

Grist to the Mill of Anti-evolutionism: The Failed Strategy of Ruling the Supernatural Out of Science by Philosophical Fiat

Maarten Boudry · Stefaan Blancke · Johan Braeckman

Published online: 22 February 2012
© Springer Science+Business Media B.V. 2012

Abstract According to a widespread philosophical opinion, science is strictly limited to investigating natural causes and putting forth natural explanations. Lacking the tools to evaluate supernatural claims, science must remain studiously neutral on questions of metaphysics. This (self-imposed) stricture, which goes under the name of ‘methodological naturalism’, allows science to be divorced from metaphysical naturalism or atheism, which many people tend to associate with it. However, ruling the supernatural out of science by fiat is not only philosophically untenable, it actually provides grist to the mill of anti-evolutionism. The philosophical flaws in this conception of methodological naturalism have been gratefully exploited by advocates of intelligent design creationism to bolster their false accusations of naturalistic bias and dogmatism on the part of modern science. We argue that it promotes a misleading view of the scientific endeavor and is at odds with the foremost arguments for evolution by natural selection. Reconciling science and religion on the basis of such methodological strictures is therefore misguided.

1 Introduction

For over a long time, creationists and intelligent design proponents have complained that modern science, and evolutionary theory in particular, is biased towards materialism and naturalism, ruling out supernatural forces *by fiat*.¹ In response to these charges, a sizeable number of philosophers and scientists have recently argued that science is merely committed to something they call *methodological naturalism*: science does not traffic in supernatural causes and explanations, but it leaves open the possibility of their reality. This view has provoked some philosophical discussion about the correct understanding of

¹ Gish (1973), Macbeth (1974), Johnson (1993), Nelson (1996), Behe (2006).

M. Boudry (✉) · S. Blancke · J. Braeckman
Department of Philosophy and Moral Sciences, Ghent University,
Blandijnberg 2, 9000 Ghent, Belgium
e-mail: maartenboudry@gmail.com

methodological naturalism and its proper role in science.² In an earlier publication (Boudry et al. 2010), we proposed a distinction between two conceptions of methodological naturalism, with two respective views on the limits of science and the proper role of naturalism in its methods.

A widespread philosophical opinion conceives of methodological naturalism as an intrinsic and self-imposed limitation of science, as part and parcel of the scientific enterprise *by definition*. According to this view (intrinsic methodological naturalism or IMN)—which is the official position of both the National Center for Science Education and the National Academy of Sciences and has been adopted in the ruling of Judge John E. Jones III in the *Kitzmiller v. Dover* (2005) case—science is simply not equipped to deal with the supernatural and hence has no authority on the issue.³

In our view, however, methodological naturalism is a provisory and empirically anchored commitment to naturalistic causes and explanations, which is *in principle* revocable in light of extraordinary evidence (provisory or pragmatic methodological naturalism—PMN). Methodological naturalism thus conceived derives its rationale from the impressive dividends of naturalistic explanations and the consistent failure of supernatural explanations throughout the history of science.⁴

Naturally, much in this discussion hinges on how we flesh out the concept of the supernatural. There are certainly ways of stacking the conceptual deck against the possibility of scientific evidence for the supernatural ever arising (e.g., ‘the supernatural is that which is beyond scientific investigation’). If we want our definition to have any bearing on the scientific status of intelligent design creationism (IDC), however, it seems more sensible to come up with a working definition that has at least some affinity with what IDC advocates themselves are getting at. Throughout this paper, the term “supernatural” will refer to processes and causes that transcend the spatio-temporal realm of impersonal matter and energy, and to phenomena arising from the interaction of those entities with the material universe. By that standard, an intelligent designer outside the material universe intervening in the course of natural evolution would fit the bill of a supernatural entity.

In our previous paper (Boudry et al. 2010), we reviewed five philosophical arguments in favor of IMN, among which the claim that supernatural phenomena are intrinsically untestable, that the supernatural is a science stopper, that scientific evidence for it is procedurally or conceptually impossible, and that allowing the supernatural would completely destroy the stability of science. Although we found some merit in these arguments, we concluded that none of them provide sufficient ground for IMN, i.e. for the view that science simply *cannot* deal with supernatural phenomena. If supernatural entities exist and are causally potent in the natural world, such interactions would be empirically detectable (e.g. efficacy of intercessory prayer). In line with a number of other philosophers and scientists (Fales 2009; Fishman 2009; Edis 1998), we concluded that at least some forms of supernatural intervention would be on the scientific radar.⁵

² Pennock (1996), Forrest (2000), Tanona (2010), Fishman (2009), Mahner (2011).

³ Pennock (1999), Scott (1998), Haught (2004), Jones (2005), K. B. Miller (2009).

⁴ Edis (2002), Shanks (2004), Coyne (2009a), Fishman (2009).

⁵ Before resorting to supernatural causes, we should of course make sure to eliminate all available natural ones, especially given that all such recourses have invariably turned out premature. Nevertheless, it is not difficult to conceive of some extraordinary event that leaves all natural explanations impotent (examples provided in Boudry et al. 2010), and that can be elegantly explained by some supernatural hypothesis. In such cases, or so we argue, supernatural explanations would be warranted.

In this paper we argue that this dispute over methodological naturalism, although arcane and purely theoretical at first sight, bears important consequences for science education, the public understanding of science, and the relationship between science and religion. Ruling the supernatural out of science by definition or for intrinsic reasons proves a counterproductive strategy against IDC, and, for that matter, against any theory involving supernatural claims. Because IMN promotes a fundamentally misleading picture of the methods and epistemic reach of science, it has provided grist to the mill of anti-evolutionism.

2 Reconciling Science and Religion

In our view (PMN), modern scientists no longer pursue supernatural explanations because these have invariably turned out unsuccessful. With such a dismal track record, supernaturalism surely has become a waste of time and intellectual effort. But that is not to say that supernatural claims *cannot possibly* be true. All scientific knowledge is fallible, and in principle supernaturalism might be vindicated one day, although the prospects are rather dim, to say the least. Defenders of IMN, however, hold that the commitment of scientists to natural explanations is non-negotiable, for reasons going beyond simple lack of evidence, and that the idea of a ‘supernatural explanation’ in science is nothing but an oxymoron.

On the face of it, PMN seems to be more hospitable to supernatural claims than IMN. It would be a mistake to think, however, that IMN is therefore the favorite position of atheists and anti-supernaturalists. Precisely because it firmly shuts the door for supernaturalism in science, IMN allows for a way—in the words of one of its proponents—to “divorce [evolutionary science] from supposedly atheistic implications” (Ruse 2005, p. 45).

The term ‘methodological naturalism’ itself was coined in 1983 by the evangelical Christian philosopher Paul de Vries, who used it to make room for “other sources of truth” besides science.

If we are free to let the natural sciences be limited to their perspectives under the guidance of methodological naturalism, then other sources of truth will become more defensible. However, to insist that God-talk be included in the natural sciences is to submit unwisely to the modern myth of scientism: the myth that all truth is scientific. (deVries 1986, p. 396)

Not surprisingly, IMN is typically embraced by philosophers sympathetic to religion, by theistic evolutionists and religious liberals intent on safeguarding an epistemic domain for religious faith (Haught 2000), as well as by atheists who try to disarm the perceived conflict between religion and science (Ruse 2001, 2005). In a way reminiscent of Stephen Jay Gould’s principle of non-overlapping magisteria (NOMA) (Gould 1999), IMN seems to embody the modern *modus vivendi* between science and religion.

Not every theist has been content with this polite stand-off between science and religion. Creationists and proponents of intelligent design perceive the commitment of science to IMN as a token of philosophical and naturalistic prejudice. Phillip Johnson even turned it into the central tenet of his *Darwin on Trial* (Johnson 1993):

For all the controversies over these issues, however, there is a basic philosophical point on which the evolutionary biologists all agree. [...] The theory in question is a theory of *naturalistic* evolution, which means that it absolutely rules out any miraculous or supernatural intervention at any point. Everything is conclusively presumed to have happened through purely material mechanisms that are in principle accessible to scientific investigation, whether they have yet been discovered or not. (Johnson 2001, p. 61)

Is IMN a symptom of metaphysical prejudice, under a thin methodological veneer? Robert Pennock among others has claimed that Johnson fails to appreciate the difference between methodological and metaphysical naturalism (Pennock 1996; 1999, p. 192). We will argue that the situation is more complicated, and that IMN, because it suffers from several philosophical flaws, actually plays right into anti-evolutionist hands.

3 Grist to the Mill

At first blush, IMN seems to give the naturalistic outlook of science a solid philosophical underpinning. In doing so, however, it divorces the methodology of modern science from the successful track record of naturalistic explanations. This makes it look as if science has never even bothered to consider supernatural causes, and already discarded them at the outset. IDC advocates, always eager to depict scientists as dogmatists with anti-religious blinders (Pennock 1996), while casting themselves in the role of open-minded inquirers, have consistently exploited this philosophical weakness of IMN.

For example, as befits a lawyer, Philip Johnson has turned this weak spot in the defense of evolutionists to his advantage: if science is supposed to be neutral with respect to metaphysics, as defenders of IMN claim, why is the hypothesis of supernatural design already “disqualified at the outset” (Johnson 2001, p. 67)?⁶ Elsewhere, Johnson has complained that “[b]y the use of labels, objections to naturalistic evolution can be dismissed without a fair hearing” (Johnson 1993, p. 7; see also Dembski 1999).

Michael Behe quotes molecular biologist Richard Dickerson’s argument that science is a game with IMN as its “one overriding and defining rule”. Behe has Dickerson where he wants to have him: “The clear implication is that [the supernatural] should not be invoked *whether it is true or not*” (Behe 2006, p. 239). Critical and open-minded scientists, dixit Michael Behe, have to follow the evidence *wherever it leads*, instead of ruling out some options in advance (Behe 2006, p. 243). Anti-evolutionists have repeated these complaints about naturalistic bias over and over, almost invariably choosing IMN as their target.⁷

But why indeed should we rule against the supernatural beforehand? Consider how Alvin Plantinga spells out the historical implications of IMN:

Well, suppose we adopt this attitude [IMN]. Then perhaps it looks as if by far the most probable of all the properly scientific hypotheses is that of evolution by common ancestry: it is hard to think of any other real possibility. [...] So it could be that the best hypothesis was evolution by common descent – i.e. of all the hypotheses that conform to methodological naturalism, it is the best. But of course what we really want to know is not which hypothesis is the best from some artificially adopted standpoint of naturalism, but what the best hypothesis is *overall*. [...] (Plantinga 2001c, pp. 137–138)

Plantinga’s argument shows how IMN backfires on science:

The believer in God, unlike her naturalistic counterpart, is free to look at the evidence for the Grand Evolutionary Scheme, and follow it wherever it leads, rejecting that scheme if the evidence is insufficient. (Plantinga 2001c, p. 138; see also Dembski 2004, pp. 170–171)

In the eyes of IDC advocates, such unwavering methodological prohibition against the supernatural makes scientists, and evolutionary biologists in particular, myopic to the “self-evident” fact of supernatural design. If it were not for IMN, so the argument goes, intelligent design would long have been vindicated. This widespread view is particularly

⁶ See also Plantinga (1996), Dembski (1999, pp. 97–121).

⁷ See also Nelson (1996, 1998), Dembski (2004, pp. 168–172), Bledsoe (2006, pp. 255–256).

damaging to the public understanding of science. IDC proponents never fail to point out to the public that only a very bad theory would need to be shored up by such shaky philosophical arguments. For creationist Paul Nelson, IMN is a desperate move to keep theology out of science at any cost (Nelson 1998; Bledsoe 2006). For sociologist and ID-sympathizer Steve Fuller, it is “as if contemporary science was so indefensible on its own merits that it required a philosophical fig leaf for protective cover” (Fuller 2007, p. 117).

Many defenders of IMN insist that IDC advocates simply fail to grasp the difference between methodological and metaphysical naturalism (Scott 1998; Pennock 1999; K. B. Miller 2009). But this hardly clears up the confusion. A complete disregard for potential supernatural causes makes sense only if we possess airtight reasons that the supernatural either does not exist (a view to which most defenders of IMN don’t *want* to be committed), or that if it does, it never interferes with our material universe. This point has not escaped the attention of sophisticated creationists (Dilley 2010; Nagel 2008). In the absence of a sound rationale for disqualifying the supernatural, the dictum of IMN to proceed “as if” only natural causes are operative looks quite artificial. One need only imagine what would happen if supernatural forces were *really* operative in our universe. In such a world, IMN would be a very bad methodological device indeed, because it would exclude a real and tangible factor governing the universe from scientific consideration (Edis 1998, 2002). This is the reason why, despite the disclaimers of Scott and Pennock, IDC theorists persist—albeit falsely—that scientists upholding IMN must be dogmatic metaphysical naturalists (Johnson 1995; Dembski 1999; Dilley 2010). By contrast, in the view we defend (PMN), science may provide support for, but does not *collapse* into metaphysical naturalism.

IDC advocates are well aware that the image of a scientific establishment excluding dissenting views is bound to offend the democratic sentiments of the public at large. It is no wonder that the 2008 propaganda film *Expelled: No Intelligence Allowed* plays off this theme of naturalistic dogma and expulsion from science at length. On some occasions, IDC advocates openly admit that the a priori rejection of supernatural causes plays right into their hands. Consider Richard Lewontin’s often-quoted statement about materialism in science:

It is not that the methods and institutions of science somehow compel us to accept a material explanation of the world, but, on the contrary, that we are forced by our a priori adherence to material causes to create an apparatus of investigation and a set of concepts that produce material explanations [...]. Moreover, that materialism is absolute, for we cannot allow a Divine Foot in the door. (Lewontin 1997, p. 28)

Phillip Johnson lauds this paragraph as “the most insightful statement of what is at issue in the creation/evolution controversy that I have ever read from a senior figure in the scientific establishment” (Johnson 1997, p. 23). For Johnson, it neatly explains why evolution can seem so certain to scientific insiders, and why evolutionists are undisturbed when they hear about the alleged gaps in the fossil record. Their prior adherence to naturalism prevents them from seeing the flaws in the theory.⁸

⁸ Some advocates of IMN have made an argument that is the exact mirror image of ours. Rejecting the supernatural on *empirical* grounds, so they claim, is counterproductive for the public understanding of science (Pennock 2003; Haught 2000). For example, theologian and theistic evolutionist John Haught writes that evolutionary materialists are “conflating science with a worldview” and that “they leave themselves with no methodological high ground to stand when they complain about ID’s mixing of biology with theology” (Haught 2000, p. 207). But Haught’s argument begs the question against evolutionary materialists, because it already presupposes that science is not equipped to deal with supernatural claims, a claim that Haught gives no support for. Besides, evolutionary materialists are not the ones to complain about the “conflating” of biology and theology. They agree with IDC proponents that, if a supernatural entity has been involved in the creation of the world, it is in principle within the reach of science.

4 Soft-Pedaling Science

Attempts to explain mysterious phenomena in terms of natural causes date back to early Greek philosophy, and came to typify the activity of Christian natural philosophers from the Middle Ages onward. Early pioneers of the scientific revolution like Galileo Galilei were the first to successfully apply a naturalistic methodology to the study of the visible world. Over time, the track record of naturalism became ever more impressive, encompassing even problems that were previously deemed to require supernatural solutions. This fate befell problems such as the stability of the solar system, the origin of species, biological adaptations, the human moral sense, the phenomenon of mystic experiences and so forth. Especially in the wake of Darwin's evolutionary theory, which delivered a promissory note for a complete naturalization of the living world (Bowler 2007), many scientists removed the supernatural from their explanatory resources altogether.

In retrospect this process of naturalization has ironically fostered the ill-founded opinion that science is simply not equipped to evaluate supernatural claims in any case. Defenders of IMN pretend that there really was no dispute to begin with, because the very notion of a supernatural explanation is an oxymoron. IMN suggests that natural explanations inevitably *had* to come out at the end of the day. God's departure from science is then not seen as the outcome of scientific progress, but rather of a deepened philosophical understanding of science and its methods. For example, Michael Ruse maintains that the history of the life sciences deserves to be labeled scientific only insofar as it begins to adhere to the strict prescripts of methodological naturalism:

[E]volutionism grew up from being a pseudoscience, through being a popular science, to being what I term a mature or "professional" science. At various stages along this process, one sees a transformation as evolution does become more subject to the strict dictates of methodological naturalism. (Ruse 2005, p. 48)

But Ruse's account sets the cart before the horse. It is not very different from saying that, at the turn of the 19th century, physicists became more and more subject to the "strict dictates of atomism", as if atomic theory were not itself the outcome of contingent scientific discoveries. To suggest that the life sciences have become naturalized because of some timeless philosophical insight dawning on biologists is to obscure the evidential reasons behind these developments. As Taner Edis wrote:

Nineteenth-century biologists did not come to think special creation was a hypothesis they were not allowed to entertain. They rejected it, deciding evolution explained life better. And intelligent design is still, on the face of it, a straightforward fact claim. (Edis 2002, p. 58)

The pioneers of the life sciences could very well have bumped into phenomena that defied every attempt at naturalistic explanation (but they didn't). In the world we happen to live in, science is capable of offering comprehensible natural explanations for a great deal of phenomena that were previously deemed mysterious. But this should not distract us from appreciating what is logically and metaphysically possible. We are so accustomed to the absence of any credible evidence for the supernatural (e.g. miraculous healings) that we are tempted to conclude that such evidence must be *impossible*.

5 The Retreat of Religion

Religious doctrines have often been revised in response to new scientific developments, with substantive metaphysical claims transforming over time into vague metaphors or

moral lessons (Bowler 2007; Numbers 2003). Because it succeeded in finding blind and material explanations for phenomena that were previously held to be inexplicable in anything other than supernatural terms, evolutionary theory in particular has given theologians a lot of headaches. Theistic defenders of IMN have tried to safeguard a place for God by erecting philosophical walls around science, arguing that the whole project of finding God in nature was misguided in any case (Edis 2002, pp. 51–58; see also Dennett 1996). In his otherwise very informative book on IDC, Robert Pennock presents God's absence from modern science as an indication of science's metaphysical neutrality:

[n]owhere in evolutionary theory does it say that God does not exist, for the simple reason that, like cell theory and relativity theory and every other scientific theory, it says nothing at all about God. But to say nothing about God is not to say that God is nothing. (Pennock 1999, p. 333)

Thus, Pennock reassures his readers that “[s]cience is godless in the same way as plumbing is godless” (Pennock 1999, p. 282). But Pennock's analogy soft-pedals the very real threat that science poses to religious belief. If a plumber ignores supernatural explanations when dealing with stopped drains and water pipes, of course he can still comfortably resort to God when it comes to weightier matters of explanation. But modern science has extended its explanatory reach far beyond, including many domains that were traditionally reserved for God: the origin of life, the beginning of the universe, the human mind, the edges of the observable world etc. God's irrelevance to plumbers is harmless and insignificant compared to his superfluity on every level of scientific explanation. Pennock seems to pretend that God enjoys immunity from Ockham's razor, but many religious believers think otherwise. As an analogy, modern biology says nothing about Bigfoot either. Surely Pennock does not want to believe that biologists are neutral on the question of Bigfoot's existence?

To give another example, consider Christian philosopher Howard Van Till's claim that science is “religiously inconclusive”: “Modern scientific theories concerning the properties, behaviour and formative history of the physical universe are logically independent of both theism and naturalism, favoring neither one nor the other” (see also Van Till 2001, p. 153; Haught 2003, p. 776). But logical possibility is a very weak criterion for belief, because there is precious little that science *can* logically exclude (not even Bigfoot). The argument from logical consistency is a red herring that diverts attention away from the fact that evolutionary science has dramatically undermined a whole class of positive arguments for supernatural design. This does not mean that science has conclusively disproven God's existence, a straw man position that defenders of IMN often attribute to defenders of the conflict view. For example, evolutionary biologist and Roman Catholic Kenneth Miller writes:

[T]he conflict depends [...] on an unspoken assumption. That assumption is, if the origins of living organisms can be explained in purely materialistic terms, then the existence of God – at least any God worthy of the name – is disproved. (K. R. Miller 2000, p. 190)⁹

But who endorses that “unspoken assumption”? Even someone like Daniel Dennett, whom Miller explicitly lists among those guilty, is careful enough to argue that “[u]ndermining the best argument anybody ever thought of for the existence of God is not, of course, proving the nonexistence of God” (Dennett 2007, p. 139). Science cannot prove that God does not exist (or that there is no teapot orbiting the earth, to use Bertrand Russell's famous example), but it does not follow that scientific findings have no bearing whatsoever on the plausibility of God's existence.

⁹ See also Scott (1998), Sober (2010).

6 Good Fences Make Good Neighbours

Defenders of IMN hold that the epistemic authority of science is limited to the natural realm. Although it does not say so explicitly, IMN clearly hints at the existence of other domains of reality, which just happen to fall outside the scope of science (McMullin 2001, p. 168). For example, consider geologist Keith B. Miller:

Science is a methodology that provides a limited, but very fruitful, way of knowing about the natural world. This method works only if science confines itself to investigation of *natural* entities and forces. (K. B. Miller 2009, p. 117)

In the writings of theists, a defense of IMN is typically accompanied by the suggestion that there is more between heaven and earth than is dreamt of in naturalist philosophy. This claim is not shared by atheistic defenders of IMN, but one has to admit that it is a natural extension of it. In their polite reluctance to offend religious sensibilities, atheist defenders of IMN have bought into a philosophical view that inadvertently suggests that religion is a more powerful source of knowledge than science. After all, from the claim that science is “restricted” to the natural domain, it is but a small step to the conclusion that only religion can offer us deep knowledge about the world. For example, Reformed Christian Howard Van Till is a strong defender of science and IMN, but he does not buy any of its naturalistic conclusions:

As I see it, granting the limited competence of natural science is not a concession to naturalism; rather, it is simply a recognition that we have empirical access only to creaturely phenomena. [...] science [provides] an incomplete picture of reality because of its inability to probe beyond the creaturely realm. (Van Till 2001, p. 161)

For his part, theologian John Haught has embraced IMN in almost lyrical terms, as it resonates with his conviction that theology offers us deeper knowledge than science can attain:

Theology is now freed from moonlighting in the explanatory domain that science now occupies, so that it may now gravitate toward its more natural setting - at levels of depth to which science cannot reach. (Haught 2004, p. 236)

But this view of science as one source of knowledge among others—not even a particularly deep one—does gross injustice to its impressive accomplishments compared to religion. If religion really constitutes an equally valid source of knowledge, as defenders of IMN suggest, why would we choose to ignore it for such important questions as the origin of life? Why not take every available source of knowledge into consideration?

7 The Empirical Case Against Supernatural Design

In *On the Origin of Species* Charles Darwin took the reigning paradigm of natural theology very seriously. Rather than dismissing special creation out of hand, he repeatedly contrasted supernatural hypotheses with his own account of evolution by natural selection. In particular, Darwin devoted considerable time to anomalous phenomena which are “inexplicable on the ordinary view of the independent creation of each species”, and which support his “one long argument” for evolution through natural selection (Darwin 1998 [1859]): homologies, imperfect and rudimentary organs, geographical distributions, embryology, etc. Even now, many scientists see the imperfections and oddities of nature as more compelling arguments for evolution than examples of ‘perfect’ adaptation, because the latter just mimic the actions

of an alleged intelligent creator (Gould 1980; Coyne 2009b; Boudry and Leuridan 2011). The point is that such empirical objections make sense only if one takes the theory of special creation seriously as an alternative explanation. IMN inadvertently sabotages this empirical case against design, rendering Darwin's arguments against design superfluous.¹⁰ Defenders of IMN even commit themselves to the peculiar view that considerable parts of *On the Origin of Species* are 'unscientific', because of its engagement with supernatural explanations (even if in a purely negative way). If supernatural explanations are ruled out even before evidence kicks in, it makes little sense to argue, as Darwin did, that the evidence speaks against them. By contraposition, if supernaturalism is an empirical failure, this entails that it *might* have succeeded, something which is only allowed by PMN. The problem reminds one of an old Jewish joke: someone borrowed a copper kettle from B and after he had returned it, he was sued by B because the kettle now had a big hole in it. His defense was: "First, I never borrowed a kettle from B at all; secondly, the kettle already had a hole in it when he gave it to me and thirdly, I gave the kettle back undamaged".¹¹

By setting up an artificial wall between science and supernatural claims, IMN has deprived itself from the most powerful arguments against design. IDCers like Paul Nelson have been quick to point out that the empirical arguments against supernatural design sit uncomfortably with the widely advocated principle of IMN in science, and on that particular point they are quite right.¹² As Thomas Nagel put it in his own *rapprochement* with IDC theory:

The conceivability of the design alternative is part of the background for understanding evolutionary theory. To make the assumption of its falsehood a condition of scientific rationality seems almost incoherent. (Nagel 2008, p. 201)

In (Boudry et al. 2010), we argued that, not only in the life sciences, but also in other domains of inquiry, paranormal researchers and skeptics have investigated extraordinary claims which, if corroborated, would substantiate the existence of immaterial and supernatural entities (e.g. ghosts, extra-sensory perception, the healing power of prayer; see Humphrey 1996).

Defenders of IMN themselves are sometimes ambivalent on what they see as the epistemic limits of science. For example, Robert Pennock acknowledges the failure of supernatural explanations in the history of the life sciences, but he writes that this cannot be the "main reason" for rejecting design explanations, proceeding to list several *intrinsic* reasons for ruling the supernatural out of science (Pennock 1999). The same problem is apparent in Barbara Forrest's discussion of scientific naturalism. On the one hand, she argues that scientific evidence for the supernatural is procedurally impossible, because any such putative evidence "would only demonstrate that this newly verified aspect of reality had all along never been supernatural at all" (Forrest 2000, p. 25). On the other hand, she proposes a "tentative rejection" of the supernatural "in light of the heretofore consistent lack of confirmation of it" (Forrest 2000, p. 23), a claim with which we can heartily agree. But the two conceptions of methodological naturalism are mutually exclusive and should not be conflated: either one defends PMN, implying that supernatural explanations *might* have succeeded, or one chooses IMN, which is to rule them out of science a priori.

¹⁰ Strictly speaking, defenders of IMN allow for scientific arguments against the idea of separate origins, though not against special creation by a supernatural being. But we don't see any difference. If particular observations about the material world can be derived from some supernatural worldview, and those observations are not borne out, then they disfavor *that* supernatural worldview.

¹¹ The example is given in Freud's *The Interpretation of Dreams*.

¹² Nelson (1996, 1998); see also Dembski (1999), Woetzel (2005), Dilley (2010).

8 Theological Quarrels

In our dispute with defenders of IMN, both parties concur that evolutionary theory is solid science whereas IDC is pseudoscience. We just quarrel over the proper way to tackle supernatural claims in science.¹³ In order to understand the different positions and alliances in this debate, it is instructive to have a look at a parallel dispute among theists about this same question. The bone of contention here takes a different guise: is there any sound theological rationale for the strictures of IMN? Does a theist have any reasons to accept that supernatural claims fall beyond the epistemic purview of science?

The crux for theists is whether they believe in an interventionist God. If God really performs miracles, he would be on the scientific radar. By contrast, if he never meddles with our affairs, the strictures of IMN would be justified (or at least harmless). Many liberal theologians argue that any worthy deity must have a non-interventionist policy with regard to his creation. A typical theological justification for IMN has been put forward by Diogenes Allen:

God can never properly be used in scientific accounts, which are formulated in terms of the relations between the members of the universe, because that would reduce God to the status of a creature. According to a Christian conception of God as creator of a universe that is rational through and through, there are no missing relations between the members of nature. If in our study of nature, we run into what seems to be an instance of a connection missing between members of nature, the Christian doctrine of creation implies that we should keep looking for one. (Allen 1989, p. 45)¹⁴

In other words, the idea of divine intervention should be dismissed because it reduces God to the sorry state of a creature, and because it suggests that there are gaps in the natural economy of God's creation. The latter assumption, which can be traced back to the writings of Baruch Spinoza, was coined the thesis of "functional integrity" by Howard Van Till:

In such a Creation there would be no need for God to perform acts of 'special creation' in time because it has no gaps in its developmental economy that would necessitate bridging by extraordinary divine interventions of the sort often postulated by Special Creationism. (Van Till 1996, p. 21)

Liberal theologians also fear that the idea of direct interventions by God in the course of nature amounts to 'God of the gaps' theology. This theological view sees divine action in the 'gaps' of reality left unexplained by science. Many theologians find the idea unacceptable, because it puts theology on the defensive and restricts God's action to particular aspects of reality, which natural science might be able to lay hold on in the future.

But not all theists agree. IDC advocates such as Alvin Plantinga and William Dembski see no reason to rule out the possibility of supernatural intervention. They accuse liberal theology of sacrificing too much to science, and of rationalizing their retreat with spurious theological reasoning. Their ill-conceived arguments against evolution notwithstanding, it is hard not to sympathize with IDC advocates on this point. In an exchange with Van Till about IMN, Philip Johnson put it succinctly:

Effectively, that [IMN] means that God must be exiled to that shadowy realm before the Big Bang, and He must promise to do nothing thereafter that might cause trouble between theists and the scientific naturalists. (Van Till and Johnson 1993)

¹³ Some defenders of IMN are metaphysical naturalists and atheists all the same, but they simply feel that this is a purely philosophical discussion which should be separated from scientific issues (Pigliucci 2010).

¹⁴ Cited in Plantinga (2001b, p. 347).

According to Dembski, the thesis of the self-sufficiency of nature “artificially constricts the range of things God may ordain” (Dembski 1999, p. 64; see also Plantinga 2001b). Plantinga, among other defenders of IDC, denies that belief in divine intervention amounts to God of the gaps theology, a position which he himself forcefully dismisses (Plantinga 2001b, p. 350). It is perfectly consistent to hold that God sometimes directly intervenes in the world, according to Plantinga, while still maintaining that he constantly sustains the whole of his creation, natural laws included.

The bugbear of God of the gaps theology looks like a red herring indeed. So why do theologians like McMullin, Van Till and Allen accept the retreat of God into the “shadowy realm before the Big Bang”? We think it suggests a different explanation: theistic defenders of IMN seem to be aware, *unlike* Plantinga and the IDC proponents, that appealing to supernatural explanations in the face of unresolved scientific problems has *always been premature*, and that such problems have consistently yielded to naturalistic explanations. From their perspective, pushing arguments such as ‘irreducible complexity’ in biology is a guaranteed dead-end for theism. Because they do not share Plantinga’s misconceptions about evolutionary theory, they realize very well that the scientific evidence for evolution by natural selection is overwhelming. If science has failed to unearth any evidence for a supernatural Creator of the universe, what better solution than to pretend that it simply has no bearing on the supernatural at all? This solution safeguards religion from direct confrontations with science, provided that non-religious scientists honor the same territorial boundaries and have no intention to tread on the domains reserved for religion. Faced with a pending defeat for theism, liberal theologians simply opt for a draw.

On the other side of the debate, Plantinga, Johnson and Dembski are keenly aware that the theory of evolution by natural selection, by explaining away the apparent design and contrivance in nature, looms very large over religion. Science has rendered God superfluous and irrelevant. In the words of Dembski:

Atheists, materialists and naturalists had been offering promissory notes that natural laws were sufficient to explain life. It was Darwin’s theory, however, that put paid to these promissory notes. [...] By giving a plausible picture of how mechanization could take command and make life submit to mechanistic explanation, [Darwin] cleared the ground for the triumphant march of mechanistic explanations in biology. (Dembski 1999, pp. 83–84)

From their perspective, the only way out is to resist the conclusion that naturalistic evolution tells the whole story. Confident as they are that they can make a scientific case for theism, IDC theorists will have none of the concessions and reconciliations offered by Allen, Van Till and others. For their ambitious program to succeed, IMN is a serious obstacle (Van Till and Johnson 1993; Dembski 1999; Plantinga 2001a).

9 Confusion About Methodological Naturalism

If we are right, the real crux in the debate about naturalism and IDC is not the confusion between metaphysical and methodological naturalism, as Eugenie Scott and others like to think, but between what we call IMN and PMN. This distinction was already implicitly present in the controversy over IDC, but as far as we know it had not been clearly identified and labeled. IDC theorists often present the a priori dismissal of the supernatural as the consensus view among scientists (see for example Johnson 2001, p. 61; Dembski 1999, pp. 117–119; 2004, pp. 170–171), an impression that is fostered by the confident

pronouncements of IMN defenders on the nature of science. But there clearly is a strand of thought that goes against IMN.¹⁵

Unfortunately, even some of those who think along our lines fail to notice the popularity of IMN. For example, in his excellent critique of IDC, Niall Shanks has no patience with the suggestion that science is by definition restricted to natural causes and explanations, which he labels as a “smoke-and-mirrors strategy” (Shanks 2004, p. 139) of IDC advocates. But this is to underestimate the confusion among critics of IDC. Shanks is right to dismiss Dembski’s complaint that “methodological naturalism is the functional equivalent of a full-blown metaphysical naturalism” (Dembski 1999, p. 119), because in Shanks’s presentation it amounts to no such thing. However, Shanks seems unaware that the widespread view attacked by Dembski (i.e. IMN) is unwarranted indeed unless we have prior reason to accept either metaphysical naturalism or strict divine non-interventionism (see for example Dembski 2004, p. 191; Nagel 2008, pp. 193–194). Thus, Shanks writes that “the methodological naturalist will not simply rule hypotheses about supernatural causes out of court” (Shanks 2004, p. 141), whereas this is exactly what authors like Eugenie Scott, John Haught and Robert Pennock do.¹⁶

In a reply to Paul Nelson’s critique of methodological naturalism (Nelson 1996), philosopher of biology Kelly C. Smith rightly points out that science “is not in the business of ruling things impossible” (Smith 2001, p. 713), and that whenever supernatural explanations were invoked in the history of science, they never survived critical scrutiny for very long. However, Smith’s article leaves the reader with the impression that he is voicing the consensus view among philosophers and scientists, whereas many of his colleagues would beg to differ. For example, would Eugenie Scott agree that in principle science is always open to the possibility of supernatural explanations?

10 Conclusion

At some point in David Hume’s *Dialogues Concerning Natural Religion* (Hume 2007 [1779]), Philo and Demea jointly take sides against Cleanthes’s design arguments for the existence of God. Rather than trying to understand God by looking at his works, a feat that is impossible for the human mind to achieve, Philo and Demea think that God’s existence should be accepted as self-evident and a priori knowable. Philo (or Hume) is arguably being cautious to avoid that his skeptical arguments against the design argument collapse into outright atheism. Demea for his part does not want to make God’s existence dependent on something as mundane and fallible as an a posteriori argument, for that would expose theism to the attacks of atheists.

In a way reminiscent of Hume’s *Dialogues*, theist and non-theist defenders of science have advocated IMN as a way of dissociating science from atheism and consolidating a truce between (evolutionary) science and religion. The received idea seems to be that, as Pennock writes, confronting supernatural claims with science “inadvertently help[s] the ID cause” (Pennock 2003, p. 156), because it links evolution with atheism. By contrast, relegating the supernatural to a different domain provides reassurance to religious believers

¹⁵ Smith (2000), Edis (2002), Shanks (2004), Dawkins (2006), Stenger (2008), Fales (2009), Fishman (2009).

¹⁶ In a review of Shanks’ book, IDC sympathizer Del Ratzsch unsurprisingly accuses Shanks of misrepresenting even the views of his evolutionist allies, and he confronts him with a catalogue of quotes by IMN advocates (Ratzsch 2005, pp. 39–48).

and allows science educators to retain the support of theistic evolutionists and religious liberals in the battle against anti-evolutionist forces.¹⁷ Understandable as this may be in the context of the ongoing efforts of IDC advocates to sneak their pseudoscience in to the classroom, it is seriously misguided. First, excluding the supernatural by fiat fuels the old accusations of metaphysical bias, and allows IDC proponents to cast themselves in the role of open-minded truth-lovers. Second, the letter of IMN conflicts with actual scientific arguments against supernatural design, a discrepancy which IDC proponents have been quick to point out. Third, IMN does a disservice to the epistemic status of science, inviting the view that it is just *one* way of knowing among other, presumably deeper ones. Fourth, it fails to appreciate the threat that the naturalization of science poses to religion. Pennock's concern about the perceived conflict between science and religion is a legitimate one, but muddled philosophical reasoning will do little to avert that conflict. Science educators should not equate evolution with atheism, but neither should they pretend that the conflict between science and religion is wholly imaginary. Most religious believers would find out for themselves in any case.

For these reasons, and for the philosophical shortcomings we have reviewed elsewhere, scientists and science educators would be well-advised to reconsider their standard strategy in dealing with supernaturalist pseudoscience. Reconciling science and religion on the basis of IMN happens at the expense of philosophical and scientific integrity, and it is therefore misguided. It leaves the public with the impression that evolution by natural selection appears to win the scientific debate only because supernatural designers were already carefully excluded from the outset. *This* is the philosophical crack into which IDC theorists are currently trying to drive their ideological wedge.

Acknowledgments The authors would like to thank Jerry Coyne, Taner Edis, Massimo Pigliucci, Griet Vandermassen and John Teehan for stimulating discussions and comments on an earlier draft.

References

Allen, D. (1989). *Christian belief in a postmodern world: The full wealth of conviction*. Louisville: Westminster John Knox Press.

Behe, M. J. (2006). *Darwin's black box: The biochemical challenge to evolution* (10th Anniversary ed.). New York, NY: Simon and Schuster.

Bledsoe, B. (2006). *Every reason to be a Christian*. Longwood, FL: Xulon Press.

Boudry, M., Blancke, S., & Braeckman, J. (2010). How not to attack intelligent design creationism: Philosophical misconceptions about methodological naturalism. *Foundations of Science*, 15(3), 227–244.

Boudry, M., & Leuridan, B. (2011). Where the design argument goes wrong: Auxiliary assumptions and unification. *Philosophy of Science*, 78(4), 558–578.

Bowler, P. J. (2007). *Monkey trials and gorilla sermons: Evolution and Christianity from Darwin to intelligent design*. Cambridge, MA: Harvard university press.

Coyne, J. A. (2009a). Seeing and believing. The never-ending attempt to reconcile science and religion, and why it is doomed to fail. *New Republic*. Retrieved from <http://www.tnr.com/article/books/seeing-and-believing>.

¹⁷ Although we think IMN is philosophically and historically unsound, it may have proven fruitful in bringing about the success of the scientific enterprise. Since IMN promises a reconciliation between science and religion, it may have helped in uniting people from different backgrounds and with different worldviews in the collaborative enterprise that science is. Arguably, this would have been more difficult if the naturalistic outlook of science had been perceived as a direct challenge to religion. Even today, scientific organizations like the NCSE and the NAS succeed in rallying the support of liberal theists and religious scientists by downplaying the conflict with religion (Ruse 2005, p. 45).

Coyne, J. A. (2009b). *Why evolution is true*. New York NY: Viking.

Darwin, C. (1998 [1859]). *The origin of species*. Oxford: Oxford university press.

Dawkins, R. (2006). *The God delusion*. London: Bantam.

Dembski, W. A. (1999). *Intelligent design: The bridge between science and technology*. Downers Grove, IL: InterVarsity press.

Dembski, W. A. (2004). *The design revolution: Answering the toughest questions about intelligent design*. Downers Grove, IL: InterVarsity Press.

Dennett, D. C. (1996). *Darwin's dangerous idea: Evolution and the meanings of life*. New York: Simon and Schuster.

Dennett, D. C. (2007). Atheism and evolution. In M. Martin (Ed.), *The Cambridge companion to atheism* (pp. 135–148). Cambridge: Cambridge University Press.

deVries, P. (1986). Naturalism in the natural sciences: A Christian perspective. *Christian Scholar's Review*, 15(4), 388–396.

Dilley, S. C. (2010). Philosophical naturalism and methodological naturalism: Strange bedfellows. *Philosophia Christi*, 12(1), 118–141.

Edis, T. (1998). Taking creationism seriously. *Skeptic*, 6(2), 56–65.

Edis, T. (2002). *The ghost in the universe: God in light of modern science*. Amherst, NY: Prometheus books.

Fales, E. (2009). Animadversions on Kitzmiller v. Dover: Correct ruling, flawed reasoning. *Infidels*. Retrieved from http://www.infidels.org/library/modern/evan_fales/intelligent-design.html.

Fishman, Y. I. (2009). Can science test supernatural worldviews? *Science & Education*, 18(6–7), 813–837.

Forrest, B. (2000). Methodological naturalism and philosophical naturalism: Clarifying the connection. *Philo*, 3(2), 7–29.

Fuller, S. (2007). *Science vs religion? Intelligent design and the problem of evolution*. Cambridge: Polity press.

Gish, D. T. (1973). *Evolution: The fossils say no!*. San Diego: Creation-Life Publishers.

Gould, S. J. (1980). *The panda's thumb: More reflections in natural history* (1st ed.). New York: Norton.

Gould, S. J. (1999). Non-overlapping magisteria. *Skeptical Inquirer*, 23, 55–61.

Haught, J. F. (2000). *God after Darwin: A theology of evolution*. Boulder, CO: Westview press.

Haught, J. F. (2003). Is nature enough? No. *Zygon: Journal of Religion and Science*, 38(4), 769–782.

Haught, J. F. (2004). Darwin, design, and divine providence. In W. Dembski & M. Ruse (Eds.), *Debating design: From Darwin to DNA* (pp. 229–245). Cambridge, MA: MIT press.

Hume, D. (2007 [1779]). *Dialogues concerning natural religion and other writings*. Cambridge: Cambridge University Press.

Humphrey, N. (1996). *Soul searching: Human nature and supernatural belief*. London: Vintage.

Johnson, P. E. (1993). *Darwin on trial* (2nd ed.). Downers Grove, IL: InterVarsity Press.

Johnson, P. E. (1995). *Reason in the balance: The case against naturalism in science, law and education*. Downers Grove, IL: InterVarsity press.

Johnson, P. E. (1997). The unraveling of scientific materialism. *First Things*, 77, 22–25.

Johnson, P. E. (2001). Evolution as Dogma: The establishment of naturalism. In R. T. Pennock (Ed.), *Intelligent design creationism and its critics: Philosophical, theological, and scientific perspectives* (pp. 59–76). Cambridge, MA: MIT press.

Jones, J. E. (2005). Kitzmiller v. Dover. 400 F. Supp. 2nd 707 (M.D. Pa.) 2005.

Lewontin, R. (1997). Billions and billions of demons. Book review of 'the demon-haunted world: Science as a candle in the Dark' by Carl Sagan. *The New York Review of Books*, 44(1), 31.

Macbeth, N. (1974). *Darwin retried: An appeal to reason*. London: Garnstone Press.

Mahner, M. (2011). The role of metaphysical naturalism in science. *Science & Education*. doi: 10.1007/s11191-011-9421-9.

McMullin, E. (2001). Plantinga's defense of special creation. In R. T. Pennock (Ed.), *Intelligent design creationism and its critics: Philosophical, theological, and scientific perspectives* (pp. 168–169). Cambridge, MA: MIT press.

Miller, K. R. (2000). *Finding Darwin's God: A scientist's search for common ground between God and evolution*. New York, NY: HarperCollins.

Miller, K. B. (2009). The misguided attack on methodological naturalism. In J. S. Schneiderman & W. D. Allmon (Eds.), *For the rock record: Geologists on intelligent design* (pp. 117–140). Berkeley and Los Angeles: University of California Press.

Nagel, T. (2008). Public education and intelligent design. *Philosophy & Public Affairs*, 36(2), 187–205.

Nelson, P. A. (1996). The role of theology in current evolutionary reasoning. *Biology and Philosophy*, 11(4), 493–517.

Nelson, P. A. (1998). Jettison the arguments, or the rule? The place of Darwinian theological themata in evolutionary reasoning retrieved March, 23 2009, from http://www.arn.org/docs/nelson/pn_jettison.htm.

Numbers, R. (2003). Science without God: Natural laws and Christian beliefs. In D. C. Lindberg & R. L. Numbers (Eds.), *When science and Christianity meet* (pp. 265–285). Chicago: University of Chicago Press.

Pennock, R. T. (1996). Naturalism, evidence and creationism: The case of Phillip Johnson. [Article]. *Biology and Philosophy*, 11(4), 543–559.

Pennock, R. T. (1999). *Tower of Babel: The evidence against the new creationism*. Cambridge, MA: MIT Press.

Pennock, R. T. (2003). Creationism and intelligent design. *Annual Review of Genomics and Human Genetics*, 4(1), 143–163.

Pigliucci, M. (2010). *Nonsense on stilts: How to tell science from bunk*. Chicago: University Of Chicago Press.

Plantinga, A. (1996). Methodological Naturalism? In J. van der Meer (Ed.), *Facets of faith and science, volume 1: Historiography and modes of interaction* (pp. 177–221). Lanham: University Press of America.

Plantinga, A. (2001a). Evolution, neutrality, and antecedent probability: A reply to McMullin and Van Till. In R. T. Pennock (Ed.), *Intelligent design creationism and its critics: Philosophical, theological, and scientific perspectives* (pp. 197–236). Cambridge, MA: MIT press.

Plantinga, A. (2001b). Methodological naturalism? In R. T. Pennock (Ed.), *Intelligent design creationism and its critics: Philosophical, theological, and scientific perspectives* (pp. 339–361). Cambridge, MA: MIT press.

Plantinga, A. (2001c). When faith and reason clash: Evolution and the Bible. In R. T. Pennock (Ed.), *Intelligent design creationism and its critics: Philosophical, theological, and scientific perspectives* (pp. 113–145). Cambridge, MA: MIT press.

Ratzsch, D. (2005). How Not to Critique Intelligent Design Theory. *Ars Disputandi: The Online Journal for Philosophy of Religion*, 5, 1–18.

Ruse, M. (2001). *Can a Darwinian be a Christian? The relationship between science and religion*. Cambridge: Cambridge university press.

Ruse, M. (2005). Methodological naturalism under attack. *South African Journal of Philosophy*, 24(1), 44–61.

Scott, E. C. (1998). Two kinds of materialism: Keeping them separate makes faith and science compatible. *Free Inquiry*, 18, 20.

Scott, E. C. (2004). *Evolution vs. creationism: An introduction*. Berkeley, CA: University of California press.

Shanks, N. (2004). *God, the devil, and Darwin: A critique of intelligent design theory*. Oxford: Oxford university press.

Smith, K. C. (2000). Can Intelligent Design Become Respectable? *Reports of the National Center for Science Education*, 20(4), 40–43.

Smith, K. C. (2001). Appealing to ignorance behind the cloak of ambiguity. In R. T. Pennock (Ed.), *Intelligent design creationism and its critics: Philosophical, theological, and scientific perspectives* (pp. 705–735). Cambridge, MA: MIT press.

Sober, E. (2010). Evolution without naturalism. In J. Kvanvig (Ed.), *Oxford studies in philosophy of religion* (Vol. 3). Oxford: Oxford University Press.

Stenger, V. J. (2008). *God: The failed hypothesis: How science shows that God does not exist*. Amherst, NY: Prometheus books.

Tanona, S. (2010). The pursuit of the natural. *Philosophical Studies*, 148(1), 79–87.

Van Till, H. J. (1996). Basil, Augustine, and the doctrine of creation's functional integrity. *Science and Christian Belief*, 8, 21–38.

Van Till, H. J. (2001). When faith and reason cooperate. In R. T. Pennock (Ed.), *Intelligent design creationism and its critics: Philosophical, theological, and scientific perspectives* (pp. 147–163). Cambridge, MA: MIT press.

Van Till, H. J., & Johnson, P. E. (1993). God and evolution: An exchange. *First Things*, 34, 32–41.

Woetzel, D. (2005). Can science consider supernatural explanations? *Creation Matters*, 10(4), 1–5.