Bruce Craven: Contrarian or Questioning Thinker?

John Pilbrow

Abstract: This article continues the author's tribute to Bruce Craven, published on the ISCAST website earlier this year and reproduced here, revised and expanded, in the Appendix. Craven's relevant contributions are reviewed in the hope that both ISCAST members and other readers can appreciate his robust thinking at the nexus of Christianity and science. The approach is straightforward, the author focusing on Craven's articles published in *Christian Perspectives on Science and Technology*, where he gleans true gems and a few weaknesses. What emerges at the end of this exploration is the portrait of Bruce Craven as a Christian "questioning thinker" who—equipped with the specific skills of his mathematical expertise—is able to inspire his readers today, as he did in the past.

Keywords: Bruce Craven; creation narratives; divine presence; evolution; scientific method

In his writings as well as during ISCAST meetings and conferences, Bruce Craven always came across as a somewhat *contrarian* thinker because of the kinds of questions he posed. What is attempted here is a review of some of his thought as exemplified in a number of articles

Emeritus Professor John Pilbrow is a Life Fellow and former President of ISCAST.

available on the ISCAST journal's website.[1] On balance, what emerges is not so much a *contrarian* thinker, but rather someone who wanted more *i*s dotted and more *t*s crossed, in fact, very much a *questioning* thinker.

We now consider some of the issues that Bruce raised and on which he pondered in some depth, and see what we can learn from them. This discussion does not exhaust all that Bruce Craven wrote or thought, but should serve to illustrate why we are much in his debt.

For those readers who did not know Bruce or who were unaware of his contributions to ISCAST, biographical information is provided in the Appendix.

God's Involvement in the World

When thinking about science from a Christian perspective, Bruce observed that to state that "it is all 'God's world' can become a meaningless platitude if our system excludes God from any continuing role in the world." Indeed, he continued to try to understand how God is involved in the cosmos, stopping short of wanting to put God's name in scientific papers. Rather, the question of God's involvement[2] comes in at a philosophical and theological level, where one can think about purpose.

1 Go to http://journal.iscast.org/ (search for *Craven*). Articles on the website of *Christian Perspectives on Science and Technology*: "Editorial" (with John Pilbrow) vol. 10 (December 2014); "Working Hypotheses in Science" vol. 8 (January 2012); "What Doubt Is Reasonable?" vol. 7 (December 2011); Review of Michael Poole's book *The New Atheism: 10 Arguments that Don't Hold Water* vol. 6 (May 2010); "How Useful is Unpredictability? A Mathematician's Thoughts on Gambling" vol. 6 (April 2010); "Evolution—A Short Guide for the Perplexed" vol. 4 (October 2008); "What Does Genesis Tell Us?" vol. 4 (June 2008); "Explanation and Belief" vol. 4 (April 2008); "Ethics in Research" vol. 2 (December 2006); "Are God's Actions Hidden in Chaos?" vol. 2 (June 2006); "Death of Science?" vol. 1 (November 2003).

2 The topic was discussed in six volumes resulting from a series of conferences jointly organised by the Center for Theology & the Natural Sciences, Berkeley, and the Vatican Observatory. Under the general heading, *Scientific Perspectives on Divine Action*, here are the titles of the six volumes in this series: *Quantum Cosmology and the Laws of Nature*; *Chaos and Complexity*; *Evolution and Molecular Biology*; *Neuroscience and The Person*; *Quantum Mechanics*; *Twenty Years of Challenge and Progress*. ISCAST members will be interested to know that the last chapter in the sixth and final volume was written by ISCAST Fellow, Mark Worthing.

He wondered whether Chaos Theory might help us understand how God acts. He noted that many physical systems are extremely sensitive to initial conditions, so that a small unobserved input can produce large consequences later, and moreover can behave in a seemingly random way. He was not alone in wondering whether perhaps God intervenes[3] in His creation by such small inputs, without violating the regularities that we call physical laws. He thought the world may be less deterministic, and more open to the future, than many suppose.

What Does Genesis Tell Us?

Bruce readily acknowledged that what we know from modern science forces us to rethink how we understand the early chapters of Genesis. In fact this is an ongoing necessity since those chapters continue to be at the core of much public controversy. He had this to say about Genesis:

> A first reading of Genesis suggests a creation in six literal days (but what was a day before the sun was there?). Many early Christian writers did not understand it so literally. Calculations from lists of ancestors suggest about 6000 years since the creation (though only if we had complete records, but we don't). Ancient writers had not our technical terms, and often expressed ideas by stories. We must try to understand the main point of the story, but to insist on a literal interpretation of every detail does little to praise God. They, like we, were concerned with how things began; but they were interested in purpose—what was it for?—whereas we are much more interested in method—how did it come about? The two don't have to fight. The authors of Genesis shared common traditions with their neighbouring peoples. These included creation from chaos, in a number of stages. But Genesis understood it differently. Instead of a number of gods fighting in the sky, a random world, and humans as an afterthought (only to feed the gods), Genesis describes a world made by a single creator, a world with coherent structure, and humans as important, made with

3 It is probably better to speak in terms of God interacting with his Creation rather than intervening. The latter is open to the idea that God only acts occasionally, rather than upholding the universe continually.

> something Godlike in them, and God feeds them. If this is what Genesis 1 was telling its first hearers, then we need not get hung up about days.[4]

This statement is consistent with the point of view expressed by the late Dr John Thompson[5] and, in the light of that, Bruce rejected the false idea that God made the world look like it was old, an argument sometimes used by those promoting a literal view of Genesis 1-3. After all, Genesis 1-3 is not the only scriptural story of creation. It is worth pointing out that the 2017 ISCAST Lecturer, Tom McLeish, has noted there are more than twenty Creation Narratives in Scripture.[6]

In passing, while on the subject of the early chapters of Genesis, Bruce pointed out that while the New Testament does not mention research, to fulfil the requirements of Gen 1:28 necessitated research and observation, which we know to be the key to modern science.

Explanation and Belief

Bruce noted that scientific explanations depend so often on analogy with simpler things and he questioned: what were the limits of this approach? He readily acknowledged that the scientific enterprise ever seeks to move closer to the truth. He made a particularly interesting observation that a clear explanation in one culture may be incomprehensible in another. Accordingly, he pondered how we may choose between different possible explanations. For example should we adopt the simplest explanation (Occam's Razor)? Or, alternatively, choose

4 "What Does Genesis Tell Us?" *Christian Perspectives on Science and Technology* 4 (June 2008) *https://journal.iscast.org/past-issues/what-does-genesis-tell-us (accessed on 10 May 2022).*

5 J. A. Thompson, *Genesis 1-3: Science? History? Theology?* (Melbourne: ISCAST and Acorn Press, 2007).

6 Tom McLeish, "Biblical Creation: Over 20 Creation Accounts in the Bible?" (28 October 2019) https://iscast.org/news/biblical-creation-over-20-creation-accounts-in-the-bible/ (accessed on 10 May 2022).

an explanation with a beautiful equation à la Paul Dirac?[7] This still involves making a judgment in a given case.

Further, he was well aware that there are, of course, different levels of explanation. For example, the otherwise discredited theory of epicycles to explain planetary motion nevertheless remains important in navigation. Then there are theories with predictive capacity, e.g., gravitation. He noted that Newton's great discovery was that the physics of the falling pebble and planetary motion involve the same theory.

Bruce frequently asked whether there is intelligence and/or purpose behind observed phenomena. He wondered what level of autonomy the universe possesses, something that Polkinghorne discussed in terms of the contrast between human free will and his free process defence concerning the intrinsic behaviour of the universe.[8]

Limits to Science

Bruce recognised that many individual scientists have not thought through the philosophy of science that they actually use and default to scientism, the idea that if something cannot be demonstrated scientifically it is not meaningful knowledge. This situation demonstrates the long reach of the Vienna Circle's Logical Positivism from the 1920s and the 1930s. I guess what he wanted, above all, was for all scientists to have thought deeply about their science and the basis on which that science rests.

Bruce was certainly aware that our present knowledge and current understanding will always be tentative, but he realised that does not excuse us from embracing the best understanding we can find. He was rightly concerned about the limits of science and in several places

7 As an Honours student a long time ago, I came across Dirac's relativistic theory of the electron and the key equation which, still to my mind, is one of the most wonderful equations in the whole of science. It not only illuminated the relativistic behaviour of electrons, but predicted antimatter (negative electrons or positrons used in PET scans in medicine today). The prediction predated the discovery of antiparticles by several years.

8 John Polkinghorne, *Science and Providence* (London: SPCK, 1989), 66.

referred to Nobel Laureate Sir Peter Medawar, a rationalist, who had this to say:

> There is no quicker way for a scientist to bring discredit upon himself and upon his profession than roundly to declare—particularly when no declaration of any kind is called for—that science knows or soon will know the answers to all questions worth asking, and that questions that do not admit a scientific answer are in some way non-questions or "pseudo-questions" that only simpletons ask and only the gullible profess to be able to answer.[9]

Though Bruce did not write a specific article to articulate a Christian understanding of the philosophy of science, we can glean something of how that would look from the points raised in this reflection. Bruce always wanted to have a distinct Christian perspective. It is in this respect that his understanding went beyond Medawar's statement, even though he found that to be a helpful insight.

Further, he was concerned about pressure placed on scientists in certain contexts to assert opinions not supported by the data. He referred particularly those in Christian Colleges (especially in the USA) who are not free to express an opinion on evolution except to dismiss it.[10]

Various Roles Played by Doubt

Here Bruce explores a range of issues that involve doubt both as a positive and as a negative influence.

Doubt often plays a significant role in science when seeking to judge between two or more competing theories. And there is also doubt that some have regarding the reality of God and the truth of the Christian story. But he noted an insidious kind of doubt resulting from research funded by large international enterprises that wanted scientific

9 Peter Medawar, *The Limits of Science* (Oxford University Press, 1984).

10 Bruce would have had in mind the situation faced by the 2008 ISCAST Lecturer, Richard Colling, author of *Random Designer* (Bourbonnais, IL: Browning Press, 2004), who ultimately resigned from a Christian college in the US after being prevented from teaching evolution there.

research to support their product. He refers to the exposé *Merchants of Doubt* that reported in detail on the attempt to sow the seeds of doubt on an unwary public and the science community.[11]

He also posed the question, "What is reasonable doubt?" particularly in the realm of potential catastrophes. He realised that decision makers cannot prevaricate forever.[12] Then he asked, "What counts as good scientific evidence?" He mentioned the conflict between Big Bang Cosmology and Steady State Theory that was settled eventually in 1964 in favour of the Big Bang after the observation of the microwave background from the early universe.

With regard to the role of prediction in science, Bruce referred to neutrinos that were predicted long before they were detected. He noted that dark matter is required in cosmology, but has not actually been identified as yet. Here I would add gravitational waves, predicted by Einstein's General Relativity in 1915, but not observed until a century later.[13]

Bruce also noted the increasing pressures on researchers. For example, universities have to some extent become businesses and without external funding (particularly from industry) some university research may not be possible. There are ethical issues involved.[14]

Evolution—A Short Guide for the Perplexed

Bruce remained perplexed about evolution, particularly because he recognised that Darwinism has often become a worldview that goes beyond the realm of biological evolution, and imparts to it a broad function and purpose that cannot be deduced from biology alone. He was,

11 Naomi Oreskes and Erik M. Conway, *Merchants of Doubt: How a Handful of Scientists Obscure the Truth on Issues from Tobacco to Global Warming* (Bloomsbury, 2010).

12 See *A Reckless God: Currents and Challenges in the Christian Conversations with Science*, ed. Roland Ashby et al. (Melbourne: ISCAST and Morning Star, 2018), 131, from the review of Sir John Houghton's autobiography, *In the Eye of the Storm.*

13 See Stephen Ames and John Pilbrow, "Gravitational Waves Discovery Opens New Way of Looking at the Universe" in *A Reckless God*, 286.

14 For more information regarding ethical issues in science, see Craven, "Ethics in Research" https://journal.iscast.org/past-issues/ethics-in-research (accessed on 10 May 2022).

however, well aware that the science of evolution is based on evidence from four kinds of observations:

(a) The earth is much older than 6000 years;
(b) Many species are known to be extinct;
(c) There are demonstrable common biological ancestries;[15]
(d) Neo-Darwinian natural selection operating locally (for closely related species).

While he questioned, "If we say evolution has been established, does that apply equally to (a)-(d)?" he did not address the technical issues in detail as a biologist or palaeontologist might have done, but rather was responding more as a mathematician, looking for a level of proof as one might in regard to a mathematical theorem. He was also unhappy with the sloppy use of "random" in much evolutionary discourse.[16] But, above all, Bruce wanted evolution to involve purpose. I respond by saying that to deal with such matters, we need to delineate the basis of science from wider philosophical and theological issues to do with meaning and purpose. Just as the presuppositions which underpin science are not themselves derivable within science, so any attempt to inject purpose into the discussion must be at the philosophical and theological level, but cannot be incorporated in the science itself.

He referred to the dispute between the late Stephen Jay Gould (Harvard) and Simon Conway Morris (Cambridge) during the late 1990s regarding what would happen if the evolutionary tape were rerun. He was encouraged by Conway Morris' arguments outlining the basis of evolutionary convergence. That is, there are islands of stability, random processes are involved, and not all outcomes are possible. This is the kind of language that Bruce as a mathematician would have understood very well. In fact this is probably about the nearest one could get to Bruce's quest for purpose in evolution.

15 Graeme Finlay, *Human Evolution* (Cambridge University Press, 2014). Finlay is an Evangelical Christian.

16 It is noted that Bruce's discussion of randomness in *Evolution—A Short Guide for the Perplexed* and in *Working Hypotheses in Science* are found to lack rigour.

Unpredictability

Bruce's interests and inquisitiveness knew no bounds. In thinking as a mathematician about unpredictability he wondered why it was that so many people want to gamble. He concluded that the reason is that as we are no longer hunter gatherers, our lives do not involve the same level of risk as experienced by earlier humans. An interesting observation.

The Scientific Enterprise

Bruce was concerned that science as we know it might not last. His brief account of the history of science, especially of modern science in Europe, may be contrasted with the short article by Peter Harrison.[17] Science emerged in a climate of opinion that nature is not capricious, a period ripe for technological inventions particularly in navigation.

While Bruce considered the death of science as not inevitable, nevertheless he thought the danger was real. This is his rather bleak assessment of the situation as he saw it.

> The scientific enterprise will not automatically continue in our changed social climate. If it is to carry on, some scientific leaders may have to put as much effort into influencing public opinion, as they do in raising funding. Scientists must show their concern about the use, or often misuse, of their knowledge. And some imagination is needed, on how to interest the younger generation in science.

It would have been interesting to see how Bruce would have recast this statement as a challenge for Christians working in the sciences.

17 ISCAST Fellow Peter Harrison, an acknowledged international scholar on the rise of modern science in Christian Europe, has written at length on the topic. We note a recent short article, "Christianity: The Womb of Western Science" (in *A Reckless God*, 17) that captures the essence of his thought.

Conclusion

What can we say by way of a summary of Bruce's ideas and thinking? Bruce was in some ways a contrarian thinker, not because he wanted to avoid having to decide the truth or otherwise of a major scientific proposition, but rather because he wanted the best basis to be able to judge for himself. In discussions following a variety of presentations at ISCAST events, Bruce would not let us simply accept something because someone had said it, but he always wanted us to be sure we understood what we had just heard. Perhaps he was something of a terrier—a deliberative thinking terrier. He was always right to demand proper attention to the basis on which major scientific conclusions were or are made. The mathematician in him sometimes looked for a deeper level of certainty than can be guaranteed in science. My comment is that the empirical sciences involve a more subtle assessment of theoretical understanding.

Knowing that Bruce struggled with the questions as to how God interacts with the world, it would have been interesting to know what he might have said about prayer, but this does not crop up in any of his articles published in *Christian Perspectives on Science and Technology*.

Bruce was saddened by those Christians who keep science and faith in separate boxes. He recognised that for such people to integrate their understanding of faith and science would involve rethinking their understanding of both and, ultimately, to be able to embrace and celebrate both.

I'm sorry I did not have opportunities to discuss more of these issues with Bruce in recent years. We need the Bruces of this world to hold us to account for the views we hold and to be prepared to modify them when it is obvious that becomes necessary. It is my hope that this reflection will help us all to understand better the kind of thinker that Bruce Craven was, not so much a *contrarian* thinker, but rather a *questioning* thinker. This should give us all something to think about! Bruce would not settle for glib answers or for superficial thinking. He always sought to challenge us to dig deep.

Appendix

Bruce Desmond Craven, 1931–2022[18]

We report with sadness the passing of Dr Bruce Craven, a long-time Fellow of ISCAST, on the evening of 25 January 2022, after a long illness.

Bruce, who was elected a Fellow of ISCAST in the early 1990s (and a Life Fellow in 2011), had participated in the former Victorian Research Scientists' Christian Fellowship (RSCF) from the late 1950s for about 20 years. When the ISCAST online journal, *Christian Perspectives on Science and Technology*, was established, Bruce was its Founding Editor. In addition to judicious reviewing of submitted articles, which sustained the ISCAST ethos, Bruce himself contributed across a wide spectrum of issues, including as indicated in n. 1 above.

An only child, Bruce was brought up in Hampton, a Melbourne suburb, and, apart from his time in the United Kingdom, lived in the same family home until he had to move into aged care some years ago. Anyone who ever visited his home would have seen the extensive bookcases in hall and rooms lined with mathematical journals and books on an endless variety of topics!

Bruce attended Hampton High School until he was awarded a Scholarship to Wesley College. At Wesley, he learned French as part of the curriculum, but he also took advantage of voluntary German lessons after school. This enabled him to read mathematical journal articles not only in English, but in French and German as well.

During the early 1950s, Bruce graduated with both BSc and MSc degrees with First-Class Honours in Mathematics at the University of Melbourne. In 1955 he spent a year working in industry in the United Kingdom, followed by several years as a Senior Research Physicist at Australian Paper Manufacturers Melbourne. During this time he gained a further degree from Melbourne University, BA (Hons) in Sta-

18 An extended biography may be found in my tribute to Bruce, at https://iscast.org/news/tribute-to-bruce-craven/ Some details presented here were obtained from the notification of Bruce's death to the Australian Mathematical Society, and are used with permission.

tistics, again with First-Class Honours. In 1962 Bruce was appointed Lecturer in Mathematics at Melbourne University, ultimately becoming Reader. He was awarded a well-deserved DSc in 1973.

During his academic career, Bruce also taught himself Russian, to the point where he was able to give lectures in Russian during visits to Moscow. Something of an adventurer, he once explained that during a visit to Moscow he decided to buy a bus ticket and traveled around the outer suburbs, something his Russian maths colleagues thought wasn't such a good idea for a foreigner. But that was Bruce, often somewhat unpredictable and yet unperturbed by apparent difficulty.

Bruce was in many ways, quite self-contained. He didn't indulge in small talk such as local gossip about football, cricket, or sports in general.

Bruce contributed much to the faith-science conversation here in Melbourne for more than five decades, for which many of us remain profoundly grateful. His faith in Christ was firm and informed, and he was a loyal member of the congregation at Brighton Church of Christ for most of his life. He was a good friend to ISCAST and we'll all miss his deep and insightful comments, some of which are explored above.

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