

RELIGIOUS BELIEF AND THE LIMITS OF SCIENCE

The Plantinga Fellow Lecture at the University of Notre Dame

April 11, 2008

René van Woudenberg

When the director of the Center for Philosophy of Religion at this university, Tom Flint, invited me to give ‘The Plantinga Fellow Lecture’, he made it clear that it should be geared to a wider audience than professional philosophers. And so it will. I will abstain from technicalities and move about on a rather general level. My Doktorvater and dear friend Nicholas Wolterstorff once remarked that a philosopher should be able to do two things, though not necessarily at the same time, viz. to provide clear analyses and arguments relevant to the various topics she is working on *and* to sketch a bigger picture that makes clear what the relevance is of the technical work. My lecture will be of the ‘bigger picture’ type and accordingly be sketchy and programmatic: it indicates a certain broad direction that I think it is fruitful and important to explore in much greater detail—but at a later time.

I have chosen a topic about which the name-giver of this lecture, Alvin Plantinga, has pronounced on many occasions with a rigor, subtlety, depth, grace and humour that so many so rightly admire, viz. the relation between Christian belief and science. Before I start out, however, I want to acknowledge that in the U.S. but also in Europe the Center for Philosophy of Religion is looked upon as an institution than which no greater one exists. What is produced by the Notre Dame philosophers of religion (be it Al Plantinga, Peter van Inwagen, Tom Flint, Mike Rea, Robert Audi, or others) is without exception rigorous, vigorous, clever and relevant. I myself am a happy beneficiary of their work.

There can be no doubt about the fact that ever since the rise of modern science many people have claimed that, given the findings of science, the rational stance to take towards traditional Christianity is to either abandon or drastically reform it. This claim has been supported by considerations having to do with, among other things, chance, evolution, and the laws of nature. I am not going to deal now with any of these more specific considerations (as I have done on other occasions) but will, instead, say something far more general about science. What I am

going to propose this afternoon, is that the claim that I have just mentioned (the claim that, given the findings of science, the rational stance to take towards traditional Christianity is to either abandon or drastically reform it) can only be appealing when one neglects or somehow plays down the importance of certain limitations of science. Accordingly I will spend quite some time arguing that science as we currently know it, is limited in various (and I think rather obvious) respects. Saying that science is limited is, of course, something very different from *criticising* science. I take science with utter seriousness. I take my guitar with real seriousness too—but I must say the instrument has its limits: I can't produce the golden sound of a horn by means of it (nor, for that matter, drive to Chicago in it). Saying so much is not criticizing my guitar.

My paper is organized as follows. First I shall make some general remarks about the key notions in my talk: 'science' and 'Christian faith'—for the religious beliefs my title refers to are religious beliefs indigenous to the Christian faith. Next I shall argue for various limits of science—but lay no claim to completeness. Finally I shall indicate how exactly these limits are relevant for (or rather against) the claim that due to science, the rational stance to take towards Christian faith is to either abandon or drastically reform it.

1. On the Notions 'Science' and 'Christian Faith'

The word 'science' doesn't denote one specific thing, or kind of thing, with characteristic features. For starters, it can be used to denote an activity (the activity of *doing science*) but it can also be used to denote the *results* of that activity (the so-called findings of science). But those results come in a rather startling variety; they may take the form of an ordered *description* of phenomena, but they may also take the form of an *explanation* of phenomena, or a *prediction* of phenomena. But not all science displays all of these features. Carl Linneaus, for instance, founded modern taxonomy, but he did not *explain* the origin and nature of living organisms (in fact he believed no natural explanation was available); and some scientific theories, for instance those about the extinction of dinosaurs, do not *predict* new results. Furthermore, in some sciences certain 'high profile' *theories* play a central role (in evolutionary psychology for example the theory of kin altruism), but not in all (not in history, for example); I say 'high profile', for sometimes 'theory' is used for just any hypothesis or assumption, how trivial it may seem, e.g. that Churchill forgot his coat while being in Yalta-Potsdam, or that the chimpanzee

did not perform as well as was expected, due to a cold that he caught. These are not ‘high-profile’ theories. I won’t try to specify what marks the distinction between high and low profile theories, but leave it at this intuitive level. In any event, not all of the sciences, not all scientific explanations, involve high profile theories.

A next thing to note is that explanations may take on radically different forms. Some explanations explain by reference to laws, others by specifying causes, yet others by unifying a plurality of phenomena.

Furthermore: in some of the sciences *experiments* are carried out, but not in all (e.g. not in Big Bang cosmology); in some of the sciences empirical confirmation plays an important role, but not in all (not, for instance, in mathematics, or logic, nor in the so-called hermeneutical sciences). Science can consist, furthermore, in the *inquiry of sources* (for instance, of testimonies, or works of art, or archaeological findings) or the *interpretation* of texts. Sometimes it is said that science is characterized by some unique method, *the scientific method*, one, for instance, that involves a body of established general laws that have explanatory power and have the capacity to yield precise and reliable predictions, as Ernest Nagel has it¹. But, as can be argued (and gleaned from what was previously said), there is no such thing as *the scientific method*, rather there is a whole cluster of practices that are used in a variety of contexts and that can be loosely called scientific methodologies.²

It is, therefore, impossible to say exactly what kind of thing science is; for science is not something *exactly*. ‘Science’, to use Wittgenstein’s famous dictum, is a family resemblance concept: some things called ‘science’ share some of their features with some but not all of the other things called ‘science’. This means that the concept of science has vague boundaries. This reflected by the fact that there have always been discussions about the demarcation of science, i.e. discussions about whether or not a particular way of thinking, a particular body of propositions, a particular way of dealing with phenomena, really *is* science. Whether acupuncture is ‘scientific’ or not, for instance, has been a matter of dispute. At one time Social Darwinism was considered a science, whereas nowadays it will generally be denied that status. Similar disputes have been going on about homoeopathy and astrology. The very criteria that

¹ See Ernest Nagel, *The Structure of Science. Problems in the Logic of Scientific Explanation*, London: Routledge & Kegan Paul, 1971.

² This point is well argued by J.P. Moreland, *Christianity and the Nature of Science*, Grand Rapids: Baker, 1989, chap.2.

should enable us to demarcate science from what is not have even been disputed.³

Obviously, the point that I have been making so far potentially debilitates discussion about the limits of science. For if science is not a well-defined thing, if it is a vague concept, it will be very difficult if not impossible to say something about ‘the’ limits of science in general. In order not to get stuck, therefore, I will have to state explicitly which property is responsible for science’s being limited in a particular way. And this property will not be had by *all* science.

The point I have been making is, of course, not new with me. It has been widely acknowledged, as is proved by the fact that both philosophers and scientists have talked not just about science (singular), but about the sciences and have made various proposals as to their classification—classifications based on widely recognized shared features. One major classification has been the division into the natural sciences and the humanities. The natural sciences, on this conception, investigate, as the name suggests, the natural world; they include physics, chemistry, and biology. The humanities, by contrast, investigate the human mind and its expressions and objectifications, as Dilthey used to call it; they include psychology, history, sociology, linguistics, literary studies, ethics and theology.

Another well known division is into alpha, beta, and gamma sciences, where the last category includes economics and sociology. And there have been other classifications as well, in some of which the technical sciences have been assigned a place of their own.

The principles of division underlying the various proposals have, of course, been diverse. One such principle ties the various disciplines to (supposedly) various domains, or sectors, or aspects of reality, physics to the physical domain, sociology to the social sector, ethics to the moral aspects of reality. Another principle divides the disciplines according to the various research goals that are aimed at, or to the methods that are being used. The aim of the natural sciences, Wilhelm Dilthey held, is to *explain* phenomena, whereas the aim of the humanities is to *understand* them. Understanding and explanation, on his view, involve different methods.⁴

³ Cf for this point Barry Barnes, David Bloor, John Henry, *Scientific Knowledge. A Sociological Analysis*, London: Athlone, 1996, pp.140-54. One can agree with these authors on this, and at the same be critical (as I am) about the general relativist gloss these authors put on it.

⁴ These are, of course, extremely general remarks about these principles. As to the first principle, it should be observed that one domain, or aspect, of reality can be studied in more than one discipline. The mental realm, traditionally considered as the domain of the humanities, can at the same time be the object of a (more or less) natural science; stress, for example, mental phenomenon though it is, can be studied in a natural scientific way. As to the second principle, one could say that a physicist working on, for instance, the propagation of light, tries to

The preceding indicates that it is by no means exactly clear what ‘science’ is nor how it is to be demarcated from what is not science. Still, even vague notions can be, and in fact are, often very useful. For example, it is sometimes just unclear whether a particular grouping of houses should be called a city, or a village. The notions ‘village’ and ‘city’ are, to a certain extent, vague. But it clearly makes sense to say that Amsterdam, London and Paris are cities. We know, in a sense, how to apply vague notions (and this is because we are able to recognize paradigm cases to which such notions obviously apply). When dealing, in the next section, with the thesis that science is limited, then, I will be working with a vague (but useful) notion. And I will have to rely on our just noted ability. To this I add that when using the notion ‘science’, unless the context indicates otherwise, I will have in mind primarily the natural sciences.

This ends my introductory discussion of the first notion. As to the second, ‘Christian faith’, the following must suffice. As I will be thinking of it, someone has Christian faith if she affirms the ecumenical creeds in a way that involves believing that what its articles state, for example, that the heavens and the earth are created by God, that Jesus Christ is God Incarnate, who was raised from the dead, etc. is true. However, having Christian faith involves more than believing these things to be true. It also involves *trusting* God, praising and thanking God, standing to God in a special relationship, experiencing his loving care—it involves, in one word, what Psalm 25 calls ‘friendship with God’.

2. Limits of Science

Before I lay out my reasons for thinking that science is limited in various respects, it bears noting that ‘limits’ of science can either be of a practical kind (having to do with limits on financial and technological resources—but also with what is ethically impermissible to do in the process of inquiry) or of a principled nature. The limits I have my eyes on are of the second in-principle sort. The arguments I shall offer all have different points of departure, but, as will appear in due course, are nonetheless related in many respects.

understand the phenomena at hand; and that a historian, working on, for instance, the cold war, tries to *explain* the various moves of the U.S. and the U.S.S.R. The point is, of course, that the notions ‘understanding’ and ‘explanation’ too are, to a certain extent, vague. Cf Karl-Otto Apel, *Understanding and Explanation*, Cambridge (Mass.): MIT Press, 1984.

i- a limit from extra-scientific knowledge

One of the aims of science is to obtain knowledge. Scientists immerse themselves in all kinds of activities in order to, among other things, acquire knowledge. But how shall we understand ‘knowledge’? In contemporary analytic epistemology knowledge is analysed as true belief that has some further property, for instance that it is justified, or warranted. On this analysis one can’t know that, say, the cat is on the mat, unless one believes that the cat is on the mat and unless it is true that the cat is on the mat. But although true belief is necessary for knowledge, it is not sufficient for it. For someone may, for no good reason, believe that the cat is on the mat, and the cat may be even be on the mat, without that person knowing the cat is on the mat. This person’s belief is true, but by luck—this person’s belief lacks something important: it lacks warrant, for that belief has nothing going for it, it is not formed or acquired in an appropriate way. Knowledge, we might therefore say, is true belief that is warranted.

There has been, and still is, considerable debate as to what this property of warrant exactly is (is it *believed for good reasons*, or *based on sufficient evidence*, or *being certain*, or *coherent with a large body of other beliefs*, or *resulting from a reliable process*, or *being produced by a properly functioning faculty that is successfully aimed at truth and that worked in an appropriate environment*, or what?)⁵ For present purposes, however, I need not enter this debate, for the point I want to establish can be made irrespective of one’s favourite analysis of the property under dispute. But I do need to note that I will be thinking of *scientific* knowledge as true belief whose warrant derives, somehow, from science or scientific research. How exactly scientific research can provide warrant is a topic of great interest, one that I presently need not go into either, because the point that I want to establish can be made irrespective of how exactly warrant-through-science works.

As I said, then, one of the aims of doing science is to obtain knowledge. It should be uncontroversial, however, that there are many things we know without science in any way being involved in its production or warrant. Examples abound. To confine myself initially to my own case: I open my eyes and see (and hence know) that the lights are on, that the sky is blue, and that I have a white shirt on. I also know that the world is older than 3 minutes, that China is a

⁵ Cf Robert Shope, *The Analysis of Knowing. A Decade of Research*, Princeton: Princeton University Press, 1983 and Alvin Plantinga, *Warrant: The Current Debate*, New York: Oxford University Press, 1993.

very big country. I furthermore know that $5+7=12$, that if John is taller Jack, Jack is not taller than John, and that 6 could not have been odd. I also know that presently I am standing on my feet, and that my feet are touching the floor. Again, I know that I was in Toronto last week, that I am suffering from a mild pain in my left ankle, and that I was born and raised in The Hague. I furthermore know many moral truths: that honesty is much better than dishonesty, that lying is wrong, that I ought to help my ageing mother, that there is more demerit in an unjust act than in an ungenerous one. Next there are many very general truths that I happen to know, such as: that there are very many people, that they live (virtually all of them) on the surface of the earth, that they need food en liquids to keep themselves alive, that they need love and respect, that there are very many countries in which these people live, and that these countries have governments, some of which are bad, but other of which are tolerably good And so I could go on for a very long time. And as it is with me, so it is with you. You know many of these things as well, and many more besides. The point of rehearsing these obvious and perhaps boring truisms is, of course, that we have acquired vast amounts of knowledge without engaging in anything that could be called 'scientific research', and hence without the warrant condition for knowledge being satisfied by anything scientific. Let us call knowledge that is in fact obtained independent of science (and that furthermore isn't based on testimony about things that have been established by scientific investigation) extra-scientific knowledge.

Now one might have knowledge that is in fact extra-scientific but that *could have been* scientific. Many things that we in fact know without the help of science are such that they *could* be known *with* the help of science. For example: I know that my great-grandfather was a ship builder by profession; the warrant-condition for my knowing is satisfied by testimony from my mother and other members of the family. But the warrant condition could also have been satisfied by something that involves scientific inquiry: for instance by my reading of a book by a professional historian on shipbuilding in early 20th century Dutch harbours, or by having executed such research myself. In that case my knowledge that my great grandfather was a ship builder by profession would be in instance of extra-scientific. (And what if I have both scientific and non-scientific warrant for that knowledge? Then there is no simple answer to the question 'Is your knowledge scientific?')

But not all extra-scientific knowledge is like that. Not all extra-scientific knowledge is such that although it is *in fact* acquired and warranted by something that doesn't involve science

it *could also be* acquired and warranted by something that *does* involve science. Much of our knowledge can *as a matter of principle* not be acquired or warranted through scientific research. Confining myself, again, to myself, it seems impossible that I know, or come to know, that lying is wrong in a way that somehow involves science (it seems impossible that science can satisfy the warrant condition for that knowledge). The same holds for other things that I know, such as that honesty is much better than dishonesty, that I have an obligation to care for my children. Other examples, perhaps somewhat more controversial, would be examples of knowledge of some of my own mental states. It seems impossible that I know, or come to know, that I have a headache (when I have one) independently of my feeling headache and exclusively in a way that involves, one way or another, science. For, as Thomas Reid rightly said, “pain consists in being felt”. (This is of course not to deny that I might learn all sorts of things about headaches, or about my own headache, through science—but what seems impossible is that I learn that I have a headache through scientific research.). Let us call this sector of extra-scientific knowledge the sector of *irreducibly extra-scientific knowledge*.

My contention is that irreducibly extra-scientific knowledge marks a limit of science: there is knowledge that we have that *cannot* be obtained through or receive warrant from science. Contending this is, of course, neither criticizing science, nor criticizing this sector of our knowledge. We face a fact here that we best wholeheartedly acknowledge.

My contention will, of course, meet with scepticism. Emotivists and other moral anti-realists will deny that there are moral truths and hence dispute that there is such a thing as moral knowledge—which would be a problem for my argument because the most important instances of irreducibly extra-scientific knowledge that I gave were examples of moral knowledge. In response I can only say that I reject moral anti-realism for reasons that have nothing to do with the present argument. Another response to my contention might be to bite the bullet and deny extra-scientific beliefs ever amount to knowledge. This, however, would be deeply problematic. For scientific knowledge *depends* in many ways on extra-scientific knowledge, for instance on what we know through perception, such as that the thermometer now reads 118 degrees Fahrenheit. Without such extra-scientific knowledge it is hard to see how science could even get started.

The point I have been trying to make is that science (as we now know it) is limited in that there is knowledge that as a matter of principle cannot be gained through, or warranted by,

scientific research. I concur, therefore with Nicholas Rescher, when he says that “even in the strictly cognitive domain, scientific knowledge is only one sort of knowledge”, to which he adds:

The facts to which science addresses itself are ... those that arise from intersubjectively available observation rather than personal sensibility. ... This quantitative orientation of our natural science means that the qualitative, affective, evaluative dimension of human cognition is bypassed. Our knowledge of the value dimension of experience - our recognition as such of these features of things in virtue of which we deem them beautiful or delightful or tragic - remains outside the range of science.⁶

There is, then, a limit to science from irreducibly extra-scientific knowledge. In the next section I am going to exploit this point when I will be suggesting that Christian faith gives us knowledge of divine things—knowledge that science cannot give us and for which it cannot provide the warrant.

Before moving on to a second limit, I want to bring out that the way I have been thinking about scientific knowledge, viz. as true belief that is warranted through scientific research, is not at all the way many philosophers of science talk about scientific knowledge. In the philosophy of science, it would seem, a conjecture, or statement, or hypothesis, or theory can qualify as scientific knowledge even when no one believes it, and even when it is false. Scientific knowledge that has been discarded, because it was proved false, for example, can, by some philosophers of science, still be referred to as ‘scientific knowledge’. For an epistemologist this sounds like saying that 13th century people knew that the sun revolves around the earth, something no epistemologist that I know of would want to say. What this point indicates is that if epistemologists want to appropriate what philosophers of science say about scientific knowledge they need not take them to be talking about knowledge, but about something else: hypotheses and theories, for example.

All of this suggests something of further significance: it is often said that science is a fallible enterprise. And so it is. Many so-called results of scientific research performed not even very long ago, are now no longer considered as valid. This might mean different things. It might

⁶ Nicholas Rescher, *The Limits of Science*, Berkeley: University of California Press, 1984, pp.209-210.

mean that the methods used for obtaining those results are no longer considered reliable; or it might mean that the ways of processing the data are no longer considered as apt; or it might mean that new data have come available that render the data used biased or otherwise unfit; or it might mean that a reprise of an experiment disconfirms earlier results. But whatever the case, the earlier results are no longer considered as true or warranted. And this means that many results of scientific research, even when believed, don't qualify as knowledge—knowledge understood as warranted true belief.)

ii- a limit from knowledge by acquaintance

In epistemology sometimes a distinction is sometimes made between 'knowledge of truths' or 'propositional knowledge' on the one hand and 'knowledge by acquaintance' on the other⁷-- between knowing *about* things, and knowing things. By my own experience I am acquainted with, for instance, the taste of wine, the smell of roses, and the colours of Rembrandt's *Nightwatch*. And there is a sense of 'knowing' such that when someone is acquainted with the taste of wine, that person can be said to 'know' the taste of wine, and that someone not thus acquainted *cannot* be said to know the taste of wine. It is one thing to be acquainted with the taste of wine, and another to *know truths (or true propositions) about* the taste of wine, for instance, know that Italian wines generally taste sweeter than French ones, due to do with various minerals and differential weather conditions. It is logically possible to have the first kind of knowledge but lack the second. One can know something, in the sense of being acquainted with it, and at the same time know no, or almost no, truths *about* what one is acquainted with. One can be acquainted with colours, without knowing much *about* colours, etc.

This distinction is also relevant when it comes to knowing persons.⁸ One can know many truths about someone one is not acquainted with. Many people, for instance, know many truths about the second president of the U.S., John Adams, e.g. that he was happily married to his wife Abigail, that he stayed an extended period of his life in Europe, especially France, but

⁷ This terminology gained currency through Bertrand Russell; see, for instance, his *Problems of Philosophy*, Oxford: Oxford University Press, 1948, pp.46 sqq.

⁸ It should be added that I am using this distinction here in a way Russell would not approve of. He held that we can have knowledge by acquaintance of colours and sounds, etc., universals, logical forms, and (perhaps) oneself, but not other persons. However, there is nothing in the distinction itself that would prevent other persons to be known by acquaintance. Russell's denial of this possibility is premised by other of his philosophical commitments.

also The Netherlands, that he obtained an important loan to finance the Revolution from a Frisian banker, that he was an ardent lover of poetry, that his son John Quincy also became president, etc. One can, as we do, know these truths about him, without ever having met him, without ever being introduced to him, without being acquainted with him in the sense of having had personal interaction with him. But although one may know many truths about Adams, there is a sense of knowing in which one *doesn't* know Adams. It is the sense of 'know' that forbids me to say 'yes' when I am asked "Do you know George Bush?" I don't know that man, because I never met him, never been introduced to him, never been acquainted with him—even though I know many truths about him.

The difference between knowledge by acquaintance and propositional knowledge has to do with truth. In the following way: the objects of propositional knowledge (the things we usually talk about by using 'that'-clauses: that John Adams was the second president of the U.S., that the thermometer reads '68 F', etc.) have truth value, they are either true or false. But the objects of knowledge by acquaintance (such as: the taste of wine and John Adams) are not the sorts of things that have, or even can have, truth value; neither the taste of wine nor John Adams can be true or false.

One aim of doing science, I said earlier on, is to obtain knowledge, or at the very least to formulate and deal with items such as conjectures, hypotheses, theories, predictions etc.—items that are all propositional in nature and thus all have truth value. What we want to find out by doing science is whether certain theories, hypotheses etc. (which really are complex propositions) are true, or not. What this means is that science operates on the propositional level and that insofar as it gives us knowledge, it gives us propositional knowledge. But scientific knowledge never *gives us* knowledge by acquaintance, even though it is, to a certain extent⁹, *based* on such acquaintance. For, how could a theory of light, like Newton's (or Goethe's for that matter), have been ever devised, if Newton (or Goethe) had not been *acquainted* with phenomena of light? Many scientific theories are *based upon* phenomena we can, in principle, be acquainted with.

If I am right about this, there appears to be a second limit for science, in that science, if it gives us knowledge at all, gives us propositional knowledge, but no knowledge by acquaintance.

⁹ Only 'to a certain extent' because theories are underdetermined by the acquaintance knowledge of their originators.

Nothing that qualifies as ‘knowledge by acquaintance’ merits the label ‘scientific knowledge’, even though, as I have suggested, science is to a certain extent based on such knowledge by acquaintance.

Later on I am going to exploit this point when I will be arguing that classical Christian faith partly (and only sometimes) involves knowledge by acquaintance of God.

That science is limited in the way argued for in this section, has been used by Frank Jackson in his famous ‘knowledge argument’ against physicalism—where ‘physicalism’ is the thesis that the actual world is entirely physical.¹⁰ Since traditional Christianity too is committed to the denial of physicalism, it will be worthwhile to take a quick look into the argument.

Suppose that physics is completed, and that a human person (in Jackson’s argument, Mary) has been comprehensively instructed about physics in a rather peculiar situation: she was instructed in a black and white room (that she was born into and never left) through a black and white television screen. Having been comprehensively instructed, Mary knows everything that is to be known about the physical nature of the world. And if physicalism is true, so the argument goes, she knows all there is to know. To suppose otherwise would be to suppose that there is more to know than every physical fact (and that is just what physicalism denies). So this person knows all truths, also, for example, all truths about grass. Now Mary has never been outside that black and white room and accordingly has never seen the greenness of grass. Suppose now that Mary is to exit her room. Will she then come to know something she did not know before? Well, Mary knows all truths about grass and all truths about colours and all truths about perception, but in her entire life she never saw green grass with her own eyes. So does she know the colour of grass before leaving the room? It would seem she does not. She has never seen anything green, and hence doesn’t know the colour green. Mary, the argument concludes, does not know everything. And therefore physicalism is false.¹¹

iii- a limit from presuppositions

There can be no science without scientists making various very general suppositions that,

¹⁰ Frank Jackson, “What Mary Didn’t Know”, *Journal of Philosophy* 83 (1986), 291-295.

¹¹ For a careful analyses and defence of this kind of argument, see Howard Robinson, “The Anti-Materialist Strategy and the ‘Knowledge Argument’”, in: Howard Robinson (ed.), *Objections to Physicalism*, Oxford: Clarendon, 1993, pp.159-184.

because of their special nature, could be called *presuppositions*. In this section I want to argue that there are no scientific proofs of the truth of these presuppositions. And this, I shall contend, constitutes another limit of science. I shall single out three presuppositions.

A. In science the principles of logic, such as Modus Ponens, are used. The truth of these principles, however, cannot be proved on the basis of arguments that only have premises that are established by scientific research. This cannot be done for at least two reasons. (1) The principles of logic are *necessarily* true, if true at all, but the findings of the natural sciences are, as a matter of principle, at best contingently true, if true at all. And this causes a problem, for necessary truths, if they are to be established, have to be established by reasoning that proceeds from necessarily true premises. But science can never provide necessary truths. (2) If the principles of logic are to be proven by argument, the proofs may not involve, or implicitly presuppose the truth of, those very principles. That would be begging the question. But any proof of the principles inevitably will have to beg the question. For, one cannot prove anything (and a fortiori not the principles of logic) without using of the principles of logic.¹²

B. Secondly, in science it must be presupposed that our basic cognitive faculties such as perception, reason, and memory, are by and large reliable. One cannot rely on observations without presupposing sense perception is by and large reliable; one cannot conduct experiments, without presupposing that reason is by and large reliable; likewise one cannot do science without presupposing memory is by and large reliable. But the reliability of our faculties cannot be proved on the basis of arguments that crucially involve premises obtained by scientific research. For the scientific research that will have to provide the premises for such an argument (an argument for the conclusion that our basic cognitive faculties are reliable) itself presupposes the reliability of the faculties whose reliability it aims to establish.

To this it could be added, as William Alston has argued, that the reliability of our faculties cannot be proved by arguments *at all*. For every attempted proof of the reliability of, for instance, sense perception will crucially involve premises won by the workings of that very faculty. And similar things hold for reason, and memory. All such attempts suffer from what Alston has called ‘epistemic circularity’.¹³

¹² Husserl’s case against 19th century psychologism, that tried to place logic on an empirical footing, or make it an empirical science, crucially rested on arguments like the ones offered. See his *Logical Investigations*, part I [1900], transl. J.N. Findley, London: Routledge, 1970.

¹³ William P. Alston, *The Reliability of Sense Perception*, Ithaca: Cornell University Press, 1992.

C. Scientists not only presuppose the truth of the principles of logic and the reliability of our cognitive faculties, they also presuppose various things about their object of research. They presuppose, for instance, that nature behaves uniform. The principle of the uniformity of nature says that the patterns nature displays on a small scale, nature will also display on a large scale. That this particular piece of iron expands when it gets heated, tells us something not only about this particular piece, but about all iron. If we did not presuppose this principle, science would at once become impossible. We would not, in that case, have any reason to think that the causal connection between A and B that obtained yesterday in Amsterdam, will also, *ceteris paribus*, obtain tomorrow, and/or in Bruxelles. Were the principle not presupposed, the testing of hypotheses would be pointless.

So, here are three presuppositions of science—three suppositions whose truth science is unable to establish. This does not mean there are no good grounds for adopting them. But it does mean that the person who refuses to accept or believe anything unless it is proved by science (a position we might label *scientism*), is in serious trouble. For such a person should refuse to accept the principles of logic, refuse to assume that our basic cognitive faculties are by and large reliable, and refuse to accept the principle of the uniformity of nature. Such a person, then, refuses to accept the presuppositions of science and accordingly should be committed to not accepting anything science tells us. But that is, of course, ludicrous. For we know, we think, many things on the basis of scientific research. Therefore, if one wants to save science as a source of knowledge (or warrant), one had better reject scientism.¹⁴

The existence of presuppositions of science, I submit, marks another limit of science. There are certain things absolutely fundamental to the scientific enterprise that science cannot prove to be true: its presuppositions. And this inability indicates a sort of limitation: it marks out something that science cannot do. At the same time the existence of presuppositions hints at something else as well—at least if one rejects scientism. If we assume that acceptance of these presuppositions is warranted, we have thereby implicitly acknowledged that the condition for warrant can be satisfied by something that does not involve science. And this means that the discussion of presuppositions of science brings us back in the neighbourhood of extra-scientific knowledge and warrant, and even of irreducible extra-scientific knowledge and warrant. If we

¹⁴ This point has also been argued by Del Ratzsch, *Philosophy of Science. The Natural Sciences in Christian Perspective*, Downers Grove (Ill.): IVP, 1986, p.99 sq.

assume that we know that the principles of logic are true, and know that our faculties are by and large reliable, and know that nature is uniform, then we must insist that these are instances of extra-scientific knowledge, and even irreducibly so. And there doesn't seem to be anything wrong with that. It isn't that there is anything wrong with extra-scientific knowledge *as such*.

This too is a point I will be exploiting later on, when I will insist that it is nothing against religious belief when there is no scientific warrant for it. (And I will be exploiting another point of this section too, viz. that it is nothing against religious belief when there is no non-circular argument for its truth.)

iv- a limit from ultimate questions

There can be no science (taken in a broad sense now) without scientists *asking questions*. We can think about science as a set of tentative answers to questions. These questions take on various different forms. Here is a small sampling: 'What is the cause of X (where X is some natural phenomenon, e.g. lightning and thunder)?', 'How can this pattern of phenomena be explained?', 'What are the ultimate constituents of matter?'; furthermore: 'What did Kant mean by the expression "private use of reason"?', 'Why has president Bush not completely dismantled Saddam Hussein's army in early 1991?', 'What is the best treatment of psychosis?' Scientific questions differ greatly from one another. Some would be answered by citing facts, others by giving explanations, still others by citing reasons or motives, yet others by proposing a theory; some would be answered by offering an interpretation of a text, and some by suggesting a particular treatment, a particular course of action, and yet others in yet other ways.

So, the questions scientists ask are all but of one kind. Some philosophers, however, have held that scientific questions are characterized by a feature that non-scientific questions lack. Some Wittgensteinians, for example, have held that scientific questions have the particular feature that their answers have the form of *explanations*.¹⁵ But this, as our sampling in the previous paragraph indicates, is not right. Furthermore, there are clearly extra-scientific questions whose answers have the form of explanations. Someone asking 'Why are those windows wet?' asks for an explanation, but asks no scientific question.

¹⁵ Vincent Brümmer, 'A Dialogue on Language Games', in: Vincent Brümmer (ed.), *Interpreting the Universe as Creation*, Kampen: Kok Pharos, 1991, pp.1-17. And D.Z. Phillips

It may, therefore, be impossible to fully characterize a scientific question. What is, or should be, evident, however, is that there are extremely important ‘ultimate’ questions that cannot be answered by scientific research, not in the near future, nor in the distant future, nay, never. I am thinking, of course, of such questions as, ‘What are we all here for?’, ‘Why is there something and not nothing?’, ‘Do we possess freedom?’, ‘What moral principles should we heed?’, ‘Which moral virtues should we try to attain?’, ‘What things are of value?’, ‘Does God exist?’, ‘What does God (if he exists) require from us?’ The sciences (still taken in the broader sense, so as to include psychology, sociology and the like) do not answer these questions and it would seem that they *cannot* answer them. What part of or theory in physics, or biology, or psychology or other is ever going to provide answers to these questions? We seem to face another limit of science, viz. its inability to answer ‘ultimate’ questions.

Not everyone, however, will be inclined to agree with this. At one time (not so very long ago) the neopositivists declared that *because* science cannot answer these questions, they are bad or meaningless questions; it isn't that we can't find answers to them, but those questions, they held, don't even make sense to begin with.¹⁶ The famous Verification Principle, advanced in order to discriminate between meaningful and meaningless questions, however, itself ran into trouble. One point brought against it was that many questions that are clearly meaningful on that Principle were declared meaningless. In such a case one faces a dilemma. Either maintain the Principle and declare those questions meaningless (although they might still seem to be meaningful) or reject the Principle and give those questions the attention they deserve. The last seems the more reasonable way to proceed.¹⁷

Although the neopositivist Principle receded into obscurity, there are philosophers who hold that the thesis that science is limited in the way indicated in this section, is false, but they have other reasons for thinking so. Paul Churchland, for instance, thinks that as science progresses ‘ultimate’ questions will not be answered but simply wither away: no one will feel urged to pose them any longer for they make sense no more; they will sound like the question ‘how does phlogiston work?’ sounds in our ears. Such questions, he holds, belong to, and arise out of, an unscientific common sense view of the world, a view that is radically false.¹⁸ Now this

¹⁶ For instance Rudolf Carnap, ‘Überwindung der Metaphysik durch logische Analyse’,

¹⁷ See for this Alvin Plantinga, *God and Other Minds*, Ithaca: Cornell University Press, 1967, pp.156-168.

¹⁸ Churchland labels his position ‘eliminative materialism’, which he defines as “the thesis that our common sense conception of psychological phenomena constitutes a radically false ontology, a theory so fundamentally

is no more than an expectation on Churchland's part—one that very well might not come through. But what should we do with these ultimate questions so long as Churchill's expectation is only an expectation? Should we abstain from asking them? That will, I should think, prove hard for most of us. But all the while two facts remain: first, ultimate questions continue to seem meaningful to us as well as of utter importance, and second, science doesn't have a handle on them. It would therefore be wrong and unreasonable to turn to science for 'ultimate answers'. As Peter Medawar once quipped, "to expect from science to answer the ultimate questions is tantamount to expecting to deduce from the axioms and postulates of Euclid a theorem having to do with how to bake a cake".¹⁹ But this does not imply that ultimate questions cannot be answered *at all*. For, as I suggested in section i-, there is knowledge other than scientific knowledge and such knowledge might flow from sources that enable us to even address ultimate issues.

Now there are scientists and philosophers (and lay persons) who, unlike the neopositivists, reject Verificationism, and unlike Churchland, don't think the 'ultimate' questions will wither away while science marches progresses. According to these persons at least some of these questions are meaningful and they add to this that science *can* answer some them and as a matter of fact *has* already answered a fair number of them. Let me give just one example of this, having to do with the question of whether there is meaning to life. In evolutionary biology the notion of chance plays an important role—mutations in the genetic make-up of organisms are generally referred to as chance-occurrences. Now a fair number of people assume that chance is the complement of design, and on the basis of that assumption conclude that the mutations are un-designed, and from there on merrily (or melancholy) go on to claim that life is a meaningless affair, that there really are no such things as morally good and morally bad actions and that humans simply have to dance to the rhythm of their genes. This line of thought calls for a lengthy response that I won't give now. Instead I offer one short remark. The first is that this line of reasoning is confused due to not properly distinguishing between various notions of 'chance'. When biologists say that mutations are chance events, what they mean by that, among other things, is that mutations don't result from some sort of prospective

defective that both the principles and the ontology of that theory will eventually be displaced, rather than smoothly reduced, by completed neuroscience" (see his "Eliminative Materialism and the Propositional Attitudes", *The Journal of Philosophy*, 78 (1981), p.67.

¹⁹ Peter Medawar, *The Limits of Science*, Oxford: OUP, 1986, p.76.

calculation on the part of the organism to the effect that, given the current local environment, the pay-offs of a certain kind of mutation would be great. The mutation doesn't occur *because* it is fitness-enhancing. But to go on from here and to make, on this basis, those further claims that I mentioned, seems entirely unwarranted. Those further claims simply don't follow—or: they only follow when one helps oneself to a number of assumptions none of which itself is the result of scientific research. I have no very deep objection, however, to those who make claims of the following sort: “From a biological perspective, life has no meaning”. For that claim signals the point I have been trying to make in this section: viz. that science is not properly equipped to pronounce on ultimate matters. My not very deep objection to the claim is only that it is misleading in that it implicitly suggests that biology provides some but inconclusive evidence for life's meaninglessness. Which it does not. The more proper claim, it seems to me, would be “from a biological perspective no pronouncement can be made on the meaning of life: neither that life is meaningful, nor that it is meaningless—biology is about other matters.”

So I submit that science is limited in the sense that it is unable and unequipped to answer ultimate questions.

v- a limit from inexplicable brute facts

Next to ultimate questions, there are other questions that science cannot answer. In a sense they are ultimate too, but not in the ‘existential’ way the questions in the previous section were supposed to be.

Among other things, scientists sometimes proffer explanations of phenomena. One type of explanation involves citing a universal laws. That heated air moves upwards can be explained by citing Boyle's law. That the tree in my backyard gives that particular shape of shadow can be explained by citing (among other things) general laws of light. Explanations like these consist at least in part in subsuming phenomena under universal laws. Such explanations are clearly valuable and add to our knowledge and understanding of the world. But such explanations leave unanswered the question why those particular universal laws hold and not others. Universal laws, then, figure in many explanations, but their very existence is left unexplained. Surely, some laws can be explained by reference to other more general laws, and those laws might be explained by yet more general laws. But there is an end to this. There comes a point where there

is no next higher level law. At a certain point we face brute facts—i.e. facts that cannot be explained by reference to laws, or laws of a higher level of generality.

The set of brute facts comprises not only universal laws, but also the so-called universal constants such as the gravitational constant. These constants have specific values—values for which no further explanation can be given.

Other brute facts are of a more homely kind. Consider an apple. We can try to explain why this apple tastes the way it does. Such explanation will no doubt make reference to the papillae of taste, to the way they are affected by the physical properties of the apple, to neurological impulses that are being transmitted to the brain, as well as to various laws. But such an explanation leaves unanswered the question *why* this particular stimulus (this apple) gives rise to this extremely hard to describe but very familiar sensation of taste. Scientists may be able to tell something informative about neurological transmission of impulses. But they cannot explain why such-and-such impulses cause such-and-such taste sensations. As Thomas Reid has said:

No man can give a reason, why the vibration of a body might not have given the sensation of smelling, and the effluvia of bodies affected our hearing, if it has pleased our Maker. In like manner, no man can give a reason why sensations of smell, or taste, or sound, might not have indicated hardness, as well as that sensation which, by our constitution, does indicate it.²⁰

Here again science encounters an inexplicable brute fact. The point I am navigating towards is that brute facts constitute a limit of (a particular kind of) science—*natural* science. The natural sciences as we now know them have a limit in that they cannot explain certain brute facts, even though these facts are invoked in explaining other things than themselves. This is a point I will be will be exploiting later on.

But first I want to point out that brute facts, in principle, can be explained albeit by a type of explanation that is not employed in the natural sciences as we now know them. Whether that kind of explanation is *allowable* (either inside or outside of the sciences), is a matter of great

²⁰ Thomas Reid, *An Inquiry into the Human Mind* [1764], ed. William Hamilton, Bristol: Thoemmes Press, 1994, pp.120-21.

controversy. What I mean is this. One characteristic of explanations in the natural sciences is the negative fact that they don't refer to acts and intentions of personal agents. But it seems quite obvious that many phenomena cannot be explained without such reference. To take an example from daily life: suppose I want an explanation of the puzzling fact that there is a book on my desk that I did not put there myself. One good explanation would be that my son put it there because he wanted me to read it. The puzzling fact is, in this case, explained by reference to an act (my son's putting the book at my desk) and an intention (my son's wish that I read the book) of a personal actor (my son). This type of explanation makes no reference to universal laws, only to acts and intentions. Explanations of this type have been called 'personal explanations'²¹, so as to bring out that such explanations refer to persons, but they have also been called 'teleological explanations' so as to bring out that such explanations refer to goals and aims that agents have. In ordinary life personal explanations have, intuitively, a great appeal. We can't live without them.

One issue that has been raised about personal explanations is whether they can be reduced to the sort of explanations that are ubiquitous in the natural sciences (that make no reference to goals). I cannot properly enter that matter here, but only report that attempts to show that it can, seem to me to be unsuccessful.²²

One might think that if personal explanations make sense in every day life, they might also make sense when applied to the brute facts of the natural world I have been speaking of. This suggestion will, naturally enough, meet with suspicion. Many will object to it and say that personal explanations, if they work at all, must be confined to ordinary life and that they should not be employed in the natural sciences. But why should one grant so much. Surely, many difficult issues arise. But if there really are brute facts (which means: facts that cannot be explained by reference to a law), and if one furthermore thinks that personal explanations are, as a matter of principle, good explanations, then the field is open to explore the possibility of personal explanations of brute facts. And this, of course, is the substance of the current debate

²¹ Richard Swinburne, *The Existence of God*, revised edition, Oxford: Clarendon, 1991, pp.32-35.

²² Donald Davidson is one among many who have argued that a personal explanation is a form of scientific explanation (see his "Actions, Reasons, and Causes", *Journal of Philosophy* 60 (1963), pp.685-700). Swinburne offers good arguments against Davidson's position; see his *The Existence of God*, pp.36-42. Other powerful criticisms of Davidson's position are G.F. Schueler, *Reasons and Purposes. Human Rationality and the Teleological Explanation of Action*, Oxford: Clarendon, 2003 and Scott Sehon, *Teleological Realism. Mind, Agency, and Explanation*, Cambridge MA: MIT Press, 2005.

over the apparent fine-tuning of the cosmological constants. What is at issue here, among others, is the legitimacy, explanatory power and intellectual plausibility of a personal explanation of the order in the cosmos—an explanation that refers to the acts and intentions of a non-human actor.²³

This is not to say that the cosmic order *must* be explained in a personal explanation. One could take the line that that order is ultimately inexplicable (inexplicable not only because there is no law to refer to, but also because there is no personal agent to refer to). This is not an impossible or an irrational position. But neither is the position of those who propose a personal explanation. It isn't as if the one position is in accordance with the findings of science, whereas the other is in contradiction with it. The issue between these positions in large part turns on whether one thinks there is knowledge and warrant available from sources other than warrant—knowledge that, when it is available, one might use in crafting personal explanations of brute facts.

This too is a point I will be exploiting in the final section.

vi- a limit from norms for theory choice

Scientists devise hypotheses and theories, and they also evaluate them, comparing and contrasting them with alternative hypotheses and theories. Scientists make, and have to make, 'theory choices' or 'theory evaluations' and those choices and evaluations will have to be made in a reasoned way. But when is a reason to accept a particular hypothesis or theory a *good* reason, and when is it a bad one? This is the subject matter of what is sometimes called the Theory of Scientific Rationality.

It is generally agreed that certain reasons are of a bad kind. That a theory gives you a headache is no good reason to reject it, and that it boosts your popularity if you adopt it no good reason to accept it. So there are *norms* of good and bad reasonhood when it comes to theory choice and theory evaluation.

It could be argued, as Stephen Wykstra has done, that such norms lie on various levels.²⁴

²³ See for this: John Foster, *The Divine Law Maker*, Oxford: Clarendon, 2005.

²⁴ Stephen Wykstra, "Reasons, Redemption, and Realism: The Axiological Roots of Rationality in Science and Religion", in: Michael D. Beaty (ed.), *Christian Theism and the Problems of Philosophy*, Notre Dame: UNDP, 1990, pp.118-161.

There are, he argues, first of all norms on a theoretical level. One example of which is simplicity. Confronted with different theories with respect to the same subject matter, this norm says that if theory A is simpler than theory B, A's being simpler than B is a good reason for preferring A over B. Second, there are norms on a methodological level. One example is induction. Given two different theories concerning the same subject matter, this norm says that if theory A is based on inductive inference, whereas theory B only on casuistry, A is to be preferred over B. Finally there are norms on an axiological level, the level of values. One example is the 'height' of a theory. An instance of this (as Wykstra has it) is Robert Boyle's adherence to corpuscular (or 'mechanical') philosophy for the reason that corpuscular explanations are exceptionally satisfying to the mind, much more than Aristotelian explanations. Given two theories only one of which involves corpuscular philosophy, this norm says that the one that involves that philosophy is to be preferred over the one that does not.

In order to be able to see what this has to do with limits of science, it needs to be noted that all of the norms mentioned can be, and in fact have been, contested by scientists and philosophers alike. On the theoretical level it has been contested that simplicity should function as a norm. Reid, for instance, held that "if we conclude that [nature] operates in such a manner, only because to our understandings that appears ... simplest, we shall always go wrong".²⁵ A further problem with simplicity is that arguments for the conclusion that simpler theories are more likely to be true, such as Swinburne's, have met with stern opposition. On the methodological level some have argued that the norm of induction itself is problematic, for, as Hume as argued, induction cannot itself be justified. It cannot be shown that induction leads to truth, or high probability, or anything in the neighbourhood. Finally, on the axiological level it has been contested that the corpuscular theory is 'higher', or intellectually more satisfying than Aristotelianism.

The fact that theory choice and evaluation is informed by various contested and contestable norms indicates, I submit, another limit of science. In the following way: science itself cannot tell us what the proper norms for theory choice and evaluation are. It isn't that scientific research brings to light which norms are the ones that should regulate our choices and evaluations of theories. All kinds of extra-scientific convictions and beliefs on the part of the

²⁵ Reid, *Essays on the Intellectual Powers*, ed. Hamilton, p.470.

scientist (and the community of scientists) come into play here.²⁶ This is another point I will be exploiting in the final part of my paper, when I will suggest that religious beliefs may inform one's norms for theory choice.

This concludes my discussion of those limits of science that are most relevant for my purposes.²⁷ In the next section I am going to exploiting these limits in a discussion of the claim that given modern science traditional Christian belief must either be abandoned or drastically reformed.

3. Does Science Call Christianity to Change?

In the beginning of this paper I said that many have claimed that given the findings of modern science, the rational stance to take towards traditional Christian faith is to either abandon or drastically reform it. I didn't say why that is supposed to be so, but there are two broad types of reasons behind it:

- (I) science lends no warrant to Christian faith, and
- (II) science provides defeaters for the Christian faith.

In this section I will be exploiting what we (I hope) have learned about the limits of science by bringing it to bear on these two broad types of reasons for the claim that given the findings of science we should either abandon or drastically reform the Christian faith.

As to (1): 'Christian faith' as I have presented it involves belief—belief in God, in his existence, in his goodness and unlimited power, in his being the creator of all things, in his revelation in Jesus Christ, his only son, in the salvation he offers through Christ's redemptive suffering and glorious resurrection, in a day of judgment, and a day of resurrection of the body etc. Clearly, science does not compel us to believe any of this nor does it provide warrant for

²⁶ When it comes to theory choice, then, various different 'choice policies' are possible.

²⁷ There are, indeed, more limits to science than the ones I have discussed. There is a limit due to the fact that scientists have to use classificatory ('formal') concepts that figure in necessary truths that can only be known a priori and hence do not result from but are presupposed by science (see for this George Bealer, "The Philosophical Limits of Scientific Essentialism", in *Philosophical Perspectives, vol.1: Metaphysics*, ed. James E. Tomberlin, Atascadero: Ridgview, 1987, pp.289-365). There also is a limit from the fact that human beings are fallible (and sinful) creatures (see for this Abraham Kuyper, *Principles of Sacred Theology*, New York: Scribner's, 1970).

such beliefs. But that is nothing against those beliefs. For, as I argued in i-, there are *many* things we truly believe, many things we know, without the warrant condition for knowledge being satisfied by science. We have, I argued, extra-scientific knowledge of moral truths, of values, and of much else besides. To this list I now want to add the Christian beliefs just cited and suggest that these beliefs too can have warrant in a way that does not involve science.

How these beliefs can be warranted is the topic of the most exciting work in the philosophy of religion over the last four decades. It has been argued that there are various sources of belief in God and that there are various ways in which religious belief can be warranted. It has been argued that there is some such thing as the *sensus divinitatis* that in a wide variety of circumstances elicits belief in God and gives it warrant.²⁸ It has also been argued that there is some such thing as mystical perception—and that such perception warrants certain religious beliefs.²⁹ It has also been argued that there is some such thing as divine discourse: God speaking to someone in a way that provides warrant to the beliefs engendered in the person spoken to. Finally it has been argued that there is some such thing as divine revelation and that beliefs formed in response to that can have warrant.³⁰

The point of my argument is that the fact that science lends no warrant to religious belief is not much of an argument *against* such belief, because there are sources of warrant other than science, as the example of our knowledge of, e.g., moral truths is supposed to have made clear.

In the previous section, part ii- I introduced the distinction between knowledge of truths (propositional knowledge) and knowledge by acquaintance and said that scientific knowledge (and scientific belief) is always propositional. This is relevant for (I), the claim that science gives no warrant to Christian faith, in the following way: Christian faith, as I said earlier on, involves not only propositional belief, but also, and maybe even more central, awareness, or acquaintance, with God. Christian mystics have written extensively about experiential acquaintance with God. And to a lesser degree the average Christian too has non-propositional awareness or acquaintance with God. As John Ballie thinks of faith, it is a “primary mode of

²⁸ Alvin Plantinga, “Reason and Belief in God”, in: Alvin Plantinga & Nicholas Wolterstorff (eds.), *Faith and Rationality. Reason and Belief in God*, Notre Dame: UNDP, 1983. Alvin Plantinga, *Warranted Christian Belief*, Oxford: Oxford University Press, 2000.

²⁹ William P. Alston, *Perceiving God. The Epistemology of Religious Experience*, Ithaca: Cornell University Press, 1992.

³⁰ George Mavrodes, *Revelation in Religious Belief*, Philadelphia: Temple University Press, 1988; Richard Swinburne, *Revelation. From Metaphor to Analogy*, Oxford: Clarendon, @@@

awareness. Faith does not deduce from other realities that *are* present the existence of God who is *not* present but absent; rather it is an awareness of the divine Presence itself, however hidden behind the veils of sense.”³¹ Since science, as I have been arguing, can never give us knowledge by acquaintance, it should come as no surprise that it cannot give us knowledge by acquaintance of God. And a fortiori it is not much of an argument against Christian faith that science does not give us such knowledge by acquaintance.

Some of the most important questions human beings ask, ‘ultimate questions’, science is unable to answer—or so I have argued in the previous section. Still there might be knowable answers to them due to the extra-scientific sources of religious belief and warrant such as the ones mentioned earlier on (sensus divinitatis, mystical experience, divine discourse, and revelation). These sources provide materials for answers, or parts of answers, to ‘ultimate questions’. The meaning of life, these sources suggest, lies in living a life in communion with God. Why the world exists, these sources tell us, is because God willed it to exist. How we should live, they suggest, is such that we are devoted to serving and trusting God and to seek to love and serve our fellows. These answers may be warranted—even if their warrant does not derive from science.

Often it is suggested that whereas science is firm, Christian faith is shaky. One way this very general point has been cashed out is by indicating that Christian belief presupposes or involves all kinds of things that cannot be proved to a sufficiently sceptical mind, whereas science involves no such presuppositions—no presuppositions that cannot be proved to a sufficiently sceptical mind. But this way of putting things neglects the fact that science involves unproved and improvable presuppositions. The point of my argument in the previous section for this claim (that here we indeed face a fact) was that there isn’t something *wrong* with science because it cannot prove its presuppositions. But if it not wrong when science involves unproved presuppositions, then neither should it be wrong when the Christian faith involves unproved presuppositions. In both cases there may be (and I think in fact are) sources of warrant available other than science.

It appeared that what can be learned (I hope) about the limits of science, in a way is richer than what is needed to address (I) and (II), the reasons underlying the Claim. After all, I suggested that whereas science is unable to answer ultimate questions, the sources of Christian

³¹ John Ballie, *The Sense of the Presence of God*, New York: Scribner's, 1962, pp.88-89.

faith may provide warranted answers to such question. This point clearly goes beyond addressing (I) and (II). And there is more along these lines, as I now should like to bring out. In section v- I argued that there are brute facts that are scientifically inexplicable. I also contrasted scientific explanations with teleological explanations, and suggested that there might be teleological for natural brute facts, such as the apparent fine-tuning of the cosmological constants and laws. Christian faith clearly favours, or at the very least does not rule out, such teleological explanations. As a matter of fact, the possibility and advantage of such an explanation over the simply taking for granted of inexplicable brute facts might be a reason to take Christian belief with real seriousness.

One final thing along the same lines (i.e. not directly addressing (I) and (II)) is suggested by what we have learned about the limits of science. Theory choice, I said, is regulated by norms—norms that themselves are the objects of a discussion that cannot be terminated by an appeal to science. The warrant for holding on to certain norms, and not to others (or for assigning them a place in a hierarchy of norms above others, and not below them) will thus have to derive from something other than science. But if, as I have suggested, Christian faith receives warrant from extra-scientific sources, then a case could be made for the thesis that it is appropriate for Christian theists to include into the body of norms that guide theory choices explicitly theistic beliefs. And what I say could be done has in fact be done. Nicholas Wolterstorff says:

Everyone who weighs a theory has certain beliefs as to what constitutes an acceptable *sort* of theory on the matter under consideration. We can call these *control* beliefs. They include beliefs about the requisite logical or aesthetic structure of a theory, beliefs about the entities to whose existence a theory may correctly commit us, and the like. Control beliefs function in two ways. Because we hold them we are led to *reject* certain sorts of theories. ... On the other hand control beliefs also lead us to *devise* theories. My contention ... is that the religious beliefs of the Christian scholar ought to function as *control* beliefs within his devising and weighing of theories.³²

³² Nichols Wolterstorff, *Reason Within the Bounds of Religion*, Grand Rapids: Eerdmans, 1977, pp.63-4; cf. Nicholas Wolterstorff, "Theology and Science: Listening to Each Other", in: W. Mark Richardson & Wesley J.

This to me seems right, and it would seem that belief in God, in creation, in atonement, etc. can function as control beliefs in various very diverse sectors of the academic enterprise.³³

Let me finally turn to (II), the claim that science provides defeaters for Christian faith. Many such defeaters have been proposed: defeaters having to do with psycho-analysis, evolutionary theory, evolutionary psychology, biblical criticism and more. What light does what we have learned about the limits of science shed on the issue of defeaters in general? This is a vast topic, but in line with the character of my discussion so far, I want to offer some very general and highly programmatic remarks. Namely that when it is claimed that science delivers defeaters for Christian faith, we must never forget the following points:

- (1) not everything that is claimed in the name of science is established scientific fact.
- (2) there often is quite some distance between what is scientifically established on the one hand, and speculative extrapolations from what is scientifically established on the other.
- (3) there is often also quite some distance between what is scientifically established on the one hand, and a worldview-driven appropriation of what is scientifically established.
- (4) when it is claimed that science provides defeaters for Christian beliefs, it would seem that what *in fact* provides those defeaters is not the scientifically established facts, but either the speculative extrapolations meant in (2), or the world-view driven appropriations meant in (3).
- (5) neither the speculative extrapolations, nor the worldview-driven appropriations receive warrant from science
- (6) it is therefore not un- or anti-scientific when one rejects those speculative extrapolations and worldview-driven appropriations.

4. Conclusion

By way of conclusion, then, I have argued that there is no property that is essential to everything called science. I then argued that the things called science are limited along various dimensions. Not everything we know we do so on the basis of science, we have extra scientific knowledge.

Wildman (eds.), *Religion and Science. History, Method, Dialogue*, New York: Routledge, 1996, pp.95-104.

³³ These examples are discussed at some length in George M. Marsden, *The Outrageous Idea of Christian*

And not all knowledge we have is (as is scientific knowledge) propositional in nature. Science is furthermore limited in that it cannot answer ultimate questions, has to acknowledge brute facts, involves unproved presuppositions, offers no personal explanations, and finally in that theory choice is regulated by norms. These limits, I argued, give us *prima facie* no reason to think that science calls Christian faith to change. Finally I briefly indicated that science is such that it allows Christian beliefs to play the role of control belief.