

## THE PROS AND CONS OF 'INTELLIGENT DESIGN'

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**Abstract.** The theories of Darwinian evolution and Intelligent Design appear to be locked in an intractable debate, partly because they offer rival scientific explanations for the phenomenon of descent with modification in biology. This paper analyses the dispute in two ways: firstly, it seeks to clarify the exact nature of the logical flaw that has been alleged to lie at the heart of Intelligent Design theory. Secondly, it proposes that, in spite of this error, the Intelligent Design theory advocated by Michael Behe takes at least one significant step in the right direction. Although Behe's suggestion is promising, it is shown to be not nearly radical enough.

### I. Paley's Shadow

The name of William Paley, along with his famous image of the watch on the heath, is well known by those who debate the relation between science and religion today – if only from Dawkins' replacement of Paley's Designer of the Universe by the Blind Watchmaker of Natural Selection.<sup>1</sup> As David Hume correctly pointed out – though not in response to Paley, it must be said, as he was writing earlier – complexity in the world is evidence for order. As it is order that needs to be explained, why does design serve so much better as an explanation of it than chance?<sup>2</sup> Both Paley and contemporary Intelligent

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<sup>1</sup> Richard Dawkins, *The Blind Watchmaker* (Harlow: Longman, 1986), pp. 4-5. The key section of Paley's *Natural Theology* (1800) is reproduced in *But is it Science? The Philosophical Question in the Creation/Evolution Controversy*, ed. by Michael Ruse (Amherst, NY: Prometheus, 1996), pp. 46-49.

<sup>2</sup> See Hume's *Dialogues Concerning Natural Religion*, especially Parts 2 and 3 and Dorothy Coleman, 'Introduction', in David Hume, *Dialogues Concerning Natural Religion and Other Writings* (Cambridge: Cambridge University Press, 2007), pp. xi-xl (pp. xx-xxiv).

Design theorists clearly think that it does, but on what grounds? The grounds provided by one leading Intelligent Design theorist, Michael Behe, will be the ones explored in this article, along with several challenges to them. As a result of this exploration, significant problems in Behe's thinking will be identified. It will also be proposed that he is moving in a promising direction, but not far enough to have found an adequate solution.

The seeking of explanations leads to the question of what it is that the explanation is being sought for. This can be meant in two distinct, but not completely unrelated, senses. One of these intimates that there is a link between explanations and reasons – a theme that will surface again later in the article. The other is that explanations might be sought for some things and not for others, or that different explanations might appropriately be given for different phenomena. For both Paley and the proponents of Intelligent Design, what seems to be at stake is the complexity of particular phenomena: for Paley, a watch on the heath requires an explanation that a rock would not. What is being explained is not the complexity of the system as a whole, but that of a complex phenomenon within the system. So, this kind of design argument is not like that put forward by Swinburne, who says that the system of the universe as a whole and its overall temporal and spatial order cannot be explained adequately by science, but needs a personal explanation.<sup>3</sup> A distinction often made between science and religion on this basis is that science asks 'How?' whereas religion asks 'Why?' But do science and religion necessarily occupy separate domains?<sup>4</sup> Or could they be closer companions than this commonly used way of putting it suggests?

Since both Paley and the Intelligent Design theorists are seeking to explain complexity within the system, they could assert that they are doing science. This is precisely what proponents of Intelligent Design contend. The latter are happy, in a way that many so-called 'Creationists' are not, to 'limit [science] to the search for rational explanations of what occurs in the universe.'<sup>5</sup> As a result, they stress that their Intelligent Design theory does

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<sup>3</sup> Richard Swinburne, 'Arguments from Design', *Think* 1 (Spring 2002), 49-54 (pp. 50-51).

<sup>4</sup> Such a position is advocated by Stephen Jay Gould's NOMA thesis that science and religion constitute non-overlapping magisteria. See Stephen Jay Gould, 'Nonoverlapping magisteria', in *An Evolving Dialogue: Theological and Scientific Perspectives on Evolution*, ed. by James B. Miller (Washington, DC: American Association for the Advancement of Science, 1998), pp. 315-326.

<sup>5</sup> Cf. Suzanne Goldenberg, 'Creationists Defeated in Kansas School Vote on Science Teaching', *Guardian*, 15 February 2007, p. 18; <<http://www.guardian.co.uk/science/2007/feb/15/schoolsworldwide.religion>> [accessed 11 April 2008].

not go as far as Paley's, and, as a result, is not subject to the criticism of smuggling religion into science. As Behe puts it:

The most important difference is that my argument is limited to design itself; I strongly emphasize that it is not an argument for the existence of a benevolent God, as Paley's was. I hasten to add that I myself do believe in a benevolent God, and I recognize that philosophy and theology may be able to extend the argument. But a scientific argument for design in biology does not reach that far. Thus, while I argue for design, the identity of the designer is left open.<sup>6</sup>

Behe argues that, whereas for Paley, evidence of design was evidence of a Designer, he, along with other Intelligent Design theorists,<sup>7</sup> are willing to leave it at evidence of design, thereby proposing a strictly scientific theory. He compares Intelligent Design to Big Bang cosmology, pointing out that although the latter does seem to fit well with belief in creation, the theories can be advanced in such a way that they stand or fall on commonly accepted scientific grounds,<sup>8</sup> such as elegance, simplicity and explanatory power. Big Bang cosmology in physics is good science if it meets scientific criteria. Similarly, Intelligent Design in biology (or, perhaps more accurately, biochemistry) must be assessed on its scientific merits.

## II. Challenging the Grounds for Intelligent Design

Paley's argument rests on complexity, but Behe holds that this does not provide sufficient grounds for Intelligent Design. Rather, Behe concentrates on a much smaller subset of complex phenomena that exhibit what he calls irreducible complexity.<sup>9</sup> He defines an irreducibly complex system as 'a single system which is composed of several well-matched, interacting parts

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<sup>6</sup> Michael Behe, 'The Modern Intelligent Design Hypothesis: Breaking Rules', in *God and Design: The Teleological Argument and Modern Science*, ed. by Neil A. Manson (London: Routledge, 2003), pp. 277-91 (p. 277).

<sup>7</sup> For example, William Dembski, who also holds that intelligent design is a scientific theory, according to Robert O'Connor, 'The Design Inference: Old Wine in New Wineskins', in *God and Design*, pp. 66-87 (p. 67).

<sup>8</sup> Behe, 'The Modern Intelligent Design Hypothesis', pp. 278-79.

<sup>9</sup> Dembski speaks, in a similar way, of 'specified complexity', pointing out that this expression is also used by others. See William Dembski, 'The Chance of the Gaps', in *God and Design*, pp. 251-74 (pp. 251-52). (He refers there to use of the expression by Leslie Orgel, in *The Origins of Life* (New York, Wiley, 1973), p. 189 and Paul Davies, in *The Fifth Miracle* (New York: Simon and Schuster, 1999), p. 112.)

that contribute to the basic function, and where the removal of any one of the parts causes the system to effectively cease functioning.<sup>10</sup> The example of the mousetrap that he first used to introduce the concept in Darwin's Black Box has been the focus of animated debate, much of it seemingly intended to show that the mousetrap is not irreducibly complex at all.<sup>11</sup> However, the attention that has been given to it is perhaps somewhat excessive, because Behe thinks that better examples of irreducible complexity are to be found at the cellular level in biology. It is the cell which, for Behe, is the black box that Darwinian evolution cannot open.<sup>12</sup> His favoured examples in the cell are the cilium and the bacterial flagellum,<sup>13</sup> biochemical systems which not only in their structure, but also in their assembly and maintenance,<sup>14</sup> are '„mind boggling”' in their complexity.<sup>15</sup> Rather than challenge Behe's definition, it might be more promising to consider why he thinks that irreducible complexity offers grounds for Intelligent Design.

Up until 2007, Behe's position in this regard had been that such complexity cannot be produced by a gradual process of natural selection based on random mutation, the mechanism proposed by his Darwinian opponents:

An irreducibly complex system cannot be produced directly by numerous, successive, slight modifications of a precursor system, because any precursor to an irreducibly complex system that is missing a part is by definition nonfunctional. [...] Since natural selection can only choose systems that are already working, then if a biological system cannot be produced gradually it would have to arise as an integrated unit, in one fell swoop, for natural selection to have anything to act on.<sup>16</sup>

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<sup>10</sup> Michael Behe, *Darwin's Black Box: The Biochemical Challenge to Evolution* (New York: The Free Press, 1996), p. 39.

<sup>11</sup> See Behe, *Darwin's Black Box*, pp. 42 and 47. The best-known example of this challenge is probably that of John McDonald, who now has two sets of reducible mousetraps available online at <<http://udel.edu/~mcdonald/mousetrap.html>> and <<http://udel.edu/~mcdonald/oldmousetrap.html>> [accessed 11 April 2008].

<sup>12</sup> Behe, *Darwin's Black Box*, pp. 9-10.

<sup>13</sup> See Behe, *Darwin's Black Box*, pp. 59-73. In

<sup>14</sup> As he makes clear in Michael J. Behe, *The Edge of Evolution* (New York: The Free Press, 2007), pp. 87-100 and Appendix C.

<sup>15</sup> Behe, *The Edge of Evolution*, p. 164.

<sup>16</sup> Michael Behe, 'Evidence for Intelligent Design from Biochemistry', *Think: Philosophy for Everyone*, 11 (Autumn 2005), 27-39, p. 31. (This article is a reprint of a talk originally given in 1996 at the Discovery Institute's 'God and Culture' Conference, which is available online at <<http://www.discovery.org/scripts/viewDB/index.php?command=view&id=51>> [accessed 21 March 2007].)

The logic of this argument, however, is flawed and, as Patrick Byrne recognizes, has been successfully undermined by Kenneth Miller.<sup>17</sup> Miller does not identify the logical mistake Behe makes, but correctly states that a key step in his argument, 'the assertion of non-functionality, is demonstrably false. [...] Once this is realized, the logic of the argument collapses.'<sup>18</sup> The reason for this is that Behe incorrectly assumes that backwards and forwards in time are logically equivalent with regard to irreducibility and, as a result, is guilty of making a directionality mistake. Having defined irreducible complexity, he infers that it applies in both temporal directions, without giving any reasons as to why this must be the case. But what if the logic of irreducible complexity is directionally sensitive? If so, it would certainly not be the case that a functioning precursor is impossible by definition, as Behe asserts. His definition forbids only the putative reduction of an irreducibly complex system once it has been established, and he may well be correct about that. Irreducibly complex systems, as he defines them, may well exist. However – and crucially – the definition itself says nothing at all about what may or may not be the case before such systems are formed. In a sense, this is not surprising, as Behe does not think that there is a before in any developmental sense, but nothing about his definition rules it out. Irreducible complexity does not logically entail what might be termed underivable complexity.

Allen Orr has conjectured that it may well be possible to form an irreducibly complex system gradually, or, to use the nomenclature of the previous paragraph, that irreducible complexity may well be derivable. If this is the case, then, although the complete system may cease to function if parts of it are removed, functionality might not be all-or-nothing as a system develops:

An irreducibly complex system can be built gradually by adding parts that, while initially just advantageous, become – because of later changes – essential. The logic is very simple. Some part (A) initially does some job (and not very well, perhaps). Another part (B) later gets added because it helps A. This new part isn't essential, it merely improves things. But later on, A (or something else) may change in such a way that B now becomes indispensable.<sup>19</sup>

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<sup>17</sup> Patrick H. Byrne, 'Evolution, Randomness, and Divine Purpose: A Reply to Cardinal Schönborn', *Theological Studies* 67 (2006), 653-65 (p. 657).

<sup>18</sup> Kenneth R. Miller, 'Answering the Biochemical Argument from Design', in *God and Design*, pp. 292-307 (p. 305).

<sup>19</sup> H. Allen Orr, 'Darwin v. Intelligent Design (again)', *Think: Philosophy for Everyone*, 11 (Autumn 2005), 41-53 (p. 46).

Orr provides a logical explanation as to how irreducible complexity might be compatible with derivable complexity. Since Behe's original argument is logical in character, a logical counter-argument suffices to show the falsity of his assertion that irreducible complexity forbids precursor systems.

In his most recent work, Behe seems to shift the grounds for his argument somewhat. There is evidence in *The Edge of Evolution* to suggest that he still holds to his earlier position,<sup>20</sup> suggesting that perhaps he intends the second argument he provides in this work to buttress the earlier logical argument found in Darwin's Black Box and elsewhere. For the purposes of the analysis being carried out here, the question is whether this later argument can survive if the first is fatally flawed. In responding to his critics, it must be said that he is somewhat scathing in his treatment of Miller,<sup>21</sup> but his use of Orr's idea of 'biological reasonability' is certainly innovative.<sup>22</sup>

He picks up an idea put forward by Francois Jacob, who 'famously wrote that Darwinian evolution is a „tinkerer,” not an engineer',<sup>23</sup> in order to suggest that, if this is the case, 'it cannot be expected to produce coherent features where a number of separate parts act together for a clear purpose, involving more than several components.'<sup>24</sup> Thus far, this sounds remarkably like his earlier argument, and suffers from a similar logical mistake. However, as he continues, he draws on the kind of solution put forward by Orr, aiming to hoist him on his own petard:

Even if someone could envision some long, convoluted gradual route to such complexity, it is not biologically reasonable to suppose random mutation traversed it. The more coherent the system, and the more parts it contains, the more profound the problem becomes.<sup>25</sup>

Although Behe does not say so directly, the implication here seems to be that, although the gradual development of an irreducibly complex system by a process of random mutation might not be theoretically impossible, it is not biologically reasonable. Or, expressed in the nomenclature used earlier, even if irreducible complexity does not logically entail underivable

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<sup>20</sup> See, for example, Behe, *The Edge of Evolution*, pp. 95-97.

<sup>21</sup> Behe, *The Edge of Evolution*, p. 95.

<sup>22</sup> Behe, *The Edge of Evolution*, Chapter Six (see especially pp. 103 and 119). He cites the source for this idea as follows: 'Coyne, J.A. and Orr, H.A. 2004. *Speciation*. Sunderland, Mass.: Sinauer Associates, p. 136.' (Behe, *The Edge of Evolution*, p. 286, n. 1)

<sup>23</sup> Behe, *The Edge of Evolution*, p.119.

<sup>24</sup> Ibid.

<sup>25</sup> Behe, *The Edge of Evolution*, p.119.

complexity, it is reasonable to infer the latter from the former. If that is the case, Behe is attempting to provide an argument for intelligent design based on reasonability. This perhaps moves his position closer to that of other proponents, notably William Dembski, who explicitly argues for intelligent design on probability grounds.<sup>26</sup> Of course, countering this kind of argument requires different tactics, because Orr, for example, would argue exactly the opposite case. What is at stake here, it seems, is the probability of a large number of chance events resulting in an irreducibly complex system weighed against the probability of intelligent design resulting in that same system. Behe and his opponents clearly hold opposite positions on this, and the opposition here is harder to reconcile.

The reason it is harder to reconcile, however, is that the two positions are not only opposed, but diametrically opposed. If some middle ground is to be sought, an attempt needs to be made to get beyond (or is it between?) the 'designer of the gaps' versus 'chance of the gaps' arguments that go back and forth between the two sides.<sup>27</sup> If the gaps in scientific understanding are closing gradually as time goes by (though Behe is unmistakably of the opinion that the gap of irreducibly complexity is growing rather than shrinking<sup>28</sup>), perhaps it is indeed time to put the 'God of the gaps' into retirement.<sup>29</sup> However, this need not be because there is nothing left for a Creator to do,<sup>30</sup> but because an appeal to a Creator who fills the gaps in human scientific knowledge misunderstands what creation is.<sup>31</sup> Despite Behe's reluctance to identify his intelligent designer, his suggestion of a need to fill (or bridge) gaps strongly suggests that he misunderstands what a Creator does in just the same way as his opponents. Perhaps a way forward can be found by

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<sup>26</sup> Dembski, pp. 251-57.

<sup>27</sup> See Behe's example of climbing the Iacocca Tower in *The Edge of Evolution*, pp. 107-9 and Dembski, p. 251.

<sup>28</sup> See the way in which he talks about the developments in the biochemical understanding of the complexity of the cilium and the bacterial flagellum in Behe, *The Edge of Evolution*, pp. 87-100 and Appendix C.

<sup>29</sup> See W. Norris Clarke, 'Is a Natural Theology Still Possible Today?', in *Physics, Philosophy and Theology: A Common Quest for Understanding*, ed. by Robert J. Russell, William R. Stoeger, and George V. Coyne (Vatican City: Vatican Observatory, 1988), pp. 103-123 (p. 105).

<sup>30</sup> As, for example, Stephen Hawking thinks would be the case if ever a Theory of Everything were to be found in Physics (Stephen Hawking, *A Brief History of Time*, 2nd edn (London: Bantam Press, 1998), pp. 160-1.

<sup>31</sup> John Polkinghorne describes how he has taken Hawking to task on this misunderstanding in John Polkinghorne, *Scientists as Theologians: A Comparison of the Writings of Ian Barbour, Arthur Peacocke and John Polkinghorne* (London: SPCK, 1996), p. 44



identifying more precisely where the disputed ground is to be located. Behe has made some helpful comments on this topic, which can serve as the basis for a more radical, but ultimately more promising, proposal.

### III. Where is the Disputed Ground?

Loren Haarsma points out that one thing holding back the debate is the way that many Intelligent Design theorists present their proposals as an either/or choice alongside evolutionary theory, though he does recognize that this is not the case with all of them.<sup>32</sup> Behe, in welcoming Haarsma's contribution, which he describes as having a 'cordial attitude in discussing a topic which too often engenders hostility',<sup>33</sup> agrees:

I strongly concur with Haarsma that the message „evolution or design, one or the other” is a flawed choice. To the extent that the public has gotten that impression, it is regrettable. There is nothing in the idea of intelligent design that precludes the design being unfolded over time, and I myself judge that scenario to be the most consistent with all of the data we currently have.<sup>34</sup>

This last comment seems difficult to square with Behe's earlier argument that an irreducibly complex biochemical system 'would have to arise as an integrated unit, in one fell swoop, for natural selection to have anything to act on.' However, it must be said that Behe only argued that this followed 'if a biological system cannot be produced gradually'.<sup>35</sup> Has he perhaps changed his position on underivable complexity, after all?

In this earlier material, Behe draws an important distinction between natural selection and evolution which is relevant to this question:

*Evidence of common descent is not evidence of natural selection.* Similarities among either organisms or proteins are the evidence for descent with modification, that is, for evolution. Natural selection, however, is a proposed explanation for how evolution takes place – its mechanism – and so it must be supported by other evidence if the question is not to be begged.<sup>36</sup>

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<sup>32</sup> Loren Haarsma, 'Is Intelligent Design „Scientific”?', *Dialogue* 59/1 (March 2007), 55-62 (p.61).

<sup>33</sup> Michael Behe, 'The Positive Side of Intelligent Design', *Dialogue* 59/1 (March 2007), 63.

<sup>34</sup> Ibid.

<sup>35</sup> Behe, 'Evidence for Intelligent Design from Biochemistry', p. 31

<sup>36</sup> Behe, 'The Modern Intelligent Design Hypothesis', p. 286.



This clarification helpfully distinguishes between evolution and natural selection, the latter of which, he argues, is the explanatory mechanism proposed by Darwinian evolutionists for the phenomenon of common descent. He seems to be suggesting that he be considered a non-Darwinian evolutionist, as he thinks that the mechanism for evolution is intelligent design. Or, more precisely, the mechanism for the evolution of irreducibly complex systems is intelligent design, even if descent with modification might well be explainable in some other cases by appeal to natural selection. His proposal is that the debate should move away from opposing creation and evolution to the more promising ground of countering natural selection with intelligent design.

In *The Edge of Evolution*, he takes this movement one step further, explicitly stating that natural selection may well play a role in evolutionary development. His major thesis in the book is that there is a point at which Darwinian evolution reaches its limit as an explanatory hypothesis in the natural world, a point beyond which it can no longer serve as the grounds for explaining common descent. In the course of elucidating that thesis, he allows that 'it's certainly reasonable to suppose that natural selection plays a large role on both sides' of this divide, since it 'is an innocuous concept that says only that the more fit organisms will tend to survive. Such a truism pretty much has to be operative in almost any biological setting.'<sup>37</sup> So, even on the non-Darwinian side of the divide, in searching for an answer to the question about where irreducible complexity comes from, 'the answer almost certainly will involve natural selection (at least after something has been supplied for natural selection to favor).'<sup>38</sup> This clarifies his earlier position somewhat, as it avers both that natural selection cannot be involved in the origination of irreducible complexity and also that, once an irreducibly complex system exists, natural selection may well be involved in further evolutionary developments.

Having made this step forward, he identifies the problematic element in the Darwinian position as random mutation: 'But just as certainly the answer will not involve random mutation at the center. [...] Random mutation does not account for the „mind boggling” systems discovered in the cell.'<sup>39</sup> The grounds for the dispute, then, are neither the choice between evolution and creation, nor between natural selection and intelligent design as alternative

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<sup>37</sup> Behe, *The Edge of Evolution*, p. 164.

<sup>38</sup> Ibid.

<sup>39</sup> Behe, *The Edge of Evolution*, p. 164.

mechanisms for evolution. The dispute is about what provides a biologically reasonable account of the appearance of irreducible complexity, which can then be selected for by natural selection if it is evolutionarily advantageous. He briefly considers nonrandom mutation as a possible mechanism, finding arguments for it unpersuasive, and concludes ‘that another possibility is more likely: The elegant, coherent, functional systems upon which life depends are the result of deliberate intelligent design.’<sup>40</sup>

By narrowing the gap to be filled by intelligent design in this way, Behe seems to be doing exactly what was pointed out at the end of the previous section, thus rendering himself vulnerable to the kind of approach advocated by Hawking. Nevertheless, he is moving in a promising direction since, as was suggested in the previous section, narrowing the gap might be as good a thing for an account of creation as it is for science. These advances reveal the appropriateness of developing a thoroughly non-contrastive account of evolution and creation,<sup>41</sup> given that the argument is not between those two, as Behe correctly points out. Neither is it between natural selection and intelligent design. However, if this non-contrastivity can be taken all the way down, the gap might close in such a way as to offer a successful and mutually constructive interrelation between Darwinian evolution and a Christian understanding of creation.

#### IV. Developing a Non-contrastive Approach

The first step in elaborating such an approach is to recognise that, despite first appearances, the positions advocated by Behe and his opponents share a structural similarity. Both propose that, with regard to any particular phenomenon in biology, an account of that phenomenon must be given in which natural selection is explained either by random mutation or by intelligent design. What this amounts to is a rule for discourse that is central to both positions and held in common: talk of explanations and causes is univocal with regard to random mutation and intelligent design, since both profess to offer scientific grounds for evolution by natural selection. Darwinian evolutionists maintain that random mutation offers grounds to account for

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<sup>40</sup> Ibid., p. 166.

<sup>41</sup> The term ‘non-contrastive’ is taken from Kathryn E. Tanner, *God and Creation in Christian Theology: Tyranny or Empowerment?* (Oxford: Blackwell, 1988), p. 45, in which it serves as the theoretical basis for addressing a number of seemingly intractable oppositions in theology.

the origin of all biological systems, whereas Behe holds that it only accounts for some (or, indeed, for most).<sup>42</sup> Irreducibly complex systems must be accounted for with reference to another explanation, a different cause. Because of this shared univocity, Darwinian evolution and Intelligent Design theory are shown to be functionally complementary.<sup>43</sup> They 'perform the same job while using different tools.'<sup>44</sup>

However, if the scientific argument for intelligent design is logically flawed, as has been suggested both here and by others, the grounds for such functional complementarity within the discipline of science appear less than secure. In that case, it might be more promising to ask whether Darwinian evolution would be better placed into a non-contrastive relation with another theory, in another discipline – that of creation. These two might well be thought to be logically incompatible but, if functional complementarity can bridge even that gap, as Kathryn Tanner suggests,<sup>45</sup> this possibility seems worthy of further consideration.

In order to pursue this line of thought, another common misunderstanding must first be addressed. Another rule for discourse that is shared by the two groups is that creation is about initiation. As Michael Ruse puts it, theorists like Behe, although they 'argue that evolution occurred in many respects as regular evolutionists argue,' also hold 'that every now and then the designer had to intervene to get organisms over a hump, as it were.' Therefore, they can be placed in the Creationist camp because they 'think that God is there all the time and always willing to step into his creation and fix things as he deems necessary.'<sup>46</sup> This seems a fair description of Behe's position, especially of his contention that irreducibly complex systems have to arise in one fell swoop. Behe might be careful to cloak the identity of his designer,<sup>47</sup> but, at any rate, it appears to be an interventionist designer, very much akin to 'the God of the Bible' appealed to by Haarsma.<sup>48</sup> But is this what creation means?

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<sup>42</sup> Behe, *The Edge of Evolution*, pp. 219-20.

<sup>43</sup> Tanner says that the recognition of such commonly held 'rules for discourse' renders rival theories 'functionally equivalent' (*God and Creation*, pp. 31-32), such that they can be recognized as 'functional complements' (p. 33).

<sup>44</sup> Tanner, *God and Creation*, p.30.

<sup>45</sup> Tanner, p. 31.

<sup>46</sup> Michael Ruse, 'Intelligent Design Theory and its Context', *Think: Philosophy for Everyone*, 11 (Autumn 2005), 7-16, p. 14.

<sup>47</sup> Behe, 'The Modern Intelligent Design Hypothesis: Breaking Rules', p. 277.

<sup>48</sup> Haarsma, 'Is Intelligent Design „Scientific“?', p. 60.

## V. The Meaning and Logic of Creation

Most of the theologians who write about the meaning of creation in Christianity agree that it is primarily about the dependence of everything that has being on the Creator for its very existence.<sup>49</sup> This primacy is clearly displayed in the position taken by Thomas Aquinas, but not exclusively by him,<sup>50</sup> that the universe could still be thought of as created even if it had no beginning.<sup>51</sup> The dependency of creatures upon the Creator is therefore no greater at the start of their existence than at any point during their existence.<sup>52</sup> If the Creator were to withdraw creative activity from a creature at any point in its life, that creature would instantaneously cease to exist.<sup>53</sup> Of course, this need not imply an either/or opposition between dependency and initiation. Edward Schillebeeckx combines both when he says that being created means that 'I have been called into existence by God, it means at the same time that I continually receive my being from him'.<sup>54</sup> Like all created things, human beings exist in 'the absolute presence of God'.<sup>55</sup> God does not need to intervene in the created order, precisely because, as Creator,

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<sup>49</sup> See, for example, Pieter Smulders, 'Creation' in *Encyclopedia of Theology: A Concise Sacramentum Mundi*, ed. by Karl Rahner (London: Burns & Oates, 1975) pp. 313-328 (p. 317); Keith Ward, *Religion and Creation* (Oxford: Oxford University Press, 1996) pp. 289-290. This primacy is also found in Judaism, in the thought of Moses Maimonides, a writer on whom Aquinas leans heavily (David B. Burrell, *Freedom and Creation in Three Traditions* (Notre Dame: University of Notre Dame Press, 1993), pp. 7, 25. Also *Aquinas on Creation: Writings on the „Sentences” of Peter Lombard 2.1.1.*, trans. with an introduction and notes by Steven E. Baldner and William E. Carroll (Toronto: Pontifical Institute of Medieval Studies, 1997), p. 20.)

<sup>50</sup> See David Kelsey, 'The Doctrine of Creation From Nothing' in *Evolution and Creation*, ed. by Ernan McMullin (Notre Dame: University of Notre Dame Press, 1985) pp. 176-196 (p. 177); Edward Schillebeeckx, *World and Church (Theological Soundings 3)*, trans. by N.D. Smith (London: Sheed and Ward, 1971), p. 242; David B. Burrell, *Aquinas: God and Action* (London: Routledge & Kegan Paul, 1979), pp. 136-37; David B. Burrell, *Knowing the Unknowable God: Ibn-Sina, Maimonides, Aquinas* (Notre Dame: University of Notre Dame Press, 1986), p. 75.

<sup>51</sup> See Ward, pp. 290-91; Brian Davies, *The Thought of Thomas Aquinas* (Oxford: Oxford University Press, 1992), p. 36; Baldner and Carroll, pp. 26, 53-54.

<sup>52</sup> Baldner and Carroll, pp. 42-43.

<sup>53</sup> Burrell, *Freedom and Creation*, p. 103; cf. p. 118.

<sup>54</sup> Edward Schillebeeckx, *God and Man (Theological Soundings II)*, trans. by Edward Fitzgerald and Peter Tomlinson (London: Sheed and Ward, 1969), p. 215.

<sup>55</sup> Edward Schillebeeckx, *Interim Report on the Books Jesus and Christ*, trans. by John Bowden (London: SCM Press, 1980), p. 114; Edward Schillebeeckx, *God Among Us: The Gospel Proclaimed*, trans. by John Bowden (London: SCM Press, 1983), p. 93.

God is always active in it. The dependency of the creature is so complete that God is never absent.

The interventionist position, on the other hand, proposes a God who is, for the most part, absent from the world, intervening in it only occasionally. Even if what God can do cannot be done by creatures, this way of thinking, thanks to its univocal use of language about the world and God, risks thinking of God as the biggest thing around. It speaks as if God were a super-creature,<sup>56</sup> rather than the Creator of all that has being.<sup>57</sup> In doing so, it does not take sufficient account of the ontological distinction between the world and God.<sup>58</sup> This distinction does not separate God from the world, but, because of the relation of dependence that goes along with it, means that God is closer to creatures than they are to themselves, an insight that is not an exclusively Christian one, but is shared with Judaism and Islam.<sup>59</sup>

This in turn might be thought to imply that God does everything, but such a supposition again makes the mistake of speaking univocally about the world and God. It assumes that if the creature is completely dependent on God then it must be powerless, since only God really does anything. Tanner penetratingly exposes the inadequacy of trying to balance the causation of the creature and of the Creator that is present in this univocal way of thinking. She speaks of the need 'to maintain a direct rather than inverse proportion between what the creature has, on the one hand, and the extent and influence of God's agency, on the other.'<sup>60</sup> Denying the efficacy of creaturely action on the basis of the belief that God causes all things actually amounts to 'denying the existence of an effect because of the existence of a cause.'<sup>61</sup> The mirror image position, affirming creaturely efficacy whilst holding that God's creative activity must be excluded from those actions,

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<sup>56</sup> Burrell, *Freedom and Creation*, p. 104; David Burrell and Elena Malits, *Original Peace: Restoring God's Creation* (Mahwah: Paulist Press, 1997), p. 68; Tanner, pp. 45-46.

<sup>57</sup> Burrell, *Aquinas: God and Action*, pp. 19, 66; Burrell, *Knowing the Unknowable God*, p. 46.

<sup>58</sup> Burrell, *Freedom and Creation*, pp. 13, 53; David Burrell, 'Creation or Emanation: Two Paradigms of Reason', in *God and Creation*, pp. 27-37 (p. 29); David B. Burrell, *Friendship and Ways to Truth* (Notre Dame: University of Notre Dame Press, 2000), p. 46. See also Williams, A.N., 'Deification in the *Summa Theologiae*: A Structural Interpretation of the *Prima Pars*', *The Thomist*, 61 (1997), 219-225 (p. 243); Robert Sokolowski, *The God of Faith and Reason: Foundations of Christian Theology*, (Notre Dame: University of Notre Dame Press, 1982), *passim*.

<sup>59</sup> Burrell and Malits, pp. 60-61.

<sup>60</sup> Tanner, *God and Creation*, p. 85.

<sup>61</sup> *Ibid.*, p. 86.

mistakenly proclaims ‘the existence of an effect whilst denying its cause’.<sup>62</sup> The first denies that God is Creator, the second that creatures are creatures, with regard to creaturely action.

Tanner’s proposals about the language of agency and causation advocate the use of a distinctive logic, one that can be used to further the non-contrastive approach being advocated here. Rather than being used univocally of creatures and of God, these key terms are used analogically in a non-contrastive mode of discourse. This means that, although the terms are not used in the same sense of creatures and of God, their senses are not altogether unrelated either.<sup>63</sup> The very sense in which a creature can be said to be an agent is dependent on the sense in which God, as Creator, can be said to be an agent, because the linguistic relation reflects the ontological relation between the two. As Burrell puts it, ‘the order of logic and of reality are indeed isomorphic’. But it is important to stress that this isomorphism originates in the ontological relation, not in the linguistic one.<sup>64</sup> If the creature is dependent on God’s creative agency for all it is, this dependence extends not just to what the creature is, but also to what it does and, indeed, to the effects it causes, as Tanner points out. It is here, she says, that Aquinas can again be of help, speaking of ‘two total subordinating causes’, such that the ‘whole of a created effect must be said [...] to depend both on divine agency and its created cause.’<sup>65</sup>

If the actions of creatures are themselves created, as they surely are, they are thus dependent both on God’s creative agency and on the creatures doing them. But they are not dependent on both in the same way. God does not perform the actions of a creature – the creature does – yet these actions, precisely because they are created, can also be thought of as effects of God’s

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<sup>62</sup> Ibid., p. 87.

<sup>63</sup> See, for example, Burrell, *Aquinas: God and Action*, p. 55; Nicholas M. Healy, *Thomas Aquinas: Theologian of the Christian Life* (Aldershot: Ashgate, 2003), p. 12; Brian Davies, *The Thought of Thomas Aquinas* (Oxford: Oxford University Press, 1992), p. 70; Jean-Pierre Torrell, *Saint Thomas Aquinas: Volume 2. Spiritual Master*, trans. by Robert Royal (Washington, DC: Catholic University of America Press, 2003), p. 40; Gerard J. Hughes, ‘Aquinas and the Limits of Agnosticism’, in *The Philosophical Assessment of Theology: Essays in Honour of Frederick C. Copleston*, ed. by Gerard J. Hughes (Tunbridge Wells: Search Press, 1987), pp. 35–63 (p. 43); Rudi A. te Velde, *Aquinas on God: The Divine Science of the Summa Theologiae* (Aldershot: Ashgate, 2006), p. 109; Ralph McInerny, *Aquinas and Analogy* (Washington, DC: Catholic University of America Press, 1996), pp. 93–96.

<sup>64</sup> David Burrell, ‘From Analogy of „Being” to the Analogy of Being’, in *Faith and Freedom: An Interfaith Perspective* (Oxford: Blackwell, 2004), pp. 113–26 (pp. 114–15).

<sup>65</sup> Tanner, *God and Creation*, p. 92.

creating activity. This makes it possible to expound a sense of the autonomy of the natural order that does not lead inescapably to independence, with all the competitive and contrastive implications that follow. Rather than being left alone to work out the history of the world in the absence of God, creatures are, as Schillebeeckx puts it, 'a blend of solitude and presence'.<sup>66</sup> This 'insight of faith' means 'that finitude is not left in its solitude but is supported by the absolute presence of the creator God.'<sup>67</sup> In such a non-contrastive pattern of discourse, it becomes possible to speak of 'mankind in its autonomous but finite humanity',<sup>68</sup> hinting that the autonomy of nature can be derived from the ontological distinction of God from the world, whilst a Christian concept of finitude can be drawn from the relation between God and the world that is its correlate.

The difference that this understanding of creation makes is one that makes all the difference to the debate in hand, because moving away from univocal language means that the discourses of science and theology cease to be direct competitors. There is no need for room to be left in the explanations offered by science in order for a theological account to be given. This is not because science and theology occupy utterly separate, completely watertight domains which cannot compete because they have no relation to each other.<sup>69</sup> This would mean that scientific language and theological language were absolutely equivocal. If, rather, the two modes of discourse are related analogically, then the order observed in the biological world can be explained in terms both of creation and of natural selection based on random mutation. Natural selection – and ultimately random mutation –

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<sup>66</sup> Author's translation of the Dutch text 'Eindige wizens zijn een mengsel van eenzaamheid en presentie', found in Edward Schillebeeckx, *Tussentijds verhaal over twee Jesus boeken* (Bloemendaal: Nelissen, 1978), p. 130 and Edward Schillebeeckx, *Evangelie verhalen* (Baarn: Nelissen, 1982), p. 93. (Cf. translations in Schillebeeckx, *Interim Report*, p. 114 and Schillebeeckx, *God Among Us*, p. 93.)

<sup>67</sup> Author's translation of the Dutch text 'het geloofsinzicht dat de eindigheid niet in haar eenzaamheid wordt gelaten maar gedragen wordt door de absolute aanwezigheid van de scheppende God', found in Schillebeeckx, *Tussentijds verhaal*, p. 138 and Schillebeeckx, *Evangelie verhalen*, p. 102. (Cf. translations in Schillebeeckx, *Interim Report*, pp. 121-22; Schillebeeckx, *God Among Us*, p. 101.)

<sup>68</sup> Author's translation of the Dutch text 'de mens in zijn autonome maar eindige menselijkheid', found in Schillebeeckx, *Tussentijds verhaal*, p. 131 and Schillebeeckx, *Evangelie verhalen*, p. 94. (Cf. translations in Schillebeeckx, *Interim Report*, p. 115 and Schillebeeckx, *God Among Us*, p. 93.) Also see Fergus Kerr, *After Aquinas: Versions of Thomism* (Oxford: Blackwell, 2002), p. 45.

<sup>69</sup> Cf. Kathryn Tanner, *Theories of Culture: A New Agenda for Theology* (Minneapolis: Fortress Press, 1997), pp. 53 and 96.



can serve as explanatory mechanisms for evolution because the causation of the Creator can operate in and through the causation of created agents. If it did not, creaturely causation could not exist and neither could its effects. Or, to put it more simply, if natural selection based on random mutation can provide scientific grounds for evolution, ‘why shouldn’t God use something that would work?’<sup>70</sup>

## VI. Further Developments

The approach presented here does not try to solve all the problems that arise with the formation of a non-contrastive account, but given the scope of an article of this length, it is simply not possible to do so. Two in particular merit mention as areas for further development, the first of which is the issue of contingency. In *The Edge of Evolution* Behe, perhaps not surprisingly, sees chance and design as an either/or choice. As a result, even though he wants to propose that ‘design extends from the very foundations of nature deeply into life’,<sup>71</sup> he needs to leave room for chance. He articulates this as follows: ‘Randomness accounts perfectly well for many aspects of life. Contingency is real.’<sup>72</sup> In a non-contrastive account, chance is seen as compatible with what might be termed intentional creation.<sup>73</sup> Thus the meaning of contingency would need to be extended and deepened, to indicate not only that something could be other than it in fact is, but that it might not have been at all.<sup>74</sup> As a result, everything would be seen to be contingent, and another conceptual gap would have been closed.

The second area that would need more work is the thorny issue of God’s knowledge of the world. This area in fact arises from the first, because God’s

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<sup>70</sup> Cf. Peter van Inwagen, ‘The Compatibility of Darwinism and Design’, in *God and Design*, pp. 348-363 (p. 353).

<sup>71</sup> Behe, *The Edge of Evolution*, p. 205.

<sup>72</sup> *Ibid.*, p. 220.

<sup>73</sup> This term is used because intention has overtones that include, but are not limited to, knowledge. It might be used to imply, *pace* Aquinas, that God creates by knowledge and love (Burrell, *Aquinas: God and Action*, p. 87). It also seems more easily connected with will and thereby agency (Burrell, *Freedom and Creation*, pp. 86-94) and, perhaps as a result, can assist in developing an account of creation along ‘more personalist lines.’ (Burrell, *Aquinas: God and Action*, p. 86; also see Burrell and Malits, pp. 20-21, 58.)

<sup>74</sup> David Burrell, ‘Creation and „Actualism”: The Dialectical Dimension of Philosophical Theology’, in *Faith and Freedom*, pp. 76-90 (p. 79); Schillebeeckx, *Interim Report*, pp. 113-14.

knowledge of contingent events in the world seems particularly problematic. It appears difficult to hold both that they are genuinely contingent and that God knows them without either threatening their contingency or making God's knowledge causally dependent on their occurrence.<sup>75</sup> This issue looks intractable, but this apparent intractability may well suggest that the non-contrastive logic advocated here might generate surprising results with regard to this topic, too. Whether or not the issue about God's knowledge of contingent events can be resolved using the non-contrastive discourse about creation proposed in this article, the treacherous waters between Darwinian evolution and Intelligent Design do seem to have been successfully navigated. The narrow channel between them reveals that Intelligent Design theory is, indeed, a whirlpool, but that, if it is avoided, the open seas of a non-contrastive account of science and religion beckon invitingly.

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<sup>75</sup> See, for example, Gerard J. Hughes, *The Nature of God* (London: Routledge, 1995), pp. 107-113.

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