Richard Price, Rational Intuition and Hume’s Argument Against Miracles

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1. Introduction

The treatment of Richard Price (1723-1791) in 18th century intellectual history is an enigma. So much of what Price contributed still resonates today, providing insights into subjects ranging from social security reform to modern problems in ethics and epistemology. Yet, compared to the voluminous efforts expended on detailing the contributions of contemporaries such as Adam Smith, David Hume or Benjamin Franklin, Price has received scant attention. Having already achieved some prominence as a theologian and moral philosopher, communicating Bayes theorem to the Royal Society in 1763 earned Price election to the Royal Society in 1765. Most of the notoriety Price has received in modern times focuses on his subsequent contributions to insurance and political theory. The bulk of these contributions came after the appearance of Four Dissertations (1768) where, in Dissertation IV, Price applied Bayes theorem to the important theological quandary raised by Hume’s empirical attack on Christian miracles (Hume’s attack). Though this topic still attracts some modern interest, unanswered questions remain. The paper explores a number of these questions.

At least since Deming (1940), it has been recognized that the primary contribution of the ‘Bayes theorem’ that Price communicated to the Royal Society was associated with the use of series solutions to arrive at an expression for the ratio of an incomplete to a complete Beta function as the incomplete sum of the binomial \((q + p)^n\). This mathematical result was later shown by Laplace, but in a different context. It was Laplace that formulated the modern ‘inverse probability’ version of Bayes theorem where prior probabilities are combined with the observed likelihood function to obtain the conditional posterior distribution. In Price’s version of Bayes theorem, the prior
distribution is uniform, the same *a priori* probability is attached to each possible random outcome.\textsuperscript{8} The more difficult problem of combining a non-uniform prior with a particular likelihood is not attempted. It was the uniform prior version of Bayes theorem that Price used to undermine Hume’s attack.

Modern examinations of Hume’s attack that reference Price focus attention on the application of Bayes theorem. This not surprising given that Price was the person responsible for introducing the theorem that has risen to such prominence in recent times. Price makes a number of other arguments in Dissertation IV concerning miracles. The Bayesian argument aims to undermine the empirical probabilities used to define a miracle in Hume’s attack. However, the primary argument uses rational intuition to determine that the virtuous nature of Christian teaching provides reasonable evidence for the truth of Christian miracles. It is this argument that is the essence of Dissertation IV. Being a dissenting minister, Price was not compelled to adhere to Anglican Trinitarian doctrine. As such, Dissertation IV permits Price to be situated relative to earlier Newtonians that were impacted by such restrictions, such as Samuel Clarke.\textsuperscript{9} Instead of recognizing *Four Dissertations* for the relatively small component related to the Bayesian argument, this paper argues that it is more appropriate to view this dissertation as the last of four religious dissertations where the role of ‘rational intuition’ in the dissenting Christian theology of Richard Price is detailed.

\textbf{II. The Bayesian Arguments}

Hume’s attack continues to attract modern interest due to the fascinating probabilistic complications involved in the argument. In the process of developing these complications within a Bayesian framework, the argument in Hume’s attack is altered somewhat to encompass the chief proposition: it is never justified to accept second-hand testimony to a miraculous event. This
proposition is derived from two basic conditions: miracles, such as a dead man coming back to life, are violations of laws of nature; and, the miraculous events proposed as evidence for the Christian revelation are based on historical second hand testimony. While Hume’s attack is structured to encompass all forms of miracles reported by second hand testimony, the dispute with Price centers on Christian miracles. This is significant because, as a dissenting minister, Price was most sympathetic to Arian views on the Christian revelation. This theological position does not require miracles to be violations of nature. As such, much of the debate between Price and Hume is tempered. The non-Bayesian aspects of the debate have attracted limited modern interest and been largely overlooked.

Given the role Price played in communicating Bayes theorem, it is not surprising that attention given to Dissertation IV has emphasized that part associated with Price’s application of Bayes theorem to determine the validity of second hand testimony. Yet, it is conventional in modern studies to situate Hume’s attack within the inverse probability framework introduced later in the 18th century by Laplace and applied to the specific problem of assessing the reliability of testimony by Condorcet. Few sources recognize the specific details of Price’s contribution on the use of prior probabilities. Those sources that do recognize the contribution fail to state that Price was concerned with situating probabilities within intervals rather than obtaining specific point estimates. The impact of increasing sample size on the length of the confidence interval is explicitly discussed. In this there is a hint of the problem that motivated the development of sequential analysis in the 20th century, albeit without any recognition of the restrictions imposed by combining a fixed confidence level and interval length.

Expressing Hume’s attack in Bayesian terms “renders his reasoning perspicuous, and the issue easier to grapple with.” This requires some definitions. Let: $M$ be the event that a miracle
happened and $T[M]$ be the event that testimony to the occurrence of a miracle was given. Letting $\sim$ indicate negation, this produces two ‘prior’ probabilities which are relevant: $P[M]$ and $P[\sim M]$, the probabilities of a miracle occurring and not occurring. $P[T/M]$ and $P[\sim T/M]$, the prior probabilities of testimony to a miracle being given and not being given, are not used directly. Bayesian analysis is about conditional or posterior probabilities, and the most important of these to Hume’s attack is: $P[M \mid T[M]]$, the probability that a miracle occurred, given that there was testimony for a miracle. Using the inverse probability form of Bayes theorem, this conditional probability can be solved as:

$$P[M \mid T[M]] = \frac{P[M] \cdot P[T/M \mid M]}{P[M] \cdot P[T/M \mid M] + P[\sim M] \cdot P[T/M \mid \sim M]}$$

where: $P[T/M \mid M]$ and $P[T/M \mid \sim M]$ are the conditional probabilities for the truthfulness of the testimony, e.g., $P[T/M \mid \sim M]$, the probability of testimony to a miracle given that there was no miracle, would be high when liars are the source of testimony.

To evaluate the $P[M \mid T[M]]$ relevant to Hume’s attack using this formula, it is necessary to assume all relevant prior and conditional probabilities are strictly positive to avoid indeterminate or trivial solutions. Hume’s attack sees a miracle to be a rare occurrence, which is consistent with an assumption that $P[M] = .00001 = 1 - P[\sim M]$. Similarly, regarding second hand testimony: "The many instances of forged miracles ... begat a suspicion against all relations of this kind." Hence, let $P[T/M \mid M] = .5 = P[T/M \mid \sim M]$. In this case, the conditional probabilities in the numerator and denominator cancel leaving $P[M \mid T[M]] = .00001$. Attributing a very high probability weighting of $P[T/M \mid M] = .99$ to the truthfulness of the testimony still only gives a conditional probability: $P[M \mid T[M]] = 9.02\%$. In effect, because a miracle is a virtually impossible event, a violation of the
laws of nature, it is effectively never possible for the reliability of witness testimony to overcome this hurdle. As Hume observes: "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."\(^{18}\)

It is well known that the version of Bayes theorem presented by Price to the Royal Society assumed equality of unknown prior probabilities, a uniform prior distribution. Applied to Hume’s attack this requires \(P[M] = P[\sim M]\) and the prior distributions cancel when solving \(P[M | T[M]]\) leaving the conditional probability to be determined by the truthfulness of the testimony which, for Christian miracles, was attributed mainly to the Apostles. Price observes:\(^{19}\)

Let them shew, that Christ and his Apostles were either enthusiasts or imposters, and account for their conduct and writings on one of those suppositions ... But let them not pretend they are able to prove \textit{a priori}, that no accounts of miracles can be true.

Price made a number of arguments to explain why \(P[M] = P[\sim M]\).\(^{20}\) The Bayesian argument made to support this position, mostly found in a few footnotes in Dissertation IV, follows much the same line as the ‘Appendix’ to \textit{Philosophical Transactions} (1763) written by Price. For example, consider the following demonstration from Dissertation IV that samples of very large size and constancy are required before any validity can be given to a probabilistic statement:\(^{21}\)

If we know no more of an event than that it has happened ten times in eleven trials, and failed once, and we should conclude from hence, that the probability of its happening in a single trial lies between the odds of nine to one and eleven to one, there would be twelve to one \textit{against} being right. − If it has happened a hundred times, and failed ten times, there would be odds of near three to one \textit{against} being right in such a conclusion. − If it happened a thousand times and failed a hundred, there would be an odds \textit{for} being right of a little more than two to one. And supposing the same \textit{ratio} preserved of the number of happenings to the number of failures, and the same guess made, this odds will go on increasing for ever, as the number of trials increases.

The relatively complicated procedure for calculating these specific odds "is proved by mathematical
demonstration" in the Appendix (p.411-2). Unfortunately, this case deals with events that have both succeeded and failed a number of times and, as a consequence, is not directly applicable to miracles which are more ‘unusual’.

The connection between the Bayesian argument made in Dissertation IV and Bayes theorem is apparent in the statement of the main problem being examined in *Philosophical Transactions* (1763):

*Given* the number of times in which an unknown event has happened and failed: *Required* the chance that the probability of its happening in a single trial lies somewhere between any two degrees of probability that can be named.

This speaks only to calculating the degree of probability. The intuition that Price was aiming to illustrate is seen by considering the various worked examples given in the Appendix. To see this, let $x$ denote the probability associated with the next occurrence of an event $S$, where $S_i$ is the occurrence of $S$ on trial $i$, then in modern notation Price initially gives results for:

\[
P \left[ \frac{1}{2} < x < 1 \mid S_1 \right] = \frac{3}{4} \quad P \left[ \frac{1}{2} < x < 1 \mid S_1, S_2 \right] = \frac{7}{8}\]

\[
P \left[ \frac{1}{2} < x < 1 \mid S_1, S_2, S_3 \right] = \frac{15}{16}\]

\[
P \left[ \frac{1}{2} < x < 1 \mid p \text{ successes in succession} \right] = \frac{2^p + 1 - 1}{2^p + 1}\]

While these types of calculations do support the statements made in Dissertation IV given above, the implications for Hume’s attack are obscure. These calculations suggest that the odds that the next event will be $S$ increases with number of individual occurrences of $S$ in a sequence. This is consistent with Hume’s *a priori* probability for a miracle.
The next step in Price’s Bayesian argument is to ‘mathematically demonstrate’ that, even though a particular event has never been seen to occur in ten previous trials, calculating “the probability of its happening in a single trial [that] lies somewhere between any two degrees of probability that can be named” produces an unexpected result:

\[
P\left(\frac{2}{3} < x < \frac{16}{17} \mid 10 \text{ successes, no failures}\right) = 0.5013
\]

Price observes: “The specimen now given is enough to show how very inaccurately we are apt to speak and judge on this subject, previously to calculation.”\(^24\) This may be correct, but it still does not clearly address Hume’s attack. For this purpose, Price falls back on more traditional arguments. Though Hume’s attack was particularly sharp, the empirical or materialist debate on miracles had been carefully started with Spinoza and Locke. Development of the metaphysical and theological properties of miracles provided by Clarke in the dispute with Liebnitz provided sufficient conceptual firepower for Price to counter Hume’s attack without employing a Bayesian argument. As such, Dissertation IV is more accurately viewed as the culmination of the Newtonian theological position on miracles rather than the first successful application of Bayesian analysis to the practical problem of evaluating the credibility of testimony.

While Price may have seen that a Bayesian argument could be used to counter Hume’s attack, and was attracted by the Newtonian possibility of refuting Hume’s attack mathematically, this argument was decidedly underdeveloped. The heavy lifting in Dissertation IV is achieved by Price’s defining a miracle as an unusual event guided by divine intent. Armed with this definition, Price (p.413,419) observes “improbabilities as such do not lessen the capacity of testimony to report truth” and “between impossibilities and improbabilities, however apt we may be to confound them, there is an
infinite difference.” Newspapers, for example, are in the business of reporting testimony concerning unusual events and there is general acceptance of the truth of stories in credible newspapers. Directly addressing Hume’s attack Price observes that improbabilities “have no direct and necessary operation upon [truth of testimony], and should not be considered as a counter-evidence invalidating, in proportion to their degree, its reports.” In terms of a Bayesian calculation, Price is seemingly saying that, because the prior probability for a miracle does not impact the truthfulness of testimony, then there will be equal prior probabilities $P[M] = P[\sim M]$.

III. Price, Miracles and Dissenting Theology

The enigma posed by the treatment of Richard Price in 18th century intellectual history has theological roots. *Four Dissertations* (1768) represented the culmination of a century long evolution of religious Newtonianism. This dissenting Christian theology can be traced to the Arians, an early Christian sect that denied Jesus was co-eternal with God. Both William Whiston and Samuel Clarke felt Arianism was the doctrine of the early Christian church. The prototypical Newtonian position on the divinity of Jesus was Arian, a position differing from that of other ‘free thinking’ religious dissenters, represented in Newton’s time by the Socinians, that denied the divinity of Jesus and emphasized Jesus as a prophet and conveyor of God’s word. Being a prolific Bible scholar, Newton developed an involved dissenting theology based on detailed study of Scripture and early Church history. Though Newton’s important intellectual stature prevented his personal variant of anti-trinitarian dissenting theology from being publicly displayed, the Boyle lectures provided the venue for the development and presentation of Newton’s natural philosophy and, indirectly, his theology. Over the course of a series of lectures and writings, the social philosophy and liberal Anglican theology that became Newtonianism emerged.
Though relatively close in historical time, the religious and social environment of Newton, Whiston (Boyle lecturer 1707) and Clarke (Boyle lecturer 1704-5) differed significantly from that of Price. The collapse of the divine right of kings followed by the Revolution Settlement, with milestones stretching from the Bill of Rights in 1689 to the Act of Settlement in 1701, marked a period of turmoil for the ‘High Church’. The persecution of Anglican beliefs and practices under the Commonwealth was still fresh in the minds of many. The return of the Anglican party to power in the Cavalier Parliament marked the revival of the High Church position in the English political structure. However, the Revolution Settlement eroded the legal and political powers of the Church and marked the political emergence of a landed Whig oligarchy that was populated by ‘freethinkers, materialists, atheists and deists’. After a generation of struggle, there was a need to renew the Anglican theology of the Church of England. This social, political and religious initiative coincided with the dissemination of the natural philosophy contained in the marvelous contributions of Sir Isaac Newton. In this environment there emerged an uneasy alliance between the Anglican church and the collection of intellectuals that composed the Newtonians.

The reign of Queen Anne (1702-1714) was marked by the High Church alarm of “Church in Danger”\textsuperscript{27}. It was during this reign that Newtonian science emerged into the public conscience at the same time the trinitarian doctrine was a required litmus test for Anglican orthodoxy. The Newtonian struggle with the metaphysics of natural philosophy is evident in the Boyle lectures of Clarke and Whiston.\textsuperscript{28} While these lectures were at least superficially consistent with Anglican teaching, both Clarke and Whiston subsequently published a number of works which were clearly of Arian persuasion, with Clarke, \textit{The Scripture Doctrine of the Trinity} (1712), and Whiston, \textit{Primitive Christianity Revived} (5 vols., 1711-1712), being especially significant efforts. This
evolution was based primarily on scriptural interpretation and examination of early Church documents. The inherent metaphysical conflicts between trinitarianism and Newtonian natural philosophy that were raised in early writings were no longer a central concern. Fears of such unorthodox scriptural interpretations by such prominent Newtonians fueled the persecution of Clarke and Whiston. In 1710, Whiston was removed as Lucasian professor at Cambridge, a position he obtained on Newton’s retirement in 1703, and was expelled from the university after a well-publicized hearing. The controversy culminated two years later in Clarke’s humiliating promise to the Upper House of Convocation not to preach or write any further on the topic.

By the appearance of the *Four Dissertations* (1768) the character of religious orthodoxy in England had softened considerably. While Whiston was denied entry into the Royal Society, ostensibly for publishing scriptural interpretations that denied trinitarian doctrine, Price suffered no such sanction, despite publicly detailing his Arian beliefs. Between Newton and Price there was considerable evolution in the overt theology of Newtonians away from Anglican orthodoxy and towards those of religious dissenters. Yet, as Price points out in *Sermons on the Christian Doctrine* (1787), there are common beliefs held by all Christians, whether Socinian, Trinitarian or Arian. Included in these beliefs are: “That Christ was sent of God; that he is the true Messiah; that he worked miracles, and suffered and died and rose again as related in the four Gospels.” To reconcile this belief in miracles with Newton’s mechanical universe governed by the immutable laws of nature, it was necessary to avoid defining a miracle as a violation of the laws of nature. This mistake was made by 17th century Newtonians writing prior to Clarke, such as Robert Boyle and Thomas Sprat, who went so far as claim superior ability to judge whether a miracle had happened due to deeper knowledge of the Newtonian natural philosophy.
In the Boyle lectures, Clarke concludes about miracles: “‘Tis not therefore a right Distinction; to define a *Miracle* to be That which is against the *Course of Nature.*” Writing long before Newton proposed his version of the laws of nature, St. Augustine and Thomas Aquinas both emphasized the ‘unusual’ character of miracles and that approach is adopted by Clarke, both in the Boyle lectures and in the dispute with Leibnitz over miracles. It is apparent from Dissertation IV that Price also did not equate miracles with violations of laws of nature:

> a miracle, according to common opinion, implies a *violation* or *suspension* of the laws of nature. But, in reality, this is by no means necessarily included in the idea of a miracle. A sensible and *extraordinary effect* produced by a *superior power*, no more implies that a law of nature is *violated*, than any *common effect* produced by *human power*.

The argument from prophesy, which is distinct from that of miracles, is confounded with the argument from miracles as in Hume’s attack: “in any instance, a scripture prophesy is fulfilled, an unprejudiced person must be impressed. It affords, not only a demonstration of the credibility of miracles, but, in some degree, an *actual exhibition* of them.” Absent the underdeveloped Bayesian element, the essence of Price’s reply to Hume’s attack follows lines similar to previous Newtonian efforts aimed at countering materialist, empiricist, deist and atheist attacks on miracles dating back at least to Samuel Clarke.

**IV. Miracles and Rational Intuition**

Karl Pearson attributes much of Price’s doctrine on miracles to Samuel Chandler. Though the source of this claim is not provided and the voracity not supported by other biographical sources, the description of Price’s ‘doctrine of miracles’ is accurate: miracles are to be believed if support is given to a messenger of God, such as a prophet, who is a teacher of just and rational views that lead to the practice of virtue and goodness. In Price’s words: “A revelation to instruct and reform a sinful
and degenerate world is so far from implying any absurdity, that it is an effect of divine goodness which might reasonably be hoped for.”36 In a similar statement, Price observes:37

If we reject the miracles mentioned in the New Testament, it will not be possible to give any tolerable account of the establishment of such a religion as the Christian among mankind, by a few persons of no education or learning, in opposition to all the prejudices and powers of the world.

Unlike the Bayesian argument, these are not words submerged in a footnote. Rather, these and other similar statements are contained in the body of the text. As such, despite some Bayesian tendencies to the contrary, Dissertation IV was written more as a contribution to moral philosophy and theology than as an application of Bayesian analysis to Hume’s attack.

The doctrine of miracles proposed by Price depends on accurate identification of ‘virtue and goodness’, a problem that is central to moral philosophy. For Price, the primary source of teaching on “divine goodness” is the New Testament:38

It is not conceivable, that any one can read the New Testament, and observe with what a force and purity, before unknown, it teaches morality and natural religion; the sublime and singular character it has drawn, without the least appearance of art and effort, in the history it gives of the life, discourses and Miracles of Jesus Christ; and the spirit of piety, goodness, love and heavenly mindedness which breathes through all its parts.

The connection between the divine mind and the human mind being revealed through miraculous works is a key element Price shared with other Newtonians. Unlike doctrinaire Christianity, Newtonians maintained the pursuit of knowledge and the exercise of reason was a duty owed to “the Deity”. While free thinkers of this period applauded Newton’s scientific achievements as evidence for the use of reason alone to decide philosophical issues, this approach was actively opposed by the Newtonians. Precisely how this opposition was expressed differs across Newtonian adherents.

Given the miraculous revelation of the New Testament, Price’s rationalist moral philosophy
maintained that being patient and virtuous will be rewarded by the just and benevolent divine Spirit.\textsuperscript{39} Contrary to empiricists such as Hume, moral judgments involve a non-arbitrary intuition about necessary truth. While this moral philosophy created some difficulties with respect to Arian theology, Price was convinced of the need to be open to the rational consideration of alternative moral and theological arguments:\textsuperscript{40} “It would be much better, if christians ... would take care that their own faith is the result of honest enquiry, and at the same time study to demonstrate the excellence of their religion by the excellence of their tempers and lives”.\textsuperscript{41} Being a Newtonian, for Price this honest enquiry included the active study of natural science which is of great assistance in revealing the divine mind.\textsuperscript{42} Price compares the miraculous discoveries in natural science with the “improbability” of a miracle defined as a “sensible and \textit{extraordinary effect} produced by a \textit{superior power}”:\textsuperscript{43}

there is nothing of the improbability in miracles which some have imagined. I may even venture to say, that they have in them a much less degree of improbability, than there was, antecedently to observations and experiments, in such \textit{phenomena as comets}, or such powers as those of \textit{magnetism} and \textit{electricity}.\textsuperscript{44}

The reference to comets extends the scientific enterprise well beyond the scope of the contributions of Newton.

Starting with his first book, \textit{A Review of the Principle Questions and Difficulties of Morals} (1758), Price presents an evolution of moral philosophy that has been described as ‘rational intuitionism’.\textsuperscript{45} This reference is intriguing because of the connection to modern ‘rational intuitionists’, a loosely defined group that, almost certainly, includes the ‘ethical intuitionists’ such as H.A. Prichard and W.D. Ross. Contrary to the utilitarians, ethical intuitionists proposed a different answer to the question: which action is right? While utilitarians would always choose the action that produces the
most good, ethical intuitionists identify “a number of distinct and irreducible basic duties or moral principles, all of which can be relevant in determining whether some action is right.” This debate which took place mostly between the wars, prompted H. Joseph to observe of the ethical intuitionists that “our obligations are not a heap of unrelated obligations.” While the likes of Prichard and Ross were not able to deal with this type of criticism, Price addresses this with the revelation of virtuous and good actions in the New Testament. There is direct connection between moral philosophy and theology that is not available to modern rational intuitionists.

Since the positivist onslaught initiated by Comte in the early 19th century, theological solutions to problems in moral philosophy and epistemology have been generally disregarded, especially by the scientific community. The predictable reaction is to disregard all philosophical solutions that depend inherently on theological foundations, even though there are elements of a particular philosophy that may not depend substantively on theology. It is often too frustrating to disentangle the various threads of the argument to focus on those elements with theological underpinnings that have modern relevance outside religious studies. In this process, some debates on topics of modern relevance have been ignored. The debate between Price, the rational intuitionist, and Frances Hutcheson, the utilitarian, on whether benevolence was the whole of virtue, is one such debate. Translated into modern times, this has relevance to the debate between Ross and Pritchard, on the one side, and the utilitarians, represented by G.E. Moore, on the other. This debate was concerned with the question: is there more than one fundamental moral principle? Utilitarians argue for a single rule: choose that action which produces the most good for the greatest number. Rational intuitionists argue that moral judgment is more complex. Intuition is required to balance the claims of different, and irreducible, moral principles.
Contrasting these two debates is revealing. The central issue is the same: is the utilitarian formula a valid guide for making moral decisions? The statement of the utilitarian rule by Hutcheson is much the same in both debates: “that action is best which produces the greatest happiness for the greatest numbers”. In a theological context, this implies that the providence of God depends only on the happiness of his subjects. In an individual context, it implies that virtue flows only from the consequences of actions. Price did not agree with either of these positions. Though beneficence may be the most important virtue, it does not necessarily take precedence. Some individual actions are undertaken without considerations of immediate beneficial consequences. For Price, such actions have a religious basis. The duty of prayer, the obligation to worship and be faithful to God, the obligation to keep promises and the duty to “think rightly about disputed points of Christianity” are all actions that are not undertaken for immediate beneficial consequences. In contrast, Ross has a list of duties involving fidelity, reparation, gratitude, justice, beneficence, self-improvement and non-maleficence. While Hutcheson takes an empiricist’s approach to the utilitarian rule, Moore recognizes that apprehension of natural properties is insufficient to determine ‘good’ activities and actions, intuition is also required.

Unlike the modern rational intuitionists, Price is able to make sense of the ‘unconnected heap of duties’ by referencing the necessary truths of Christian teaching. In addition, the failings of moral philosophy derived from reason alone have provided a more general recognition of the role of intuition in determining whether an action is good or right. As such, the connection between modern ‘rational intuitionism’ and the ‘rational intuition’ of Price is muted. Price is a rationalist because he maintains that rational and objective moral judgments can be made independently of sensory perceptions; he is an intuitionist because reason alone cannot provide sufficient guidance for moral
The epistemology associated with the moral order implied by the rational intuitionism of Price features prominently in the response to Hume’s attack. The counterattack on the empiricism of Hume is evident:

it is necessary first to consider the nature and foundation of that assurance which experience gives us of the laws of nature. This assurance is nothing but the conviction we have, that future events will be agreeable to what we have hitherto found to be the course of nature, or the expectation airing in us, upon having observed that an event has happened in former experiments, that it will happen again in future experiments. This expectation has been represented as one of the greatest mysteries, and the result of an ingenious and elaborate disquisition about it is, that it cannot be founded on any reason, and consists only in an association of ideas derived from habit, or a disposition in our imagination to pass from the idea of one object to the idea of another which we have found to be its usual attendant.

Intuition is required to determine the laws of nature from observation: “An experiment which has often succeeded, we expect to succeed again, because we perceive intuitively, that such a constancy of event must proceed from something in the constitution of natural causes.” For Price, such arguments extend naturally to assessment of testimony because: “Testimony is truly no more than sense at second-hand”.

Even though the concept is not generally accepted in modern academic discussion, situating the human mind within the divine mind is still a powerful method of resolving the confusion arising from the use of intuition to produce both empirical and moral judgments. Because the divine teaching revealed in the New Testament is intuitively true and good, key problems in epistemology and ethics are transformed into problems in theology. In supporting the Newtonian goal of establishing a rational foundation for Christian religion, throughout his life Price stressed the importance of thinking rightly about the disputed points of Christianity between Trinitarians, Arians and Socinians. Though the essence of this matter can be found in earlier sources, such as the Boyle lectures by Clarke, there were significant institutional restrictions on the ability to make such
theological arguments clearly and forcefully early in the 18th century. A similar comment applies to Hume’s attack. Miracles are an essential motivation for Christian teaching and Price was not restricted from launching a formidable response. Due to the modern significance of Bayesian analysis, Price’s response to Hume’s attack is still remembered for one of its varied and interesting insights.

NOTES

1. In what follows, the convention is adopted to drop the apostrophe and refer to ‘Bayes theorem’ which was published as T. Bayes, “An Essay towards solving a Problem in the Doctrine of Chances. By the late Rev. Mr. Bayes, FRS communicated by Mr. Price, in a letter to John Canton, AM, FRS”, Philosophical Transactions (1763) 53: 370-418.

2. This concurs with David Owen, “Hume versus Price on Miracles and Prior Probabilities: Testimony and the Bayesian Calculation”, Philosophical Quarterly 37 (1987): 187-202, especially p.196: “My main purpose has been to show that Hume’s argument has a larger significance than is generally realized, that Price saw this and has been unjustly neglected, and that their debate is extremely similar to an important modern issue.” Similarly, J. Earman, Hume’s Abject Failure, (Oxford, UK: Oxford University Press, 2000), p.24: “The name of Richard Price is largely unknown to modern readers.”


have generally neglected the clues to Hume’s intentions offered by these changes.”


8. Writing after Laplace, in *Laws of Thought* (1854) Boole refers to this case as “equal distribution of ignorance” and is able to demonstrate inherent difficulties with this assumption for solving general inverse probability problems.


10. This follows P. Harrison, “Prophecy, Early Modern Apologetics, and Hume’s Argument against Miracles”, *Journal of the History of Ideas*, 60 (1999): 241-256, especially p.241-2. The statement of Hume’s attack can be made stronger by observing that the evidence for second hand testimony
of Christian miracles was written by individuals other than the actual witnesses to the miracles. This complication to Hume’s attack was not addressed by Price or Hume, though Bible scholars such as Newton or Price would have known this.


18. Ibid., pt.1.


20. The closest Price comes to directly identifying the condition $P[M] = P[\sim M]$ is the following: “the improbability of event here mentioned, must mean the improbability which we should have seen
there was of its happening independently of any evidence for it, or, previously to the evidence of testimony informing us that is *has* happened”; Price, *Dissertations* (1768)(op. cit.), p.405.

21. Ibid., p.397.

22. Ibid., p.395.


24. Ibid., p.397.

25. Ibid., p.413, 419.

26. See B. Dobbs and M. Jacob, *Newton and the culture of Newtonianism*, (Atlantic Highlands, N.J, 1995); M. Jacob, *The Newtonians and the English Revolution*, 1689-1720 (Ithaca, 1976); and, M. Jacob, “Newtonianism”, (1977)(op. cit), p. 1-25. These lectures were created in 1691 by an endowment in the will of Robert Boyle and were given continuously from 1692-1714, with occasional breaks until 1732. The lectures were given sporadically during the 19th century and were revived in 2004.


28. Ibid.

29. The most accessible source for these views is R. Price, *Sermons on the Christian Doctrine as received by the different Denominations of Christians*, (London, 1787). This book is a collection of sermons, many of which were delivered well prior to 1787.

30. Following Pfizenmaier (1997, op.cit.), there is some disagreement over whether Newton was an Arian and even some support for the position that, in later life, Newton came to support trinitarian doctrine. Whatever the case, there is no disagreement that Newton was a dissenting theologian with an individually determined religious perspective.


34. Ibid., p.381. On the distinction between miracles and prophesies see P. Harrison, “Prophesies”, (1999)(op.cit.).


37. Ibid., p.439.

38. Ibid., p.459-60.


40. On the conflict between rationalism and Arian theology see Ibid., p.38-40.


43. The process of the Deity producing these effects is detailed in Dissertation I.

44. Ibid., p.437.

45. See, for example, Thomas, Honest Mind (1977)(op.cit), p.vii


54. Ibid., p.391.

55. Ibid., p.416.