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The end of certainty: a challenge to aggressive secularism.

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Advocates of new atheism typically assert that everything which has meaning falls in the domain of the natural and may at least in principle be explained scientifically. In contrast, Christian belief sees all that is as God’s creation, with the person and work of Jesus Christ at the centre of God’s mission to the world. As evidence-based science profoundly affects how we live and how we understand ourselves and all of nature, well informed dialogue between science and religion has an important place in discerning the mission of God in today’s world. Contemporary science recognizes inherent uncertainty and unpredictability in many natural processes, opening up new avenues for dialogue between science and religion. In particular, uncertainty is a characteristic of the evolution of complex entities such as living organisms and human culture. The open-endedness of processes understood using complexity and emergence undermines deterministic and reductionist views of nature and provides a way of imagining beyond nature as presently conceived. It also resonates with the religious sensibility that there is much we can only intuit, approach with faith, and indeed which may forever be beyond human comprehension. This resonance invites creative conversation between scientific and religious approaches to all creation and to what it is to be human, enabling each to enrich and inform the other.

Introduction

The voices of aggressive atheism directly confront those who believe that this world is God’s creation, that humankind is created in the image of God, and that human lives find their deepest meaning in commitment to the work of God. Their message that there is no God is grounded in appeal to the extraordinary successes of scientific work, and is presented as an alternative and far more “reasonable” belief system. It is a message that has considerable appeal to generations whose world-view is dominantly informed by the assumptions of modernity. In this paper we look at some contemporary trends in scientific work which point to areas of open-endedness and uncertainty in scientific understanding, and even to perpetual, elusive mystery. I shall present some of these characteristics and argue that they are particularly productive in dialogue between science and religious belief.

Christian understanding of the work of God has, at its core, belief in Jesus Christ – “him whom he has sent” (John 6:29). Christian witness to the work of God of necessity assumes that belief in God is credible, and that understanding of the mission of God in the world is anchored in how Jesus is remembered and interpreted as the Christ. Whether such witness takes place in schools, churches or public discourse, it calls not only for careful and critical understanding of the grounds of Christian belief, but also of the alternatives. The alternative of particular concern in this paper is atheism, with its appeal to science and its claim to control the intellectual high ground of “reason”. This paper questions the confident, reductionist ways of understanding science which are evident in some arguments for atheism.

Bringing contemporary science into conversation with Christian faith and understanding has been, and often still is, a profoundly unsettling process. It may call into question deeply held ways of understanding and expressing religious belief, and also of the nature and roles of science. In doing so, it runs across the grain of what Stephen Pickard describes as “the drive for certainty in human affairs, both political and religious”.\(^1\) Pickard argues that uncertainty in religion is an essential part of openness to change and to innovation in response to the changing world.\(^2\) The work of God is greater than any of our “certainties”, and the provisional nature of either religious faith or of scientific understanding calls for careful listening and for generous living with diversity as we share life’s rich and complex journey with those with whom we differ.
The elusive horizon of nature.

In The God Delusion, Richard Dawkins makes his intentions abundantly clear: “I am attacking God, all gods, anything and everything supernatural, wherever and whenever they have been or will be invented.” In his view, there is no supernatural. Those who believe otherwise are ultimately deluded and their beliefs are misdirected by human constructs. Several writers have published detailed critical responses to The God Delusion and to other contemporary writings promoting atheism and attacking religious beliefs and practices. This article has different aims – to explore the potential of some contemporary developments in science in order to enhance dialogue between science and religion, and to relate this dialogue to the mission of God. In particular, it explores dualism between the natural and supernatural. Is this dualism necessary in order to live by faith within Christian or other religious traditions? Is the supernatural inevitably doomed to collapse under natural explanations, be they neurological, sociological or something else? Alternatively, is the natural doomed to oblivion as the eschatological hopes of Christian or other religious beliefs are ultimately fulfilled? Are there ways that may be imagined in which the natural and supernatural each form part of a greater whole and neither is swallowed up in the other? Dawkins readily admits that it may be possible to be religious without belief in the supernatural. Many people would identify with his observation that “a quasi-mystical response to nature and the universe is common among scientists and rationalists.” His immediate assertion that such a response has “no connection with supernatural belief” is less obvious and more open to question. He himself, as a scientist and rationalist (as well as an atheist) who shares that common sense of awe, recognises it as religious in character. To make this point he quotes Einstein’s thoughts on what religion meant to him, and finds resonance with his own religious experience:

To sense that behind anything that can be experienced there is a something that our mind cannot grasp and whose beauty and sublimity reaches us only indirectly and as a feeble reflection, this is religiousness. In this sense I am religious. In this sense I too am religious, with the reservation that ‘cannot grasp’ does not have to mean ‘forever ungraspable’. A “new atheist” world-view such as that of Dawkins is one in which everything that exists or has meaning falls within the natural. In such a view, although that “something that our mind cannot grasp” may alluringly appear on the receding horizon as scientific knowledge advances, it eventually may be apprehended and yield to scientific explanation. We might then have a “theory of everything” in which at least a few sufficiently trained humans could find ultimate vindication for their atheism. However, the “something” giving rise to intimations of the sublime and beautiful glimpsed on that elusive horizon may be for ever elusive. It might be the very nature of nature itself to be on trajectories that are open-ended, for ever creating the new and the unpredictable. Furthermore, the human mind may remain inescapably limited, even amongst the most creative and technologically supported parts of humankind, and simply be incapable of ever constructing a true “theory of everything”. Then again, it may be that the supernatural is not so easily dismissed. There may be that which lies outside the concepts and conventions of science by which the “natural” is imagined, measured and modelled, but which nevertheless impinges on humans and is experienced in ways which defy rational description and which will remain forever “ungrasped”, at least by scientific methodology.

Conflict of worldviews

Attacking all gods and the supernatural is not, for Dawkins, a mere intellectual exercise. He is concerned that supernatural religious beliefs are far from benign and frequently lead to conflict. One such conflict arises in science education wherever creation and evolution are set against each other. He is pained to encounter people who in choosing their particular creationist beliefs have rejected the scientific narrative of evolution, cutting themselves off from the empowerment and delight which come from a deeper understanding of nature. His own attacks on religious beliefs make this concern a two-edged sword, since he is himself discouraging others from engagement with religious traditions of meaning-making which many would also regard as deeply enriching. The creation-evolution issue is an extreme example of the wider issue of tension between worldviews, and of which ones dominate, particularly as young people journey through secondary and tertiary education. Therese D’Orsa identifies modernity as the world view dominant in western education. It is the view that:
...the world constitutes a closed system and that all explanations of reality have to be confined to this system. This worldview, which became influential from the Enlightenment onwards, now stands behind most disciplines and their methods of human enquiry and so is dominant in academic disciplines.  

She sees challenging the worldview of modernity as a "huge issue in educating young people in Christian schools". Although the assumptions of modernity "have been called into question by the post-modern critique, it remains the default position to which most people return". It is a position supported by excessively reductionist views of science which, as shall be argued, science itself is increasingly calling into question. The mission of Christian educators, whether at school, home, church or elsewhere is about equipping people to grow into deeper relationships with other people, all of creation and ultimately with God. If people do not have ways of engaging in dialogue between alternative worldviews, then rejection of one and acceptance of another becomes more likely. How then can we better equip people to engage in dialogue between the worldviews of faith traditions and of modernity, and the particular scientific expressions of modernity which are used to justify atheist beliefs? A Christian response needs to be sufficiently insightful of scientific understanding to appreciate its strengths and its limitations and, where appropriate, to positively and joyfully integrate scientific insights into Christian teaching, worship and practice, all of which witness to the mission of God in the world. Scientific understanding is then affirmed as a gift from God and as one expression of liberating truth, rather than as a threat to faith. A Christian response also needs to equip people to accept diversity in Christian faith and practice. As those for whom science-faith issues are intellectually important explore dialogue between science and religion, they will need freedom and encouragement to explore critical questions in theology and biblical studies. Such questions may be threatening to others in their faith community, and there may be pastoral work to be done to ensure ongoing mutual love and acceptance. In 1 Corinthians, Paul appealed for acceptance of diversity of gifts in the church using his well-known analogy of the human body. Such acceptance needs also to extend to diversity of where people are in their intellectual and faith journeys.

The end of certainty and some limits of science.

In the last few hundred years, there have been several occasions where particularly successful science has led to popular extrapolation of ideas well beyond where their applicability was properly established. For example, in the mid-17th century, Descartes speculated that the bodies of animals, including humans, could be regarded as complicated machines governed by the laws of physics. By the end of that century, the extraordinary success of Newton's mathematical formulation of mechanics further encouraged mechanical, deterministic, reductionist ways of imagining nature. In such a view, since universal laws determine how the universe changes over time, if sufficient is known about its present state, its history may be deduced and future predicted. Similarly, the laws of physics which control man-made machines were supposed to control all features of nature imagined as machine-like. Most of nature, however, is immensely more complicated than the gross astronomical features dealt with by celestial mechanics, or than machines ever devised by humans. This is particularly obvious with life. The tension between a deterministic world-view and the behaviour of living beings reaches its most acute form in human decision making and action. It is a tension which has exercised philosophers and theologians alike. As Ilya Prigogine notes:

Again and again, the great thinkers in Western traditions, such as Immanuel Kant, Alfred North Whitehead, and Martin Heidegger, felt they had to make a tragic choice between an alienating science or an antiscientific philosophy. They attempted to find some compromise, but none proved to be satisfactory.

A possible reason for the lack of satisfactory deterministic explanation of how living organisms function is to say that the amount of information required is simply too great to retrieve or to compute. However, the assumption that underlying determinism exists and is only hidden by human limitations is not necessarily correct. If it is not correct, it becomes a barrier to deeper insights into the relationship between the behaviours of living organisms and their underlying physical functioning. Karl Popper identifies the depth of this problem when it comes to understanding what it is to be human:
I regard Laplacian\textsuperscript{13} determinism – confirmed as it may seem to be by the prima facie deterministic theories of physics, and by their marvellous success – as the most solid and serious obstacle to our understanding and justifying the nature of human freedom, creativity, and responsibility.\textsuperscript{14}

When students are learning physics, the underlying laws are commonly exposed by appeal to experiments where the arrangements are simple, or even idealised. More complicated situations are then typically understood using “bottom up” descriptions: what are the parts doing as they obey the underlying laws, and how do they interact to make the whole? This approach presents a deterministic view of nature which contributes to the cultural background of modernism. During the last century, the limits of conditions under which the laws of physics support determinism have been increasingly understood. In the 1920s, the development of quantum mechanics showed that on the atomic scale matter behaves probabilistically, and the determinism assumed by classical physics depends on averaging atomic-level probabilities over the very large numbers of atoms found in everyday size samples. By the last few decades of the 20\textsuperscript{th} century, it became increasingly apparent that deterministic “bottom up” descriptions also fail for many complex entities, including all living things.

For such complex entities, what is happening to the whole thing influences its constituent parts, and they in turn influence the whole. The whole thing also is likely to be interacting with its environment, exchanging energy, material and information. It will also be changing its own form, often in irreversible ways. New forms may emerge from amongst a range of possibilities. Technically, we say that such complex entities are subject to feedback loops, they undergo processes which may be non-linear and irreversible, and their state is far from equilibrium. These ideas are readily illustrated from human experience. Our sense that time moves relentlessly forward is an expression of irreversibility, and our sense that the future is uncertain arises from accumulated experience that things might have gone one way or another. In human experience feedback loops are illustrated by the complex interplay between our physical and mental states. As we live our lives, we are continually exchanging material, energy and information with our environment. We experience nonlinear processes when small amounts of energy or information may lead to anything from much physical exertion or intellectual activity to virtually none and, as long as we live, we are in a state of continuous change. Because complex systems occur so widely, including entities as diverse as global weather, human cultural functioning and, as already noted, all life, complexity and emergence has become a major area of research.\textsuperscript{15}

Complexity in nature enables self-organisation, so that new forms emerge as older ones change in multiple ways. Interactions with the environment select which ones survive and so have potential to evolve further. Increasing complexity occurs in two distinct but interacting domains: the material domain and the domain of coded information. In humans, as in all living organisms, the material domain is represented by many layers of complexity, from atoms and molecules to cells and the body as whole. The domain of coded information is present at the molecular level as accumulated “memory” of evolutionary past recorded in genes and related body chemistry. Coded information is also present at the higher level of memory, consciousness and culture. Carolyn King describes these two domains as “two different forms of reality”, each of which is essential to life:

\textit{The interactions between (the material and coded information domains) are unimaginably complicated, but essential to life in the every day. Over time they are the source of all natural, historical and cultural diversity.}\textsuperscript{16}

Her statements are widely accepted science, but her reference to “source” may also be read as pointing to a theological significance, as Arthur Peacocke suggests:

\textit{Would it be too much to suggest that these new, emergentist monist insights into the inbuilt creativity of our world through its complexifying and self-organizing capacities open up a vista of continuity between the physical, the mental and the spiritual which could in this new century, break down the parallel barricades mounted in the last, both between the “two cultures” of the sciences and the humanities – and between the experiences of nature and of God, the sciences and religion?}\textsuperscript{17}

\textbf{Embracing unity and an open-ended future}

Developing insight into how complex entities evolve and new forms of being emerge offers a conceptual framework which draws the physical sciences, life sciences and humanities into a single
unity. In particular, it offers a way of conceptualising continuity between biological and cultural evolution, including evolution of human reflective consciousness.\textsuperscript{18} Once reflective consciousness is recognised as an emergent attribute, so too is spiritual awareness, at least in the sense which Peacocke describes:

*These emergent properties include...mental and personal ones and, I would add, spiritual ones – by which I mean the capacity to relate personally to that Ultimate Reality that is the source and ground of all existence....and in English that reality is “God”*\textsuperscript{19}

The concepts of complexity and emergence challenge the view that that the total universe may ultimately be explained in terms of matter, energy and the laws of physics. Science does give a robust description of how material things, whether living or non-living, do depend on this underlying physics for their embodiment. However, there are also emergent characteristics which do not follow these laws or, indeed, any specific laws,\textsuperscript{20} and which may take on a “life of their own”, independent of their original embodiment. Human creativity, for example, leads to abundant cultural expressions which evolve in different ways in different cultural environments. Such cultural expressions may be preserved and transmitted on many platforms, and there is no obvious reason why some could not continue to evolve in non-human environments of consciousness which may yet evolve, or of which we are unaware.

Even in its present form, understanding of complexity points towards open-ended trajectories of evolution of life and culture. It is credible that in future new and currently unimagined levels of being may emerge, or may be recognized as present all along. So imagined, the age-old intuitive dualisms between body and soul, the natural and supernatural and the material and spiritual may be subsumed into evolving awareness of a greater reality. Neither the natural nor the supernatural needs be subordinated to or explained by the other, but each as presently conceived may be seen as a limited expression of something greater – “something that our mind cannot grasp and whose beauty and sublimity reaches us only indirectly and as a feeble reflection”, as Albert Einstein put it. Others may choose the language of religious tradition.

Russel Stannard, whose own career as a physicist was initiated by enthrallment with Einstein’s theories of relativity, expresses a similar call to humility and acceptance of likely limitations of human knowledge:

*Following through for oneself the thoughts of great scientists such as Einstein can be an exhilarating and attitude-changing experience. But in addition, it is to be seen as a call to exercise a measure of humility. We live in an age when certain scientists allow their love of the subject to get the better of them; they make extravagant claims as to the scope and power of scientific thinking.*\textsuperscript{21}

Such humility is not an excuse to hold back from exploring the boundaries of science on frontiers often held to be particularly sacred, such as the origins of the universe or the beginnings of life. Rather, it is recognition that there is no fundamental incompatibility between scientific thinking, and belief that in and beyond that which is accessible to scientific investigation, there is something more enduring and ultimate. In Christian tradition, Jesus Christ incarnates that “Something” amongst us, inviting us to believe that God relates personally to people, calling us to live lives guided by love of God and love of neighbour, and calling us to be worshiping and purposeful participants in the mission of God.

**Breaking down barriers**

I have argued that contemporary scientific narratives point to an open-endedness which calls for humility, particularly in dealing with the intuitions of mystery and wonder which nourish religious belief. This is not an invitation to use uncertainty in science as in itself justification for belief in God.\textsuperscript{22} Nor is it an invitation to insist that biblical stories which are traditionally read as being about the supernatural prove that science does not have all the answers and that God therefore exists. Rather, it is an invitation to conversation between science and religion in the expectation that each has much to learn from the other. It is a conversation in which even the categories of natural and supernatural may be called into question. Such an outcome is unlikely if Christian belief is understood in terms of certainties derived from uncritical readings of Christian history and biblical writings. New atheist writers such as Dawkins portray and ridicule a caricature of uncritical Christian belief which he then
invites people to dismiss. Such caricatures may not be devoid of substance. In Christian education of all sorts, there is opportunity and obligation to equip people to go deeper in their faith and understanding so that they may see beyond such caricatures. This is the “meaning making in context” which is central to mission education. In this instance, the context includes a wealth of scientific insights which are themselves dynamic and changing, and which increasingly strident voices claim are all that is necessary to give meaning to life.

We may always expect a great deal of diversity in how people in a local church believe and interpret their faith, and that includes the priest or pastor and other leaders. That diversity is immensely greater world-wide. To what extent is that diversity typically acknowledged and respected? I suggest that the following questions may identify possible experiences of a person seeking to integrate a scientific world view and Christian belief. Is the Christian belief they encounter expressed in terms of certainties which may leave a person who questions those certainties feeling that their faith is deficient and that they are not fully accepted? Alternatively, does what is heard legitimate, and indeed encourage questioning? Is there generous acceptance of diversity of belief, including of the wide range of ways in which people engage with the Bible? Are they able to bring an open-ended understanding of science to Christian beliefs that also have an important place for mystery, the unknown, and that which is likely to be forever beyond human understanding? Is the presence and work of God understood to be so comprehensive and unbounded that it continually places before us elusive horizons of beauty and possibility, not least as we bring scientific insights into conversation with Christian beliefs?

David Bosch discerns six paradigms of mission which have existed at times during church history. He observes that “One’s theology of mission is always closely dependent on one’s theology of salvation; it would therefore be correct to say that salvation – however we define salvation – determines the scope of the missionary enterprise.” In the contemporary, emerging ecumenical paradigm of mission, “Salvation is as coherent, broad and deep as the needs and exigencies of human existence” In a world suffering ecological damage as never before, with the human population on collision course with resource limitations and climate change, and in frequent conflict with itself, these needs and exigencies call for an inclusive vision of the Mission of God which unites all things seen and unseen, and embraces old dualisms such as material and spiritual, natural and supernatural in a greater vision of the being of Christ and the heart of God.

END NOTES

1. PICKARD, Stephen. The In-Between God, (Hindmarsh, ATF Press, 2008), p16
2. ibid, Chapter II, Uncertainty, Religion and Trust, pp 15-32
5. DAWKINS, The God Delusion, p11
6. ibid, p19
7. ibid, pp284,285
9. ibid, p9
11. Ilya Prigogine was awarded the 1977 Nobel Prize in Chemistry for work which is critical to contemporary understanding of complex systems.
13. The idea that an intellect with sufficient knowledge to use the laws of physics to determine the future is formally ascribed to Laplace.
15. One research centre is the Santa Fe Institute for the Study of Complexity. A search of its resident and external faculty gives insight into the scope of current research on complex systems. (http://www.santafe.edu/, accessed June 2011).
18. The emphasis here is on “conceptualising”. Many features and significant gaps, such as the beginnings of life and the nature of consciousness, remain scientifically unresolved foci of active research.
19. PEACOCKE, *Complexity, Emergence and Divine Creativity*, pp197,198
22. To do so would be to follow the agenda of the Intelligent Design movement.  Dawkins, *The God Delusion*, p125
26. ibid p182
27. ibid p393
28. ibid p400