TWO TRUTHS AND ONE MYSTERY[1]

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ABSTRACT

The celebrated historian of religion, Wilfred Cantwell Smith, once wrote in a throwaway line that we live 'in a near-inscrutable universe.'[2] To be reminded of this could assist us in defusing the assumed warfare between scientific rationality and the religious imagination.[3] Yet we do comprehend – through the exercise of experience, reason, hypothesis and theory. But as we do so, we become aware that the quest for understanding is never-ending, and this sets up the paradox that the more we claim to know the more the horizon of knowledge extends ahead of our human grasp. Our insatiable curiosity is governed by this paradox, the awareness of which transports us to the door of mystery.

CHALLENGES FROM SCIENCE

Religions have approached the mystery of material existence essentially through their cosmologies, which have developed over time in accordance with both the best available philosophical

1. A version of this article was first given as a keynote address at the International Conference on Science, Reason and Religion, Minhaj University, 26-27 October 2019. The article explores some aspects of the science and religion debates mainly with the monotheistic traditions in mind. A different account would have been required for the non- or trans-theistic religious traditions.

2. Wilfred Cantwell Smith, 'Shall the Next Century Be Secular or Religious?' *Modern Culture from a Comparative Perspective*, ed. John W. Burbidge, New York: SUNY 1997, p. 82.

3. For an account of the origins of the warfare thesis, see David C. Lindberg and Ronald L. Numbers, 'Beyond War and Peace: A Reappraisal of the Encounter between Christianity and Science', https://www.asa3.org/ASA/PSCF/1987/PSCF9-87Lindberg.html

insights and what we now call scientific judgements. But our present-day cultural contexts are now so vastly different from the observations, calculations and philosophical speculations prior to the scientific revolutions of the modern period that this inevitably places acute intellectual challenges before the theologians and philosophers of all religious traditions. The Jesuit Christian theologian and philosopher, Roger Haight, has summed up the impact of the new challenges neatly as follows:

The age and size of the universe seem to dwarf the human and dethrone anthropocentrism; the tight integrity of nature seems to edge out God's intervention in the world and our lives; the randomness of evolution seems to subvert confidence in divine purpose; scientists do not speak of God and do not need the divine.[4]

Given this fundamental shift in outlook, stimulated by modern science, the religions are obliged to work with the results of scientific enquiry if their cosmologies are to remain at all relevant to questions of how human beings are to view the world about them, the origins and trajectories of all life. We are left with the question: whither now the sacred?

The authority within scientific thinking has been summed up by the young Swedish climate campaigner, Greta Thunberg, when she declares to governments and policymakers in face of the world's climate emergency: 'Follow the science.' This invocation endows scientific knowledge with saving potential. For this reason, science is not culturally neutral, as it assumes an arbitration role in moral decision-making: we enquire into the consequences of actions based on scientific evidence. But evidence may not be enough: 'following science' also requires parallel determination, prophetic dynamism and a reason to hope – all of which stems from human imaginative vision. Perhaps this

4. Roger Haight, S.J., *Faith and Evolution: A Grace-filled Naturalism*, Maryknoll: Orbis Press, 2019, p. 70.

explains one of Einstein's well-known sayings that 'science without religion is lame, religion without science is blind.'[5]

SCIENCE AND IMAGINATIVE VISION

A sense of the mystery of the cosmos leads many of us, religious and non-religious, to the brink of awe and wonder at the sheer vastness of space-time. The prospect is truly staggering: 10^{11} stars in the Milky Way and 10^{11} solar systems in the universe – and maybe even a multiverse. This picture was not known to our predecessors. If humanity is the cosmos become conscious of itself, as is sometimes said, then awe and wonder are intrinsic to the universe as such and are not simply optional human emotions. The question of science and religion then becomes the search for a fruitful relationship between two forms of enquiry: broadly-speaking the sciences providing the theoretical shape of the material processes of life – the 'how' of how things work – and the imaginative visions of the religions pondering the meaning of the whole. Each must inform the other if the mystery is to be respected.

The 'fruitful relationship' model is a far cry from the 'warfare' model which has been and continues to be essentially focused on issues of epistemology – what it means to know something to be the case. But retaining the notion of mystery refuses the limitations which the epistemology-only approach has imposed on the discussion. Historically, science has never functioned apart from a cultural context composed of imaginative vision. Let me illustrate this with reference to historical precedence in the atomistic thinking of ancient Greek thought, especially that of Democritus (460-370 BCE) and Epicurus (341-270 BCE), and the latter's Latin follower, Lucretius (99-55 BCE), whose epic poem *De Rerum Natura* (On the Nature of Things) influenced Western thought right up to the Renaissance. Like Democritus before him,

[5].https://www.oxfordreference.com/view/10.1093/acref/9780191826719.001.0001/q-oro-ed4-00003988

Epicurus taught that all matter is entirely composed of extremely tiny particles called 'atoms' (Greek: ἄτομος, *atomos*, meaning 'indivisible'), particles which were assumed to carry the whole weight not simply of naturalistic explanation but also of human meaning. (What the ancient Greeks meant by atoms is of course not the same as the meaning intended by modern physics). For Lucretius, in turn, atomism became was not the solution simply to the puzzling nature of matter; part of its meaning was also to free human beings from their subservience to religious superstitions. In their bid to be free from the unsatisfactorinesses of existence, believed Lucretius, people were duped by religion into committing crimes, such as the slaughter of animals for sacred sacrificial purposes. As Lucretius says in *De Rerum Natura*:

This is not piety, this oft-repeated show of bowing a veiled head before a stone, this bustling to every altar, this deluging of altars with the blood of beasts. True piety lies rather in the power to contemplate the universe with a quiet mind.[6]

In other words, physical explanations are better than religious ones if a person desires not only to come to the truth of how the world is constituted but also to settle their inner anxieties.

Science was not simply benign theorising. This was science as salvation – and it has reverberated down the centuries to the present-day. For example, consider this from new atheist, Richard Dawkins, in the introduction to his highly influential book, *The Selfish Gene*:

> We no longer have to resort to superstition when faced with the deep problems: Is there a meaning to life? What are we for? What is man? (*sic*) …. 'all attempts to answer

6. Lucretius, *De Rerum Natura*, R. E. Latham (trans.), London: Penguin, 1951, Book V, lines 1194-1203. I am grateful to Mary Midgley, *Science and Poetry*, London: Routledge, 2001, for insight into the impact of ancient Greek and Latin philosophers on the roots of modern scientific thinking.

> that [last] question before 1859 are worthless and …. we will be better off if we ignore them completely'.[7]

This is pure Lucretius: scientific investigation not only promises well-grounded truths about the natural world but it also helps you discover the meaning of life. In other words, in Darwinian mode, science helps you to forge a philosophy of life on the back of discoveries in evolutionary science as such. Yet, surely, the presentation of 'science as salvation' simply confuses the matter and borders on being irresponsible hubris. Dawkins might at least have acknowledged a debt to Lucretius.

CONTROLLING KNOWLEDGE AND AMBIGUITY

Notwithstanding my observation about hubristic tendencies among some scientists, there is also some truth in the accusation that religious thought too might overreach itself in its desire to 'explain' everything. If there can be 'scientism' there can also be 'religionism'. There has been irresponsible religion – for example, manipulation of the sacred by insisting that scientific discoveries ought to conform to prescribed metaphysical beliefs. Both the religions and the sciences are capable of overreaching themselves.

A great part of the issue here seems to revolve around the issue of who has control over rationality and knowledge. In relation to scientific methodology, do the fruits of scientific endeavour assume the role of a new 'sacred canopy' such that all attempts at a greater imaginative philosophical vision for a fulfilled life, whether religious or not, are considered to be of lesser importance? Science might 'explain' natural processes, but it has no remit for elevating the fruits of its research into a totalising theory of scientism. On the other hand, the religions have

7. Richard Dawkins, *The Selfish Gene*, Oxford University Press, 1976, p. 1. The quotation included by Dawkins is from the palaeontologist, George Gaylord Simpson, *Tempo and Mode in Evolution*, originally Columbia University Press, 1944. 1859 refers to the publication date of Darwin's *On the Origin of Species*.

developed systems of thought which in the scientific age now seem very unfit for purpose and are easily accused of encroaching too much on science's territorial claims. Under these cultural circumstances, the question before us becomes: what is the nature of a fruitful relationship between two endeavours, each with their essential modes of enquiry and each aware of their limitations in the face of mystery?

Any fruitful relationship must begin by recognising the different perceptions of science and religion in relation to an ambiguous universe, that is, a universe capable of being interpreted naturalistically or religiously. On the naturalistic interpretation, the universe consists exclusively and seamlessly of energy that is discharged in multiple forms, from the Big Bang into an ever-expanding cosmos. As the physicist Sean Carroll has famously remarked:

The basic stuff of reality is a quantum wave function, or a collection of particles and forces—whatever the fundamental stuff turns out to be. Everything else is an overlay, a vocabulary created by us for particular purposes.[8]

On this view, forms of life are dependent solely on material processes: the physical sciences analyse the whole of reality as simply an expanding mass of 'fundamental stuff', with the challenging implication that human existence is a fleeting accident devoid of inherent meaning. On the religious view, however, the universe is perceived as an environment which is both physical and interpenetrated-yet-transcended by a non-physical reality which is characterised as spirit, thereby leading to a view of life as being inherently purposeful because it is related to that which is the source and goal of all life. Judging between these two overarching perspectives, and mainly as a result of the explanatory power of the sciences, the most common

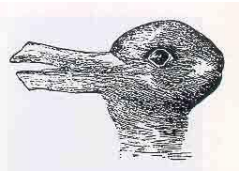
8. Sean Carroll, *The Big Picture: On the Origins of Life, Meaning, and the Universe Itself*, New York: Dutton, 2016, p. 142.

assumption among many, whether scientifically or/and religiously informed, has become the naturalistic view. There is a lingering concern, however, over how far such assumptions have avoided close philosophical scrutiny.

Notwithstanding this common view, ambiguity persists, and I think this is necessarily the nature of the case. Still, we ask: how might 'ambiguity' be depicted? One way into this discussion would be to cite an older debate featuring the notion of verification. Religious assertions were held to be true if they could be verified through evidence and reason. From a previous generation, the philosopher John Wisdom, famously outlined the parable of The Gardener. Two people return to a garden after a period of neglect to find that among the weeds there were some old plants vigorously surviving. One said that a gardener must have been at work secretly as there are live plants among the weeds and there is evidence of some flourishing of beauty. The other said that no gardener can have come, for any gardener worth their salt would do a better job than this. After much dispute the two remain divided about their responses to the garden. Wisdom concluded that there could be no conclusive settlement for the conundrum by appeal to evidence alone. The difference between the two turns on how they 'feel towards the garden.' In other words, no amount of evidence could determine whether the naturalist or religious interpretation of material events is the correct one to adopt. Ambiguity remained.

The issue of ambiguity in relation to the discussion on science and religion has moved from one of verification, as in Wisdom's parable, to one highlighting a role for religious experience as a cognitive activity of the mind acting within an overall environment of ambiguity. Instead of a garden depicting overall ambiguity, picture an image of a duck/rabbit, made famous by the Polish-born American psychologist, Joseph Jastrow (1863-1944):[9]

[9]. See his *Fact and Fable in Psychology*, London: Macmillan, 1901.



We *see* either a rabbit or a duck as we *interpret* the image. The philosopher Ludwig Wittgenstein (1889-1951), who used this image, said that we '… see it as we interpret it.' If we now substitute *experiencing* for our *seeing* we then have the formula: we '*experience* it as we interpret it.'[10] There is an element of interpreting inherent in all of our experiencing, and while this has been accepted philosophically throughout history it has been most forcefully rehearsed since the European Enlightenment, especially with the German philosopher Immanuel Kant. The human mind plays a significant role in bringing our experience to consciousness, organising sense data according to patterns of cultural awareness. Moreover, the truth of this principle has been tested and confirmed through the disciplines of cognitive psychology and sociology of knowledge. There is a distinction between a thing-in-itself and a thing-as-we-experience/interpret it.

If we approach the universe's ambiguity through this lens there will be those who experience the world religiously, either theistically *as* divine gift or non-theistically *as* arising from the formlessness of Absolute reality beyond words. In theistic terms, there are those for whom the world's intelligibility, creativity and serendipitous qualities invite a religious response of wonder and joy; and for the non-religious there are those who simply affirm the brute materiality of the world, which interprets the qualities of intelligibility and creativity as a function of 'chance and necessity'. There will be no obvious reason why one responds religiously to the world and another does not see the need.

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10. Ludwig Wittgenstein, *Philosophical Investigations*, (trans.) Elizabeth Anscombe, Oxford: Blackwell, 1953, p. 193.

Interpreting the big picture of the world/universe, therefore, is not simply a matter of drawing metaphysical conclusions – either naturalistic or religious – from the results of scientific investigations; the element of interpretative awareness has a role to play. There can be no logical route from the absence of non-physical effects in scientific research to the metaphysical conclusion that any proposed spiritual awareness is devoid of cognitive meaning. By the same token, spiritual experience does not resolve the ambiguity inherent in our perception of the world. Even religious notions of 'revelation' are more subtle than the view which imagines divine action to emanate from divine *fiat*.

EXAMPLES OF DISCOURSE FAILURE

We have, then, two sets of lenses, the naturalistic and the religious – with the only remaining option being one of responsible conversation between them. But is this enough? There are responsibilities to be borne by both sides of the ambiguity. On the one hand, if the religions want to claim legitimacy for their religious experiences then they can only do this having absorbed the thrust of scientific enlightenment, otherwise they risk obscurantism. On the other hand, science needs to respect the limits that are inherent in its experimental portfolio. Deducing metaphysical conclusions from scientific theory is a mirror image of the accusation that theologians filter metaphysical dogma through a pre-scientific lens.

In order to assist progress in a responsible conversation let me now outline, first, two religious examples of how religious thought has failed to make the adjustments necessary for compliance with such a conversation, and, second, highlight one scientific example of how some conclusions from scientific research fail to respect the limits proper to the discipline.

My first example of *religious failure* to comply with scientific credentials is known as Intelligent Design (ID). Many people,

particularly from a theistic background, have an intuitive sense that the world displays order, intelligibility, complexity and beauty, rendering the search for a Designer a not unreasonable proposition. As Phillip Johnson, one of the originators of ID has put it: '[ID] means we affirm that God is objectively real as creator, that the reality of God is tangibly recorded in evidence accessible to science, particularly in biology.'[11] The key phrase here is 'tangibly recorded in evidence' – it expresses a religious fear that without this the reality of God is undermined. Yet in spite of the claim that the need for ID arises from scientific investigation itself, especially from noticing complexity within natural systems, the price to be paid is that 'tangibly recorded evidence' insists on an interventionist view of divine action, and this is something which cuts across scientific methodology itself.

Although ID asserts that repeated miraculous interventions are necessary, in addition to basic evolutionary processes, the fact that these are not able to be tested through usual scientific methods undermines the credibility of ID in its basic claim to be scientific. Furthermore, while emergent complexity is a real feature of the evolutionary process and suggests purpose in creation, direction and purpose in creation are quite different categories. Is it necessarily the case that without the hypothesis of ID the creation is without purpose? This seems to be the basic anxiety of ID theorists. An alternative and, in my view, more responsible approach to issues of design in creation has been put by the Catholic theologian John Haught:

> [In] theology's conversations with contemporary science, it is more helpful to think of God as the infinitely generous ground of new possibilities for world-becoming than as a 'designer' or 'planner' who has mapped out the world in

11. Cited in Philip Clayton, *Religion and Science: The Basics*, London & New York: Routledge, (2nd ed.), 2019, p. 18.

> every detail from some indefinitely remote point in the past.[12]

It is hard not to think of this as a more cogent approach, both scientifically and philosophically/religiously, to the issue of design in creation.

My second religious example exhibiting unnecessary religious defensiveness in science and religion discussions is known as 'Islamic science', a position which shares comparable concerns with the motivation behind ID. It is probably Seyyed Hossein Nasr who is the main inspiration for Islamic Science:

> The Islamic sciences …, like other traditional sciences, never sought to satisfy the thirst for the Infinite in the realm of the finite. They were based directly on metaphysics and made no claims to usurp its place … In contrast, modern science has sought to quench this profound thirst for the Infinite on its own level of finiteness, forgetting the limits which have always been set upon the sciences from on high.[13]

There is a legitimate concern here when Nasr presses the claim that modern science poses itself as a form of metaphysics in opposition to religion. However, Nasr's desire is not so much to integrate modern science with an Islamic worldview as render it

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12. John F. Haught, *God After Darwin: A Theology of Evolution*, Boulder, CO: Westview Press, 2000, p. 119. A good brief discussion of Intelligent Design can be found in Philip Clayton, *Religion and Science: The Basics*, Second Edition, Abingdon, Oxon: Routledge, 2019, Chapter 2.

13. Seyyed Hossein Nasr, *Islamic Science: An Illustrated Study*, London: World of Islam Festival Publishing Company, 1976, p. 237. A brief summary of Nasr's position is examined in the important report, *Islam & Science: Muslim Responses to Science's Big Questions*, the Report of the İhsanoğlu Task Force on Islam & Science, eds. Usama Hasan and Athar Osama, 2016, produced by Muslim World Science Initiative, Islamabad, Pakistan, pp. 35-38. https://www.iasworld.org/wp-content/uploads/2016/05/Task-Force-on-Islam-and-Science.pdf.

subservient to Qur'anic claims. In the light of what scientists actually set out to achieve through experimentation Nasr's anxiety seems misplaced. In defence of modern science, it is hard to see how Nasr's stipulations can be embraced by empirical research or even make sense. There seems to be a muddle between the methodological processes of science as such and any alleged (mischievous!) philosophical principles said to be directing it. I will explore this muddle further below.

It is important to note that 'Islamic Science' represents an outlook which is as contentious within the Islamic world as outside of it. In a Foreword to the book *Islam and Science* (1991) by the Pakistani physicist, Pervez Hoodbuoy, and in contrast to Nasr, the Pakistani theoretical physicist and Nobel Prize winner (1979), Mohammed Abdus Salam (1926-1996), asserts:

> There is only one universal science, its problems and modalities are international and there is no such thing as Islamic science just as there is no Hindu science, no Jewish science, no Confucian science, nor Christian science.[14]

Attempts to bracket off scientific endeavour from religious presuppositions does not represent apostasy: science exists merely to investigate the material world in terms of the world's own structures and processes and what can be deduced from them. Metaphysical reflections lie outside of science's remit.

That said, I turn now to a reflection on how some scientists view their work as the undermining of all religious worldviews, and in so doing transgress the limitations of their craft. This involves the debate, already alluded to, between methodological and metaphysical naturalism.

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14. Mohammed Abdus Salam, 'Foreword' in Pervez Hoodbhoy, *Islam and Science: Religious Orthodoxy and the Battle for Rationality*, Islamabad: Zed Books, 1991, p. ix.

Let the following well-known citation from the American theoretical physicist Steven Weinberg illustrate my point:

> It is almost irresistible for humans to believe that we have some special relation to the universe, that human life is not just a more-or-less *farcical* outcome of a chain of accidents reaching back to the first three minutes, but that we were somehow built in from the beginning … It is very hard to realise that this is all just a tiny part of an overwhelmingly *hostile* universe … The more the universe seems comprehensible, the more it also seems *pointless*.[15]

With sentiments like these one can see how the religious mind would feel significantly under attack! But does Professor Weinberg see himself as a *farcical* product of the evolutionary universe? His theoretical work seems far from being farcical. Why then should he think the language of 'hostility' and 'pointlessness' appropriate? These are value-judgements which go beyond the realm of science itself.

My point here is that just as certain religious engagements with scientific method seem unnecessarily defensive when new discoveries seemingly clash with religious dogma, so some scientists fail to obey the limits of methodological enquiry by claiming illegitimate conclusions as a function of instrumental reason, and as a result establish an alternative dogma.

RESPONDING TO THE NEW CREATION STORY

It seems to me that defensive theologians and over-reaching scientists sometimes involve themselves in an unnecessary argumentative tango. That said, we still need to ask about what kind of theological picture looks more promising in responding

[15]. Steven Weinberg, *The First Three Minutes*, London: Andre Deutsch, 1977, p. 154. Weinberg shared the Nobel Prize with Mohammed Salam in 1979.

to the new science-generated creation story? I will address this in two stages.

First, the idea of 'creation' in terms of the Big Bang as indicative of the beginning of time. It seems intuitive to specify the Big Bang as the first created moment in time (strictly, space-time). Yet that would be a mistake.

Astronomers and cosmologists infer the Big Bang by arguing backwards from the present with inferences that lead them to affirm (speculate?) that the universe at its origins consisted of matter-energy-time-space in its most basic forms, for example, a fluctuating quantum field. Beyond that we can say very little. But, theologically speaking, we should not say that God initiated that initial explosion. Theologically, creation specifies an ontological relationship between Creator and created. Creation, as Roger Haight explains, is not an event but a relationship: 'an intrinsic and invisible relationship with the ground of being that is intimated in the question of why there is being at all.'[16] The classical doctrine of creation *ex nihilo* is a statement about contingency and dependency, an affirmation that the universe does not supply its own reason for being. 'God' is not the name which 'causes' the Big Bang. It is rather, as Roger Haight again highlights, 'the on-going condition of the possibility of existence.'[17]

Creation *ex nihilo* as an ontological relationship entails that God is present to and within all reality, from the first inklings of life to its present conditions. Conceived as the depth of all reality, God does not intervene from outside. Furthermore, there is no need of the 'God of the gaps': God, as is sometimes said, makes creation make itself. This leaves science free to investigate creation with all the means of observation, measurement and inference at its disposal. God works 'through' the world and not over against it.

16. *Faith and Evolution,* p. 72.
17. ibid. p. 71.

In relation to evolution, one might say that evolution expresses the power of God's creativity, even suggesting clues as to how that creativity unfolds, while simultaneously remaining hidden within the empirical realm.

A second issue in relation to the new scientific creation story concerns what has been called the 'causal joint' – the issue of how divine and human action are involved simultaneously if God's action is wholly immanent within the natural laws of cause and effect. This has been a long-standing problem in relation to a form of divine action/creativity that refuses intervention. However, there are some suggested solutions. For example, divine action might well occur *either* by virtue of intrinsic indeterminacy at the quantum level, thus leaving 'openings' for divine action without overriding the laws of nature, *or* through noticing in chaos theory how tiny unobservable interventions would lead to desired results on an amplified scale in normal life. Yet however qualified, there seems no way to avoid the accusation that both routes continue to involve some sense, even if hidden, of divine intervention. Moreover, it seems that further analysis of these suggested solutions reveals more difficulties. In relation to quantum indeterminacy, for example, Arthur Peacock, a biochemist and Christian theologian, has written that 'to determine microscopic events on any terrestrial scale, God would have to determine a fantastically large number of quantum processes over extraordinary long periods in advance,'[18] and it is this that sits uneasily with the affirmation of God's underpinning of the inherent consistency and rationality of the creative process as a whole. Peacock cites Nicholas Saunders, in support:

> If God does act regularly in quantum mechanics, then there are relatively few quantum processes that would escape his control. If this is the case then it seems very irrational that God would formulate quantum mechanics

[18]. Arthur Peacock, *Paths From Science Towards God*, Oxford: Oneworld, 2002, p. 106.

> as a product of his creation of the world to be indeterminate.[19]

The mystery of God is that the creativity at the heart of cosmology and evolution expresses divine intention and action in the measure that the material of the world acts according to its own inherent nature and not by any 'extra' divine exertion that would violate such divinely given properties.

Although it is not the only possibility in the search for a convincing theological metaphysic in response to the new creation story, the model known as Panentheism – the view that all exists within the divine reality but without that reality being exhausted or circumscribed by what is existing within it – is becoming more and more plausible. This model may be the only one which allows for a sense of direction, intelligibility and purpose in the universe without any sense of interventionist imposition by a creator on inert matter, yet without falling into pantheism as such.

Direction, intelligibility and purpose arising from scientific observations and reflections cannot lead us to descriptions of the inner nature of transcendent reality, but they might suggest patterns in natural processes which chime with theology's estimations in addressing the 'why' questions of existence. Here's one example of such 'chiming' from an evolutionary biologist, Brian Goodwin:

We are every bit as co-operative as we are competitive, as altruistic as we are selfish, as creative and playful as we are destructive and repetitive. And we are biologically grounded in relationships which operate at all the different levels of our beings … These are not romantic yearnings and utopian ideals. They

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19. Nicholas Saunders, 'Does God Cheat at Dice? Divine Action and Quantum Possibilities', *Zygon*, 35, 2000, pp. 517-44, cited by Peacock. Saunders is a barrister but also a trained physicist and theologian.

arise from a rethinking of our biological natures that is emerging from the sciences of complexity.[20]

Descriptions of evolution described in terms such as competition, survival and selfishness are not the whole picture. 'Chance and necessity' do not deserve the final word on cosmology and evolution. As the veteran science and religion scholar, Ian Barbour, once indicated regarding the emergent qualities within material forms uncovered by science: 'There can be purpose without an exact predetermined plan.' My notion of 'chimings' fits with this kind of sentiment.

For a number of theologians, the explanatory power of scientific endeavour, the inherent beauty within mathematical formulae and the intelligibility of natural laws and processes has pushed theology into a search for immanent direction in the universe, the prospect of which might seem implausible at first sight. If direction can be discerned, however, it necessarily includes human beings as part of the whole cloth of natural processes. Direction and purpose are human concerns and arise within human consciousness. Therefore, for what we might call the fullest explanatory power of science to be appreciated, account will need to be taken of human creativity and consciousness.

A ROLE FOR EXPERIENCE

This returns us to the earlier discussion about the role of religious experience. Interestingly, after surveying various theories about divine action in the Islamic discussion of science and religion and finding them unresolved, Nidhal Guessoum, Professor of Physics and Astronomy at the American University of Sharjah, UAE, contributing to the İhsanoğlu Task Force on Islam & Science cited earlier, recommends turning to religious experience as the *locus* where divine action relates to the concept of mind or spirit. The

20. Brian Goodwin, *How the Leopard Changed Its Spots*, London: Orion Books, 1994, pp. 166-68.

advantage of a theology in this regard is that it envisages awareness of transcendent reality to arise naturally within the human being as a result of our living under the ambiguous conditions of evolving life and where we interpret such awareness according to our varying cultural frameworks in a globally interconnected world. Experiences are real, often yielding a sense of presence or overwhelming joy and oneness with all living things, leading to a renewed life committed to self-giving compassion, and can be said to be cognitive. The British biologist and zoologist, Alister Hardy, was the first to insist on research into religious experience as a natural biological function of being human. That was in the mid-twentieth century and there are now thousands of reports of such experiences from around the world in the Alister Hardy archives.[21]

From a religious point of view these experiences do not involve explanations in terms of divine intervention; from a scientific point of view the validity of investigating such experiences stems from their openness to empirical research. The central question hovering over reports of religious experience, however, is how it finds a place within the domain of brain/mind/consciousness studies in neuroscience. For some, such experiences will likely be seen as an hallucinatory epiphenomenon or by-product resulting from brain/mind identity; but for others, consciousness constitutes its own non-physical reality, distinguishable from yet correlated with brain activity. This is a huge expanding area of enquiry in science and religion debates. But from my perspective the same issue, stemming from the universe's ambiguity, arises in respect of a choice between a naturalistic and religious assumption interpreting religious experience. In other words, explanations of consciousness may be reduced to material

21. Alister Hardy's seminal book is *The Spiritual Nature of Man: Study of Contemporary Religious Experience*, London: Jonathan Cape, 1975. Discussion of the archives can be found in David Hay, *Something There: The Biology of the Human Spirit*, London: Darton, Longman and Todd, 2006. Alister Hardy founded The Alister Hardy Religious Experience Research Centre in the 1960s.

assumptions or they may be open to other kinds of explanation not limited by materialist philosophy.[22]

CONCLUSION

In conclusion, let me say that most science and religion discussions finally turn on questions of the status and meaning of being human. This was at the heart of the difficulties faced by both Copernicus and Darwin. With the former, the earth, and therefore the human, was no longer at the centre of God's universe and with the latter the human merged with other life-forms in the evolution of organic life.

A similar anxiety underlies, I believe, present discussions over the possibility of discerning resonance between the scientific investigation of natural processes and the human search for meaning, purpose, hope and excitement at being alive. Furthermore, it is clear that meaning, purpose, hope and excitement do not have to be entertained as merely optional extras to the evolutionary journey, for they are products of the journey itself. As the science writer, Gaia Vince, has affirmed: as a human species, 'we are continually making ourselves through a triad of genetic, environmental and cultural evolution, and … we've become an extraordinary species capable of directing our own destiny.'[23] This estimation from the perspective of evolutionary anthropology seems entirely open to what a fruitful dialogue between religion and science might offer. Cultural evolution emerges from biological evolution and therefore a 'whole' explanation about the implications of the scientific investigation of life is capable of proceeding by way of

22. For a summary discussion of these debates, see John Hick, *The New Frontier of Religion and Science: Religious Experience, Neuroscience and the Transcendent*, Palgrave Macmillan, 2006.
23. Gaia Vince, *Transcendence: How Humans Evolved Through Fire, Language, Beauty and Time*, Penguin, Allen Lane, 2019, p. 234.

theological/philosophical self-critical analysis and respectful mutuality between numerous disciplines.

The following assessment of science and religions debates by Oxford University Professor of Physics, Andrew Steane, returns us to the notion of mystery:

> [A]ll physical things have a present existence that is, at root, mysterious, and inaccessible to science or the scientific method. Scientific 'explanations' are lines of connection starting out from this mystery and then invoking the assumption that the universe is somehow shot through with deep pattern.[24]

We can interpret that 'deep pattern' either naturalistically or religiously, according to the ambiguity of how human beings perceive their place in the scheme of things. It is the nature of human self-consciousness that neither 'explanation' can be 100% beyond reasonable doubt. Steane reflects further on the observation of 'deep pattern':

Anyone who thinks that scientific explanations are the whole of human experience, or the only thing that matters, will, of course, end up atheist if they are consistent. However, in fact scientific 'explanations' on their own are just lines of reasoning dangling in the void; they are neither the whole of human experience, nor the only thing that matters. Without love, they are like so much noise.[25]

The mention of love here is not a move to end on a homiletic note. It is simply to affirm that the epistemic ambiguity of material givenness, first unleashed by the Big Bang and extending into the unforeseeable future, includes a human reality which invites both

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[24]. Andrew Steane, *Science and Humanity: A Humane Philosophy of Science and Religion*, Oxford University Press, 2018, p. 134.
[25]. *Science and Humanity*, p. 138.

scientific and theological/philosophical reflection, albeit from their different perspectives, on the 'deep pattern' – another term for which is mystery.