can never be believed by a wise person.

Part 2 of Hume's essay is dedicated to *a posteriori* arguments, those that depend on assessment of evidence after it has already been presented. The arguments that Hume collects in Part 2 would have been familiar to anyone of that era who had followed the Deistic debate and there is no hint of novelty in this section of Hume's Essay. Hume presents four arguments:

First, witnesses to alleged miracles are all incompetent, or suffering from delusions, or are not beyond suspicion in some other way, so we cannot really trust them.

Second, people love gossip and so there is an innate human tendency to pass on stories which become exaggerated in the telling.

Third, miracles 'are observed chiefly to abound among ignorant and barbarous nations' and were not often observed amongst educated people, so rendering them intrinsically unlikely.

Fourth, rival religions claim miracles which oppose each other and so they in effect cancel each other out.

Hume then provides a number of historical or contemporary examples of miracles, including the stories, well-known at the time, of the alleged miracles of healing connected with the tomb of the Francois de Paris in France. As Hume freely admits, the evidence for such healings having occurred was really rather strong, so his conclusions on the matter are therefore quite informative:

**Where shall we find such a number of circumstances, agreeing to the corroboration of one fact? And what have we to oppose to such a cloud of witnesses, but the absolute impossibility or miraculous nature of the events, which they relate? And this surely, in the eyes of all reasonable people, will alone be regarded as a sufficient refutation<sup>7</sup>.**

In other words, since miracles cannot happen, even though the witnesses are both vocal and numerous, nevertheless their combined testimony cannot possibly accumulate to provide sufficient weight to believe that miracles have occurred.

### A Critique of Hume's Thesis

Part 1 of Hume's thesis<sup>8</sup> is generally held to be question-begging. For if 'a miracle is a violation of the laws of nature' which have in turn been established by 'unalterable experience' then clearly

there can be, by prior definition, no experience that anyone could have which would change such a conclusion. It is not for nothing that Hume's a priori argument has often been accused of circularity<sup>9</sup>. But in practice scientific endeavour shows no such signs of being a closed book in which we know ahead of time what we may or may not observe.

Hume's idea that a large accumulation of uniform human experience adds up to such a quantitative weight that no counter-evidence can possibly overthrow it, is therefore not a very useful one. If we believed his argument then we would never believe that we had been dealt a perfect bridge hand, since the odds against it are 1,635,013,559,600 to 1 (although this has in fact happened). A single unambiguous and intelligible message from outer space would establish the existence of intelligent life-forms elsewhere in the universe. Furthermore, the mere accumulation of further instances that things generally happen in the same way is no guarantee that they will not happen differently in the future under different circumstances and in a different context. One convincing well-attested counter-example, as Karl Popper pointed out, can bring crashing to the ground a scientific theory built, until that moment, on an impressive edifice of 'uniform human experience'. Hume also failed to distinguish between prior probability, which may be low, and the posterior probability when the evidence is taken into account<sup>10</sup>. Evidence is weighed not added. Evidence for repeatable phenomena is not necessarily greater than for events which have happened only once. This is why the cutting edge of so much contemporary science is characterised by the investigation of pieces of data which do not fit comfortably within currently held paradigms. 'Uniform human experience' is scientifically boring - the exceptions are much more interesting.

Furthermore, Hume was in a particularly weak position to argue that miracles are impossible because they violate the laws of nature, since for Hume laws implied no necessity. A view similar to that of Hume was put forward much later by Ernst Mach who maintained that the 'laws of nature' are nothing more than 'concise abridged descriptions' of reality. 'This is really all that natural laws are', claimed Mach, useful summaries of empirical data which reflect the propensities of the human mind to catalogue phenomena in a tidy manner<sup>11</sup>.

Yet scientists have generally ignored the views of both Hume and Mach, and in the realist tradition have continued to insist that the laws described by science are not mere epiphenomena of tidy human minds, but reflect properties which are intrinsic to the physical properties of matter. Nearly all scientists have therefore, knowingly or unknowingly, aligned themselves with the theologically understood tradition of 'scientific laws' as being rooted in the properties of the world that they investigate. For there is considerable historical evidence, particularly in the writings of René Descartes, Robert Boyle and Isaac Newton, suggesting that the very notion of 'natural laws' is rooted in the understanding of a rational creator God who sustains an intelligible universe with moral laws that, ipso facto, must also be characterised by scientific laws<sup>12</sup>.

<sup>9</sup> The idea that Hume propounds a circular argument is not supported by all commentators. For example, Beckwith suggests that Hume is not arguing for the uniformity of nature, but rather that 'our formulations of natural law, if they are to be considered lawful appraisals of our perceptions, must be based on uniform experience, or they cease to be natural law' (Beckwith, F.J. *David Hume's Argument Against Miracles - a Critical Analysis*, Lanham: University Press of America (1989), p. 28).

<sup>10</sup> Bayes' theorem was not published until 1763 but Hume seems not to have reacted to it. See Holder, R.D. 'Hume on Miracles: Bayesian Interpretation, Multiple Testimony, and the Existence of God', *Brit. J. Phil. Sci.* (1998) 49: 49-65.

<sup>11</sup> Mach, E. *Popular Scientific Lectures*, Chicago: Open Court Publishing (1989).

<sup>12</sup> Jaeger, L. 'The Idea of Law in Science and Religion', *Science and Christian Belief* (2008) 20, 133-146; Harrison, P. 'The Development of the Concept of Laws of Nature' in Watts, F. (ed.), *Creation: Law and Probability*, Aldershot: Ashgate (2008), pp. 13-36.

<sup>7</sup> Hume, D. *op.cit.*, p. 124.

<sup>8</sup> A more technical introduction to the philosophical literature on miracles may be found at: <https://plato.stanford.edu/entries/miracles/>. Also see: Geivett, R.D. & Habermas, G.R. (eds.), *In Defence of Miracles*, Leicester: Apollon (1997). Hume is critiqued here more via the 'hard' interpretation that miracles are impossible because against the laws of nature. A 'soft' interpretation has Hume arguing for the *incredibility* of accepting miracles. Both interpretations are supported by Hume's own statements.

Stephen Hawking is well within this tradition when he points out that 'it would be completely consistent with all we know to say that there was a Being who is responsible for the laws of physics'<sup>13</sup>.

A mainstream contemporary view of scientific laws sees them as descriptive rather than proscriptive. They are not like traffic laws that have to be obeyed, more like our best current description of the very striking consistency of the properties of matter and energy. The theist is not surprised by this consistency, seeing the whole created order as sustained by God, and the reproducibility of the properties of matter as a reflection of God's faithfulness. But equally the theist will not be surprised if God occasionally chooses to act in an unusual way in a particular historical context. This same theist will be hostile to the suggestion that God is profligate in bringing about such unusual events, because it is the general consistency of God in creation which generates the possibility of the scientific enterprise itself and which thereby enables at least one type of miraculous event to be readily identified as such. This is the answer to those who worry that belief in miracles will subvert the scientific enterprise, for nearly all the founders of modern science, such as Descartes, Boyle and Newton, who introduced the idea of 'laws of science', believed in the biblical miracles, just as many scientists do so today<sup>14</sup>. It is precisely the reproducibility of the properties of the universe which provides the backcloth against which an unusual event may be more readily detected.

Unfortunately those who remain in the Humean tradition are more likely to maintain a closed mind when it comes to the question of evidence for claimed miraculous events ('miracles do not occur by definition'). As Hume stated so clearly, 'the absolute impossibility...of the events' was counted as a sufficient refutation for their actual occurrence. In contrast the theist can remain both cautious and sceptical concerning miraculous claims, but still afford to keep an open mind about such matters and examine the evidence on its own merits, not eliminate it by appeals to prior metaphysical presuppositions. There seems to be little doubt that in this instance it is the stance of the theist which best exemplifies the general attitude which one hopes characterises the scientific community as a whole, namely, an openness to the way the world actually is, rather than an attitude which already knows the answer before the investigation has even begun. Burns observes that Humean thought was actually alien to the British empirical tradition, being much closer to continental philosophical scepticism: '... Hume is much more to be regarded as the advocate in England of attitudes and approaches to philosophy which had been rejected by the leading empiricist scientists of the late seventeenth century than as the systematizer of the authentic latent tendencies of the English empiricist tradition'<sup>15</sup>.

With regard to Part 2 of Hume's essay, one can only agree with its general tenor. Alleged contemporary miracles do often seem to be surrounded by an atmosphere of hysteria in which witnesses appear gullible or unduly influenced by the psychological influences of a crowd. There is also no doubt that stories can easily become exaggerated upon being retold, not least via a media machine which knows that the unusual or the quirky sells well in mass markets. The value of a scientific training is that it can instil an innate and healthy scepticism which is not easily fooled by the latest claim to some extraordinary event having occurred. None of this entails that miracles do not happen today, just the need to be cautious.

## The biblical understanding of miracles

The biblical understanding of the miraculous is very different from that of Hume and may be defined as 'a sign of God's special grace in a particular historical-religious context'. This understanding of the miraculous is illustrated by the biblical words and terms which the writers of the Hebrew and Greek texts (in the Old and New Testaments, respectively) have chosen to bring out the various nuances of 'wonders' or the 'miraculous'. Three words in particular are used most frequently. The Greek word *teras* and its Hebrew equivalent *mopheth*, translated as 'wonders', are used to draw attention to events which are so remarkable that they are remembered. The term focuses more on the amazement produced in the witnesses of the event rather than on the specific purpose of the event. The Greek word *dunamis*, from which we derive our word 'dynamite', is translated as 'acts of power' or 'mighty works' and emphasises the biblical conception of miracles as the result of the operation of the power (*dunamis*) of God, who is perceived to be the source of all power. Whereas the word *teras* points to the impact the miracle made on the observer, *dunamis* points to its cause. The third word which is most critical of all in understanding how the Bible views miracles is 'sign': 'ot in Hebrew and *semeion* in Greek (hence 'semiotics'). The plagues described in Exodus chapters 3-10 are each described as an 'ot (sign). 'Sign' is the main word used in John's Gospel when describing the miracles of Jesus. Miracles are only meaningful in a particular context as they point to something beyond the event itself. A *semeion* emphasises the ethical end and purpose of a miracle. The intention of a *semeion* is to reveal aspects of God's character - especially his power and love. As Monden comments: 'Miracles are set apart from natural happenings not by the fact that they demonstrate a manifestation of power, but rather because their unusual nature makes them better fitted to be signs.'<sup>16</sup>

The words *teras*, *dunamis* and *semeion* are not the only words used by the New Testament to refer to the miraculous, but they are the most commonly used, and are frequently mentioned together in the same breath. Remarkably the word *teras* ('wonder') is always combined with one or the other, or both together, emphasising the reluctance of the biblical text to dwell on the merely marvellous character of the miracles. In the Old Testament equivalent Hebrew words are brought together to express the same sets of meanings, so that as Moses looks back to the exodus of the Israelites from Egypt, he reminds his people that 'with your own eyes you saw those great trials, those miraculous signs and great wonders' [Deut. 29:3]. The Apostle Peter on the Day of Pentecost weaves the various threads of the New Testament's understanding of the miraculous together into a single tapestry, proclaiming that 'Jesus of Nazareth was a man accredited by God to you by miracles [*dunamis*], wonders [*teras*] and signs [*semeion*], which God did among you through him, as you yourselves know' [Acts 2:22].

Therefore in the Bible it is the *context* and *purpose* of the miracle which draws most attention - the 'significant historical-religious context' - an understanding in stark contrast to Hume's concept of miracles as isolated anomalies which violate the laws of nature. Miracles are made plausible by their coherence, by the way they fit into an overall picture or narrative. Of course such coherence is not sufficient alone to establish their veracity, but it is certainly necessary.

The Bible makes no attempt to distinguish between miracles that have what we would now call 'natural' explanations and those that do not. This is because in the biblical understanding of creation, God is the ultimate and on-going cause of all that exists, be those events his normal daily working in the biological created order (as in Psalm 104:14-24) or in remarkable events like the crossing of the

<sup>13</sup> Hawking, S. 'Letters to the Editor: Time and the Universe', *American Scientist* (1985) 73, p. 12.

<sup>14</sup> Boyle wrote much on miracles. e.g. see Beck, D.A. *Miracle and the Mechanical Philosophy: The Theology of Robert Boyle in its Historical Context*, Notre Dame: University of Notre Dame (1986).

<sup>15</sup> Burns *op. cit.*, p. 32.

<sup>16</sup> Cited by Brown, C. *op. cit.*, p. 217.

Red Sea<sup>17</sup>. The philosopher Leibniz made this point in his famous correspondence with Newton when he averred that ‘when God does miracles, He does not do it in order to supply the wants of nature, but those of grace’. Occasionally the Bible provides an explanation as to how God has brought about the unusual event. So in the case of the Exodus the text informs us that Moses stretched out his hand over the sea ‘and all that night the Lord drove the sea back with a strong east wind and turned it into dry land’ -with striking consequences<sup>18</sup>. The miracle here is one of timing and clearly parts company with Hume’s comment that ‘nothing is esteemed a miracle, if it ever happen in the common course of nature’. The Israelites were trapped and God provided a way out – ‘God’s special grace in a particular historical-religious context’. Compare this to the first miracle that Jesus performed – the changing of water in to wine at a wedding – symbolising the inauguration of the new covenant [John 2:1-11]. No ‘natural’ explanation is provided for this miracle. Even more is this the case with Christ’s resurrection. Dead bodies do not come alive again – people knew that in the first century as much as in this century, probably more so because of their familiarity with dealing personally with death. Modern science adds nothing to the simple observation that dead bodies remain dead and suffer decay, though of course it well explains the processes going on when this happens.

The bodily resurrection of Christ, which is central to Christian faith, illustrates three key aspects of the biblical understanding of miracles. First, it is the particular religious-historical context which is key. There were many weddings going on in Palestine with wine-drinking in progress at the time of Christ, just as there were no doubt many empty tombs in Jerusalem. It was the historical particularity and religious context that singles out these events as special. There was only one empty tomb, previously sealed with a large stone and guarded by soldiers, that had just been occupied by someone newly crucified due to his claim to be the Son of God [Matthew 27:57- 28:20]. The interpretation of the event as a special sign of God’s grace is made within a particular theological understanding.

Second, belief in any purported historical event depends upon reliable witnesses plus circumstantial data. Historical investigation is like science in its dependence upon evidence, but quite unlike (most) science in its particularity. All historical events are by definition unique: never again will your own birth be repeated. Miraculous claims fall into that category – they are all unique in (at least) the same way that all historical events are unique. The historical evidence for the resurrection is strong<sup>19</sup>, and the early followers of Christians were so convinced that they had encountered the risen Christ that they staked their lives on it. This is remarkable because counter-evidence, such as the production of Christ’s dead body, could easily have refuted their claims [1 Corinthians 15:12-19]. Miracles have evidentialist impact on those who witness them<sup>20</sup>, less so when distant from the purported event(s). But we can certainly identify with the evidence-based open-to-refutation way of thinking of the first century faith community.

<sup>17</sup> Or ‘Sea of Reeds’, *Yam Suph* (Yam = sea or coast; Suph = reeds: how this term began to be translated as ‘Red Sea’ is discussed in Humphreys, C.J. *The Miracles of Exodus*, London: Continuum (2003), pp. 172-187).

<sup>18</sup> Humphreys, C.J. *op. cit.*, pp. 244-260.

<sup>19</sup> e.g. see Habermas in Geivett, R.D. & Habermas, G.R. *op. cit.*, chap.16.

<sup>20</sup> Romans 1:4; Acts 2:22-24.

Third, within the biblical understanding of miracles, they are rendered both plausible and coherent by the understanding that they are actions of God. As Augustine expressed it: ‘No-one, indeed, believes anything unless he previously knows it to be believable.’<sup>21</sup> If God is the creator of all that exists, then it is perfectly rational to believe that God very occasionally does some things differently. As Augustine also commented on miracles: ‘When such a thing happens, it appears to us as an event contrary to nature. But with God it is not so; for him “nature” is what He does [or what He has made].’<sup>22</sup> The resurrection is a singularity – something that lies beyond science, with an interpretation embedded within the overall theological framework of New Testament teaching. It is the context and meaning of the narrative as a whole which renders the miracle plausible.

### Do miracles happen today?

The answer to that question will depend entirely on one’s definition. If there is a creator God who upholds the properties of matter that we investigate as scientists, then it is difficult to see why such a God could not choose to bring about an event or set of events of an unusual nature in a particular context and for a special religious purpose. The unusual nature of the event could be recognised in the same way that we have discussed in the context of the biblical miracles, either as a constellation of remarkable circumstances through which God shows his plan or purposes for a particular individual or community, and/or due to the fact that the event itself does not fit with the normally expected behaviour of the physical world.

Suppose that a woman called Mrs B. has suffered from severe rheumatoid arthritis for a period of many years during which time she has been treated by five different specialists, but without success. The progress of the disease appears to be medically intractable and she is permanently in a wheelchair. The specialists have all kept impeccable medical records. Mrs B. is then prayed for by her church community. Moments later she is healed and walks out of her wheelchair. The next day Mrs B is examined by her five specialists who find to their amazement that the inflammation in her joints has suddenly subsided and that the degradation of her joint cartilage has been reversed. Ten-year follow-up reveals no recurrence. It would be hard to object to this event being described as ‘miraculous’: it is no random event but happens within a particular religious context and it is certainly a special sign of God’s grace. Could it be explained medically? Perhaps - the medical literature is full of remarkable (and often unexplained) reversals of medical conditions. But the ability to provide a ‘natural’ explanation is irrelevant to the biblical understanding of miracles.

Do such miracles happen today? There seems no reason why not, although the theologically rational possibility should provide no excuse for gullibility or wishful thinking. And in any event, Christian faith does not depend on the answer. However, Christian faith does depend on belief in the resurrection of Christ, an event which lies beyond science, but not beyond history.

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<sup>21</sup> Augustine: *De Praedestinatione Sanctorum* 2:5.

<sup>22</sup> Augustine, *Literal Commentary on Genesis*, c. 410, 6.13.24.

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