

Science and Religion: Why Does the Debate Continue?

First, *is* there a debate? Well yes, I suppose there is. Many Christians have the vague impression that science is somehow unfriendly to religious belief; for other Christians it's less a vague impression than a settled conviction. Similarly, many scientists and science enthusiasts argue that there is opposition between serious religious belief and science; indeed, some claim that religious belief constitutes a clear and present danger to science. Still others see religious belief as steadily dwindling in the face of scientific advance. Our question is: Why does this debate continue?

I'll try to answer that question; more modestly, I'll try to make a contribution to an answer. This debate displays several different loci or topics. (1) There is the association of science with *secularism* or the so-called 'scientific worldview.'¹ (2) There is alleged conflict between scientific theories of evolution and essential aspects of Christianity and other theistic religions—for example, that human beings are created in the image of God. (3) There is alleged conflict between science and the claim, common to theistic religions, that God *acts specially* in the world. Miracles would be one example of special divine action, but there are others as well: for example, Calvin's "Internal Witness of the Holy Spirit" and Aquinas's "Internal Instigation of the Holy Spirit." (4) There is conflict between religious claims and many explanations in evolutionary psychology of such human phenomena as love, altruism, morality, and religion itself. (5) There is conflict between certain classical Christian doctrines—the resurrection of Jesus, for example—and certain varieties of scientific or historical Biblical criticism. Finally, (6) there is alleged conflict between the *epistemic attitudes* of science and religion. The

¹ What Peter Unger (Unger, 2002) calls 'the scientiphicalism'. In his mind, as in mine, there is no intrinsic connection between science and the scientiphicalism.

scientific attitude, so it is said, involves forming belief on the basis of empirical investigation, holding belief tentatively, constantly testing belief and looking for a better alternative; the religious attitude involves believing on faith. Clearly I can't address all six of these topics of debate here; I'll confine myself to the first two.

I Science and secularism

Science is often thought to endorse, promote, enforce, imply or require *secularism*; but what exactly, or even approximately, *is* secularism? Suppose we start with the adjective and sneak up gradually on the noun. According to my dictionary the term 'secular' means "of or relating to the worldly or the temporal as distinguished from the spiritual or eternal: not sacred." Here 'eternal' wouldn't refer to propositions, properties, numbers and other abstract objects, which could be thought of as eternal; perhaps we could replace 'eternal,' here, with 'supernatural.' On this account, raking your lawn could be secular; praying or worshipping would not. How about *secularism*? This would be an attitude or a position of some sort: perhaps the position, with respect to some particular area of life, that secular approaches are all that is necessary or desirable in that area of life; no reference to the spiritual or supernatural is needed for proper prosecution of the activities or projects in that area. One might thus embrace secularism with respect to raking the lawn or getting your car repaired: no reference to the supernatural or spiritual is necessary. This is secularism *with respect to x*, for some department or aspect of life *x*; but then what is secularism *tout court*? For present purposes, that would be the idea that a secular approach to *all* of life is satisfactory or required; there is no department or aspect of life where there needs to be, or ought to be, a reference to the supernatural or spiritual. Secularism, so construed, has been an

increasing feature of much of western life, in particular of western academic and intellectual life, for the last couple of centuries.

There are two basic and vastly different versions of secularism present in contemporary western academia. One is limned and examined (and rejected) by Bas van Fraassen in his absorbing book *The Empirical Stance* (van Fraassen 2002), initially given as lectures in the very series we are celebrating. This variety is intimately connected with science, and can be briefly if imprecisely described as the thought that scientific inquiry, or more accurately what van Fraassen calls 'objectifying inquiry,' is enough. Perhaps a bit more accurately, but still requiring nuance and qualification, it is the position that the broadly scientific picture of the world is enough. Enough for what? Enough for understanding, and enough for practice. Enough as a guide to life, and enough for rightly fixing opinion. This scientific worldview encompasses all we need to know and indeed all we *can* know about our world and about ourselves; if there is anything beyond or in addition to what science (present or future) reveals, it is something with which we neither have nor can have contact.

This variety of secularism is our main focus; but it is important to see that there is another and wholly different species of the same genus. And just as the first, scientific, variety is outlined in van Fraassen's book, so the second, nonscientific variety is sketched in a review of van Fraassen's book by Richard Rorty (Rorty 2002). As Rorty points out, there is a kind of secularism that pays little attention to science, or at any rate sees its value as merely utilitarian. Rorty may or may not be right about the nature of the practical goals endorsed by this version of secularism; I'll comment instead on its intellectual or perhaps ideological side. Here what is fundamental is a turning away from

science and objectifying inquiry, rejecting that whole endeavor as a failed project. And instead of seeing human beings as trying to achieve the truth about our world, it would instead see us, at some deep level, as *constructing* or, better, *constituting* the truth about the world. This way of thinking goes back, of course, to Kant and perhaps indeed to the ancient world, to the Protagorean claim that "man is the measure of all things." Here the fundamental idea is that we human beings, in some deep and important way, are ourselves responsible for the structure and nature of the world—either individually or communally. At this point, naturally, I'd like to talk about Kant, but I don't have the space.

Another version of fundamentally the same idea is the claim that there really isn't any such thing as truth (with a capital T, as they like to put it); what there are instead are various substitutes. Sticking with Rorty, for example, there is truth (now with a small 't') as 'what our peers will let us get away with saying' (Rorty 1979). This kind of secularism, like scientific secularism, embraces the idea that we have no need to resort to the spiritual or supernatural; we human beings are autonomous, and must make our own way, must fashion our own salvation. We are responsible for ourselves, and indeed (as Rorty says), can redefine, remake ourselves. This lust for human autonomy can assume truly heroic proportions, as (if Rorty's account is accurate) with Heidegger's standing appalled at the thought that he was not his own creation (Rorty 1989, p. 109), and his remarkable idea that he was *guilty* by virtue of existing in a universe he had not himself created. (Talk about moral scruples and a tender conscience!) The contrast between these two forms of secularism is enormously fascinating. From a Christian perspective the one vastly overestimates us, tending to see us, we ourselves, as the real creators of the world,

or at least the real source of its structure; the other vastly underestimates us, tending to see us as just another animal with a peculiar way of making a living.

But our present concern is with scientific secularism. Let's look a bit further. According to van Fraassen, the development of modern science involves what he calls, perhaps following Rudolf Bultmann, "objectifying inquiry." Objectifying inquiry, he says, is neither necessary nor sufficient for science; nevertheless, he says, it is a prominent and profoundly important feature of most scientific investigation. There are several aspects to this kind of inquiry, but a number of them can be subsumed under the striking phrase "getting ourselves out of the picture".² There is getting ourselves *individually* out of the picture: my own likes and dislikes, my own hopes and fears and loves are not to enter into what I do or say as a scientist, although of course they may serve as motivation for engaging in science in the first place or for pursuing one scientific project as opposed to another. The surgeon who dispassionately cuts into another human being displays this kind of objectivity; to achieve it, surgeons ordinarily refuse to operate on family members. Similarly, my own private and idiosyncratic moral judgments are not to enter in, either into my reports of the data, or my theories. Objectivity in this sense is a matter of ignoring or bracketing what pertains to one or some individual(s) as opposed to others.

But science, notoriously, is also said to refrain from moral judgments more generally—not just those that don't enjoy universal assent. And the same goes for likes and dislikes. So there is a stronger sense of objectivity also operative here: stepping away from, bracketing, at least some aspects or characteristics of human subjectivity

²A phrase van Fraassen gets from the historian Catherine Wilson.

more generally, hoping in this way to achieve objectivity in the sense of faithfulness to the object of inquiry. There is our nearly inevitable propensity for making moral judgments; objectivity requires that, in doing science, we see this as something "from our side" as it were, not to be found in the things themselves (at least for the purposes of science). Similarly for *teleology*: human subjects display a nearly ineluctable tendency to think in terms of teleology, perhaps because of our inveterate practical bent. Another part of objectifying inquiry, therefore, another part of "taking ourselves out of the picture" is to think of the world, at least as scientific object, as involving no purposes, no teleology. This thought goes all the way back to Francis Bacon:

Although the most general principles in nature ought to be held merely positive, as they are discovered, and cannot with truth be referred to a cause; nevertheless the human understanding being unable to rest still seeks something prior in the order of nature. And then it is that in struggling towards that which is further off it falls back upon that which is more nigh at hand; namely, on final causes: which have relation clearly to the nature of man rather than to the nature of the universe; and from this source have strangely defiled philosophy.³

Still further: human beings display a powerful inclination to *personify* the world: to see it as populated by living spirits who, like us, love and hate, think, believe and reason;⁴ for the animist the whole world is alive, permeated by living spirits. And a very special case of this—a limiting case, as we might think—is our human tendency to think

³Quoted in Leon Kass, (1985), p. 250.

⁴A tendency that, for what it is worth, has been confirmed by studies in evolutionary psychology: see, for example, Justin Barrett, (2000), and (2004); Pascal Boyer, (1994); and Todd Tremlin, (2006).

of the world itself as created and governed by just one transcendent spirit; theism can thus be thought of as a limiting case of animism. Now part of taking ourselves out of the picture is rejecting, at least for scientific purposes, this tendency to personify the world. And if we do think of theism as a limiting case of animism, then this taking ourselves out of the picture can be seen as a source of *methodological naturalism* (MN).⁵

MN is widely proposed as a constraint on proper science, and indeed it seems to characterize most if not all of contemporary science. MN is not to be confused with *philosophical* or *ontological* naturalism, according to which there is no such person as God or any other supernatural beings. The partisan of MN doesn't necessarily subscribe to ontological naturalism. MN is a proposed condition on proper science, not a statement about the nature of the universe. (Of course if philosophical naturalism were true, and if we thought of science as an effort to find the truth about our world, then MN would presumably be the sensible way to proceed in science.) The rough and basic idea of MN is that science should be done *as if*, in some sense, ontological naturalism were true; as Hugo Grotius put it, we should proceed as if God is not given. According to MN, therefore, a proper scientific theory can't refer to God or other supernatural agents such as angels or devils or Satan and his cohorts. Further, scientific description or presentation of the data relevant to a given inquiry can't be in terms or categories involving the

⁵ Obviously we don't take ourselves *completely* out of the picture, in doing science: we continue to endorse *modus ponens* as opposed to affirming the consequent; we rely on logic, mathematics, perception, measurement, the idea that there has been a past, etc., all of which are characteristically human ways of proceeding. Other, more subtle ways in which our human proclivities enter into scientific inquiry are pointed out in detail in Del Ratzsch, "Humanness in their Hearts" (presently unpublished but available on the web). And of course there can be controversy as to whether a given part of the human cognitive constitution *should* be bracketed in science: if theism is true, for example, it is far from obvious that Methodological Naturalism gives us the best shot at reaching the truth. See A. Plantinga (1993) (1996).

supernatural. Still further, a scientific theory can't employ what one knows or thinks one knows by way of divine revelation. There will be more to MN than this: for example, it will also involve a constraint on the appropriate body of background knowledge or belief with respect to which a scientific discipline is to be conducted: that background information, presumably, will contain no propositions obviously entailing⁶ the existence of God (or other supernatural beings).

I'll say more about MN later; for the moment, we may note that it can nicely be seen as secularism with respect to science. The claim is that science, that striking and important human activity or form of life, has no need of the supernatural or spiritual for its proper prosecution, and indeed is best done by deleting any such references. Note the vast difference between *secularism with respect to science* and *scientific secularism*. The former is the claim that *science* can or should proceed without reference to the supernatural; it says nothing about the rest of life. The latter is a variety of secularism *tout court*; it is the claim that *all* of life can or should proceed without reference to the supernatural, because objectifying inquiry is enough for practice as well as for understanding. And now we can note one source of the continuing debate or mistrust between science and religion. Secularism *tout court*, of course, is the enemy of religion; it is the declaration that there is no department or aspect of life where there needs to be, or ought to be, a reference to the supernatural or spiritual. But the religious attitude towards life just is the attitude that the most important project in human life is getting into the right relation with the supernatural. Specified to Christianity, the religious attitude is

⁶ "Obviously": if, as many theists have thought, God is a necessary being, the proposition that there is such a person as God is necessarily true and thus entailed (though not obviously entailed) by every proposition.

that the final good, the *summum bonum* for human beings, is to get into the right relationship with God, which is made possible by the incarnation and atonement of the divine son of God. From that perspective, secularism is a maximally mistaken attitude; it's about as far from right as you can get. And the same will go, then, for *scientific* secularism, the variety of secularism according to which objectifying inquiry, the kind of inquiry characteristic of science, is enough for understanding and practice. According to Christian belief, objectifying inquiry, inquiry characterized by getting ourselves out of the picture, isn't anywhere nearly enough either for theoretical understanding or for knowing how to live a good life. To say it is woefully inadequate would be colossal understatement.

It is crucially important to see that science itself doesn't support or endorse scientific secularism, or the scientific world picture. Science is one thing; the claim that it is *enough* is a wholly different thing. It is not part of science to make that claim. One won't find it in textbooks of science as such, whether physics, chemistry, biology, or whatever. There are scientists who make this claim; but there are as many who reject it. One can be wholly enthusiastic about science without thinking objectifying inquiry is enough. Indeed, that's the sensible attitude towards science from a Christian perspective. The confusion of science with scientific secularism is egregious; it is little better than confusing, say, music history with the claim that music history is enough, philately with the claim that philately is enough. But I believe this confusion, colossal as it is, is widely perpetrated, and by people from both sides of the divide between science and religion. There are many who enthusiastically endorse science; but they go on to confuse it with scientific secularism. Perhaps this is because they see secularism with respect to science,

i.e, methodological naturalism, as essential to science, but then confuse it with secularism *simpliciter*. Others who emphatically reject secularism fall into the same confusion. They are suspicious, distrustful of science, because of its association with scientific secularism or the so-called scientific worldview. But the fact that science is associated with secularism—i.e., the fact that some people associate the two—is not a decent reason for suspicion of science; it is no better than being suspicious of music history just because someone thinks it's enough. This confusion, I believe, is one factor underlying the continuing mutual distrust between science and religion. So one factor here is really no more than a confusion.

II Evolution

In Galileo's time, so they say, the main source of conflict between science and religion was astronomical; at present it is biological. Ever since Darwin's day, there has been friction, misunderstanding and mutual recrimination between those who accept Darwinism in one form or another, and Christians of various kinds; and of course this conflict is a main source of the continuing debate between religion and science. Many Christian fundamentalists find incompatibility between the contemporary Darwinian evolutionary account of our origins and their version of the Christian faith. Many Darwinian fundamentalists (as the late Stephen Jay Gould called them) second that motion: they too claim there is conflict between Darwinian evolution and classical Christian or even theistic belief. Contemporaries who champion this conflict view would include, for example, Richard Dawkins (1986), (2003), Daniel Dennett (1985), and, far to the opposite side, Phillip Johnson (1993). In Darwin's own day, this opposition and strife could assume massive proportions. Now Darwin himself was a shy, retiring sort; he

hated public controversy and confrontation, but given what he had to say, he was often embroiled in controversy. Fortunately for him, there was his friend Thomas H. Huxley, who defended Darwin with such fierce tenacity that he came to be called ‘Darwin’s bulldog’. Huxley himself continued the canine allusion by referring to some of Darwin’s opponents as “curs which will bark and yelp”.⁷ This canine connection has proved resilient, or at least durable, extending all the way to the present, where we have Richard Dawkins described as “Darwin’s Rottweiler,” and Daniel Dennett described, unkindly, by the late Stephen Jay Gould, as “Dawkins’s lapdog.”

Now where, exactly, does conflict or alleged conflict arise? Evolution, of course, is manifold and various; the term covers a multitude—not necessarily a multitude of sins, but a multitude nevertheless. There is (1) the *Ancient Earth Thesis*, the proposition that the earth is billions of years old. (2) There is the proposition that life has progressed from relatively simple to relatively complex forms. In the beginning there was relatively simple unicellular life, perhaps of the sort represented by bacteria and blue green algae, or perhaps still simpler unknown forms of life. (Although bacteria are simple compared to some other living beings, they are in fact enormously complex creatures.) Then more complex unicellular life, then relatively simple multi-cellular life such as seagoing worms, coral, and jellyfish, then fish, then amphibia, then reptiles, birds, mammals, and finally, as the culmination of the whole process, and the crown of creation, human beings: the *Progress Thesis*, as we humans like to call it (jellyfish might have a different view as to where the whole process culminates). (3) There is the thesis of *Descent with Modification*: the enormous diversity of the contemporary living world has come about by way of offspring differing, ordinarily in small and subtle ways, from their parents.

⁷ Darwin (1887), Vol. II, p. 232.

Connected with the thesis of descent with modification is the (4) *Common Ancestry Thesis*: that life originated just once on earth, all subsequent life being related by descent to those original living creatures—the proposition that, as Gould (1983) put it, there is a "tree of evolutionary descent linking all organisms by ties of genealogy." According to the Common Ancestry Thesis, we are all cousins of each other—and indeed of all living things.⁸ You and the summer squash in your garden, for example—are really cousins under the skin (rind).

Fifth, there is the claim that a certain particular mechanism drives this process of descent with modification: the most popular candidate is natural selection culling or winnowing random genetic mutation. Since Darwin made a similar proposal ("Natural selection has been the main but not exclusive means of modification"), call this thesis *Darwinism*. Finally, it is often assumed that (6) life itself developed from non-living matter without any special creative activity of God but just by virtue of processes described by the ordinary laws of physics and chemistry: call this the *Naturalistic Origins Thesis*. These six theses are of course importantly different from each other. They are also logically independent in pairs, except for the third and fifth theses: the fifth entails the third, in that you can't sensibly propose a mechanism for a process without supposing that the process has indeed occurred. Suppose we use the term "Evolution" to denote the first four of these; the fifth thesis points to the mechanism allegedly *underlying* evolution, and the sixth isn't really part of the theory of evolution.

So where does real or apparent conflict arise? Many Christian evangelicals or

⁸ Why not suppose that life has originated just once, so that we needn't all be cousins? This suggestion is occasionally made, but the more usual idea is that life originated just once—if only because of the astounding difficulty in seeing how it could have originated (by merely natural processes) at all.

fundamentalists accept a literal interpretation of the creation account in the first two chapters of *Genesis*; they are inclined therefore to think the earth and indeed the universe vastly younger than the billions of years of age attributed to them by current science. This seems to be a fairly straightforward conflict, and hence part of the answer to our question is that current scientific estimates of the age of the earth and of the universe differ widely (not to say wildly) from scripturally based beliefs on the part of some Christians and other theists (Muslims for example). The ranks of young earth creationists may be thinning; they are being succeeded by adherents of ‘Intelligent Design,’ who ordinarily hold neither that the earth is young, nor that God has directly created representatives of most lineages in more or less their present forms.

A more important source of conflict has to do with the Christian doctrine of creation, in particular the claim that God has created human beings *in his image*. This requires that God *intended* to create creatures of a certain kind—rational creatures with a moral sense and the capacity to know and love him—and then acted in such a way as to accomplish this intention. It does not require that God *directly* create human beings, or that he didn’t do so by way of an evolutionary process, or even that he intended to create precisely human beings, precisely our species. (Maybe all he actually intended to create were rational, moral and religious creatures; he may have been indifferent to the specific form such creatures would take). But if he created human beings in his image, then at the least he intended that creatures of a certain sort come to be, and acted in such a way as to guarantee the existence of such creatures. This claim is consistent with the ancient earth thesis, the progress thesis, the descent with modification thesis, and the common ancestry thesis. It is important to see that it is also consistent with Darwinism. It could be, for

example, that God directs and orchestrates the Darwinian process; perhaps, indeed, God causes the right genetic mutation to arise at the right times. There is nothing in the scientific theory of evolution to preclude God from causing the relevant genetic mutations.

What is *not* consistent with Christian belief, however, is the claim that this process of evolution is *unguided*—that neither God nor anyone else has had a hand in guiding, directing, orchestrating, or shaping it. But precisely this claim is made by a large number of contemporary scientists and philosophers who write on this topic. There is a veritable choir of extremely distinguished experts insisting that this process is unguided, and indeed insisting that it is part of contemporary evolutionary theory to assert that it is unguided. Examples would be Stephen Jay Gould (1983), Douglas Futuyma (1986) G.G. Simpson (1984) and many others; but the loudest voices in the choir (the soloists, perhaps) are Richard Dawkins and Daniel Dennett.

One of Dawkins's most influential books is entitled '*The Blind Watchmaker*.' Its thesis is that the enormous variety of the living world has been produced by natural selection unguided by the hand of God or any other person:

All appearances to the contrary, the only watchmaker in nature is the blind forces of physics, albeit deployed in a very special way. A true watchmaker has foresight: he designs his cogs and springs, and plans their interconnections, with a future purpose in his mind's eye. Natural selection, the blind, unconscious automatic process which Darwin discovered, and which we now know is the explanation for the existence and apparently purposeful form of all life, has no purpose in mind. It has no mind and no

mind's eye. It does not plan for the future. It has no vision, no foresight, no sight at all. If it can be said to play the role of watchmaker in nature, it is the *blind* watchmaker.⁹

This thought is trumpeted by the subtitle of the book: “Why the evidence of evolution reveals a universe without design.” Why does Dawkins think natural selection is blind and unguided? Why does he think that “*the Evidence of Evolution Reveals a Universe without Design*”? How does the evidence of evolution reveal such a thing? What Dawkins does in his book, fundamentally, is three things. First, he nicely recounts some of the fascinating anatomical details of certain living creatures and their ways, (bats, for example). Second, he tries to refute arguments for the conclusion that blind, unguided evolution could not have produced certain of the wonders of the living world—the mammalian eye, or the wing. Third, he makes suggestions as to how these and other organic systems could have developed by unguided evolution.

His refutations of these objections are not always successful; what is most striking, however, is the general form of his argument for the conclusion that the universe is without design. His detailed arguments are all for the conclusion that it is *biologically possible* that these various organs and systems should have come to be by unguided Darwinian mechanisms, where he takes it that an outcome is biologically possible if it is not *prohibitively improbable*. Of course there are problems with measuring probability here, with saying what degree of improbability is acceptable, and the like. What is truly remarkable, however, is the form of the main argument. The premise he argues for is something like

⁹ Dawkins (1986), p. 5.

(1) We know of no irrefutable objections to its being biologically possible that all of life has come to be by way of unguided Darwinian processes;

the conclusion is

(2) All of life has come to be by way of unguided Darwinian processes.

It's worth meditating, if only for a moment, on the striking distance, here, between premise and conclusion. The premise tells us, substantially, that for all we know it is possible that unguided evolution has produced all of the wonders of the living world; the conclusion is that unguided evolution has indeed produced all of those wonders. The argument form seems to be something like *there are no irrefutable objections to the possibility of p; therefore p*. Many widely endorsed philosophical arguments are invalid; few display the truly colossal distance between premise and conclusion flaunted by this one. I come home and announce to my wife that I have just been given a \$50,000 raise; naturally she wants to know my reason for thinking so; I tell her that no irrefutable objections to its possibility have so far been produced. The reaction would not be pretty. Now perhaps Dawkins has some other unexpressed premises in mind, and perhaps if we added those premises, the argument would be less unimpressive; but wouldn't it be good if he told us what those premises are?

Dawkins utterly fails to show that "the facts of evolution reveal a universe without design;" at best he argues that we don't know that it's astronomically improbable that the living world is without design. Still, the fact that he and others assert his subtitle loudly and slowly, as it were, can be expected to convince many, in particular those with no particular expertise in the subject, that the biological theory of evolution is in fact incompatible with the Christian belief that the living world has been designed. Another

source of the continuing debate, therefore, is the mistaken claim on the part of such writers as Dawkins that the scientific theory implies that the living world and human beings in particular have not been designed and created by God.

A second prominent authority on the subject is Daniel Dennett; his views are similar to those of Dawkins (which may be why Gould called him “Dawkins’s lapdog”). Dennett’s main contribution to the subject is entitled “*Darwin’s Dangerous Idea*” (Dennett, 1995); what is Darwin’s idea and why is it dangerous? In brief, Darwin’s idea, an idea Dennett of course endorses and defends, is the thought that the living world with all of its beauty and wonder, all of its marvelous and apparent ingenious design, was not created or designed by God or anything at all like God; instead it was produced by natural selection, a blind, unconscious, mechanical, algorithmic process—a process, he says, which creates “design out of chaos without the aid of Mind” (50). The whole process has happened without divine aid. It all happened just by the grace of mindless natural selection: “An impersonal, unreflective, robotic, mindless little scrap of molecular machinery is the ultimate basis of all the agency, and hence meaning, and hence consciousness, in the universe” (203). The idea is that mind, intelligence, foresight, planning, design, are all latecomers in the universe, themselves created by the mindless process of natural selection. Human beings, of course, are among the products of this mindless process; they are not designed or planned for by God or anyone else. “Here, then, is Darwin’s dangerous idea: the algorithmic level *is* the level that best accounts for the speed of the antelope, the wing of the eagle, the shape of the orchid, the diversity of species, and all the other occasions for wonder in the world of nature” (Dennett 1995, p. 59); in his recent book *Breaking the Spell: Religion as a Natural Phenomenon* he adds

that the same goes for the moral sense we humans display, as well as our religious sensibilities, our artistic strivings, and our interest in and ability to do science and mathematics or compose great music or poetry.

Now why is Darwin's idea dangerous? Because if we accept it, thinks Dennett, we are forced to reconsider all our childhood and childish ideas about God, morality, value, the meaning of life, and so on. Theists, naturally enough, believe that God has always existed; so mind has always existed, and was involved in the production and planning of whatever else there is. In fact many have thought it *impossible* that mind should be produced just from unthinking matter; as John Locke puts it, ". . . it is as impossible to conceive that ever pure incogitative Matter should produce a thinking intelligent Being, as that nothing should of itself produce Matter" (1950, IV, x, 10). Darwin's idea is that this notion is not merely not impossible; it's the sober truth of the matter. This idea, then, is inconsistent with any form of theism, and Dennett sees serious religion as steadily dwindling with the progress of science. And just as we preserve in zoos animals threatened with extinction, Dennett thoughtfully suggests that we keep a few Baptists and other fundamentalists in something like "cultural zoos" (no doubt with sizable moats to protect the rest of us right-thinking nonfundamentalists). We should preserve a few Baptists for the sake of posterity—but not, he says, at just any cost. "Save the Baptists", says he, "but not *by all means* [Dennett's emphasis]. Not if it means tolerating the deliberate misinforming of children about the natural world" (516). Save the Baptists, all right, but only if they promise not to misinform their children by teaching them "that 'Man' is not a product of evolution by natural selection" (519) and other

blatantly objectionably views.¹⁰

Darwin's idea is incompatible with theism (and most varieties of religion). Of course this doesn't automatically make it *dangerous* to theism—theists might just note the inconsistency and reject it. Many propositions are inconsistent with theism (e.g., *nothing but turtles exist*), but not a danger to it. This idea is dangerous to theism only if it is *attractive*, only if there are good reasons for adopting it and rejecting theism. Why does Dennett think we should *accept* Darwin's dangerous idea? Concede that it is audacious, with it, revolutionary, anti-medieval, quintessentially contemporary, appropriately reverential towards science, and has that nobly stoical hair shirt quality Bertrand Russell said he liked in his beliefs: still, why should we believe it? First, Dennett seems to think Darwin's idea is just part of current biology—that the contemporary neo-Darwinian theory of evolution just is a theory according to which the living world in all its beauty and diversity has come to be by unguided natural selection. That's Darwin's idea, and that idea, he thinks, is a solid part of contemporary biology. But what does he think is the *evidence* for this idea?

Here Dennett follows the same route as Dawkins. He claims that it's *possible* that all the variety of the biosphere be produced by mindless natural selection: "The theory of natural selection shows how every feature of the world *can* be the product of a blind, unforesightful, nonteleological, ultimately mechanical process of differential reproduction over long periods of time" (315, Dennett's emphasis). Now clearly the

¹⁰ But what if they *do* insist on teaching these heresies to their children? (Baptists will be Baptists, after all.) Will we be obliged to remove Baptist children from their parents' noxious influence? Should we put barbed wire around those zoos, maybe check to see if perhaps there is room for them in northern Siberia? Dennett and Richard Rorty come from opposite ends of the philosophical spectrum, but Dennett's views here nicely match Rorty's declaration that in the new liberal society, those who believe there is a "chief end of man", as in the Westminster Shorter Catechism, will have to be regarded as "insane" (and perhaps deprived of the vote and institutionalized pending recovery from the seizure?)

theory of natural selection doesn't show this at all. Dennett quotes John Locke (above, [p. 000]) as holding it impossible that "pure incogitative Matter should produce a thinking intelligent Being;" Locke believed it impossible in the broadly logical sense that mind should have arisen apart from the activity of mind. Supposing, as he did, that matter and mind exhaust the possibilities for concrete beings, he believed that there are no possible worlds in which there are minds at a given time, but no minds at any earlier time; minds can have been produced only by minds. Or by Mind; Locke and other theists will agree that mind is a primitive feature of the universe. God has always existed, never come into existence, and exists necessarily; at any time *t*, God is present at *t*. The scientific theory of natural selection certainly hasn't shown that Locke is wrong: it hasn't shown that it is possible, in the broadly logical sense, that mind arise from 'pure incogitative Matter'. It doesn't so much as address that question. But set aside such metaphysical qualms for the moment. What does the theory show, then? It gives us detailed and empirically informed stories—or perhaps a recipe for such stories about how various features of the living world¹¹ could have come to be by way of natural selection winnowing genetic mutation. Could have come to be in what sense of 'could'? Perhaps the thing to say is that these stories are successful if they are reasonably probable—where of course there is ineliminable vagueness; one can't say just how probable a theory must be in order to be *reasonably* probable.

The important point to see is that Dennett just identifies Darwin's idea—i.e., the idea that the living world has been produced by a process of unguided natural selection—

¹¹ Of course many claim that there are features of the world such that at the moment there aren't any plausible stories of that sort—see, e.g., Michael Behe's *Darwin's Black Box*. So perhaps the idea is that the theory of natural selection gives us reason to think such stories will be forthcoming, or would be forthcoming given sufficient time and resources.

with the deliverances of contemporary biological science. But how can that be right? True: there is no canonical source telling us exactly and precisely what the contemporary neo-Darwinian theory of evolution comprises. But does it include, not merely the idea that the living world has been produced by a process in which natural selection is the chief mechanism, but the vastly more ambitious idea that this process has been unsupervised, unplanned, unintended by God or any other intelligent agent? That hardly seems to be an appropriate part of an empirical scientific theory. It looks instead like a metaphysical or theological add-on. Dennett himself is of course a naturalist; he just adds naturalism to the scientific theory, shakes well, and declares the result part of current science, thus confusing natural selection with *unguided* natural selection.

Here we have another important source of the continuing debate between science and religion. Dawkins and Dennett both hold that contemporary evolutionary theory—Darwinism, in particular—is incompatible with the Christian and theistic claim that God has created human beings in his own image. Both claim that Darwinism, the theory that the principal mechanism driving the process of evolution is natural selection winnowing random genetic mutation, implies that the universe—the living universe, anyway—is without design. Dennett does so simply by identifying current evolutionary theory with the result of annexing to it the proposition that evolution is unguided; Dawkins does so by arguing—ineptly, as we’ve seen—that Darwinism implies that proposition.

This confusion or alleged connection between Darwinism and unguided Darwinism is perhaps the most important source of continuing conflict and debate between science and religion. According to theistic religion, God has created human beings in his own image. According to current evolutionary theory—Darwinism,

anyway—the main mechanism driving the process of evolution is natural selection culling random genetic mutation. So far there is no conflict. God could shape, supervise, direct, this process, for example, by protecting certain populations from extinction, arranging for their having a sufficient food supply, and so on. He could be more intimately involved; he could cause the genetic mutations, and cause the right mutations to arise at the right times. But when Dennett, Dawkins and their friends go on to add that the process is unguided by God or any other intelligent agent, then, of course, conflict and inconsistency arises. Hence if you confuse Darwinism with unguided Darwinism, a confusion Dennett makes and Dawkins encourages, you will see science and religion as in conflict at this point (See Ruse, 2005).

There are many manifestations of this confusion. Consider the conflict raging over Intelligent Design. Here both friends and foes as well as some judges and other allegedly neutral arbiters claim that ID is *incompatible* with evolution. Some of its friends propose that ID be taught as an *alternative* to evolution; foes, naturally, reject that proposal. Both claim that ID is inconsistent with evolution. Now the central claim of ID is that certain organisms or organic systems cannot be explained by unguided natural selection, and that the best scientific hypothesis, with respect to those phenomena, is that they have been intelligently designed. This claim, that intelligent design in the living world can be empirically detected, is consistent with Darwinism as such; but of course if you confuse Darwinism, with *unguided* Darwinism, or evolution, with *unguided* evolution, then you will see ID as incompatible with evolution. This confusion of Darwinism with unguided Darwinism is to be found even in official proclamations of such organizations as the National Association of Biology Teachers. Until 1997 that

organization stated as part of its official position that “the diversity of life on earth is the outcome of evolution: an unsupervised, impersonal, unpredictable and natural process”

This confusion between Darwinism and unguided Darwinism is a crucial cause of the continuing debate. Darwinism, the scientific theory, is compatible with theism and theistic religion; unguided Darwinism, a consequence of naturalism, is incompatible with theism, but isn't entailed by the scientific theory. It is instead a metaphysical or theological add-on.

I close with two objections to my assertion that the scientific theory does not entail unguided Darwinism. One of these is of little consequence; the other is more puzzling. To start with the easy one: Darwinism and theism are compatible, so I say, because it could be that God *cause* the random genetic mutations involved. But, says the objector, if those mutations are caused by God, how could they possibly be *random*? Doesn't randomness imply that they are uncaused, or at least unplanned? Doesn't it mean that they happen just by chance?

The answer is easy enough: to say that a mutation is random, in the biological sense, is only to say that it does not arise out of the design plan of the creature to which it accrues, and is not a response to its adaptational needs. Thus Ernst Mayr, the dean of post World War II biology: “When it is said that mutation or variation is random, the statement simply means that there is no correlation between the production of new genotypes and the adaptational needs of an organism in the given environment” (Mayr 1988, p. 99; see also Sober 1993). He adds that “If we say that a particular mutation is random, it does not mean that a mutation at that locus could be anything under the sun,

but merely that it is unrelated to any current needs of the organism or is not in any other way predictable” (Mayr 1997, p. 69; see also Sober 1993). But clearly a mutation could be random in *this* sense and also caused, indeed, caused by God. In this way God could guide and orchestrate the whole course of evolution, and do it by way of causing the right random mutations to arise at the right time, allowing natural selection to do the rest.

Some will object to this suggestion as improperly involving divine action in the world; God should not be thought of as intervening in the world he has created. That is, of course, a theological objection that doesn’t really bear on the question of compatibility. But for those who find this theological objection compelling, there is another possibility worth exploring: frontloading. God could create initial conditions that he knows will issue, given the laws he sets for the world, in the right mutations arising at the right time. There is little real difference between

(a) God’s decreeing at the beginning that at t , such and such will happen,
on the one hand, and

(b) At t , God’s decreeing that such and such happen then.

Our issue, however, is the question whether Darwinism is compatible with God’s creating and designing human beings, and creating them in his own image. Clearly these two are compatible.

I turn now to the second objection. Like Dawkins and Dennett, Alex Pruss (Pruss, unpublished) holds that current evolutionary theory is incompatible with Christian belief: but his suggestion is both more subtle and more plausible. According to Pruss, the modern neo-Darwinian theory asserts at least two things. It asserts, first, that there is a “full ancestral history” of each population of organisms, and indeed of each individual

organism. This would be a proposition specifying the ancestors of the individual in question, going all the way back to its very first ancestor (and here again there will be ineliminable vagueness). According to most contemporary experts, life began in just one place; therefore that first ancestor would also be the first ancestor of all living things. This history would also report which mutations occurred to which ancestors, and which of those mutations (by way of natural selection) came to spread to the rest of the relevant population. (It goes without saying that we don't have access to these ancestral histories.) According to Pruss, the claim that there is such a complete ancestral history for each individual is compatible with theism, as is the claim that no special divine action is required for the mutations or for their spreading to the rest of the population by natural selection.

But evolutionary theory makes a further claim: that an *explanation* of all the current diversity of life is given by the assertion that it has come to be by way of natural selection working on random genetic mutation:

It is the ambitious claim that evolution provides a true explanation of why such marvelously complex and adapted animals as horses, pine trees and frogs exist, with complex organs such as equine eyes and human brains, and why intelligent animals like humans exist, an explanation whose possibility competes with, and undercuts, Paley-type teleological arguments (p. 9).

It is *this* claim, the claim

(E) Darwinism provides a true explanation of all the variety of life, including the existence of human beings,

says Pruss, that is incompatible with the theistic claim that God has created human beings in his own image.

Where, exactly, is the incompatibility? The first thing to note is that explanations come in a wide variety, and the term ‘explanation’ is a bit of a weasel word. A paradigm case of explanation: my car won’t start; I take it in to the garage; the mechanic checks the electrical system, finds no problem, and finally concludes that the problem is a defective fuel pump; he replaces the fuel pump, whereupon the car starts properly. The explanation of its failing to start is that it had a defective fuel pump; that is, the answer to the question *Why did that car fail to start?* is *It had a defective fuel pump.* Note that (depending on just how we understand ‘defective’) it is very unlikely that a car with a defective fuel pump will start.

The explanation E says Darwinism offers is of a different kind: it is *statistical*. This means, says Pruss, that the explanation works by showing how the *explanans* is not unlikely: “. . . it is claimed that some set of mutations and environmental interactions that would lead to the occurrence of a species containing the ‘notable’ features . . . is not unlikely” (4). Pruss proposes that this statistical variety of explanation is the sort current scientific evolutionary theory claims to give for the variety of terrestrial life. According to the scientific theory of evolution, therefore, the correct answer to the question *Why is there such a thing as human beings or the human brain, or the equine eye?* is *It is not unlikely that these things have come to be by way of natural selection working on random genetic mutation, starting originally from some very simple unicellular form of life.*

Pruss goes on to say, however, that no theist could accept E—that is, no theist could accept the claim that the presence and activity of these processes is the *explanation*

of the existence of human-like creatures (intelligent animals made in the image of God). That is because the theist accepts another proposition that *undercuts* the explanation proposed in E. This proposition, of course, is that God intended all along to create human beings, or at any rate creatures in his image. Pruss's claim is that if you accept *that* proposition, then you can't also accept E; you can't also accept the evolutionary story *as an explanation*.

By way of analogy: suppose Sam contracts lung cancer; one explanation is that he was a smoker for 40 years. But now suppose we learn that an ill-disposed physician injected Sam with a serum that invariably causes lung cancer. Then, we might think, Sam's long-term smoking is no longer an explanation, at least for us; it's been undercut, as an explanation, by our knowledge of that rogue physician's malicious activity. When we knew that Sam was a heavy smoker but didn't know about the rogue physician, then the fact that he was a smoker was a probabilistic explanation of his getting lung cancer; once we learn about that malevolent physician, the fact of his smoking is no longer a probabilistic explanation, or indeed an explanation of any kind at all.

According to Pruss, therefore, you can't both be a theist and sensibly think natural selection is the explanation of the existence of human or humanlike creatures. Is he right? The question divides itself. First, is he right in claiming that it is part of current science, part of the scientific theory of evolution, to claim that natural selection is indeed the true explanation of the existence of humanlike creatures? As I said earlier, there is no canonical axiomatization of the scientific theory of evolution emblazoned on the walls of the National Academy of Sciences or the American Association for the Advancement of Science. Where do you go to find out precisely what this theory says? How can we tell

whether this claim of explanation is or isn't part of the scientific theory as such, as opposed to an add-on by those who don't accept theism? That's a hard question, and the answer is far from obvious.

Second, is E, the claim that natural selection is a (statistical) explanation of there being humanlike creatures really incompatible with theism? Not obviously. Let's concede for purposes of argument that a theist can't sensibly accept E; is that sufficient for the proposition that theism is incompatible with E? Maybe not. As Pruss sees it, a proposition's being an explanation sometimes depends on what else you know: if you know that God intended that there be humanlike creatures, then natural selection won't be, for you, a statistical explanation of their existence; if you don't know that, however, it could be. That Sam is a smoker is a statistical explanation of his coming down with cancer—but it's not an explanation for you if you know about that nefarious physician.

This means that a proposition of the sort in question is an explanation *relative to* some body of background information; P can be an explanation relative to my background information without being an explanation relative to yours. We live in North Dakota; the overnight temperature drops below -40 ; my car won't start. The proposition that most cars won't start at that temperature may be a probabilistic explanation of that event for me, but not for you; that is because you have more detailed knowledge of the cause of this car's failing to start on this occasion (you know I always buy cheap oil that congeals at -40 and that my car is equipped with an inhibitor that prevents its starting when the oil is congealed). But then strictly speaking, the claim that natural selection is a probabilistic explanation of the variety of life doesn't make sense, just as it stands; it's like saying that Chicago is to the west of. To get a proper assertion, we need to specify

which background information it is with respect to which this proposition is an explanation.

Of course the scientific theory in question doesn't explicitly say. But it seems sensible to suppose, first, that any scientific inquiry proceeds relative to some array of background information. It seems sensible to suggest second, that the relevant background information won't include propositions obviously implying the existence of God or other supernatural agents; this would be a consequence of the assumption of methodological naturalism, which, at present anyway, constrains most if not all scientific projects. That means, however, that E is not really incompatible with theism. For E is as it stands incomplete; it's the claim that *the coming to be of humanlike creatures by way of natural selection* is not massively improbable with respect to an implicitly but not explicitly specified array of background information. That array, however, whatever precisely it is, is constrained by methodological naturalism and therefore contains no propositions implying the existence of supernatural beings. That (1) is a probabilistic explanation of the variety of life relative to *that* array is surely not inconsistent with theism.

I am therefore inclined to think Pruss has not given us a good reason for thinking theism incompatible with evolutionary theory.

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