Review article for The Baha'i Studies Review[1]

Publications dealing with 'Science and Religion'

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July 1996 (revised January 1997)

Books reviewed

Mirza Abu'l-Fadl (1981) 'Miracles and Metaphors', Kalimat Press.
B Hoff Conow (1990) 'The Baha'i Teachings: A Resurgent Model of the Universe', George Ronald.
John S Hatcher and William S Hatcher (1996) 'The Law of Love Enshrined', George Ronald.
William S Hatcher (1977) 'The Science of Religion', ABS Baha'i Studies vol 2.
William S Hatcher (1990) 'Logic and Logos', George Ronald.
Craig Loehle (1994) 'On the Shoulders of Giants', George Ronald.
Julio Savi (1989) 'The Eternal Quest for God', George Ronald.

Critique methodology

When undertaking this review, we (John Danesh, Roger Kingdon)[2] were aware of the dangers of dealing with each publication separately: firstly, the resulting review would most likely appear as nothing more than a glorified catalogue, failing to correlate or compare arguments or to interest the reader; secondly, in lieu of being able to find anything positive to say about this or that publication, and yet being stuck with an approach which demanded that something - anything - be said, we would by necessity fall into a vicious circle of searching out and commenting upon every flaw and inadequacy, which would be to the benefit of no-one. Consequently, we chose to follow a thematic approach, identifying subjects of interest (to us, at least) and searching our review material for comments, arguments or fresh ideas on these subjects. We chose to consider the following six themes: God; Evolution; Creation; Human nature; The purpose of science; The method of science. Between them, these themes cover the main aspects of religious and scientific enquiry:

God: The existence, and nature of, the transcendent (theology)
Evolution: How things are transformed one to the other (the process of 'becoming')
Creation: The true nature of things (ontology, or the study of 'being')
Human nature: The study of the human condition (anthropology)
The purpose of science: The purposive direction of our knowledge (ethics, teleology)
The method of science: The process of knowledge acquisition (epistemology)

[1] Submitted but never published. (Note added 18 March 2014)
[2] Although this review was written entirely by me, Roger Kingdon, the original intention was that it was to be written jointly with John Danesh, to whom this draft was submitted for augmentation/improvement. The joint paper never materialised, however. (Note added 18 March 2014)

While I (RK) was making a first pass through my share of the review material, it became clear to me that I was judging what I was reading by standards which are, firstly, likely to be alien to most non-scientists (and, indeed, to those scientists who do not think about the nature and methods of their occupation), and secondly, easy to express and explain. Rarely do reviewers care to publicise their 'agenda', preferring to give the impression that their opinions are objective truth; but this would be a false impression, because even if by some chance a particular reviewer gave forth objective truth all the time, that truth could not be verified as such because our own understanding is relative. Accordingly, I take the view that it is disingenuous and unfair to withhold my own opinions on the subject of 'Science and Religion', which are as follows.

(1) 'It is clear that the prophets and Manifestations of the Cause of God were sent to guide the nations, to improve their characters, and to bring the people nearer to their Source and ultimate Goal. They were not sent as historians, astronomers, philosophers, or natural scientists.' (Abu'l-Fadl p9). However, this has not prevented the Manifestations of God from making their own contributions, typically adopting whichever mode of discourse happens to be conventional: 'The Baha'i Manifestation of God, Baha'u'llah, wrote in Arabic and Persian, and his immediate audience consisted for the most part of nineteenth-century Middle Eastern Muslims. The theological and philosophical ideas familiar to His audience owed a great deal, not only to the Judeo-Christian and Islamic religious traditions, but also to the Greek and Hellenistic philosophical heritage. For this reason, much of the psychology and the cosmogony of the Baha'i writings is framed in broadly Aristotelian terms.' Thus Juan Cole ('The Concept of the Manifestation in the Baha'i Writings', Baha'i Studies ix pp2-3), quoted in a footnote by Savi (p25), who adds (p26): 'The same concept can be applied also to the Writings and the recorded talks of Abdu'l-Baha, which were addressed not only to Eastern, but also to Western audiences.' My conclusion from these findings is, where Manifestations of God have set out arguments on historical, astronomical, philosophical or scientific grounds, this is intended merely to persuade their audience of the truth of their mission or to illustrate certain spiritual truths, and should not be interpreted as new contributions to the material subjects; even less, as infallible contributions. In this light, I find that (for example) 'Some Answered Questions' says more about the attitudes of Abdu'l-Baha's questioner than about evolution; such an approach may cause disquiet amongst literalists, but I find it liberating.

(2) It follows from the above approach that it is possible to establish a 'strong demarcation' between religion and, in particular, science. For example: 'On the one hand, there is the enterprise of relating to reality by constructing mental models of it... This way of relating to reality has been systematised and generalised and constitutes what is now called 'science'. On the other hand, our recognition that we ourselves have sprung from the unknown and unobservable, and will return to it at the moment of our death, inspires in us an appropriate sense of our limitations - of being encompassed by a reality greater than ourselves... The systematisation and generalisation of this quest for transcendence is what we call 'religion'.' Hatcher (1990, vii). And while Hatcher, for his own reasons, might not agree, I would draw out the blunt conclusion: Science deals with the material, religion with the spiritual, and never the twain shall meet; at least, no more than the extent to which a scientist can establish a new measure of morality, or a Manifestation of God establish a new law of science. Again, I find this demarcation to be reassuring and empowering, rather than constituting a threat to either science or religion.

(3) In identifying 'science' with 'the material' and 'religion' with 'the spiritual', I am referring to the contents of each, rather than their methods. And yet, in order to explain the apparently unreasonable level of (technical) success of science in the modern age, it is natural

to point to the underlying methodology, and equally natural to identify that methodology closely and exclusively with science by calling it the 'scientific method'. This need not necessarily be the case, however, and I find myself agreeing with the unanimous view of the reviewed works, that there is nothing in scientific method which enforces the prevailing exclusivity and prevents it from being applied to religion. Whether or not this violates 'demarcation' depends upon one's understanding of the nature of scientific method. There exists at least one description of scientific method which, far from violating the demarcation, strengthens and elucidates it, and indeed gives an opportunity to define a 'religious' component to the methodology, applicable both to religion and science (I am referring to Bayesian Conditionalisation; see Colin Howson and Peter Urbach (1989), 'Scientific Reasoning: The Bayesian Approach', Open Court Publishing). Assuming that the demarcation is indeed upheld, it is only through this cross-application of the scientific and religious methods that the Baha'is can demonstrate the 'unity of science and religion'. Given the potency of the scientific method (at least), this restriction leaves plenty of scope for new and useful discoveries, both material and spiritual; on the other hand, the same potency of method means that any lack of appreciation of the nature and importance of the demarcation restriction is swiftly amplified, making a mockery of the application, the method, and those who apply it. For this reason I am vigilant in scotching what seem to me (by the demarcation criterion) to be misapplications of religious pronouncement or scientific method, and it is this sense of vigilance which has come to the fore in the present review.

Literature review

God

Is there a logical proof of the existence of God? This simply-stated question typically evokes from practitioners (Theo-logicians, perhaps?) the kind of response that one might otherwise expect from those who indulge in the use of recreational drugs: they assert that there's nothing in it, nevertheless they return again and again for more. Alone of all the authors reviewed, William Hatcher is clearly hooked to this question, applying his manifest skills to the task of perfecting just such a proof, for which he secures pride of place in several publications (Hatcher (1990), Hatcher and Hatcher (1996), the latter reprinted from The Journal of Baha'i Studies vol 5 no 4). And while his intention is honest, his exposition erudite, and the result of his endeavours a wonderfully stimulating mindteaser, yet in reading it one is overwhelmed with the irrational conviction that there *must* be a mistake somewhere. And indeed, there are some very strange goings-on in Hatcher's version of Avicenna's proof. Consider, in particular, Lemma 2 of his first version (1990, p75), Theorem 3 of his alternative, but equivalent, later version (1996, p40). Translated from logical symbolism into relatively-comprehensible english, these are:

(1990, Lemma 2): If A is a composite phenomenon and if A has some uncaused component B, then B is a cause of A.

(1996, Theorem 3): If B is a member of A and B is uncaused, then B is a cause of A.

Even without entering the dark world of definitions, it is possible to see a correspondence between these statements. Indeed, with an appropriate set-theoretic definitions of Avicenna's concepts of 'composite phenomenon' and 'component', the statements are identical. And the mistake? It appears to us that the first part of the statement (between the 'If' and 'then') is a contradiction, and as any logician knows, this makes the inference nonsense because the complete statement will be true regardless of the truth or falsity of its second part (after the 'then'). For example, 'If X is true and X is not true then God exists' is logically true regardless of the state of existence of God, because 'X is true and X is not true' is a contradiction; and clearly, the inference is meaningless. We consider the first part of Hatcher's Lemma 2/Theorem 3 to be a contradiction because, in the language of his (1990), all components of a composite phenomenon are caused by that composite phenomenon (1990 p77, causality relation (2)). In his (1996) Hatcher alters the form (but not the thrust) of the proof, but an expression equivalent to the earlier causality relation may be recovered if Theorem 1 ('Any composite phenomenon is caused') is considered together with Philosophical Assumption 2 (the 'Potency Principle': 'Any cause of a phenomenon A is also a cause of every component and every subphenomenon of A'). In either case, the meaning is clear: any composite phenomenon A cannot have an uncaused component B, and the first part of Lemma 2/Theorem 3 is a contradiction. Consequently, the inference of Lemma 2/Theorem 3 is meaningless, and the proof fails.

Ourselves having become incurable Theo-logicians, courtesy William Hatcher, we do penance for challenging his proof by offering the outline of an alternative. Consider the following:

(1) An interesting and somewhat-neglected feature of propositional (mathematical) logic is that it may be represented using set diagrams. In particular, the logical functions 'and', 'or' and 'implies' correspond to the set operators 'union', 'intersection' and 'subset' respectively.

The last of these identities (equating, for example, 'If A then B' with 'A is a subset of B') has, in our opinion, particular significance.
(2) An interesting and somewhat-neglected feature of sets is that (put simply) 'bigger' sets are more 'abstract'. That is, relative to its more 'general' host set, a subset will appear more 'particular'. For example, it is easy to suppose (but difficult to prove!) that 'black' is a more abstract concept than 'raven', and that 'raven' should be a subset of 'black', rather than the other way round. This example also illustrates the previous point: the statement 'If raven then black' is much more likely to be correct that the reverse, 'If black then raven'. We comment that this feature of sets (that is, the 'particular' being subsets of the 'general') may be used to infer the directionality of logical implication, without altering the underlying rules of logical inference.
(3) Descartes, in his celebrated 'Discourse on Method', sets out an argument which appears to take the following conclusions (only the first of which is a direct quote): (a) 'I think, therefore I am.' (b) 'I am, therefore God is.' (c) 'God exists, and God does not deceive us, therefore our clear and distinct ideas about the world are reliable.' (Alternatively, paraphrasing Browning, 'God's in his Heaven, therefore all's right with the world.') Descartes' proof of these propositions is decidedly ropey, but the above understanding ('particular' sets are subsets of 'general' sets, therefore 'particular' expressions logically imply 'general' expressions) gives it new life. In particular: (a) Almost by definition, 'my thoughts' are 'mine'; they are, in some sense, a part of 'me'; being thus, they are a 'subset' of me; consequently, the inference 'If 'my thoughts' then 'me'' is true; in other words, 'I think, therefore I am'. (b) There is a strong identity between the notion of God and the set-theoretic notion of the universal set, i.e. that set which contains all other sets. Indeed, the Baha'i concept of God as an unknowable essence definable only in relation to His Messengers is echoed in set theory by the condition (introduced in order to overcome Russell's paradox) that sets may be defined only in terms of their member sets rather than as particular conditions. Equating God with the universal set certainly means that Descartes' second conclusion is true; indeed, it becomes true that 'If anything exists, then God exists'. We comment that any statement - be it true or false - will logically imply a tautology, so this last inference may well be suggesting that the existence of God is an empty truth, being simply a matter of definition. (c) Logical implication goes from the particular to the general, not the other way round; God is the most 'general' or 'abstract' entity that exists; therefore, nothing at all may be implied from the existence of God; therefore, Descartes' third conclusion is invalid. We suggest that a more healthy principle would be to suppose that 'The existence of God can be proved, but it doesn't help'.

Logical proof aside, most of the books reviewed gave consideration to the question of the existence of God. Savi gives a comprehensive account of the (almost exclusively classical) proofs set out in the Baha'i Writings, while Loehle couches similar arguments in a more scientific framework. To us, the most convincing argument is given by Abu'l-Fadl, who finds the greatest evidence of the real presence of God to be the certitude of His followers, demonstrated by 'their ability to exchange corrupt creeds for sound beliefs and to change repulsive, savage natures into good and pleasing ones.' (p31).

While most of the works reviewed discussed the existence of God, few of them gave any description of the thing the existence of which they were trying to prove. This may come as something of a surprise to scientists, but not to Baha'is, who are accustomed to think of God as something which exists but which is fundamentally unknowable. However, given that the Baha'i purpose in life is 'to know God and to worship Him', and that the Manifestations of God mirror forth His qualities, this lack of serious discussion on the nature of God is a disappointment. Again, William Hatcher (1996) gains credit for being the most adventurous but, presumably because in this intellectual desert he has wandered alone, his findings are

hilarious. For example (p57): 'We do not call gravity or the strong nuclear force 'God' because the effects these forces produce are not so marvellous as the effect produced by the evolutionary force.'

Evolution

Compared with William Hatcher's logical tomes and Savi's penchant for serial quotation, Craig Loehle's book is a humble little creation. Yet, while like all the books reviewed it contains its fair share of humbug, this book is outstanding as a product of honest enquiry and plain common sense. Nowhere is this more evident than when Loehle considers the question of evolution. While Khursheed (in 'Science and Religion') gets the credit for digging out Abdu'l-Baha's startling endorsement of Darwinism ('The Darwinian and monistic theories of evolution and the origin of species are not materialistic, atheistic ideas; they are religious truths which the godless and the deluded have unjustifiably used in their campaign against religion and the Bible'; see Loehle, p105), Loehle deserves greater credit for outlining how, as a consequence, we should interpret Abdu'l-Baha's statements in 'Some Answered Questions'. He writes (p108-9): 'A final note is needed on understanding Abdu'l-Baha's discussions of human evolution. 'Some Answered Questions'... was recorded from verbal answers given to a Baha'i pilgrim, Laura Clifford Barney, during the years 1904-6. Parts of Abdu'l-Baha's answers appear contradictory but upon closer inspection are not. For example, at one point Abdu'l-Baha argues that the possession of vestigial organs does not prove the absence of special creation but concludes the discussion by stating that humans have passed through various forms. It seems clear that Abdu'l-Baha is using a pedagogical device here. He is refuting the principal arguments of materialists so as to break the questioner out of any confining notions or preconceived ideas, thus allowing His explanation to be effectively heard and understood. The introduction to the book notes that Abdu'l-Baha is more pedagogical here than in His other works. Quoting single sentences out of the context of the entire passage could thus be construed as opposing evolution, which is not the case... From the above discussion we see that the Baha'i view is inherently and fundamentally evolutionary.'

The Baha'i view may well be 'inherently and fundamentally evolutionary', but if the reviewed texts are anything to go by, it is not a view of evolution that biologists would recognise. William Hatcher, Savi, Conow and Loehle take the view that the process of evolution requires an outside influence, a 'force' which is a sign of God (or even, which is God). Both scientific and scriptural arguments are advanced. The main scientific argument, championed by Hatcher but echoed by Savi and Conow in particular, is based upon a misunderstanding of the Second Law of Thermodynamics. This law, guaranteeing an increase of thermodynamic entropy in the universe, is interpreted by these authors to mean that disorder must increase, hence it requires a supernatural force to reverse the process and bring about evolution. Put quite simply, they are mistaken. The Second Law of Thermodynamics concerns thermodynamic entropy, which is a very boring quantity; it does not concern 'order', 'complexity', 'information', or any other evocative notion. (The reader is referred to K G Denbigh and J S Denbigh (1985), 'Entropy in relation to incomplete knowledge', Cambridge University Press, for a comprehensive discussion of this point.) In this context, Conow has the dubious distinction of being unique in dragging down other well-established physical laws (p50): 'Perhaps the utter reliance of science on the validity of the First and Third Laws of Thermodynamics of classical physics needs to be re-evaluated.' This statement is typical in a publication which shows utter ignorance and disregard for established science, thereby (by association) bringing the Baha'i Faith into disrepute. Presumably it only passed Baha'i review because it is largely incomprehensible.

The scriptural argument for God's involvement in evolution is best summarised by Savi (pp60-61): ''*The transformation of the innate substance is impossible*', writes Abdu'l-Baha; He says moreover: '...the world of existence is dependent for its progress upon reformation; otherwise it will be as dead'; this reformation is realised through the spirit emanating from the world of the Kingdom. In Abdu'l-Baha's words: 'The transformation depends upon divine bounty. The mineral progresses in its own world. But from the mineral to the vegetable it progresses only by divine bounty. Also transformation from the vegetable to the animal is God's plan. Of itself the transformation cannot take place.' These statements are very subtle: they require deeper investigation and studies than those that have been done up to now. Evolution is within the kingdoms, says Abdu'l-Baha. Vegetable and animal spirits, being a part of creation, are sufficient for the intrinsic changes of each phenomenal being to take place. But for the transformations from one kingdom to another, these natural powers are not enough: a power from a higher level must assist. This is the divine bounty, the power of the world of the Kingdom, that is , the spirit.' As interpreted here, 'divine bounty' is a very real force acting in the material world. Is this merely another form of words for the well-established theory of evolution by natural selection? If so, then why bother to invoke God, who surely has better things to do than follow predictable laws of nature? If not, then religion and science must be in disagreement; and since the 'territory' of the debate is very much in the material world, it is an argument which religion cannot win. As Abdu'l Baha says ('Paris Talks', p131): 'Religion and science walk hand in hand, and any religion contrary to science is not the truth.' It seems to us that the only reasonable way out of this conundrum is to conclude that the given interpretation is not correct; that Abdu'l-Baha was not seriously proposing a new mechanism for evolution; that, instead, he was illustrating some higher spiritual principle, not related to evolution; that in making the illustration he was relying upon the scientific knowledge of the day, which may or may not have been correct; and that the correctness or otherwise of Abdu'l-Baha's scientific knowledge is incidental to the verity of the higher spiritual principle He was trying to make, and incidental to his infallibility in spiritual matters, and incidental to His station.

Creation

What is the true nature of things? The assumption of a spiritual or transcendent reality co-existing 'behind' the material universe is perhaps as old as the human concept of God, and the arguments for and against this transcendent shadow have been rehearsed almost as much as the arguments for and against the existence of God. Plato, Berkeley, Kant and Russell have each had their say, and so must we Baha'is. Again it is to his credit that Hatcher is first into the fray, with the following viewpoint (from his (1990), pp7-8): 'I feel that it is possible to point to certain aspects of scientific method and practice which strongly suggest that there are 'somethings' out there beyond the purely material world of space and time, and that it is reasonable, pragmatically speaking, to identify these somethings with Plato's forms.' We cannot resist the temptation to quote Abu'l-Fadl in reply (p20): 'How often have philosophers attempted to establish that there exists an absolutely pure intellect separate from matter both in essence and in act! However, the steed of their argument has stumbled on their evidence, the blade of their investigation has failed to strike home, and the standard of their proof has been hauled down. They spoke with great bombast and verbosity, but in the end produced nothing. How could it be otherwise? For this idea is simply a relic of the idle notions of the pagans and the daydreams of the Greeks, left over from a time when the veils of doubt obscured the truth on all sides and the gloom of the blackest night enveloped all regions.' And so on, and so on, until with a sigh Abu'l-Fadl begins a new paragraph with 'Let us leave off this plunge into the black depths of idle thoughts and return to the exposition...', whereupon he himself plunges into the heart of an immense darkness. Wonderfully arcane stuff; but a very good reason (along with the equally strong objection that Abu'l-Fadl may not have been referring specifically to Platonic forms) to suppose that

we are being more than a little mischievous in our approach. So, giving Hatcher due respect for exercising our minds, we will focus on what he identifies to be 'the features of scientific method which... suggest a realist ontology' (1990 p9)). They are four:

(1) 'The process of hypothesis and theory formation.' How is it, Hatcher asks, that the human mind is able to 'pick out a fruitful hypothesis', given that there must be an infinite number of duds? Clearly 'the mind has perceived an underlying form...', and so on.
(2) 'The discontinuity between fruitful and useless intuitions and notions.' More of the same.
(3) 'The social nature of science, in particular the communicability of extremely abstract ideas and concepts.' More than one person understands it, so it must be real.
(4) 'The universality and applicability of many seemingly subjective ideas, especially with regard to the applicability of mathematics...' Why is science so unreasonably successful?

We think Hatcher's arguments are incorrect, because:
(1) In all of his discussions on scientific method he neglects the fact that we do not start from level zero every day. Today's knowledge is built on yesterday's, and yesterday's on the day before; as Newton (and Loehle) would have it, we see further because we stand on the shoulders of giants. Scientific method does not involve picking hypotheses out of the ether; it involves picking hypotheses which are slight improvements on what we have already.
(2) There is an asymmetry between useful and useless notions, because the former have been honed over centuries.
(3) Theories are models of reality. Our understanding the models does not make them real.
(4) How is it that material reality can be described in elegant, simple mathematical forms? To tackle this deep question with the effort it deserves, we would raise an associated question: How is it that man has evolved on earth, apparently requiring so many improbable coincidences in nature? If the earth had just been a little bigger, or a little smaller, or there had been no moon, then where would we be? The argument that our existence is infinitesimally improbable (and therefore a miracle) is known as the 'Anthropic Principle'; or, as we would have it, the 'Anthropic Fallacy', because the improbable 'coincidences' leading to the evolution of man on earth are not physically or statistically independent. Apparently impossible events occur in nature because given their particular environment those events are not so very improbable; in much the same way as the growth of knowledge, natural events 'stand on the shoulders' of their environment. And if we should look back in wonderment, it is not so very different from looking down from the top of a mountain[3], and wondering how we could have climbed that distance; and yet we did. And to extend the metaphor, if the mountain had been a pile of rubble, it could not have been climbed; that is, non-chaotic regularities in nature allow more interesting things to happen. So it should not be so very surprising to us that, on looking back, we should be able to observe regularities, and describe them using simple mathematical models. As for the mathematical models themselves, their elegance and simplicity is simply an evidence of all the effort that has gone into improving them over the centuries.

What has all this to do with the Baha'i Faith? Very little, in our view. Platonic forms come easy to those who see the universal involvement of the transcendent in the material (Savi, for example (p97): 'The process of evolution develops in the universe because the elemental atoms, moved and guided by the impulse of the omnipresent command of the Word of God, become combined and separated by such laws as have been introduced therein by that same Word.'); but we would argue that since Platonic forms are still 'greek' to the vast majority of humanity - after all these years! - we can probably get by without them.

[3] This observation was made in ignorance of Richard Dawkins' use of the same analogy in *Climbing Mount Improbable* (1996). (Note added 18 March 2014)

Human nature

'Man is the microcosm; and the infinite universe, the macrocosm. The mysteries of the greater world, the macrocosm, are expressed or revealed in the lesser world, the microcosm. The tree, so to speak, is the greater world and the seed, in its relation to the tree, is the lesser world. But the whole of the great tree is potentially latent and hidden in the little seed.' (Abdu'l-Baha, quoted in Savi, p85.) By likening man to the seed of a tree, Abdu'l-Baha is creating a tremendously rich model of human identity. The Baha'i Writings are overflowing with such models: the sun, its rays, and the mirror; the child in the womb; and many others. On the one hand it is tempting to extend, to extrapolate, to develop the models; on the other, it is to their very simplicity, and the fundamental ideas that they convey, that we invariably return. Among those books reviewed, we found that much of the best work is based on models of reality gleaned from the Baha'i Writings. Hatcher, for example, is at his best when he discusses the organic development of human society, his 'organismic theory of history' (1990, p52) being an appalling appellation for a wonderful idea (first expressed in the writings of Giambattista Vico (1688-1744), but finding many novel applications within the Baha'i Writings): the notion that the development of humanity mirrors the maturation of an individual person. Equally, much of the worst work arises when the authors stray from the basic models. Thus Conow concludes (p99) 'We argue that human beings are knowers first, speakers second', and the rest of us are left hoping that the 'We' does not include ourselves. But 'best' and 'worst' is all very well; do any of these authors improve on the models? Do they help our understanding of the models? In this respect, are their books an easier or more stimulating read than, say, 'Paris Talks'? We think not. It is ironic that in a scientific setting - one which Hatcher characterises as being the natural homeland of model-building (1990, p30) - there should be such a lack of insight. A sign, perhaps, that we have not reached that level of maturity characterised by Hatcher as the marrying of our scientific model-building capability with our religious vision.

As a proxy for discussing the nature of human beings, it appears from the reviewed texts that Baha'is prefer to discuss the nature of an abstract concept called the 'human soul'. Savi, in particular, leaves no quote unquoted on the subject. His achievement in correlating and codifying the Writings is admirable - but frightening, in its sheer mechanistic inhumanity. What do they mean, these models, these analogies, these metaphors? If we cannot relate them to real people, with real thoughts and real feelings, then we will never be able to convey the sense of passion that comes with true religious - and scientific - insight. Unless you believe in Platonic forms and other ghosts, the human mind is the one place where you can be sure that the material and the transcendent come together. The spiritual world exists, literally and figuratively, in the human mind. If religion does not address the human condition, what else can it talk about? The evidence is that the Baha'i Faith says a great deal about human nature; so much, perhaps, that we do not know where to begin.

The purpose of science

With so much evidence of the misapplication of science, it is gratifying to find amongst the reviewed literature an example of how science can be used to the good. Appropriately, this example is William Hatcher's 'Logical Solution to the Problem of Evil' (1990 pp81-93), which stands as a worthy example of the application of the methods of science to the substance of religion, to the credit of both. As for the proof itself, it is possible to appreciate its argument without working through every detail of the logic. The classical problem is, as Hatcher expresses it, 'If there is a God, then he cannot be both omnipotent and good. For, since there is evil in the world, God, if he be all-powerful, is responsible for this evil (since he could prevent it if he chose) and is thus himself evil.' And Hatcher's solution? By replacing the notion of absolute evil implicit in the above statement with a relative term (i.e.

'x is evil' being replaced by 'x is better than y'), and cranking the handle of logic, he finds that 'God is responsible not only for the y that is more evil than x but also for the x which is *better* than y! In short, God is responsible for the fact that some things are better than others. It does not follow in any easily arguable way that God should be held less than supremely good because of this state of affairs.' He continues: '...the idea that some things are better than others - that some choices lead to relatively good results whereas others lead to relatively bad results - is the very basis of our notion of progress, of growth (both individual and social), and of happiness... We have not rejected the existence of the moral dimension but rather the term 'evil' as an absolute term.' In other words, he has shown that the classical problem of evil - which is still a faith-destroying reality for many people - evaporates when the Baha'i notion of evil replaces the Christian one.

Loehle's book contains more general examples of the application of science to positive social goals, in particular, race unity and ecology. He also gives the following insight about the nature of science (p125): 'There is no absolute certainty in science. What scientists do have, however, is faith in the *process* of science. They have a conviction that the method is valid, the goal worthy and the ends attainable.' And it is in this respect that Loehle finds a point of similarity between science and the Baha'i Faith; a comforting thought, indeed.

The method of science

To Loehle it requires a blend of 'hubris and humility'; to Hatcher it is 'organised knowledge', with a pragmatic criterion for truth; to Abu'l-Fadl it is a passion for establishing the authenticity of sources; to Savi, it is whatever Abdu'l-Baha has to say on the subject; Conow, meanwhile, appears not to have heard of it. On the whole, there is not a great deal to be learnt from these books on the subject of scientific method. On the other hand, the books give many (unintentional) illustrations of what scientific method is not, for example: Loehle's application of probability to prophecy; Hatcher's finding an identity between God and a mythical 'evolutionary force'; Abu'l-Fadl's peculiar combination of swathing criticism and unfathomable metaphysics; Savi's indiscriminate acceptance of anything labelled 'Baha'i'; and, to cap it all, Conow's extraordinary assertion that (p164) 'Each chapter in this book has been written with a particular logical and sequential unfoldment of spiritual truth.' And it is certain that science and its methods have come a long way since the doctrines of positivism and existentialism, the stock examples of 'bad science' wheeled out time and again by out-of-touch Baha'i authors. Indeed, exciting things are happening in the philosophy of science. Popper's falsification criterion has been falsified; Kuhn's 'The Structure of Scientific Revolutions', already 35 years old, is the dominant paradigm; Bayesian Conditionalisation is a good bet for the future, but only if you bet according to your rational degree of belief. As with every other human endeavour, there is a great deal in the Baha'i Writings that could be brought to bear on this subject, but it is a dangerous place for amateurs. The approach followed in the books under review has been to ignore the scientific field and follow a narrow, conventional interpretation of the Baha'i Writings taken in isolation. It is an approach which will only serve to antagonise scientists and undermine the very goal of the unity of science and religion that the Baha'i authors are attempting to establish.