

# ‘God and the Natural Sciences – A Constructive Conversation, with Comments on the Atheist Convention’

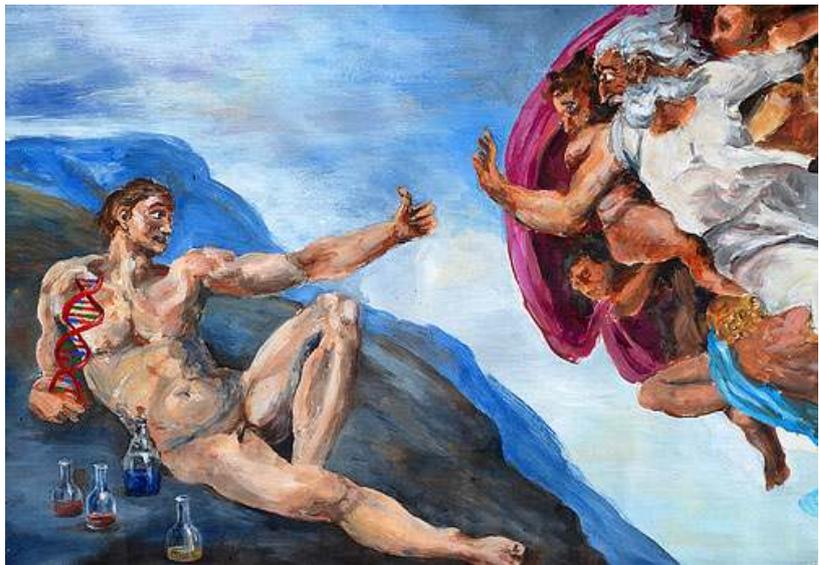
by Revd Dr Stephen Ames\*

at a forum sponsored by Social Policy Connections and the Yarra Institute for Religion and Social Policy on 23 June 2010. Dr Ames is Chair of the Yarra Institute.

## *Introduction*

Why take up the theme? The Atheist Convention is one reason. At the convention I found myself with fifteen hundred people in something like a revivalist meeting, with speakers larger than life on giant screens, well-groomed hosts, stamping of feet, cheering and ecstatic interjections. This was strident, militant, self-confident atheism in full voice and on the move to make everyone atheists.

Two big claims from the convention were that religion is utterly irrational where the standard of rationality is the natural sciences; and secondly, religion is destroying our lives. The strongest criticism of Christian belief was based on the fact of dreadful human evil in the world and that Christians did not really follow Jesus’ teaching and example. In this talk I will respond to the first issue.<sup>1</sup> It is one reason for taking up the



*"Creation by Adam - a painting by Anarya", Courtesy Shubnam, flickr CC*

theme of God and the natural sciences. But the following story is another reason.

Recently I spoke at ‘theology in the pub’ where I heard this story from a teacher at a Catholic secondary school. His students were utterly surprised at the start of the year when they learned their religious education teacher was their teacher for maths and science. Their utter surprise indicates that cultural formation had already given them the deeply taken-for-granted presumption

---

\* The Revd Dr Stephen Ames is Lecturer for 'God and the Natural Sciences' within the [Department of History and Philosophy of Science](#) at the University of Melbourne. He is also an Honorary Research Fellow in the Trinity College Theological School and a Canon of St Paul's Cathedral, Melbourne. He has a PhD in Physics and a PhD in Philosophy of Science and is researching the boundary between physics and metaphysics.

<sup>1</sup> For discussion relevant to the two other issues see my, ‘Resonances and Dissonances between Church and Society’, This was first published in, Sullivan, F., and, Leppert, S., *Church and Civil Society*, (ATF Press, Adelaide, 2004), pp. 142-185. See my website ‘Science, Religion & Society at Trinity College’ at [www.trinity.unimelb.edu.au/academic\\_programs/academic\\_forums/srs](http://www.trinity.unimelb.edu.au/academic_programs/academic_forums/srs).

that thoughtful people like their teacher could not hold together religion and science. My long-range target is our culture which promotes a construal of reality in which being realistic means, among other things, there cannot be a conjunction between theology *and* science. My missiological interest which is also my human interest is in helping interdict this cultural formation, which I think is mistaken. I want to be part of offering something better for our culture in the light of the good news of the reign of God that has come into the world through Jesus of Nazareth.

The orientation of this talk is summed up in two ways. Firstly the understanding of God I am assuming and secondly the understanding of the church's mission. I retain Anselm's understanding of God as that than which none greater can be conceived and therefore understand God as all powerful, all knowing and wholly good, who creates the world *ex nihilo* for some purpose.<sup>2</sup> However, I accept this idea of God from the standpoint of a Christian, who hears the good news of the triune God, as the narrative of a vulnerable God who proves invincible.<sup>3</sup> This good news is what frames my life and thinking, and I will selectively draw on but not elaborate this framework in what follows.

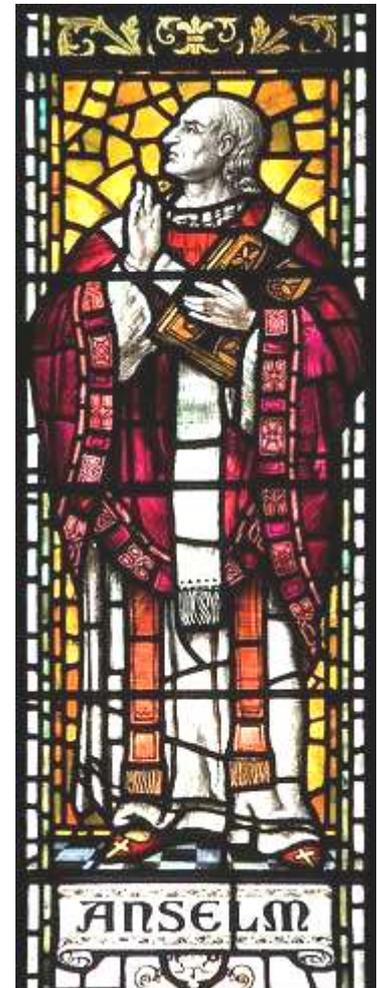
On the second matter I assume the mission of the Church is to bear witness to the kind of world in which we live. This witness is not just in terms by which the world bears witness to itself but also and especially in terms of the kind of God revealed in Christ. The task is to draw out the resonances and dissonances between these two testimonies to the kind of world in which we live and how we should act on them. Here I am especially concerned with the testimony of the natural sciences to the kind of world in which we live.

I will of course address some strictly intellectual matters about Christian faith and natural science. But more than that is needed, for science and religion meet us everyday in the media, and the media, along with other hi-tech means of communication, are just the obvious examples of the technologies that pervade our living and

shape our view of the world. The key terms 'God' and 'the natural sciences' apparently point to two different construals of reality that stand opposed or apart. For many people reality as construed by the natural sciences seems so powerful, so dominant, so comprehensive, so authoritative, compared to the reality construed by faith in God. This affects their understanding of the kind of world in which they live and how they live. This is what we are engaging with our theme.

### ***Theistic faith is fundamentally hospitable to Natural Science***

The emerging scientific tradition was built on the metaphysical foundation provided by the Qur'an, and so rooted in the heart of Islamic revelation, received an initial flow of ideas from the Kalam physical theory and then a torrent of ideas, religious traditions, scientific facts and theories from the ancient Persian, Egyptian and Byzantine centres of learning. These included texts of Greek



*St Anselm of Canterbury 1033 -1108.  
Photo Lawrence OP, flickr CC*

<sup>2</sup> For an examination of criticisms of this idea of God see, Y. Nagasawa, 'A New Defence of Anselmian Theism', *The Philosophical Quarterly*, Vol 58, 2008, pp. 577-96.

<sup>3</sup> Placher, W.C. *Narratives of a Vulnerable God*, (Westminster, John Knox Press, 1994).

natural philosophy. The texts that carried this material were translated and retranslated into Arabic. The translation movement lasted for 300 years.<sup>4</sup> The move to what we would recognise as modern science first takes place in Islam from the 9<sup>th</sup> century, for example the invention of algebra, the idea of mathematical equations, astronomy, optics, engineering, medicine, within a flourishing Islamic civilisation.<sup>5</sup> Islamic scholars attribute this to the teaching of the Qur'an directing believers and unbelievers to study the order of the created world and what has produced it. In the 13<sup>th</sup> century Genghis Khan embarked on his career of world conquest, which devastated the vast Islamic civilisation. Baghdad was seized in 1258. Islam recovered during the 15<sup>th</sup> to 17<sup>th</sup> centuries within three prosperous and politically stable empires. However the earlier scientific work withered instead of enjoying a resurgence and this for reasons that are still much debated.<sup>6</sup>



Sir Francis Bacon, courtesy Chemical Heritage Foundation, flickr, CC

The rise of modern science also took place in Europe in the 16<sup>th</sup> and 17<sup>th</sup> centuries in a context that is saturated with religion and with religious conflict. The leading lights, like Copernicus, Francis Bacon, Kepler, Galileo, Descartes, Boyle and Newton, were devout and dedicated the new natural philosophy to God and believed that their work was nothing less than a study of the handiwork of God in creation. This is evidence for the claim that Christian belief is hospitable to and contributed to the promotion of the rise of the natural sciences. Of course I am not claiming that Christian faith was the only factor at work as if these theological interests were not situated in a complex context.<sup>7</sup> But this is sufficient to contradict the distorted history of the rise of the natural sciences promoted by some atheists – as we shall see.

Detailed historical studies show that the leading lights of the rise of modern science had religious and philosophical beliefs that proved hospitable to and helped promote the new view of the world. Very briefly, here are some examples. For Francis Bacon and others an important theme in promoting the new experimental philosophy was the belief that the fall of Adam had corrupted human reason which therefore needed to be disciplined by what could be known by our senses. It also provided hope for thereby restoring something of Adam's wonderful capacities prior to the fall.<sup>8</sup> Kepler was able to hold together the physical, mathematical and the metaphysical considerations focused on "the sun in its manifold roles as the mathematical centre in the description of motions; as the central physical

<sup>4</sup> M. Iqbal, *Islam and Science*, (Ashgate, Hampshire, 2002)

<sup>5</sup> Ahmad Dallal, 'Science, Medicine and Technology', in J. Esposito, ed., *The Oxford History of Islam*, (Oxford, Oxford University Press, 1999).

<sup>6</sup> P. Hoodbohy, *Islam and Science, Religious Orthodoxy and the Battle for Rationality* (Zed Books, London, 1991); T. Huff, *The Rise of Early Modern Science, Islam, China, and the West*, (Cambridge University Press, Cambridge, 1993); M. Iqbal, *Islam and Science*, (Ashgate, Hampshire, 2002)

<sup>7</sup> S. Shapin, *Never Pure: Historical Studies of Science as if It was Produced by People with Bodies Situated in Time, Space, Culture and Society, and struggling for Credibility and Authority*, (Johns Hopkins University Press, Baltimore, 2010.)

<sup>8</sup> P. Harrison, *The Fall of Man and the Foundations of Science*, (Cambridge University Press, Cambridge, 2007).

agency for assuring continued motion; and above all as the metaphysical centre, the temple of the Deity.”<sup>9</sup> For Galileo God is the author of two books, the Bible and the Book of Nature. Since there is one author the two books cannot ultimately be in contradiction unless one or both is being misinterpreted. It is commonly thought that the rise of the new natural philosophy meant that “people could no longer believe what they read in the Bible.” Oxford historian Peter Harrison argues,

the reverse is the case: that when in the 16<sup>th</sup> century people began to read the Bible in a different way, they found them-selves forced to jettison traditional conceptions of the world. The Bible and the new way in which it was read by Protestants played a central role in the emergence of natural science in the 17<sup>th</sup> century.<sup>10</sup>

Boyle and Newton retrieved from the early reformers Luther and Calvin the view that matter is fundamentally passive and that the powers we see in the world are not due to nature “vulgarly conceived” to quote Boyle, but to God’s action in the world.<sup>11</sup> You can see from these ‘broad brushstrokes’ that the leading lights of the scientific revolution did not have to leave their Christian beliefs behind in developing a new natural philosophy. On the contrary, there was a significant conjunction between their Christian beliefs and their pursuit of a new natural philosophy.

As well as working historically we can work systematically in showing how Christian faith is hospitable to natural sciences. God is free and rational and so creation bears the marks of divine reason but as an act of divine will it is contingent. It is therefore impossible to deduce from pure thought, even pure thought about God, what the created world is actually like. Our inquiry into the actual world will have to be guided both by our senses and our reason. These are prerequisites for any inquiry including that of the natural science. Through multiple testimonies the Bible also tells us about the created world. Can we hold together what we learn about the created world from science and from the Bible? Here the ‘two books’ principle is crucial. The book of nature and the book of scripture have one author and so can only be thought to be in contradiction if one or both is being misinterpreted. If the natural sciences do tell us about the world God has created there cannot be a contradiction between what scripture teaches and what we learn of nature from science – when each is correctly interpreted.



*Adam and Eve at Creation, in York Minster, courtesy Lawrence OP, flickr CC*

<sup>9</sup> G. Holton, *Thematic Origins of Scientific Thought, Kepler to Einstein*, (Harvard University Press, Cambridge, MA, 1988).

<sup>10</sup> P.Harrison, *The Bible, Protestantism and the Rise of Natural Science*, (Cambridge University Press, 1998), p.4.

<sup>11</sup> G.B. Deason, ‘Reformation Theology and the Mechanistic Conception of Nature’, in D.C. Lindberg and R.L. Numbers, ed., *God and Nature, Historical Essays on the Encounter between Christianity and Science*, (University of California Press, Berkeley, 1986).



Galileo's tomb, in Santa Croce basilica, Florence - courtesy 'ccarlstead', flickr CC

Here is a significant hermeneutical principle, that has to be applied carefully, which will be the theme of a separate paper. I will say that the 'two books' principle has often been forgotten or misapplied – for example, when people say with relief that the order of the creation of animals in Genesis is the same order as discovered by evolution. Another principle is that there is one end to all God's works in creation, redemption and consummation of God's purpose for the world and so there is an underlying intelligibility between creation, redemption and consummation. If the natural sciences do tell us something about the created universe then we should expect to be able to 'locate' what we learn from science within this underlying intelligibility.

Even this rough sketch of the history of the rise of natural science is much more accurate than the history sometimes

presented by atheists and sceptics of people throwing off the shackles of religion, mysticism, metaphysics and superstition. Consider this example in the box below.

### Science & Religion - The Inherent Conflict View

- . Modern Science began in 16<sup>th</sup> and 17<sup>th</sup> centuries
- . Scientists abandoned and rejected:
  - . tradition, mysticism, revelations, faith
  - . theological and philosophical authorities
  - . hidden occult explanations of natural phenomena
  - . purely speculative metaphysics
- . Proceeded directly to the Book of Nature
- . Developed a new method of inquiry
  - . hypotheses and theories verified empirically
  - . experimental predictions,
  - . precision and power of mathematics

This led to unparalleled breakthroughs in field after field of research.

From Paul Kurtz, *Science and Religion: are they Compatible?* 2003, p.11.

That sketch of the history is astray. It is simply not true of the leading lights in the rise of modern science with regard to what it claims was abandoned. On the other hand it is true of the 'leading lights' concerning what it says about proceeding directly to the book of nature and what it says about developing a new method of inquiry.

This is a rewrite of history that aims to eliminate any reference to the role of Christian belief in the emergence of the new science. Consider how it fails to do justice to the Galileo Affair.

The atheists claim that religion is utterly irrational where the standard of rationality is taken to be the natural sciences. Their point is that faith is a delusion, a persistent belief held in the face of contradictory evidence. On this latter point a key example is taken to be the church's suppression of Galileo. The claim is that in suppressing Galileo the Catholic Church denied the truth that was there for all to see thanks to Galileo, because it contradicted the church's belief about the world. Of course that would indeed greatly support the atheists' view if it were true. But it is a complete misrepresentation of the dispute between Galileo and the church. I regard many atheists as indulging in worthless throw-away lines about the Galileo Affair. Consider this example by Philip Adams:

Christians seeking to confirm the Bible's teachings were discomforted to find they weren't true. The world wasn't flat – so the cosmological model of heaven that had heaven up and hell down became nonsense. Galileo got himself and theology into terrible trouble when he confirmed the Copernican theory that the Earth wasn't at the centre of the universe. The pope got angry. No Nobel prize for Galileo. How about the Inquisition? How about your papers used to kindle your funeral pyre?

Philip Adams, *The Weekend Australian*, 28-29 September 2002

None of this is correct. No one believed in a flat earth. Galileo was not burned to death. Pope Urban was angry but not for the reason Adams says.



*Galileo at the Carnegie Museum. Courtesy 'jennandjon', flickr.CC*

The point is that Galileo's telescopic observations certainly contradicted the Aristotelian view of the world and the Ptolemaic astronomy. However it did not confirm the Copernican view because the telescopic observations were accommodated by the model of the great Danish astronomer Tycho Brahe, which had the earth at the centre of the universe with all the planets rotating around the sun, while the sun rotated around the earth. No one rejected the telescopic observations. Pope Urban accepted them, the Jesuit astronomers of the day confirmed them. What was debated was the interpretation of the observations. Galileo needed more than astronomy and this is what he provided by his tides argument – that the

tides were due to the orbital motion of the earth around the sun and its daily rotational

motion. But this led to predictions that were not confirmed by observations of the tides. This is just a snippet from the Galileo Affair.

More needs to be said, for example Galileo's way of holding together his account of nature and with what the Bible says – the 'two books' tradition mentioned earlier. More needs to be said, not least what is correctly said about the church's heavy-handed treatment of Galileo. However, it is not correct to say that Galileo had shown the truth of the Copernican view for all to see, which the church suppressed.

The rise of the natural sciences took place in contexts that were saturated with religion and the leading lights were devout and dedicated their new natural philosophy to God whose handiwork

they studied. But today the natural sciences seem to many, many people to promote a materialistic and atheistic world view. This is an extraordinary transition. How did it come about?

### ***The rise of modern atheism – what can we learn?***

Modern atheism as a response to the rise of the natural sciences has been investigated by various authors.<sup>12</sup> Here I will briefly mention the work of the Jesuit scholar Michael Buckley. It was D. Diderot (1713-1784) and Baron Paul d'Holbach (1723-1789) who produced the first articulation of modern atheism in Diderot's seventeen volume *Encyclopedia* as well as other works, and d'Holbach's *The System of Nature or the Laws of the Physical and Moral Universe*, in 1770. They took over some aspects of the work of Descartes and Newton while rejecting other parts. They changed the prevailing understanding of matter. They made motion part of the existence of matter. Descartes claimed he could account for everything given matter and the laws of motion. But God was needed to give the initial motion to matter. Newton had a similar view about the passivity of matter and that God provides motion. Diderot and d'Holbach had no need for God to do this. For them, motion had been part of matter forever as the dynamic creative source of all physical reality. After all nature looks like it has power. It is the sun's warmth that melts the snow. This natural philosophy had no need of God. But this removed what had become for many the chief warrant for the existence of God. Buckley makes another point that there is a deep contradiction between belief in and worship of a personal God and the use of arguments based on impersonal aspects of nature as the primary apologetic for belief in this God.

In addition to this move I want to emphasise that the 18<sup>th</sup>, 19<sup>th</sup> and 20<sup>th</sup> centuries saw the great expansion of naturalistic explanations as more and more of the operation of the world, previously attributed to God, came to be understood in terms of lawful, blind, natural processes. This is a rational basis for the belief that eventually everything will be explicable in completely natural terms, without reference to God. It is a grand generalisation based on an impressive track record of the last 500 years of scientific work. What starts out as methodological naturalism – only invoke blind natural processes to explain what is observed - is so successful that it leads, via this generalisation, to a metaphysical naturalism – all there is, is what the natural sciences say there is or complex configurations of the same. Since the natural sciences do not and do not need to invoke God, such scientific naturalism is atheistic. Hence the rise of a completely naturalistic world view, which today pervades academic life and public life.

It is important to distinguish scientific naturalism from natural science. Here is a way to think about the difference. Let us say that the natural sciences study A, B, C, D... Scientific naturalism says, "all there is, is what the natural sciences say there is." Now let us ask the open question, "is that all there is?" What can give us an answer? Not the natural sciences since they study A, B, C, D, ... but do not and do not claim to study 'all there is'. This generalisation is a rational move but it is a philosophical move not made in the natural sciences. For many people the difference between the natural sciences and the philosophy of scientific naturalism is blurred, with the latter acquiring the prestige of the former.

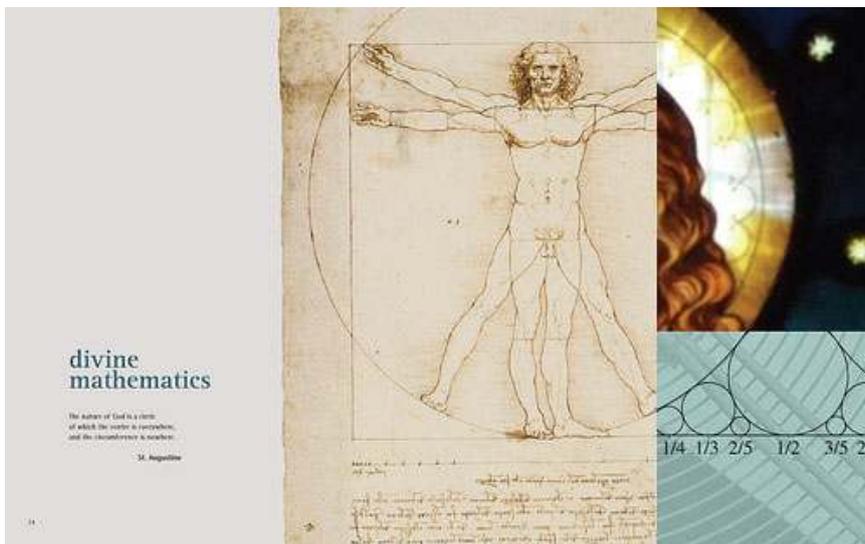
You might think scientific naturalism is obviously wrong. You may believe that all the higher human powers including compassion leading to genuine altruism can't possibly be the expressions of mere natural processes ultimately grounded in chemistry and physics. It is worth pointing out

---

<sup>12</sup> D. Wootton, 'New Histories of Atheism', in M. Hunter and D. Wootton, eds., *Atheism from the Reformation to the Enlightenment*, (Clarendon Press, Oxford 1992). M. Buckley, *At the Origins of Modern Atheism*, (Yale University Press, New Haven, 1987); *Denying and Disclosing God, The Ambiguous Progress of Modern Atheism*, (Yale University Press, New Haven, 2004).

that not everyone agrees. The motto of the National Neuroscience Faculty tells us that music, mathematics, and the other higher human capacities are all driven by brain processes. I heard on the ABC's Encounter the other week a woman saying how she saw herself as a "bag of neurons" and that was fine by her.

However I argue it is not fine either with respect to what a human being *is* or with respect to the kind of culture promoted by such a view. I make this argument by showing there is more to human beings than can be accounted for by scientific naturalism. I stress this is not a comment on what the natural sciences tell us about the universe or about human beings. Indeed the 'more' about human beings that I will highlight certainly comes to light in scientific inquiry itself. My concern is that the way scientific naturalism generalises on the success of the natural sciences cannot account for this 'more'. I have no problems with generalising, it is only a question of how well it is done. Indeed, I will offer an alternative generalisation from the natural sciences. You can compare the two.



*'Divine mathematics', Courtesy 'xtinabot', flickr CC*

With any generalisation there is the possibility of counter examples. All observed swans are white generalises to all swans are white, until a black swan shows up. What would be an equivalent to a 'black swan' for scientific naturalism? It must be something that cannot be explained by the natural sciences. This is not so simple. Non-reductive physicalism is the most

sophisticated version of scientific naturalism. On

this view, what there is, is what physics says there is or complex configurations of the same. No extra ontological ingredients like vital forces, souls or spirits are part of the world. But proponents do not embrace causal and explanatory reduction. New levels of complexity lead to new, emergent, kinds of causal powers, such as we see in plants animals and human beings, which cannot be explained in terms of physics. Reductive physicalists reject these claims and look for ways to articulate causal and explanatory reduction to the terms provided by physics.<sup>13</sup>

Are there any contenders for a 'black swan' that could contradict the powerful generalisation on which scientific naturalism is based?

Of course it will not be adequate to treat a mere gap in our current scientific knowledge as grounds for invoking something non-natural like God to provide the explanation and so contradicting naturalism. Historically the track record is that gaps in scientific knowledge eventually get filled by science and that the 'God' invoked to fill the gap disappears. Atheists rightly criticise religious people who invoke a 'gaps' argument for God.

<sup>13</sup> Melnyk, A., *A Physicalist Manifesto, A Thoroughly Modern Materialism*, (Cambridge University Press, New York, 2003); Poland, J., *Physicalism, The Philosophical Foundations*, (Clarendon Press, Oxford, 1994). D. Papineau, 'The Rise of Physicalism', in, M.W.F. Stone and J.Wolf, eds., *The Proper Ambition of Science*, (Routledge, London, 2000).

I see this as a key problem for a current contender for being a ‘black swan’, namely, Intelligent Design. Through their explanatory filter they identify complex entities that they say cannot be explained by the natural laws of science, nor can be explained by chance. The difficulty is that all they mean by claiming science *cannot* explain this complex entity is that science has not yet explained it. They are pointing to a current gap in scientific knowledge. This is a form of the gaps argument.

Here I present what I regard as a ‘black swan’ that contradicts the grand generalisation that all there is, is what the natural sciences say there is, or that only natural processes will be needed to explain everything. My example is drawn from scientific inquiry, which of course is part the natural sciences – how could it be otherwise?

Scientific inquiry has a normative dimension that is evaluative and regulative.<sup>14</sup> It is evaluative when it says that this or that is a good argument, a good experiment, a good set of results and it is regulative when it says it is these good arguments, experiments, results, that you ought to take account of in conducting your inquiries and forming your beliefs. The ‘ought’ is powerful in the sense of being deeply implicated in the primary reason for acting in the context of inquiry, and as Donald Davidson said long ago, “the primary reason for an action is its cause.”<sup>15</sup> Anti-realism about this ‘ought’ will not do.

Scientific naturalists must either deny this normativity or attempt to account for it. Given the epistemic practices of the natural sciences the denial lacks credibility. Some naturalistic accounts of normativity invoke the help of hypothetical imperatives.<sup>16</sup> A hypothetical imperative says: if you want to achieve *w* and if *x*, *y*, *z* are means, but *x* is the most effective and efficient, then you ought to do *x*. Now, it may be a fact that you want to achieve *y* and it may be a fact that *x* is the best of means out of *x*, *y*, *z*. But logically these premises do not allow an inference to any conclusion as to what ‘ought’ to be done. A hypothetical imperative is more properly stated: if you want to achieve *w* and while *x*, *y*, *z* are means, *x* is the most effective and efficient, then rationally you ought to do *x*. The point is that rationality is an inherently normative notion. Naturalism seeks to locate the origins of this normativity in natural processes described by natural science. These descriptions tell us what *is* going on in and between complex natural entities and processes – including human inquiry – but logically does not allow us to infer what *ought* to be going on, even in conducting inquiries. Given scientific naturalism, no amount of ‘emergence’ of new powers with more complex entities can provide the natural ground for the normative dimension of inquiry. Further criticisms of scientific naturalism are discussed by A. M. Grath<sup>17</sup>, John Haught<sup>18</sup>, A. Plantinga<sup>19</sup>, and C. Taylor<sup>20</sup>, which I will not discuss here.

---

<sup>14</sup> A helpful discussion of normativity with regard to theories of scientific method is, Nola, R., and, Sankey, H., ‘A Selective Survey of Theories of Scientific Method’, in, Nola, R., and, Sankey, H., eds., *After Popper, Kuhn and Feyerabend*, (Kluwer Academic Press, Great Britain, 2000), pp. 1-65.

<sup>15</sup> Davidson, D., *Essays on Actions and Events*, (Clarendon Press, Oxford, 1980), p.4.

<sup>16</sup> See, Ellis, B., *Truth and Objectivity*, (Blackwell, Oxford, 1988); Lycan, W., *Judgement and Justification*, (Cambridge University Press, Cambridge, 1988), ch. 7; Lycan, W., ‘Is’ and ‘Ought’ in Cognitive Science’, *Behaviours and Brain Sciences*, **4**, 1981, pp. 344-345; Papineau, D., ‘Normativity and Judgement’, *Aristotelian Society Supplementary Volume*, **77**, 1999, p.18.,f.n.3. See also, Searle, J., ‘On How to Derive ‘Ought’ from ‘Is’’, *The Philosophical Review*, **78**, No.1, 1964, pp. 43-58.

<sup>17</sup> A. McGrath, *A Scientific Theology, Volume 1, Nature*, (T&T Clark, Edinburgh, 2001),pp.124-133.

<sup>18</sup> J. Haught, *Is Nature Enough?, Meaning and Truth in the Age of Science*, (Cambridge University Press, Cambridge, 2006).

<sup>19</sup> See ‘Science and Religion’ by A. Plantinga, Stanford Encyclopedia of Philosophy, <http://plato.stanford.edu/entries/religion-science/>.

<sup>20</sup> C. Taylor, *Sources of the Self, The Making of the Modern Identity*, (Cambridge University Press, Cambridge, 1994), pp. 53-85.

Now I want to show that a quite different world view can be developed on the basis of the natural sciences. I begin by drawing attention to the fact that human inquiry, including the natural sciences, has its presuppositions, including philosophical presuppositions. Excellent discussions of this fact are provided for example by Karl Popper<sup>21</sup>, Imre Lakatos<sup>22</sup>, Larry Laudan<sup>23</sup> and Gerald Holton.<sup>24</sup>

One of these presuppositions is that the field being inquired into is intelligible and susceptible to rational explanation. It does not come *from* inquiry, rather it is what human inquirers bring to inquiry and part of what gets inquiry going. What forms of intelligibility and rationality prove fruitful demarks different fields of inquiry and is shown in the outcome of inquiries. Another part of what gets inquiry going is the endless asking of questions, expressive of human wondering and therewith the human quest to know what there is, what B. Lonergan<sup>25</sup> calls the pure desire to know. Our confidence in this presupposition is massively supported by human inquiry, in all its forms, but not least by the last 500 years of natural sciences attempting to understand the world.

On this basis I make a generalisation, postulating that all there is, is completely intelligible and susceptible to rational explanation.<sup>26</sup> The postulate is congruent with the fact that human inquiry continues, as if it had no limits. There is no restriction on human wondering. This doesn't prove the postulate, but exhibits its roots and motivation. The postulate is supported, not just because it "squares with the world of one's experience"<sup>27</sup>, but also by what comes into view from the standpoint of this postulate; an example is given below.<sup>28</sup>

The postulate says that human inquiry will never find itself confronted with a brute fact or chasing an infinite regress of explanations, since neither is completely intelligible. Given the postulate, there must be something that is self explanatory and necessarily self existent, on which everything else ultimately depends for its existence, which means everything else is created *ex nihilo* and its existence is wholly intelligible to its creator. The postulate generalises on the presupposition of human inquiry and this leads us to the idea of God. As Ward points out, we "cannot comprehend any being the sheer possibility of which necessitates, and thus explains its actual existence and the existence of what ever depends on it."<sup>29</sup> However the important point is that God is

---

<sup>21</sup> K. Popper, *The Logic of Scientific Discovery*, (London, 1959), p.438.

<sup>22</sup> I. Lakatos, 'Falsification and the Methodology of Scientific Research Programmes', in, I. Lakatos and A. Musgrove, eds., *Criticism and the Growth of Knowledge*, (Cambridge University Press, Cambridge, 1970).

<sup>23</sup> L. Laudan, *Progress and its Problems: toward a theory of scientific growth*, (University of California Press, Berkeley, 1977).

<sup>24</sup> G. Holton, *Thematic Origins of Scientific Thought, Kepler to Einstein*, (Harvard University Press, Cambridge MA., 1988).

<sup>25</sup> B. Lonergan, *Insight*, (Darton Longman and Todd, London, 1958), p.380. See also, B. Lonergan; 'Natural Knowledge of God', in, *A Second Collection*, (University of Toronto Press, Toronto, 1974), pp. 117-133; see also the extended argument in his, *Insight*, Chs. XIX,XX.

<sup>26</sup> K. Ward, *Rational Theology and The Creativity of God*, (Basil Blackwell, Oxford, 1982); 'God as a Principle of Cosmological Explanation', in, Russell, R.J., Murphey, N., Isham, C.J., eds., *Quantum Cosmology and The Laws of Nature, Scientific Perspectives on Divine Action*, (Vatican Observatory Publications, Vatican City State, Centre for Theology and Natural Sciences, Berkeley California, 1999), p.247-262.

<sup>27</sup> Ward (1982), p.5.

<sup>28</sup> More deeply it is supported by Lonergan's argument that being is intelligible, *Insight*, p. 672-3.

<sup>29</sup> Ward (1982), p.8. This is just the start of Ward's philosophical account of God. Another important theme is that for created human freedom and for other contingencies in the created world, as well as God's freedom to create, God must be thought to be both necessary in some respects and contingent in other respects (Ibid. p.3). For further discussion see his Chapter 7, 'Time and Eternity'.

**Why is there something and not nothing?  
Why is the universe structured, and  
structured the way it is?**

comprehensible to God; “being self explanatory, after all, does not entail that anyone else can understand the explanation, only that it exists.”<sup>30</sup> This does not exclude the possibility of human beings coming to understand what they presently cannot comprehend.

I think of this as a metaphysics of inquiry. But for the sake of comparison with scientific naturalism I call it scientific rationalism.

If all there is, is completely intelligible then there must be answers to two big questions. Why is there something and not nothing? Why is the universe structured, and structured the way it is? The postulate requires the idea of God and therewith is the start of an answer to the first question. The second question can be made more specific by noticing something of the ways the universe is structured or noticing the different forms of intelligibility embodied in what there is.<sup>31</sup> The natural sciences tell us something of how the universe is structured, or ordered from the instant of the ‘big bang’ to formation of our solar system to the way animals and plants have evolved looking as if they have been designed. The laws of physics give us one important aspect of the way the physical universe is structured. The theory of evolution is another account of the way the evolution of life on planet earth is structured.

I conclude this segment with a discussion of the laws of physics and take up ‘God, evolution and natural evil’ in the last segment. From my own research I would argue that there is an answer to the question, ‘Why are the laws of physics the way they are?’ A paper with that question as the title is on my webpage. My conclusion is that the universe is structured according to the laws of physics *in order* for the universe to be knowable through inquiry using our senses – that is, empirical inquiry - by embodied rational agents. This is an argument *to* design, not the traditional argument *from* design; it has nothing to do with arguments based on ‘fine-tuning’, anthropic principles, intelligent design, or other ‘god of the gaps’ arguments. It moves rigorously, rather than sliding from physics to metaphysics. The conclusion follows from assuming idealised inquiry and some other factual assumptions and showing that the operation of the laws of physics can be explained and their mathematical form derived.

A similar result from a different approach has been obtained by V. J. Stenger<sup>32</sup>, until recently the professor of physics and astronomy at the University of Hawaii. Stenger is one of the ‘new atheists’. How his argument incorrectly leads to atheism but mine to theism is a revealing story, which you can find on my website. I call this result the ‘rational tuning’ of the laws of physics to idealised inquiry. It is very different from the well-known ‘fine tuning’ of the physical constants. It cannot be explained by evolutionary cosmology and is unaffected by the theoretical prospects of multiple universes. The ‘multiverse’ idea is that our universe is one of zillions of universes in a much larger abstract space, with each universe randomly having different properties. With enough universes it is no surprise, so the argument goes, that one turns out to have just the right properties that make it just right for life – what Paul Davies calls ‘The Goldilocks Enigma’.<sup>33</sup> This has undermined the use of physical fine-tuning as an argument that the universe is designed for life. However my argument is not affected by the theoretical prospect of there being multiple

---

<sup>30</sup> Ibid. p. 8.

<sup>31</sup> Interestingly Ward also discusses the intelligibility found in lawful operation and in creative realization of values, such as a beautiful piece of music. (Ward, 1997). The discussion below summarizes arguments holding the two together.

<sup>32</sup> V.J. Stenger, *The Comprehensible Cosmos, Where do the laws of physics come from?* (Prometheus Books, New York, 2006).

<sup>33</sup> P. Davies, *The Goldilocks Enigma, Why is the Universe Just Right for Life?* (Allen Lane, London, 2006).

universes. This is an argument to the universe being designed to be knowable through empirical inquiry by embodied rational inquirers.

This is an argument showing that the universe is designed or ordered to a definable end. The question is who or what is the designer? If it were a stand-alone argument, I could not say. But this argument offers an answer to the question of why the universe is structured the way it is and that question came from my 'scientific rationalism', with its postulate that all there is, is intelligible. In turn this postulated required the idea that all there is, is created *ex nihilo* by God. It is God who creates and structures the physical universe by the laws of nature in order for the universe to be knowable through empirical inquiry by embodied rational agents.



Photo '5150 fantast', flickr CC

Of course this generalisation may itself be up for contradiction by its own 'black swans'. For example, it might turn out that the universe is just a brute fact; it just is, as Bertrand Russell once famously said to Fr. Copleston. An objection based on a particular interpretation of Quantum Mechanics says that there is objective uncertainty in nature, not just in our knowledge of nature. A different objection is based on the dreadful evil people do to each other and the fact of natural evil in evolution and genetic diseases and tsunamis. Are all these completely intelligible? Many would be outraged by this suggestion because of the suffering involved. I will come to these objections based on natural evil in the next segment.

I have briefly indicated the roots of scientific naturalism in the success of the natural sciences in the last 500 years of science. I have distinguished scientific naturalism from the natural sciences, which make no

assertions about 'all there is'. Scientific naturalism generalises from the success of methodological naturalism to metaphysical naturalism. Scientific rationalism generalises from the presupposition of inquiry that what is inquired into is intelligible and susceptible to rational explanation. Both are generalisations from human inquiry, especially in the natural sciences. Both take over all the results of the natural sciences. One is atheistic, while the other is theistic. Both have to handle objections and both are tested by what we know and by what they bring to our attention. Both have to be able to give an account of how human inquirers have come into existence on planet earth.

A possible objection from the side of theology would question the understanding of God in the above discussion - this is a 'philosophers' God' not the 'believers' God', not the living God of the Bible, not the Triune God revealed in and through Jesus of Nazareth. I do not agree with this objection. Recall the immediate context of discussion. I am highlighting where in ordinary experience, especially the experience of human inquiry, I think there are hints of God. This is a conversation with atheists and agnostics who claim religion, not least Christianity, is utterly irrational. I do not think that the distinctively Christian understanding of God becomes available along this pathway of reflection. But from the standpoint of a Christian who hears the good news of the triune God, I recognise it is this God who is intimated through imperfect human inquiry. A larger discussion would locate these hints of God and indeed human inquiry especially scientific inquiry with that underlying intelligibility that holds together all God's works in creation,

redemption and consummation. We are given some insight into this underlying intelligibility in the divine economy for the whole creation lately revealed in Christ.

### ***God, Evolution, and Evil***

At the atheist convention the claimed irrationality of religion was also supported by old arguments against the idea of God. If God created everything, who created God? This was Philip Adam's question and, in a more complex form, also Richard Dawkins'—who designed the designer? In *The God Delusion* Dawkins thinks he has an “un-rebuttable refutation”<sup>34</sup> of God, understood as “the supernatural intelligence who designed and created the universe and everything in it, including us.”<sup>35</sup> But the simple point is that if God is the creator of the universe, indeed of all things, then there is nothing ‘prior’ to God that can create or design God. Adams’ and Dawkins’ questions do not point to an objection to this idea of God but rather to their failure to understand this idea of God. There are other objections that could have been put, for example that the world ‘just is’—a brute fact that provides no grounds for belief in a creator.

As an alternative to his idea of God, Dawkins proposes that: “*any creative intelligence of sufficient complexity to design anything comes into existence only as the end product of an extended process of gradual evolution.*”<sup>36</sup> This refers to the ingenious Darwinian explanation of “*how the complex, improbable appearance of design arises in the universe.*” (The 19<sup>th</sup> century temptation was to explain these appearances of design as due to actual design.) Then Dawkins asks “*who designed the designer?*” His argument is that the complex and improbable are being explained by appeal to a designer. On Dawkins’ view the designer must be even more complex and more improbable and so could itself only have arisen from a gradual process of evolution. But on his idea of God as the creator and designer of the universe, God cannot have arisen from an evolutionary process within the universe, as noticed in the preceding paragraph. Despite being an alternative to Dawkins’ view the idea of God is assumed to conform to it! Theologically, I can accept Dawkins’ idea of God and his evolutionary explanation of improbable complexity within the universe, without making the latter do metaphysical work of defining the creator of the universe.

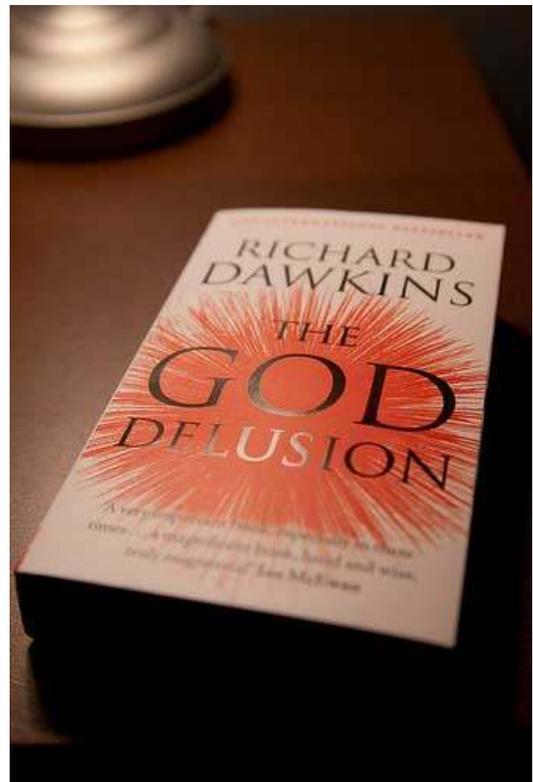


Photo 'Endemoniada', flickr CC

Dawkins allows that if there were even one example of irreducible complexity, then Darwin's theory would be wrecked. This was also Darwin's view. However no such example has yet been found. But here is the rub. Dawkins countenances, for the sake of argument, that one such example may be found and says, this ‘would wreck Darwin's theory’. But, no worries, “it has already wrecked the intelligent design theory...because [God] would have to be very, very complex and irreducibly so”<sup>37</sup> This is only a problem for the idea of God if the creator and designer God still has to be explained in terms of a Darwinian account of complexity, even though for the sake of the

<sup>34</sup> R. Dawkins, *The God Delusion*, (Bantam Press, 2006), p.157.

<sup>35</sup> Ibid. p.31.

<sup>36</sup> Ibid. p.31.

<sup>37</sup> Ibid. p. 124-125.

argument Dawkins acknowledges this account would be wrecked by the assumed example of irreducible complexity. Have I missed something? Isn't this another form of fundamentalism?

There are other arguments against the idea of God as the supernatural, intelligent creator and designer of the universe. On the one hand the natural sciences understand the universe as operating according to processes described by 'blind' natural laws, that have no end in view. This includes the laws of physics, chemistry and biology. It is widely taken as a powerful contradiction of the belief that the universe is created and ordered to some purpose by God.

On the other hand if a purposive answer exists, it should at least specify some purpose to which the universe is ordered and show how that explains why the laws of physics are the way they are. If available the argument would block the inference from 'blind' to 'purposeless', for then some larger purpose would be served by 'blind' natural laws and processes.

The point is that we are surrounded by 'blind' causal processes deployed for a variety of purposes. One response here might be that while we have plenty of examples of people using 'blind' causal processes to achieve purposes, nothing about the blind natural processes of the universe suggest they are serving or expressing or in anyway operating for a purpose. No explanatory task in the sciences calls for a purposive account of natural laws and natural processes. How then could the alleged possibility of a purposive account of the blind natural processes of the universe get going? Two answers are needed. One is from the side of natural sciences, which seems impossible, and the other is from the side of theology which seems irrational. Why would God use blind natural processes for some purpose in creation – to be quite pointed: why would God create a universe and within that universe use evolution by blind natural selection to bring life into existence, a process both wasteful and full of pain, suffering and death? Surely Genesis and William Paley make more sense theologically – God just says 'Let there be...' and it comes to pass?

Now I have already provided an answer from the side of the natural sciences. My argument is that the universe is structured as described by the laws of physics in order that the universe might be knowable through empirical inquiry by embodied rational agents. The blind laws of physics are the way they are for a purpose.

The second argument is why God would create a world for some purpose which operates according to blind natural processes. Specifically why would God create a universe and within that universe use evolution to bring life into existence? The question is also relevant to what is called the problem of natural evil and the problem of human evil.

The problem of natural evil comes to light as follows. Atheists say that evolution by natural selection shows life has come into existence by a process involving a vast amount of pain, suffering and death. It cannot be the work of a God who is all powerful, all knowing and wholly good. No half-way-decent God would create such a world.

The problem of human evil was vividly presented at the convention by Robyn Williams of the ABC's science show, who quoted a dreadful scene of slaughter and torture from the book, *The Rape of Africa*, and then said, 'God's only excuse for not intervening is that God doesn't exist.' The problem of evil whether natural evil or human evil are both part of that contradictory evidence to which atheists refer when they say faith is a delusion because it is a belief held in the face of contradictory evidence. What response is there to these arguments?

A Christian response would point to the crucifixion of Jesus and of the countless others who were horrifically executed by Rome in defending the empire. There were no interventions, not even one to stop the killing of a man who, according to the story, was the incarnate Son of God. The crucified God is very different from what is expected on the standard view of God as all powerful, all knowing, wholly good, who should not end up on a cross, and should not enter into human

suffering as another victim of human violence. Some people cope with the ‘no-intervention’ by dropping one of the superlatives, usually the ‘all powerful’, others follow Williams in denying the existence of God. I think there is a third possibility, which I will briefly indicate. More detail is available on my website in a paper entitled, ‘Why would God use Evolution’ at <http://blogs.radionational.net.au/atheistconvention/?p=610> .



Photo 'alicepopkorn', flickr, CC

This third possibility follows Aquinas from the 13<sup>th</sup> century discussion of the questions, *whether all things are governed by God immediately?*<sup>38</sup> and, *whether God is active in every agent cause?*<sup>39</sup> Aquinas argues that God creates things with their own real powers, whether matter and energy or eventually human beings with power and freedom for good or ill. Aquinas’s point is that we speak of God in superlative terms, as the very essence of goodness, and so

our speaking of God should be guided by this standard. We should prefer to say that God creates things with their own real powers, rather than not having any powers, and that these powers should be not only good in themselves, but be the cause of good in others. This is because it is a greater exercise of power compared to creating things that are merely good in themselves, but without power to be the cause of good in others.

On this line of thought what is of value to God is that creatures are co-creators and on the same basis I would argue we should say God maximises the realisation of this value in the created universe. I should therefore prefer to think of God creating a universe of basic things all with their own powers, which by their own operation produce many other things, including living things. On this view God creates a universe that is life-producing, rather than say, an inert, chaotic or mechanically interacting universe. This is a better type of creation. A student wanted to know on what basis I said it was ‘better’. Was I just projecting my values onto God? It is a ‘better’ type of creation because compared to other possible types of creating just mentioned, creatures so created are more like the living God who brings into being what does not exist, who is therefore not only good in God’s self but the cause of good in others.

Now notice that we are still doing theology, attempting a thumb sketch of a theological account of the kind of world we should expect God to create. Two questions might well have occurred to you. How and when will we move to a scientific account of the world and will this mean leaving behind the theological account or at least the Bible? As I indicated earlier, theology explains why we will not be able to deduce from pure thought what the actual world would be like. God is sovereign Lord and creation is a free act of divine will, in accord with divine wisdom or reason, but not deducible from pure reason alone. To know what the actual world is like you have to

---

<sup>38</sup> Question 1a, 103, article six, from St. Thomas Aquinas, *Summa Theologiae* [ST], Volume 14, *Divine Government*, trans. By T. C. O’Brien, (Blackfriars, Spottiswoode, Great Britain, 1975), pp.25-27.

<sup>39</sup> Ibid, ST, Question 1a, 105, article five, pp. 75-79.

attend to particulars of what has been created. You have to use your senses. The ‘empirical’ in empirical inquiry is testimony to divine freedom. Because God is rational the created world will bear the marks of that divine reason and so our inquiry will also be a rational endeavour. Doubtless many forms of inquiry are a combination of the empirical or sensory and the rational. The natural sciences are one form of inquiry that takes both aspects very seriously and in it the empirical is a testimony to divine freedom and the rational a testimony to the divine reason or logos.

One form of empirical inquiry was pursued by Darwin in the five years on the HMS Beagle, bringing to light a vast number and variety of observations, and specimens in some of the most challenging environments in the world. Thank you Charles Darwin, naturalist *extraordinaire*! Subsequently through exchanges with many people Darwin gathered a still wider body of data. With this collection of data and with a lot of hard thinking, Darwin eventually proposed his theory of evolution, subsequently developed in many ways. This theory tells us that we live in a life-producing universe, where life, including intelligent life, is produced by the lawful operation of blind causal processes, studied not only by biology, but by chemistry, physics and cosmology.

This helps us towards understanding why God would create a world in which life is brought into existence by something like Darwinian evolution. It expresses the value to God of creating in this way, namely, it is a better type of creation, in which as much as possible, creatures are co-creators.

This is a theologically grounded view, which for theological reasons waits upon the natural sciences to tell us what a life-producing universe actually looks like and this without prejudice to what poets and artist might also show us with their different sensitivity to the universe and awareness of other intelligibilities. For example, Gerard Manly Hopkins, poet *extraordinaire*.<sup>40</sup>

This argument undermines the inference from ‘blind’ to ‘purposeless’ to ‘Godless’ with respect to the blind natural processes of the universe. Here we see that God deploys these processes as the way God maximises the value of creatures as co-creators in a life producing universe and this because God is wholly good.

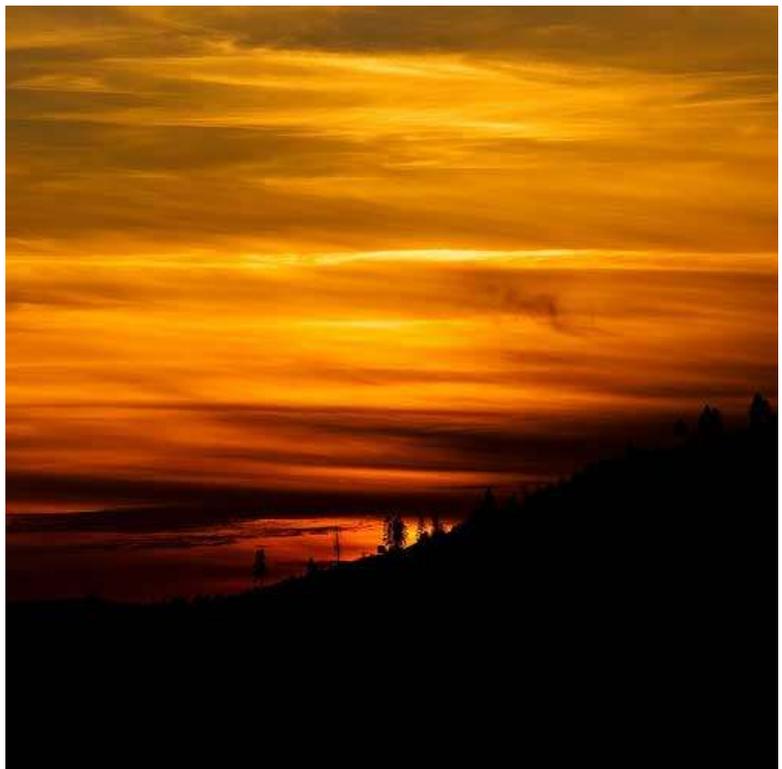


Photo Aypho' flickr CC

What is of value to God is that creatures are co-creators and God maximises the realisation of this value in the created universe, which is therefore a life-producing universe, with all the suffering due to evolution and all the risk of human co-creators creating hell on earth.

<sup>40</sup> See the discussion of Hopkins by C. Southgate, *The Groaning of Creation, God, Evolution and the Problem of Evil*, (Westminster, John Knox Press, Louisville, 2008), pp. 60, 63-64, 97-98.

This understanding of God claims to express at least one thing that is of value to God as creator: creatures as co-creators. And that value is distinguishable from whatever God's purpose may be in creation for we have reached these conclusions by only *mentioning* that God has a purpose in creating but not *using* any idea of what is that purpose.

Would a wholly good God do this, that is maximise the value of creatures as co-creators? Yes, because this is a better type of created world than other types of worlds that exclude co-creators, such as an inert or a chaotic or a mechanically interacting world. But an objection screams out: wouldn't this God be reckless and cruel in maximising the realisation of the value of creatures as co-creators? Would a wholly good God really do this? One reason for Christians thinking God maximises this value of creatures as co-creators is the creation story in Genesis where humankind is given extraordinary power, 'dominium', as part of being created in the image of God. Another reason is Jesus' parable of the prodigal son who demanded half the inheritance, thereby indicating he wished his father dead. Even more shocking, some would say 'reckless', the father does what his son demands, with all the risk involved. That father loved his son in leaving and in return. God is like that father, 'reckless' and loving. A final reason is even more outrageous - the incarnate Son of God submits to these powers on the cross. This third possibility would continue by plumbing the outrage of God being a victim of human violence.



Photo courtesy NASA Goddard, flickr, CC

we find ourselves thankful for all the green lights that give us an easy drive. This is the basis for Dawkins' strong exhortation for us to be thankful and to be inspired by the fact of our existence.

As I reflected on his exhortation, I was reminded of the different theme of thanksgiving that is part of Christian life—thanksgiving for all life as a gift from God. This is central to the meal and the conversation that is at the heart of worship for many Christians. This gift and thanksgiving is what I wake up into and why I get out of bed in the morning. It frames everything else, come what may.

For Dawkins this is just another example of misfiring, with my gratitude projected onto a non-existent God. But I would need something better than a 'misfire' to follow Dawkins' exhortation. Recall his own words: "the universe we observe has precisely the properties we should expect if there is, at bottom no design, no purpose, no evil, no good, nothing but blind pitiless indifference".<sup>41</sup> I think this places the suggested gratitude for life due to a 'misfire' in a larger context. It helps us 'see through' such gratitude, seeing it as a 'misfire'. Indifference, especially blind, pitiless indifference, doesn't warrant gratitude.

On the other hand, like many people, I am grateful for being alive. Yes, I am thankful and amazed at the evolution of life in the physical conditions of the evolving universe, as this has been brought

<sup>41</sup> R. Dawkins, *River Out of Eden, A Darwinian View of Life*, (Phoenix, London, 1996), p.133.

home to me by the scientific story about the universe. But I was thankful for life long before I knew the scientific story, even though my gratitude is now deeply informed by that story. From early in my life, before becoming a Christian, I had a strong sense of the unconditional value of life. I still take this as one of the clues to reality, even when, or especially when, this value is dreadfully violated. This sense of value does not accord with a worldview, a metaphysics, in which everything conditions everything else. The unconditional value of life must have its roots in something that transcends all the conditions of life. My gratitude for life comes from recognising that life is a precious gift. The Christian message illuminates this gift and its giver and, promises it will be honoured.

**At bottom, I think there is a gracious giving of existence and the giver is the living God who will have the 'last word' for the whole created universe, and it will be 'Yes!'**