

# 7

## Games Scientists Play

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**K**arl Popper and Imre Lakatos speak of ‘the game of science’; one of my fundamental questions in this chapter is whether scientists play one game or many different games. But this question is in the service of a larger question: what should Christians think of (how should Christians think about) sociobiology or evolutionary psychology? This is a problem because (a) Christians, I think, are committed to a high view of science, committed to taking it seriously and being utterly enthusiastic about it, (b) sociobiology and evolutionary psychology (EP) are or at least appear to be examples of science, and (c) there are apparent conflicts between many theories proposed in EP and Christian belief. In the larger piece of work of which this is a part I will try to answer that question.

I will argue first that there are apparent and, upon analysis, real conflicts between some of the theories proposed in evolutionary psychology and Christian belief. Then I will ask why these scientists propose theories that are incompatible with Christian belief. The answer, I think, has to do with ‘methodological naturalism’. Philosophical naturalism *tout court* is the idea that there is no such person as God or anything or anyone at all like God. Methodological naturalism (MN), however, is a horse of a different color. MN is proposed as a constraint upon science: it is the claim that proper science, real science, as opposed to ersatz science—such as, for example, ‘Creationism’ or ‘Intelligent Design’—must proceed *as if* philosophical naturalism were true. After distinguishing several forms of MN I will ask whether it is really true that MN is a constraint on science: is it really true that an alleged scientific project is *real* science, *genuine* science, only if it conforms to MN? I will argue that in fact there are many different scientific activities, many different games scientists play or could play; MN

constrains some of these but not others. Now, suppose some of these games are such that when they are properly played the results are theories or claims in conflict with Christian belief—suppose, that is, that some genuine and legitimate scientific projects issue in theories incompatible with Christian belief: what attitude should Christians take to such projects and theories? Should they see here a defeater for the Christian beliefs incompatible with those theories or, more moderately, an intellectual problem, a source of cognitive dissonance? And, secondly, should they see here a faith–reason conflict? My answer to both questions is, No; and the reason has crucially to do with the fact that these scientific projects are indeed constrained by MN.

## Evolutionary Psychology and Christian Belief

Even a cursory glance at the literature shows that many theories from this area of science seem, at least on first inspection, to be deeply problematic from a Christian perspective. For example, Rodney Stark (Stark and Finke 2000) has proposed a theory according to which religion is a kind of ‘spandrel’ of rational thought, an attempt to acquire non-existent goods—eternal life, a right relationship with God, salvation, remission of sins—by negotiating with non-existent supernatural beings.<sup>1</sup> The idea is that rational thought, that is, means–ends or cost–benefit thinking, comes to be in the usual evolutionary way. But having the capacity for such thought inevitably carries with it the capacity to pursue non-existent goals, like the pot of gold at the end of the rainbow, or the ones connected with religion. Taken neat, this theory is clearly incompatible with Christian belief, according to which at least some of the supernatural beings and some of the goods mentioned do indeed exist. David Sloan Wilson suggests that religion is essentially a means of social control employing or involving fictitious belief. Again, taken neat, this is incompatible with Christian belief. Michael Ruse and E. O. Wilson suggest that morality is, or rather our moral intuitions are, in Ruse’s words, a trick played on us by our genes. A group with our moral intuitions will clearly do better, from the point of view of

1. As David Sloan Wilson (Wilson 2002: 52) puts it, ‘[For Stark] Religion is envisioned as an economic exchange between people and imagined supernatural agents for goods that are scarce (e.g., rain during a drought) or impossible (e.g., immortal life) to obtain in the real world.’

survival and reproduction, than groups that lack those intuitions.<sup>2</sup> What has been selected for, then, are people with a twofold belief on this head. First, they have the sense that there really is this objective obligation, this objective and categorical *ought* that holds, whatever you and others think or desire, whatever your goals or aims; and, second, they think that it involves, for example, something like the Golden Rule: treat others (or at least others in your group) as you yourself would like to be treated. Thus, we are inclined to think this is an objective and categorical requirement of morality. According to Ruse and Wilson, our thinking this is a trick played on us by our genes to get us to cooperate; in fact, there aren't any such objective requirements.

Still another example: Herbert Simon proposes that altruistic behavior—i.e., behavior that promotes the fitness of someone else at the expense of the altruist's own fitness—is to be explained at the individual level in terms of two mechanisms. First, there is unusual docility, so that the altruist—Mother Teresa, for example—is unusually disposed to believe what her society or group tells her. The second mechanism is limited rationality; because of this limited rationality she is unable to see that this sort of behavior is in conflict with her inclusive fitness or reproductive interests. ('Limited' certainly seems to be the right word.) From a Christian perspective, of course, this explanation is wildly off the mark.

Now, there are fascinating questions to ask here, and fascinating lines of thought to pursue. For example, consider the Stark proposal—the proposal that religion is a 'spandrel' of rational thought and is devoted to the pursuit of non-existent goods by way of negotiation with non-existent supernatural agents. This proposal is inconsistent with Christian thought or commitment just because it declares these goods and agents non-existent. But wouldn't there be another theory, perhaps just as good and even empirically equivalent to Stark's, that was non-committal on the existence or non-existence of these goods? And would one really want to say that it was part of *science* to declare these goods non-existent? So, delete the offending bit from Stark's theory and call it Stark minus: would Stark minus be inconsistent with Christian belief? Stark minus would be something like the claim that (a) religious belief is the pursuit of certain kinds of ends or goods—salvation, eternal life, and the like—by way of negotiating with alleged supernatural

2. There has been controversy about whether the notion of group selection is viable; for a spirited and convincing argument that it is, see Sober and Wilson 1998.

beings, and (b) that it arises as a kind of by-product or ‘spandrel’ of the evolution of the capacity for rational thought. Is *that* theory incompatible with Christian thought? Not obviously.<sup>3</sup>

Or, consider Wilson and Ruse minus, which is the theory that results from theirs when we delete the bit according to which there really is no such thing as objective moral obligation. The resulting theory says only that morality, belief in an objective obligation to treat others the way we would like to be treated, together with the resulting tendency to behave in accordance with this belief to at least some extent has become ubiquitous among human beings by way of group selection. Is that incompatible with Christian belief? Not obviously. Similarly, for Wilson minus, the theory that results from deleting the idea that the beliefs involved in religion are fictitious: it is the theory that religion arises, or at least becomes ubiquitous among human beings by way of group selection, because it is a useful form of social control that involves beliefs of a certain kind. Is this theory incompatible with Christian belief? Again, not obviously.

I want to look a bit further into this question of the compatibility of these theories from EP with Christian thought and belief. This question is not entirely straightforward: there are several ways in which EP theories could conflict with Christian belief. Some of these theories might not be explicitly inconsistent with Christian belief but inconsistent with Christian belief together with propositions that can't sensibly be rejected. Others might be formally consistent with Christian belief, but might still be massively improbable with respect to a set of beliefs or noetic structure more or less like that of most contemporary Christians, or most contemporary Christians in the Western world (and for that matter, most Christians in the non-Western world). Such Christians will typically believe some propositions F by way of faith, and other propositions R because they are (or are thought to be) deliverances of reason (including memory, perception, rational intuition, and so on). A given theory might not be improbable with respect to F and also not improbable with respect to R, but massively improbable with respect to F and R, and hence with respect to a noetic structure that contains both F and R. Such a theory might be so unlikely with respect to such a noetic structure that it wouldn't be a real candidate for belief. An example would be the theory that if human beings have come to be by way of natural selection winnowing

3. Indeed, in more recent work Stark seems to have moved to Stark minus, no longer insisting that the beliefs involved must be false.

genetic variability, then no rational human being knowingly sacrifices her reproductive prospects in favor of advancing someone else's welfare. This isn't incompatible with F, and also not incompatible with R. However, a Christian will think the consequent massively improbable, and might also be inclined to accept the antecedent. This theory, then, would be incompatible with the noetic structures of such Christians, even if not logically inconsistent with Christian belief as such. There are still other forms of conflict, as I will argue below.

In order to look into this question of conflict or compatibility, I want to examine one particular EP theory more carefully: David Sloan Wilson's theory of religion.<sup>4</sup> This theory is a so-called 'functional interpretation' of religion. Both terms deserve comment. First, Wilson explicitly says many times that his theory is an *interpretation* of religion. This is a bit surprising: one wouldn't think of Newton's Laws, for example, or Special Relativity as an interpretation of something or other. What is involved in the theory's being an interpretation? *Understanding* of one sort or another, presumably; the thought is that once you see religion as having the function ascribed to it in the theory, then you understand it, or understand it more deeply. You understand why there is such a thing as religion, why religions arise and persist, and what they are *for*—what their function or purpose is. In the particular case of Wilson's theory, the idea is that religions play an important role in group selection. 'Many features of religion, such as the nature of supernatural agents and their relationships with humans, can be explained as adaptations designed to enable human groups to function as adaptive units' (David Sloan Wilson 2002: 51). (So a crucial difference between his theory and that of Rodney Stark is that according to the latter religious belief isn't in fact an adaptation.) He aims to 'see if the detailed properties of Calvin's Church can be interpreted as adaptation to its environment' (David Sloan Wilson 2002: 91); and he summarizes his theory as follows:

I claim that a knowledge of the details (of Calvin's Geneva) clearly supports a group-level functional interpretation of Calvinism. Calvinism is an interlocking system with a purpose: to unify and coordinate a population of people to achieve a common set of goals by collective action. The goals may be difficult to define precisely, but they certainly included what Durkheim referred to as secular utility—the basic goods and services that all people need and want, inside and outside of religion.

(David Sloan Wilson 2002: 118)

4. To be found in Wilson 2002: 48. See also Hinde 1999: 553 ff.

So Calvinism is an interlocking system with a purpose: 'to unify and coordinate a population of people to achieve a common set of goals by collective action'. This sounds a bit as if he thinks of Calvinism as an intentional project or activity undertaken by people, all or some of whom undertake it in order to achieve a common set of goals, these goals at least including that secular utility. If this were what he means, he would be wrong: Calvin and the other Calvinists weren't (and aren't) embracing Calvinism in order to achieve some kind of secular utility. In fact it is doubtful that Calvinism, or Roman Catholicism, or Christianity, or for that matter Judaism or Islam are (wholly) intentional activities in that way at all. Are they human activities undertaken in order to achieve a goal? What is the purpose or aim of being a Calvinist? What is the purpose or aim of believing in God? Well, what is the purpose or aim of believing in other people, or believing that there has been a past? The right answer, one thinks, is that believing in God, like believing in the past or in other people, typically doesn't have any purpose or aim at all. It isn't that you believe in God or other people in order to achieve some end or other. You might as well ask me what my purpose or aim is in believing that I live in Indiana or that seven plus five equals twelve. These are intentional activities, of course, but they are not undertaken in order to achieve some end or other.

You might reply that there is more to Christianity in general and Calvinism in particular than holding beliefs. This is certainly true: there is also love of God and prayer and worship, for example. These are activities one intentionally undertakes. But, again, it is not clear that there is some *purpose* for the sake of which one undertakes to love God: you love God because he is attractive, such as to compel love. You pray because it seems the right thing to do, or because we are instructed to pray, and how to pray, by our Lord Jesus Christ. The same holds for worship. When worship is going properly it isn't something done in order to achieve some end outside itself: it is more spontaneous and immediate than that. (Of course, you *might* engage in worship to please your parents or spouse or children: but then in a case like that it *isn't* going properly.) This is a complex subject, and this is not the place to go into it. What is clear, however, is that there isn't any goal or purpose or end involved, typically, in accepting the central tenets of Calvinism or Christianity, and even if there is a purpose or goal or end involved in worship and prayer it most certainly is not the achievement of the secular goods Wilson mentions.

But, perhaps Wilson isn't really proposing that Calvinists engage in the practice of Calvinism in order to achieve certain goals. This practice has goals, all right, but they aren't the goals or purposes of the people engaged in the practice. It is rather that the aims or goals are provided, somehow, by evolution. And, of course, it isn't that these aims or goals are those of evolution, or natural selection; as Wilson is thinking of it, those processes don't really have any aims or goals and aren't really aiming at the actualization of some state of affairs. Still, the idea is that some of the structures and processes that result from natural selection do have purposes, purposes they acquire from their roles in maximizing fitness. The ultimate purpose of the heart, he presumably thinks, is to enhance or maximize fitness; its proximate purpose is to pump blood (and pump it in a certain way), and the idea is that it fulfills the former purpose by fulfilling that latter. The proximate purpose of the immune system is to overcome disease; this purpose is in the service of its ultimate purpose of maximizing fitness. Whether one can really speak of purpose and proper function for organs such as the heart or liver or brain absent a designer and outside the context of theism is of course a matter of dispute; I say you can't.<sup>5</sup> But this isn't the place to enter that discussion.

So, let's suppose that a heart or a liver, and also an activity like a religion, can have a purpose conferred upon it by natural selection, even if God is not orchestrating and guiding that process. The purpose of a religion says Wilson is, at least in the case of Calvinism, 'to unify and coordinate a population of people'. That isn't a purpose endorsed by those who practice the religion; still, he thinks, that is its purpose. Here it is instructive to compare Wilson's views on religion with those of that great master of suspicion, Sigmund Freud. On Freud's view, religion (and here we are thinking especially of theistic religions) is an illusion, in his technical sense. This sense is not such as to entail the falsehood of religious belief, although in fact Freud thinks there is no such person as God. Still, illusions have their uses and indeed their functions. The function or purpose of religious belief is really to enable believers to carry on in this cold and hostile or at any rate indifferent world in which we find ourselves. The idea is that theistic belief arises from a psychological mechanism Freud calls 'wish-fulfillment';<sup>6</sup> the wish in this case is father, not to the deed, but to the belief. Nature rises

5. See Plantinga 1993a: chap. II.

6. And in such a way that it (or its deliverances) rather resembles Calvin's *sensus divinitatis* (see Freud 1955: 167 ff.).

up against us, cold, pitiless, implacable, blind to our needs and desires. She delivers hurt, fear, pain; and in the end she demands our death. Paralyzed and appalled, we invent (unconsciously, of course) a Father in heaven who exceeds our earthly fathers as much in power and knowledge as in goodness and benevolence. The alternative would be to sink into depression, stupor, paralysis; and finally death.

This illusion enables us to carry on and survive: perhaps we could put it by saying that it contributes to our fitness. Is this Freudian claim incompatible with Christian belief? Could I accept Christian belief and also accept Freud's explanation or account of it? Well, maybe. For it is at least possible that God gets us to be aware of him by way of a mechanism like wish-fulfillment. According to Augustine, 'Our hearts are restless till they rest in you, O God.' But then it might be that the way God induces awareness of himself in us is through a process of wish-fulfillment: we want so much to be in God's presence, we want so very much to feel his love, to know that we are loved by the first being of the universe, that we simply come to believe this. I don't say that is in fact the way things go; I say only that it is possible and not incompatible with Christian belief.

But there is more to Freud's account than just that we come to believe in God by way of wish-fulfillment. If that were all he thinks there would be no reason to call theistic belief an *illusion*. What more does Freud say here? The more he says, and that which makes Christian belief an illusion, is that wish-fulfillment isn't *reality oriented*, as we might say. We human beings display a large number of belief-producing processes or faculties or mechanisms. There is perception, memory, a priori intuition, credulity, induction, and much else. We ordinarily think these faculties or processes are aimed at the production of true belief: that is what they are for, and that is their purpose or function. There are some cognitive processes, however, that are not aimed at the production of true belief, but at some other desideratum. Someone may remember a painful experience as less painful than it actually was. According to John 16: 21, 'A woman giving birth to a child has pain because her time has come; but when her baby is born she forgets the anguish because of her joy that a child is born into the world.' You may continue to believe in your friend's honesty long after evidence and cool, objective judgment would have dictated a reluctant change of mind. I may believe that I will recover from a dread disease much more strongly than is warranted by the statistics of which I am aware. William James' climber in

the Alps, faced with a life or death situation, believed more strongly than his evidence warranted that he could leap the crevasse.

In all of these cases, there is no cognitive dysfunction or failure to function properly; but the processes in question don't seem to have as their functions the production of true beliefs. Rather, they produce beliefs that are useful in the context in one way or another. And exactly this is the way things stand with Freud's explanation: an essential part of his account of theistic belief is that it is not produced by truth-aimed cognitive processes, but by a process with a different sort of function. At this point the Christian or any serious theist will disagree with him: the serious theist will think that God has created us in such a way that we come to know him; and the function of the cognitive processes, whatever they are, that produce belief in God in us is to provide us with true belief. So, even if she agrees with Freud that theistic belief arises from wish-fulfillment, she will think that this particular instance of wish-fulfillment is truth-aimed; it is God's way of getting us to see that he is in fact present and in fact cares for us. At this point she will have to disagree with Freud.

Something similar goes for Wilson. He holds that the purpose or function of Calvinism and Christianity generally is to enhance fitness; a group with a religion of that sort will do well in competition with groups without any such religion (or anything similar). And, specifically religious *belief* plays a particular role here. The role of such belief is not to reflect reality, he says, but to play a part in the production of what religion produces. As he says: 'our challenge is to interpret the concept of God and his relationship with people as an elaborate belief system designed to motivate the behaviors listed . . .' In a very interesting passage he proposes that religious belief isn't reality oriented but, unlike Freud, goes on to defend it. The passage is worth quoting in full:

In the first place, much religious belief is not detached from reality . . . Rather, it is intimately connected to reality by motivating behaviors that are adaptive in the real world—an awesome achievement when we appreciate the complexity that is required to become connected in this practical sense. It is true that many religious beliefs are false as literal description of the real world, but this merely forces us to recognize two forms of realism: a factual realism based on literal correspondence and a practical realism based on behavioral adaptiveness.

In the second place, much religious belief does not represent a form of mental weakness but rather the healthy functioning of the biologically

and culturally well-adapted mind . . . Adaptation is the gold standard against which rationality must be judged, along with all other forms of thought. Evolutionary biologists should be especially quick to grasp this point because they appreciate that the well-adapted mind is ultimately an organ of survival and reproduction . . . factual realists detached from practical reality were not among our ancestors.

(David Sloan Wilson 2002: 228)

This account of religion, then, is like Freud's in that, like Freud, Wilson sees the cognitive processes that produce religious belief as not aimed at the production of true belief, but at belief that is adaptive by way of motivating those behaviors. Religious belief in general and Christian and Calvinistic belief in particular is produced by belief-producing processes that are aimed, not at the production of true belief, but at the production of belief that will motivate those adaptive behaviors. And here someone who accepts Christian belief will be forced to demur, just as with Freud. For, if Christian belief is in fact true as, naturally enough, the Christian will think, it will be produced in us by cognitive processes that God has designed with the end in view of enabling us to see the truth of 'the great things of the Gospel' (as Jonathan Edwards calls them). She will no doubt think that these processes essentially involve what Calvin calls 'the internal witness (or testimony) of the Holy Spirit' and what Aquinas calls 'the internal instigation of the Holy Spirit'. And, of course, these processes will then be truth-aimed: they are aimed at enabling us to form these true beliefs about what God has done and about the way of salvation. So there is indeed a conflict between Wilson's theory of religion and Christian belief.

## **Why Do Scientists Come Up with Theories that Conflict with Christian Belief?**

Wilson's theory of religion, as I have argued, is incompatible with Christian belief. But of course that is nothing special or exceptional about Wilson's theory: the same can be said for a wide variety of theories in evolutionary psychology: theories of religion, but also theories of morality and altruism. Why is it that scientists come up with such theories? Why do they come up with theories that are incompatible with Christian belief? Why do they come up with theories according to which the goods Christians seek are

non-existent, or the beliefs they hold are fictitious or are deceptions foisted upon us by our genes? Why do they come up with theories according to which religious belief is not produced by truth-aimed cognitive processes? Have they discovered, somehow, that Christian belief is in fact false? Well, no; but then why? The short answer, I think, is that this feature of their scientific activity is connected, in one way or another, with the *methodological naturalism* (MN) that characterizes science and, indeed, according to many, *necessarily* characterizes science.

I don't have the space here to outline the various varieties of methodological naturalism. But, first, MN is not to be confused with philosophical or ontological naturalism, according to which there is no such person as God or anything at all like God; there is no supernatural realm at all. The methodological naturalist does not necessarily subscribe to ontological naturalism. MN is a proposed condition or constraint on proper science, not a statement about the nature of the universe. (Of course, if philosophical naturalism were true, then MN would presumably be the sensible way to proceed in science.) The rough and basic idea of MN, I think, is that science should be done *as if*, in some sense, ontological naturalism were true. Of course, this rough and basic idea can be developed in various ways; and those who endorse MN do not typically go into much detail. For our purposes, I will characterize MN as follows. First, following van Fraassen, we note that for any scientific theory there is its data set, or data model; roughly speaking we can think of this as the data that are to be explained by the theory in question. The data must be presented or stated in terms of certain parameters or categories. And, according to MN, the data model of a proper scientific theory will not refer to God or other supernatural agents, or employ what one knows or thinks one knows by way of revelation. Thus, the data model of a proper theory would not include, for example, propositions entailing that someone was suffering from demon possession. Secondly, there will also be constraints on the theory itself, although the theory can properly employ categories or parameters not permitted the data model. But, according to MN, the parameters are not to include reference to God or any other supernatural agents; and the theory, like the data set, also cannot employ what one knows or thinks one knows by way of revelation. Still further, there will presumably be a constraint on the body of background knowledge or belief with respect to which the initial plausibility or probability of a proposed scientific theory is to be estimated. That background information, presumably, will not contain propositions

obviously entailing<sup>7</sup> the existence of God (or other supernatural beings); nor will it include propositions one knows or thinks one knows by way of revelation. Hence, rejecting a theory like Herbert Simon's theory of altruism because it is massively improbable with respect to a body of background information, including the existence of God, or Christian belief more generally, would presumably not be proper science—not, at least, if proper science involves methodological naturalism.

Interesting further questions arise here—does the relevant body of background information not only lack propositions obviously entailing the existence of God and other supernatural beings, but also include propositions entailing the non-existence of God? This would fit in well with such theories as Stark's and Ruse's, mentioned earlier, where the theory includes a part entailing the falsehood of Christian belief. If the relevant background information includes the non-existence of supernatural beings, then, relative to that background information, a theory like Stark minus or Ruse minus will be just equivalent to Stark or Ruse *simpliciter*.<sup>8</sup> On the other hand, while it is clear that, according to MN, no proper scientific theory can obviously entail the existence of God, can a proper scientific theory, according to MN, obviously entail the denial of the existence of God or other supernatural beings? Or is the idea that science just isn't to say anything one way or the other about God and other supernatural beings?

## Games Scientists Play

These questions cry out for investigation; for now, they shall have to cry unheeded. I want to turn instead to investigating this question: what really is the relationship between MN and science? Many people claim that MN is essential to science, part of the very nature of the scientific enterprise. The idea is that science necessarily involves MN, whether weak or strong;

7. '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 by every proposition.

8. These two versions of the constraint laid on background information are reflected in historical biblical criticism in scripture scholarship by the distinction between Troeltschian scripture scholarship, where one assumes that no miracles occur and God never acts in history, and Duhemian scripture scholarship, where one simply brackets both beliefs to the effect that God acts in the world and miracles do occur and the denials of these beliefs. See my *Plantinga* 2000: 390 ff.

MN is a constraint on science, and a theory that doesn't conform to it isn't science, whatever its virtues. Is this correct? If so, how does it work? EP, being scientific at least by aspiration, proposes naturalistic theories and accounts of human behavior and enterprises. That is what in some way accounts for its proposing theories incompatible with Christian belief. But is it really true that MN is essential to science? How would one tell? Ask the president of the American Association for the Advancement of Science? Take a poll among scientists? That seems wrong, but then what would be the right way to tell?

Now, MN is not, of course, the only constraint that has been suggested as essential to science. In an early and important statement Francis Bacon declares that explanation by way of teleology or final causes plays no role in proper science:

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 toward that which is further off it falls back upon that which is nearer at hand, namely, on final causes, which have a relation clearly to the nature of man rather than to the nature of the universe; and from this source have strangely defiled philosophy.<sup>9</sup>

Much more recently, Jacques Monod concurs: 'the cornerstone of the scientific method is the postulate that nature is objective . . . In other words, the *systematic* denial that 'true' knowledge can be got by interpreting nature in terms of final causes . . .' (Monod 1971: 21).

Many other constraints on the nature of science, or its proper practice, have been proposed: science cannot involve moral judgments, or value judgments more generally; the aim of science is explanation (whether or not this is put in the service of truth); science does not merely describe, but asks questions of nature; science asks *precise* questions of nature (of those officially on the rolls, what proportion responded to the questionnaire with 'yes?'); scientific theories must in some sense be empirically verifiable and/or falsifiable (although it is difficult *in excelsis* to say what either consists in); scientific experiments must be replicable; science cannot deal with the subjective, but only with what is public and shareable (and thus reports of consciousness are a better subject for scientific study than consciousness

9. Quoted Kass 1985: 250.

itself, which may tempt people like Daniel Dennett to claim that there really isn't any such thing as consciousness, but only reports). Richard Dawkins and Daniel Dennett say that the aim of biology is the explanation of the complex (i.e., living things) in terms of the simple (i.e., the sorts of things dealt with in contemporary physics.) Some say that good scientific theories don't propose singularities. Some say the aim of science is the attempt to discover and describe natural laws; others, equally enthusiastic about science, think there aren't any natural laws to describe. According to Richard Otte and John Mackie, the aim of science is either to propose accounts of how the world *ordinarily* goes, or to give theories that are empirically adequate *for the most part*, apart from miracles, etc.; others reject that 'for the most part'. How does one tell which, if any, of these proposed constraints actually do hold for science? And why should we think that MN really does constrain proper science?

Michael Ruse and Nancey Murphy answer this question by declaring that it is simply *true by definition* that science involves methodological naturalism. According to Murphy, 'there is what we might call *methodological atheism*, which is by definition common to all natural science' (Murphy 2001: 464). She continues: 'this is simply the principle that scientific explanations are to be in terms of natural (not supernatural) entities and processes' (her term 'methodological atheism', therefore, is close to my term 'methodological naturalism'). Similarly, for Michael Ruse:

Furthermore, even if Scientific Creationism were totally successful in making its case as science, it would not yield a *scientific* explanation of origins. Rather, at most, it could prove that science shows that there can be *no* scientific explanation of origins. The Creationists believe that the world started miraculously. But miracles lie outside of science, which by definition deals only with the natural, the repeatable, that which is governed by law.

(Ruse 1982: 322, emphasis added)

So Murphy and Ruse think MN is true by definition—by definition of the term 'science', one supposes. Thus, Ruse apparently holds there is a correct definition of 'science' such that from the definition it follows that science deals only with what is natural, repeatable, and governed by law. I have argued elsewhere (Plantinga 1995) that this cannot possibly be right. According to Ruse, science by definition deals only with the repeatable: if it turns out that the Big Bang isn't repeatable, does it follow that it cannot be studied scientifically? And, consider his claim that science, by definition,

deals only with that which is governed by law—natural law, one supposes. Bas van Fraassen has offered an extended and powerful argument for the conclusion that there *aren't* any natural laws: if he is right, would it follow that there is nothing at all for science to study?

What is most puzzling about this claim, however, is that it is hard *in excelsis* to see how one could hope to settle a disputed claim by declaring that one of the disputants is wrong just by definition. The realist claims that the aim of science is the discovery of the truth about the world and the provision of true theories; the constructive empiricist instead holds that its aim is the proposal of empirically adequate theories. Suppose the former declares that his position is just true by definition. Does he really mean to suggest that the dispute can be settled just by looking up the term 'science' in the dictionary, even a very large dictionary? On the other hand, if the realist is just proposing his *own* definition—the definition of 'science' as it occurs in *his* idiolect—there is no reason for him or others to think this will be of more than autobiographical interest. Why should the anti-realist—or anyone else, for that matter—care how the realist uses that term? If I use the term 'Democrat' to mean 'creature of darkness', should Democrats everywhere hang their heads in shame? And of course the same goes for MN. Here too we cannot just look up the answer in the dictionary. While no doubt there are uses of the term 'science' with respect to which MN is indeed true, there are plenty of other uses of the term with respect to which it is not. Set aside the broader sense (if there is one) of the English word 'science' that corresponds to the German 'Wissenschaft' and the Dutch 'Wetenschap', the sense in which Aquinas argues that theology is a science (even if not the queen). In the narrower English sense, Newton, for example, no doubt used the term 'science' in such a way that his hypotheses involving divine adjustment of the planetary orbits counted as scientific. Something similar, presumably, went for the authors of the Bridgewater Treatises. The same goes for those contemporaries who, like Michael Behe (1996), propose scientific inference from 'irreducible complexity' to 'Intelligent Design'. So this argument by definition doesn't seem a promising way to discover whether MN really is or is not a constraint on science. How then do we tell whether a proposed constraint on science really is a constraint on science?

Here it may be useful to investigate more closely a long-standing and currently lively dispute between scientific realists: those who see the aim of science as the pursuit and production of *true* theories, and scientific anti-

realists. Anti-realists with respect to universals believe that universals do not exist; anti-realists with respect to science believe not that science does not exist but that its aim is not the production of true theories. Instrumentalists, for example, think a good scientific theory is *useful* in one way or another, and need not be true or even true-or-false to be useful. A particularly sophisticated and well-developed anti-realism is Bas van Fraassen's *constructive empiricism* (van Fraassen 1980; van Fraassen 1989) according to which science aims at the production of *empirically adequate* theories. Such theories are adequate to all of experience: past, present, and future; whether they are also *true* is not (from the perspective of science itself) important; a theory need not be true to be good. To accept a scientific hypothesis, furthermore, is not to believe it is true, but to claim instead that it is empirically adequate; it is also to 'live in the world' of the theory. But what exactly *is* it to say that the aim of science is thus and so? Van Fraassen compares this question to the question 'what is the aim of chess?' The answer, he says, is that the aim of chess is to checkmate one's opponent. This is to be distinguished from one's motive or reasons for engaging in the activity—you might play the game because you want fame or fortune, or to demonstrate your remarkable intellectual powers, or to please your grandson; still, the aim of the game, even as you play it, is not fame or fortune or pleasing your grandson, but to checkmate your opponent. Of course, things don't stand, here, quite the same for chess and science: there are plenty of books containing a statement of the official rules for chess, but where will you find the official rules for playing the game of science?

Van Fraassen notes that *criteria of success* are at the least intimately related to the aim of science. An intentional human activity of this sort is at least partly defined in terms of its criterion of success. The same would go, presumably, for religion(?), art, politics, war, education, philosophy, architecture, cookery, and other intentional human activities. And perhaps this helps a little. But, again, how do we determine when we have a *successful* piece of science? More exactly, what is it that makes a given bit of science successful, what is it that distinguishes a successful piece of *science* from some other, perhaps closely related activity? A scientist *d'un certain age* is likely to write a book that is really philosophy, often in that book denouncing philosophy (see, e.g., Weinberg 1992; Fodor 1998: 167). Writing such books is presumably not science and not part of what scientists do as scientists; but, again, what makes the difference? Many scientists (e.g., Dawkins, Simpson, Gould, etc.) declare that modern evolutionary theory shows that human

beings are not designed; are these declarations part of science? Do they make them in their capacity as scientists? The suggestion about the criterion of success doesn't really help as much as one would like: someone who thought these declarations were part of science would of course think of them as conforming to the criterion of success.

But think a bit further about the criterion of success. I once complained to the then director of the Stanford Linear Accelerator that I wasn't able to make sense of quantum mechanics. He told me that he couldn't make sense of it either, that in fact no one could really make sense of it (that there wasn't a sensible interpretation of its formalism). That didn't matter, he said; what mattered was that it was useful and extremely well confirmed. This strongly suggests that, as he saw the matter, the criterion of success for science isn't truth or even intelligibility (of some so far unspecified kind); instead it is something much more like empirical adequacy or at any rate usefulness. Consider, on the other hand, theories in biology, perhaps theories that explain the large bones found in various parts of the earth as the bones of dinosaurs. Here, one guesses, empirical adequacy would not be considered sufficient; here the aim would be to propose *true* theories as to how it is that there are these bones.

Van Fraassen argues that we cannot determine whether the aim of science is the construction of true theories (as opposed to theories that are empirically adequate and may be true or false) just by asking scientists whether *they* aim at true theories or only at empirically adequate theories. What the aim of science is, he says, depends in *some* way on what scientists and others aim at and believe, but not in any simple way. This seems right; but what about asking them, not what *their own* aims are, but what they think the aim of *science* is, in an effort to discover what the 'conscious understanding' of scientists (all or most) is with respect to this question of the aim of science? This too won't work, he says. First of all it is a little unimaginative:

Let me suggest at least some more delicate probing as a little sociological experiment. Approach some scientists you know and mention some of their most valued scientific colleagues. Then tell them (taking the liberties of such empirical psychology) that as a matter of fact those colleagues are not pursuing the aim of finding true theories, but are privately concerned only to construct empirically adequate ones. Now ask them whether, with this new information in hand, they still regard those men and women as real scientists?

(van Fraassen 1994: 187)

Here, I suspect, we would encounter different answers depending on the science in question. Ask this question of someone working at string theory or some other highly theoretical parts of contemporary physics, and you would probably get the reply that this aim of their colleagues doesn't preclude their being real scientists. Ask it, however, of someone trying to discover how the population of caymans in the Amazon basin has responded to the encroachment of civilization over the last fifty years, or whether the population of 'touconderos' has been constant over the last twenty years, and you might get a very different response. ('Haven't you got anything better to do than ask silly questions?—why don't you go bother someone else?') This suggests that there may be several different aspects or parts of science, some with one aim and some with another. Better, it suggests, that there are several different activities that go under the name 'science'; these activities are related to each other by similarity and analogy. Perhaps the concept of science is one of those cluster concepts called to our attention by Thomas Aquinas and Ludwig Wittgenstein.

Indeed, doesn't this seem pretty obvious? Suppose van Fraassen is right: what distinguishes a given human intentional activity from others is its criterion of success. But then clearly there are many different activities, projects, enterprises, lurking in this neighborhood. From one perspective, this is trivially true: scientists studying the impact of deforestation on caymans will be engaged in a project the criterion of success of which involves reference to caymans; not so for those asking the same question about 'touconderos'. Of course, there are other activities in which both groups are engaged: studying the impact of deforestation on one or another form of wildlife, for example. So there are groups of activities that are hierarchically arranged. Of course, it doesn't follow that for just any pair of such activities *a* and *b* there is another activity engaged in by anyone who engages in either *a* or *b*, just as it is not the case that for just any games *a* and *b* there is a (different) game engaged in by anyone who plays either *a* or *b*.

There is clearly a project the criterion of success for which involves producing true theories; there is clearly another where the criterion of success involves producing theories that are empirically adequate, whether or not they are also true. So there are at least two activities here. The question separating the constructive empiricist from the realist is the question, 'which of these two activities is science?' The realist asserts the former and the constructive empiricist the latter. Of course, a presupposition of the

dispute is that science is just *one* project, or enterprise, or activity. This seems to be what van Fraassen thinks:

Those scientists with their very different motives and convictions participate in a common enterprise, defined by its own internal criteria of success, and this success is their common aim ‘inside’ this cluster of diverging personal aim. How else could they be said to be collaborating in a common enterprise? The question is only what that defining criterion of success is.

So the assumption is that all these scientists are engaging in a common activity; this activity is such that its aim is either the provision of true theories or the provision of empirically adequate theories (i.e., its criterion of success is either the one or the other); and the question before the house is just what the criterion of success actually is.

But is this assumption obvious, or even true? Perhaps there are at least two different enterprises, two intimately related but different enterprises. Perhaps some people engage in the one and some in the other. Perhaps there is a difference across individuals within a given science; perhaps there is also a difference across different sciences. Further, perhaps both of these activities are properly called ‘science’. We have several different possibilities here. First, it may be that there is just one activity in the relevant neighborhood: science, whose aim is either what the Constructive Empiricist says or what the Realist says (but not both): one activity with disagreement about what its aim really is. Second, it may be that science encompasses both: there is a single game or activity, science, which can be played by playing either of these others, as with poker: stud poker and draw poker. Third, there may be no single game here: there are two separate games, the realist game and the constructive empiricist game; these games are analogically related (as with chess and checkers, perhaps) but distinct; there is no game which is the union of these two; but both fall under the extension of the term ‘science’ and the concept of science. Still a fourth possibility is that the term ‘science’ is multiply ambiguous. And I suppose there is still a fifth possible suggestion here—namely, that there isn’t any answer to this question and no fact of the matter as to which of the proposed suggestions is in fact true.

Which of these suggestions is correct? And how would we tell? Is the question which is correct itself a scientific question? If not, is it a *factual* question? Well, let us assume that the question here really is a factual question: it *looks* as if there ought to be a fact of the matter about this,

even if it also looks hard to see what the fact of the matter is. And let us also assume without argument that the term is not multiply ambiguous. Which of the three remaining possibilities seems most plausible? It is not easy to mount strong or convincing arguments here. Van Fraassen's assumption, however—that there is just one aim for science—seems to me relatively unlikely, and for two reasons. Among both realists and constructive empiricists there are people of enviable accomplishment and profound acquaintance with science, people of great ability who have spent their entire lives studying and thinking about science. Is it likely that some of these people could be just wrong about the aim of the activity in which they are engaged, or about which they have been thinking for these many years? I should think not. The second reason is this: it is extremely hard to mount negative arguments here. For example, it is extremely hard to mount an argument for the conclusion that an enterprise where you aim at empirical adequacy, rather than truth, is not really science; but it is equally hard to mount an argument for the conclusion that an enterprise where you seek truth, rather than just empirical adequacy, is not science. It seems that one is initially inclined to call 'science' any activity that is (1) a systematic and disciplined enterprise aimed at finding out truth about our world<sup>10</sup> and that (2) has significant empirical involvement. Any activity that meets these vague conditions will initially count as science.

But then what about all those proposed constraints? I suggest that the following is the best way to think about the matter. There are a large number of analogically related enterprises, all satisfying (1) and (2). For each of the proposed constraints, there is an activity falling under the concept of science the aim of which is in fact characterized by that constraint; and for each or at any rate many of the proposed constraints there is another activity falling under the concept of science the aim of which does not fall under that constraint. Further, when people propose that a given constraint pertains to science just as such, to all of science, so to speak, they are ordinarily really endorsing or recommending one or more of the activities the aim of which is characterized by that constraint. So when someone declares that the aim of science is to produce true theories (not just empirically adequate theories) he is most charitably understood as endorsing scientific activities whose aim is in fact the production of

10. But what about the constructive empiricist and the instrumentalist? Well, at any rate they are aiming at true predictions, or theories that make true predictions, even if not at true theories.

true theories. He is recommending those activities, suggesting that in some way they are superior to the alternatives. And one who claims instead that the aim of science is the provision of empirically adequate theories is best understood as endorsing scientific activities whose aim is in fact the provision of such theories. Neither, I suggest, is charitably thought of as insisting that every scientific activity is constrained in the manner in question.

Now, how does this work out with Methodological Naturalism? Well, there are *some* scientific activities that are indeed constrained by MN, so that a person whose activity is not constrained by MN would not be engaged in those activities at all. This would be the element of truth in the claims of Ruse and Murphy to the effect that it is true by definition that science is constrained by MN. What is true by something like definition is that certain scientific enterprises currently carried out are in fact characterized by MN, and characterized by it in such a fashion that you cannot engage in them without conforming to MN. But of course there are other scientific activities that are not so constrained. So, for example, a theory according to which God periodically adjusts the orbits of the planets, or has created life specially, or has intelligently designed certain features of the natural world would or could fall under that general concept of science, but not under any of the cluster of scientific activities or enterprises characterized by MN. And those who insist that MN really does characterize science *tout court* are best understood as recommending or endorsing enterprises characterized by MN as superior, in some way, to those activities not so characterized.

## Defeaters for Christian Belief?

We must now return to our target question: given that ‘Simonian’ science is indeed successful science, and given that it is incompatible with Christian belief, and given the esteem in which the Christian holds science, how should Christians think about such science? Should it induce intellectual disquiet, for Christians—a sort of cognitive dissonance? To put things less metaphorically, does the fact that Simonian science comes to conclusions incompatible with certain Christian beliefs—does that fact give Christians a defeater for those beliefs? I am substantially out of time, but the answer, in a word, is ‘No’. To see why, we need the notion of an evidence base.

My evidence base is the set of beliefs to which I appeal to in conducting an inquiry. Suppose I am a detective investigating a murder. Someone floats the hypothesis that ‘the butler did it’; I happen to know that the butler was in Cleveland, 300 miles away at the time of the murder. I will then reject this hypothesis. Alternatively, I may know that the butler is seventy years old and was a mile from the scene of the crime six minutes before the time of the crime, with no automobile, bicycle, horse, or other means of transportation in addition to his own two feet. I also know that only a very small proportion of seventy-year-old men can run a mile in six minutes. Then I won’t simply rule out the hypothesis that the butler did it, but I will assign it (initially, at any rate) a low probability.

Of course, there is much more to say about evidence bases, but no time now to say it. And the next thing to see is that MN is really a constraint on the evidence bases involved in those scientific enterprises it characterizes. Now, Simonian science is characterized by MN—of either the strong or the weak sort. Suppose it is the strong sort. Then the relevant point is that the evidence base of the inquiry in question includes the denial of central Christian (and indeed) theistic beliefs. But then of course the fact that this inquiry comes to conclusions incompatible with Christian belief would be neither surprising nor an occasion for consternation or dismay. It would certainly not constitute a defeater for Christian belief.

So, suppose, on the other hand, that what is involved in Simonian science is weak MN. Then the important thing to see is that the evidence base of Simonian science is only a part, a subset, of the Christian believer’s evidence base. That latter includes the beliefs to be found in the evidence base of Simonian science, but it also includes more. It includes belief in God and belief in Jonathan Edwards’ ‘great things of the Gospel’. And that means that Simonian science need not provide the Christian theist with a defeater for those of her beliefs incompatible with Simonian science. For what the success of Simonian science really shows is something like this: that with respect to its evidential base its conclusions are probable, or sensible, or approvable as science or as good science. What it shows with respect to the Christian’s evidential base, therefore, is that from the perspective of *part* of that evidential base the Simonian conclusions are probable, or sensible, or approvable. That is, with respect to part of her evidential base some of her beliefs are improbable. But that need not give her a defeater for those beliefs. For it can easily happen that I come to see that one of my beliefs is unlikely with respect to part of my evidence base,

without thereby incurring a defeater for that belief. You tell me you saw me at the mall yesterday; I remember that I wasn't there at all, but spent the entire afternoon in my office, thinking about evolutionary psychology. Then, with respect to part of my epistemic base—a part that includes your telling me that you saw me at the mall—it is unlikely that I was in my office all afternoon; but that fact doesn't give me a defeater for my belief that that is where I was. My knowledge of your telling me that you saw me at the mall doesn't constitute a defeater for my belief that I wasn't there.

Another example: imagine a group of whimsical physicists who try to see how much of physics would be left if we refused to employ, in the development of physics, anything we know by way of memory. Perhaps something could be done along these lines, but it would be a poor, paltry, truncated, trifling thing. Suppose, further, that General Relativity turned out to be dubious and unlikely from this point of view. And now consider physicists who do physics from the usual scientific epistemic base, and furthermore believe the results: would they get a defeater for General Relativity upon learning that it was unlikely from the perspective of truncated physics? Surely not; they would note, as a reasonably interesting fact, that there was indeed a conflict: the best way to think about the subject-matter of physics from the standpoint of the *truncated* epistemic base is incompatible with the best way to think about that subject-matter from the perspective of the *whole* scientific epistemic base. But, of course, they take the perspective of the scientific epistemic base to be normative here; it is the right perspective from which to look at the matter. As a result, their knowledge of the way things look from that truncated base doesn't give them a defeater for the beliefs appropriate with respect to the whole scientific base.

I submit that something similar goes for Simonian science and the Christian epistemic base. For the Christian, Simonian science is like truncated physics. Concede that from the point of view of the evidence base of Simonian science, constrained as it is by methodological naturalism, Simonian science is indeed the way to go (and, of course, perhaps it isn't). This need not give the Christian a defeater for those of her beliefs incompatible with Simonian science; for the evidence base of the latter is only part of the Christian's evidence base.

But isn't this just a recipe for intellectual irresponsibility, for hanging on to beliefs in the teeth of the evidence? Cannot a Christian always say something like this, no matter what proposed defeater presents itself? 'Perhaps B (the proposed defeatee) is improbable or unlikely with respect

to part of what I believe', she says, 'but it is certainly not improbable with respect to the totality of what I believe, that totality including, of course, B itself.' No, of course not; if that were proper procedure every putative defeater could be turned aside in this way and defeat would be impossible. But defeat is not impossible; it sometimes happens that I *do* acquire a defeater for a belief B I hold, by learning that B is improbable on some proper subset of my evidence base. According to Isaiah 41: 9 God says 'I took you from the ends of the earth, from its farthest corners I called you. I said, "You are my servant"; I have chosen you and have not rejected you.' One who believes R, the proposition that the earth is a rectangular solid with ends and corners, on the basis of this text, will have a defeater for these beliefs when confronted with the scientific evidence—photographs of the earth from space, for example—against them. At any rate, she will have a defeater for R if the rest of her noetic structure is at all like ours. The same goes for someone who holds pre-Copernican beliefs on the basis of such a text as 'the earth stands fast; it shall not be moved' (Ps. 104: 5); the same also goes for someone who believes on the basis of the Genesis account that the earth or the universe is only 10,000 years old or so. But then what is the difference? Why is there a defeater in these cases, but not in the case of Simonian science? How is it that you get a defeater in some cases of this sort but not in others? What makes the difference?

To sharpen the question a bit, we must ask what sort of defeat is relevant here. Defeaters can be variously divided and classified; one important distinction is that between rationality defeaters and warrant defeaters. Very roughly speaking, a rationality defeater for a belief B is a belief D such that, given my noetic structure, my total set of beliefs, desires, and the like, when I come to hold D, I can no longer rationally continue to hold B. To advert to a classical Chisholmian example, I look into a field, see what looks like a sheep, and form the belief 'there is a sheep in this field'. You, whom I know to be the shepherd and a trustworthy man, come along and tell me that there aren't any sheep in that field, although you own a dog that from this distance looks like a sheep. I then have a defeater for my belief that there is a sheep there. Of course, defeat is relative to noetic structure; if I happen, oddly enough, to believe that I and I alone know that dogs are really sheep in disguise, then I won't have a defeater here. But those of us who don't believe this or anything relevantly similar will acquire a defeater for the belief that there is a sheep there; and, if I continued to hold that

belief, it will be by way of some kind of cognitive defect, some failure of proper function.

Rationality defeaters must be distinguished from warrant defeaters, circumstances that result in my belief's failing to have warrant in a state of affairs in which it would otherwise have it. Another classic example, this one to illustrate warrant defeat: I am driving through southern Wisconsin, see what looks like and in fact is a barn, and form the belief 'Now that is a fine barn!' In an effort to mask their poverty, however, the natives have erected a large number—four times the number of real barns—of barn facades: fake barns that look just like the real thing from the highway. As it happens, I am looking at a real barn. Nevertheless, my belief that it *is* a barn lacks warrant; it is only by virtue of the sheerest good luck that I form this belief with respect to a real barn. There is no failure of proper function here; nothing in the situation suggests that I am not carrying on in a perfectly rational fashion in forming that belief. But clearly enough the belief, though true, has little warrant for me; at any rate it doesn't have enough to constitute knowledge.

All rationality defeaters are warrant defeaters; the converse, of course, doesn't hold. A rationality defeater, furthermore, will be a belief; a warrant defeater need not be, but will ordinarily be just some feature of the environment, as in the barn case above. One need not be aware of warrant defeaters, and in the typical case of warrant defeaters that are not also rationality defeaters, one is not aware of them; a rationality defeater, however, is ordinarily a belief of which one is in fact aware. Finally, if you come to know about a situation that constitutes a warrant defeater for a belief you hold, then you typically have a rationality defeater for that belief.

Our question has been this: given my respect for science, does my knowledge of the success of Simonian science constitute a defeater for those of my Christian beliefs with which some conclusion of Simonian science is in conflict? Here, pretty clearly, it is rationality defeaters that are relevant.<sup>11</sup> I have claimed that I do not get a defeater here, although I would get a defeater if I believed R, that the earth is a rectangular solid, on the basis of that text from Isaiah and were presented with photographs of the earth from space. What makes the difference? Here is an unhelpful answer: the one case conforms to the definition of rationality defeat, and

11. That is because we are stipulating that I am aware of the success of Simonian science and its conflict with some Christian belief B. If I weren't aware of both, however, it could be that my belief B would be subject to a warrant defeater that wasn't also a rationality defeater.

the other one doesn't. In the case of Simonian science, I learn that such science comes to conclusions inconsistent with Christian belief, and I also believe that Simonian science is good science; nevertheless I can rationally continue to hold Christian beliefs (although of course I can't also accept those conclusions of Simonian science inconsistent with them). But I can't rationally continue to believe R, once I see those photographs and realize that in fact they are photographs.<sup>12</sup> That is the difference.

But that may leave you a bit dissatisfied. Is there anything further that can be said? *Why* is there a defeater in the one case and not in the other? Well, perhaps we could proceed along the following lines. Consider some Christian belief B incompatible with Simonian science—for example, the belief that Mother Teresa was perfectly rational in behaving in that altruistic manner. The question is whether the addition of A, the belief that Simonian science is successful science (and that it contains the denial of B), is a defeater for B. We have added A to my evidential base  $EB_{me}$ ; and now the right question, perhaps, is this: is B epistemically improbable or unlikely with respect to that new evidential base? If it is, perhaps we have a defeater; if not, not. Of course, B might initially be a member of  $EB_{me}$ , in which case it will certainly not be improbable with respect to it. But if that were sufficient for A not being a defeater of B, no member of the evidential base could ever be defeated by a new discovery; and that cannot be right. So, let us delete B from  $EB_{me}$ . Call the result of deleting B from my evidential base 'EB<sub>me</sub> reduced with respect to B'—'EB<sub>me</sub>-B', for short. The idea—call it 'the reduction test for defeat'—is that A is a defeater for B just if B is relatively improbable—epistemically improbable—with respect to  $EB_{me}$ -B.

Of course, it won't work to delete only B from  $EB_{me}$ —we must also delete conjunctions that include B—for example, the conjunction of B with two plus one equals three. We must also delete all the beliefs in  $EB_{me}$  that entail B—for example, beliefs of the sort (*If R then B*) and R. Still further, we shall also have to deal with pairs of beliefs that entail B, since it might be that I hold a pair of beliefs that together entail B but do not happen to believe their conjunction. (Maybe I have never thought of them

12. Of course, there is still the relativity of defeat to noetic structure; there are some noetic structures with respect to which those beliefs would not be a defeater for the belief that R. (For example, I might believe, for some reason, that space is pervaded by an aether-like substance that causes photographs of cubical objects to appear spherical, or I might believe that the camera in question had the unusual property of photographing cubes in such a way that they look like spheres.)

together.) Should we delete one member of each such pair? But here we run into a problem: in general, there will be no unique way of following this procedure, and different ways of following it can yield significantly different results. So let us resort to the vague way out (vagueness is all the rage these days): let us say that  $EB_{me}-B$  is any subset of  $EB_{me}$  that does not entail  $B$  and is otherwise maximally similar to  $EB_{me}$ . Now, could we say the following: could we say that I have a defeater for  $B$  if and only if  $B$  is epistemically unlikely with respect to  $EB_{me}-B$ , i.e., if and only if  $A$  and  $B$  satisfy the reduction test for defeat?

Well, this test gives the right result in the present cases. First, consider our question about Simonian science and Christian belief. Recall that  $B$  is the proposition that Mother Teresa was perfectly rational in behaving in that altruistic fashion.  $B$ , we are assuming, is incompatible with Simonian science. To apply the proposed criterion, we must ask whether  $B$  is improbable (henceforth I will suppress the ‘epistemically’) with respect to  $EB_{me}-B$ —where, of course,  $EB_{me}-B$  includes  $A$ , the proposition that Simonian science is successful science. The answer, I should think, is that  $B$  is not improbable with respect to  $EB_{me}-B$ . For that body of beliefs includes the empirical evidence, whatever exactly it is, appealed to by the Simonian, but also the proposition that we human beings have been created by God and created in his image, along with the rest of the main lines of the Christian story. But, with respect to *that* body of propositions, it is not likely that if Mother Teresa had been more rational, smarter, she would have acted so as to increase her reproductive fitness rather than live altruistically. But then the proposed defeatee—namely, that Mother Teresa was perfectly rational living as she did—is not improbable on that evidential basis. Hence, on the proposed reduction test, the fact that Simonian science is more likely than not with respect to the scientific evidential base does not give the Christian theist a defeater for what she thinks about Mother Teresa.

Now, compare the case of the person who first believes the earth is a rectangular solid on the basis of the biblical verse I mentioned above, and then acquires the evidence, including photographs, that the earth is spherical. Consider her new evidential base reduced with respect to the proposed defeatee—i.e., the proposition that the earth has corners. With respect to this reduced evidential base, the proposition that the earth has no corners is very likely. For that reduced evidential base contains or includes all of our reasons for supposing that in fact the earth doesn’t have corners. And what does it include on the other side, i.e., what does it include

by way of support for the belief that the earth has corners? Only what would be, presumably, the rather tentative thought that in the passage in question God was intending to teach us that the earth has corners. But, clearly there are other perfectly plausible ways of construing that passage. On balance, therefore, she will conclude that in fact that is not what the passage in question is intended to teach. Hence, in this case, unlike the case of Simonian science, the reduced evidential base provides evidence, indeed powerful evidence, against the proposed defeatee, and the proposed defeatee is improbable with respect to the reduced evidential base.

So, the reduction test gives the right result in the present case. But it cannot be right in general. Perhaps, indeed, it states a necessary condition of rationality defeat: perhaps, wherever I get a defeater for a belief B by way of acquiring a new belief A, B will be relatively improbable with respect to  $EB_{me}-B$ . But this condition is nowhere nearly sufficient for defeat. And the reason is of the first importance. For it might be, clearly enough, that B has a lot of warrant on its own, warrant it doesn't get from the other members of  $EB_{me}$  or indeed any other propositions; B may be *basic* with respect to warrant. But then the fact that it is unlikely with respect to  $EB_{me}-B$  doesn't show for a moment that the belief is not perfectly rational.

Consider an example: the police haul me in, accusing me of slashing the tires of your car again. At the police station I learn that the department chairman, a man of impeccable probity, claims to have seen me in the parking lot, lurking around your car at the time (yesterday mid-afternoon) the crime occurred; I am also known to resent you (in part because of your article in the department newsletter claiming that in church I slyly withdraw money from the collection plate under the guise of contributing). I had means, motive, and opportunity; furthermore there have been other such sordid episodes in my past; the evidence against me convinces everyone in the department (except the post-moderns). However, I recall very clearly spending the entire afternoon skiing in Love Creek County Park. My belief that I was skiing there then is not based on argument or inference from other propositions. (I do not note, for example, that I feel a little tired, that my ski boots are damp, and that there is a map of Love Creek in my parka pocket, concluding that the best explanation of these phenomena is that I was skiing there.)

So, consider  $EB_{me}-P$ , my evidential base diminished with respect to P, the proposition that I did not slash your tires. With respect to  $EB_{me}-P$ , P is epistemically improbable; after all, I have the same evidence as everyone

else for not-P, and everyone else is quite properly (if mistakenly) convinced that I did slash your tires. Still, I certainly do not have a defeater, here, for my belief that I did not do it. And the reason, of course, is that P has for me a source of warrant independent of the rest of my beliefs: I *remember* it. In a case like this, whether I have a defeater for the belief P in question will depend, on the one hand, upon the strength of the intrinsic warrant enjoyed by P, and, on the other, the strength of the evidence against P from  $EB_{me}-P$ . Very often the intrinsic warrant will be the stronger (husband, in flagrante delicto, to wife: 'who are you going to believe—me or your lying eyes?'). But it is not automatically the case, of course, that the intrinsic warrant of P overcomes the evidence from  $EB_{me}-P$ ; if the latter is strong enough I may have to conclude that the source of the apparent warrant of P is deceiving me. In the case of the slashed tires, for example, perhaps the department chairman, assorted grad students, and the chaired professor most distinguished for probity and judiciousness unite in declaring that they *saw* me slash those tires. In that case I will have to conclude that my memory has let me down; perhaps I have repressed memory of the whole unpleasant episode.

By way of conclusion: a serious Christian is committed to a high view of science: science is important, and is a manifestation of the image of God in us human beings. A fair number of theories and proposals from evolutionary psychology (David Sloan Wilson, E. O. Wilson, Herbert Simon, and others) are incompatible with Christian belief. Call such science 'Simonian' and suppose that it is or will become *good* science: does it follow that Christians have a defeater for those beliefs of theirs incompatible with such science? I answer that it does not. That is because Simonian science is constrained by Methodological Naturalism; but then the relevant scientific evidence base is only a proper subset of the Christian's evidence base. This means that Simonian science constitutes a defeater for Christian belief only if (but not if) they satisfy the Reduction Test for Defeat; but they do not.