

PROSPECTS FOR THEISTIC SCIENCE

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I. Introduction

Among theists, the most popular view of the engagement between religion and science (henceforth the S/R relation) is a minimalist one. They see the role of religious belief to science as primarily negative such that any theory can be acceptable to a theist so long as it doesn't outright contradict any revealed truth of Faith. On this view, conflict between religion and science is not only possible but is the only (or the most important) relation between them: if a theory outright contradicts revealed truth it's false; otherwise, it's theistically unobjectionable. There is, therefore, no such thing as theistic science; there is at most theistically compatible science.

A lesser number of theists take religious belief to have a thicker engagement with science than merely acting as a negative, external, check for falsehood. For them religious belief can supply content to theories as well. The majority of this "thicker-engagement" party holds the position that although theistic belief has little to contribute to the natural sciences, it can provide content to theories of the social sciences such as the teaching that humans are morally responsible for their actions. Fundamentalists extend this by insisting that revealed truths can yield positive content for virtually every science. And some theists have proposed still other ideas of thicker engagement. For example, recent writers have claimed that theism's positive contribution to science is not so much that of providing actual content to theories as that religious ideas inspire scientific ideas. There are permutations on these views, of course, and a number of mix-and-match combinations of them are possible.

In what follows I write as a theist who agrees with the thicker-engagement position, but who finds all its presently popular versions to be deficient. What I offer here is a distinctive interpretation of the S/R relation according to which religious belief engages science in a way that is not merely thick, but pervasive; yet at the same time it denies that the engagement consists primarily in scripture (or theology) supplying content to theories. Because the position is complex, I will not have the space to critique the other views in detail. Their relative weaknesses will be exposed only indirectly by defending the view to be presented. There is room for only the following preliminary comment on them.

It seems clear to me that each of theistic versions of the S/R relation is able to point to cases which instantiate it. Surely, it can't be wrong for a theist to say that a theory must be false if it outright contradicts a tenet of Theism, and it seems equally certain that there are theistic teachings that should be included in theories. The fundamentalist goes too far, in my opinion, by regarding scripture as a sort of encyclopedia of inspired information on virtually every topic. But despite the scriptures' distinctly religious focus, they do occasionally speak on issues that can bear even on natural sciences – as when they teach the universe is not eternal, or speak of laws, space, and time as created by God. And, finally, there seem to be clear cases of scientific theories having been inspired by religious or theological ideas. But even if each of these ideas of the S/R relation is at times true, it seems equally plain that merely citing such instances is not sufficient to justify the claim that any of them is the right way to think of the S/R relation *generally*,

or even that it's the most important part of that relation. Instead, advocates of each view simply apply their favored idea to various issues while ignoring the other positions (except for fundamentalism which attacks, and is attacked by, all the others). The discussions therefore strike me as both one-sided and dogmatic, and lacking in the sort of analysis that could uncover any deeper metaphysical underpinnings to the S/R relation.

The main reason for this sorry state of affairs, I suggest, is that in all views of the S/R relation a crucial element is missing from the discussion. That missing element is nothing less than *a clear definition of the nature of religious belief*. There are, by contrast, many attempts to account for the nature of scientific theorizing. So it is troubling that present discussions of the S/R relation are deafeningly silent about the general nature of religious belief and seem to assume that it is unnecessary to be precise about what religious belief is in order to gain clarity about its relation to science. In fact, abstracts of some papers for recent S/R conferences provided on the Templeton listserv have actually asserted that there is nothing to be learned in this direction! "We all know what religion is", one of them said, "so let's concentrate on science." But isn't it implausible that we can explain the relation between two enterprises without a clear definition of *both* of them? And isn't it just possible that discovering what counts as a religious belief might go a long way toward also discovering the correct idea of the general S/R relation?

The rest of this paper is dedicated to the proposition that the answer to these questions is "yes". I will argue that an essential definition of religious belief is possible, actual, important, and allows us to uncover an otherwise hidden level of interaction between religion and science which is in fact their most general and pervasive relation.

II. SOME REMARKS ON DEFINITIONS

1. Narrowing the Scope of the Term "Religious"

The first thing that must be avoided is ambiguity in the adjective "religious". The term could be used to connote the subjective manner in which a belief is held or used. In that case it might include such features as: being held consciously and fervently, being given great (or even supreme) importance, being used to inspire worship and/or enforce a moral code, or being accompanied by emotions such as awe, penitence, humility, and gratitude. Important as these subjective accompaniments are in many cultic religious traditions, they do not get at the meaning of the adjective "religious" as a modifier for "belief" that can distinguish religious belief from non-religious belief. Every party to the discussion appears to agree with this point since all of the specific relations they've proposed as prototypes of the general S/R relation concern the *content* of religious beliefs vis a vis science rather than the subjective manner in which those beliefs are held or used. I think they're right to do that for two reasons. First, because the components of these subjective attitudes can just as well apply to the game of golf as to belief in a divinity. Someone can regard golf with fervor, awe, and value it above all else although golf is no more a religion than religion is a sport. Second, because there are actual religious beliefs lacking every one of those components. Clearly, then, what is needed is to define religious belief by finding what they have in common. Then we could look for the most general sort of relation between their common component(s) and the scientific enterprise.

2. Essential Definitions

Any essential definition has two requirements that are notoriously difficult to meet. On the one hand, it must pick out characteristics true of everything that is a member of the class being defined or it will be too narrow; on the other hand, what it picks out may not apply to anything that is clearly not a member of that class or it will be too broad. Since these difficulties can baffle the best attempts to formulate such definitions, we often settle for something less precise. In the past thirty years a number of influential scholars have concluded that settling for less is exactly what must be done for "religion".¹ But whether that's true for religion as a whole is beyond my concern here. My claim is that we can get such a definition for the nature of religious *belief*, whether or not it can be done for religion as a whole.

Even when an essential definition can be formulated for a class of things, there are often difficulties that plague its acceptance. There is something disturbing about paring back the characteristics of a type of things till we're left with just the features shared by all and only that type. Such definitions can be surprising or disappointing, and can be rejected for those reasons. Take the case of defining what counts as a tree. Everyone easily recognizes many things as trees, and yet it is hard to state exactly what features are shared by all but only trees. Once formulated, however, the definition can be disappointing since so much that is obvious or valuable about trees is not included - their beautiful foliage, shade, or uses as wood, for example. And surely we can expect similar disappointments from defining "religious belief". Restricting ourselves to its essentials all but guarantees that much of what people usually associate with the religion(s) they know best will not appear in the definition. Moreover, some people even think that religion is distorted by the very project of definition. So it needs to be kept in mind that the sort of definition I'm seeking doesn't *do* anything to religious belief as practiced. It's not to be a definition of the whole of "religion", nor has it anything to do with over-intellectualizing actual religious experience and life. What I'm seeking is no more an over-intellectualization of religion than defining marriage is an over-intellectualization of love.

We need to recognize, too, that the more initial imprecision there is about a type of things the more likely it is that formulating its clear definition will produce surprises. For example, many years ago whales were classed as fish. They had bodies shaped like fish; they lived their lives in oceans and swam like fish. But in time they were reclassified as mammals. There were good reasons for this. Whales have four-chambered hearts and are warm blooded; they lack gills and breathe air with lungs, and they both bear their young alive and nurse them. So despite their very fish-like tails and fins, and despite the fact that they cannot live on land but spend their lives in oceans, whales are defined as mammals. Perhaps this redefinition was surprising to some people when it was first put forward, and perhaps it was even offensive since it means that whale bodies have more in common with human bodies than with fish bodies! But it was not wrong for those reasons.

III. MISUNDERSTANDINGS OF RELIGIOUS BELIEF

Because the most widespread understandings of "religious belief" are both

seriously mistaken and deeply entrenched, I can't simply ignore them. So before proceeding to the defining element(s) of religious belief, let's briefly consider why the popular ideas won't do. In criticizing these ideas I will make use of an undefended assumption, namely, that although belief in a god is not the only sort of religious belief, it is indeed one sort. Therefore any definition entailing that belief in a god is not a religious belief will be rejected as absurd. I'll call this the "god rule".

1. Religious Belief is Belief in a Supreme Being

Many people think this is not only a good definition, but even suspect that all religions actually believe in the same Supreme Being under different names. The reason this seems plausible in Europe and North America is that the theistic religions dominant on those continents – Judaism, Christianity, and Islam - do in fact all believe in one God who created the universe. So this definition would be quite right if theisms were the only possible religions. But that is far from being the case.

Many religions are polytheistic, and in some of them there is no one supreme god. Thus the definition violates the god rule because it requires that people who believe in many gods but have no Supreme Being, have no religious belief whatever. Moreover, there are yet other religions that are literally atheistic and do not believe in any gods! Brahmin Hinduism and Theravada Buddhism are examples.² According to the Brahmin theology, the gods of popular Hindu worship and practice are but accommodations of religious truth to the level of the average person. The Divine (Brahman-Atman) is not a person or even an individual but is "Being-itself". So religious belief cannot be defined as belief in a Supreme Being since that would force us to say that Brahmin Hinduism, Theravada Buddhism, and polytheisms with no supreme god are all ruled out as religious beliefs.

2. Religious Belief Inspires or Supports Worship

This definition is also clearly defeated by Brahmin Hinduism and Theravada Buddhism, since neither practices worship.³ Nor are they the only examples. Aristotle believed in a being he alternately called the "prime mover" and "god". But since he also held that this god neither knows nor cares about humans, he neither advocated nor engaged in its worship. Similarly, the Epicureans believed in many gods but also never worshipped them for the same reasons as Aristotle's. So making inducement of worship a defining feature of religious belief fails because there are forms of two major world religions that lack it and because it violates the god rule.

Nor will it help to reply that it's ritual taken broadly, not worship construed narrowly, that is a hallmark of religious belief. No matter how broadly we construe the notion of ritual it will still be inadequate to distinguish religious beliefs since so many rituals are not religious. Think of the rituals accompanying swearing-in ceremonies, graduations, inductions into clubs, national anniversaries, and even birthday celebrations. Gathering around a cake with candles on it and singing "happy birthday" is surely a ritual, but not a religious one. If there were a specific list of rituals associated with only religious beliefs, this might work. But in fact there's a huge list of activities that are at times religious and at others not: burning down a house, setting off fireworks, fasting,

feasting, having sexual intercourse, singing, chanting, cutting oneself, circumcising an infant, covering oneself with manure, washing, killing an animal, killing a human, eating bread and wine, having one's head shaved, etc. The only way to know which rituals are religious is to know what those who take part in them *believe* about them. Without that, even an act of prayer can be indistinguishable from fantasizing or talking to oneself. So trying to determine which beliefs are religious by looking at the rituals they give rise to doesn't work since we'd need to know whether the beliefs that motivated the rituals were religious in order to know whether the rituals were.

3. Religious Belief is Belief in Our Highest Value

This definition appears more plausible than it deserves because of the way we sometimes speak of peoples' obsessions as their "religion" – as when a golf fanatic jokingly calls golf his religion. But even if someone's love of golf, or career, etc., is like the devotion and fervor of saints or prophets, that won't make it true that religious belief concerns what is valued most. In fact, there are good reasons to think it's *not* true.

For starters, we can notice that there are polytheistic traditions whose gods are counter-examples to this definition because they are little valued or even hated. So this definition turns out to violate the god rule. Nor are those the only counter-examples; Christianity is one too! For although what a person values most figures importantly in Christian teaching, God himself is not the supreme value or a value at all. What a Christian is supposed to value above all else is God's *favor* (Matt. 6:33). If that's right, then belief in God is neither itself a value nor the belief in a value, but *the basis for the proper ordering of all values*. Unless a person already believed in God's existence and in the faithfulness of his covenant promises, that person could not possibly value God's favor and Kingdom above all else (Heb. 11:6). So belief in God is not religious because it's what a Christian values most; rather, what a Christian values most is a result of his or her belief in God. Thus belief in God and the valuing that results from it cannot be identical.

IV. A DEFINITION OF RELIGIOUS BELIEF

1. Locating What Religious Beliefs Have in Common

Let's start by observing that every religious tradition regards something or other as divine. That seems true enough, but not very enlightening; it simply shifts the problem to finding something common to every idea of "divine". Can this be done? It doesn't take much reflection to see why it appears hopeless. Even if we confine our search only to a few traditions - say, the theistic idea of God, the Hindu idea of Brahman-Atman, the idea of Dharmakaya in Mahajana Buddhism, and the idea of the Tao of Taoism - isolating a common element would be a daunting task. And if it could be done for them, we'd then have to discover the same element(s) in every other idea of divinity: those of ancient Egypt, Babylon, Palestine, and Greece, of China and Japan, of the Pacific islands, of Australia, of the Druids, and of the tribes of Africa and North and South America. So isn't it painfully obvious that there is no common feature to the all these divinities?

Tackled in this way, I agree the project is impossible. If an essential definition

requires finding a property common to every candidate for divinity, then surely their natures are so diverse as to have no feature in common. But this is not the only way such beliefs can have a significant common element. We could also look for commonality in the *status* of divinity rather than in the natures of all putative divinities. To illustrate this difference, consider the two ways we can understand the question: “Who is the President of the US?” We could take it to ask for a description of the person holding that office, and answer by describing that person. Or we could take the question to be about the *office*, and answer by stating the duties, powers, and limitations of the Presidency. The difference is important. If an election were in dispute people could disagree as to the description of the candidate who was now really President, but still agree on the office to which they claim their candidate was elected. Similarly, although people differ widely over the right description of *what* is truly divine, there could still be common agreement among all religions as to *what it means to be divine*.

Just such an agreement is exactly what I have found to be the case! After more than forty years of study in comparative religion, I have never found a religious tradition that fails to regard the divine status as that of *having unconditionally, non-dependent reality*. The divine is whatever is “just there” while all that is non-divine depends for existence on the divine. This is not to say that every myth or body of teaching has been precise about this point, or has used such expressions “non-dependence”, “self-existent”, or “absolute”, etc. Some simply trace everything non-divine back to an original something the status of which is neither emphasized nor explained. But in such cases the original something is still spoken of as though it has independent reality; all is traced back to it and there is nothing it is said to depend on. Thus it is tacitly given non-dependent status so far as the teaching goes.

It must also be added, however, that religious beliefs are not *confined* to identifying what has divine status. Many are about how all that is non-divine depends on the divine, and others are about how humans can acquire the proper relation to the divine. To cover these additional senses of “religious belief” as well, our definition must have three parts:

A belief, B, is a religious belief if and only if:

1. B is a belief in something as divine no matter how that is described or
2. B is a belief about how the non-divine depends upon the divine, or
3. B is a belief about how humans may stand in proper relation to the divine, where
4. the meaning of “divine” is (minimally) having the status of utterly unconditional reality.

I find this definition to cover the plethora of religious beliefs while no other does. For openers, it can locate a common element among the God of theism, Brahman-Atman, the Dharmakaya, and the Tao - the list that earlier appeared so daunting. Moreover, it is also true of: Nam in Sikhism, Ahura Mazda (Ohrmazd) in early Zoroastrianism or Zurvan in its later development, the soul/matter dualism of the Jains, the high god of the Dieri

Aborigines, the Mana of the Trobriand islanders, Kami in the Shinto tradition, the Raluvhimba of Bantu religion, and the idea of Wakan or Orenda found among native American tribes. It holds as well for the ancient Roman idea of Numen, for Chaos or Okeanos as found in the myths of Hesiod and Homer, and for a host of beliefs found in other ancient myths. I can't, of course, claim to have investigated every religion that ever existed, or to know that there's no religion yet to be discovered which doesn't have this idea of divine status. But I can say that neither I nor any of the other thinkers who have endorsed this definition⁴ have ever come across a religion that fails to regard as divine whatever they identify as the non-dependent reality (or realities) on which all that is non-divine depends.

2. Some Confirming Consequences

In addition to covering the field and avoiding the difficulties found in other definitions, this definition helps clarify some important differences and unique features of certain religious beliefs. For example, it is well known that in theism there is but one God who is the only divine reality, so that God and divinity are identical. In these traditions everything other than God is creation, and the creation is not divine. By contrast, however, other religions believe there to be a difference between what is divine per se and their gods. That is, they believe in a per se divine reality that is the source of the gods and goddesses as well as of humans and the rest of the non-divine world. The ancient Greek and Roman myths are examples of this. Hesiod and Homer called the divine reality Chaos and Okeanos, while it was called Numen in ancient Roman religion. And there are similar beliefs in other polytheisms both ancient and contemporary. This explains why the individual gods of such religions do not fit the definition just given for "divine". It's because in those traditions individual gods do not have unconditional existence but are beings *thought to possess more divine power than humans do*. Their religious importance lies in their super-human powers and in their being the means by which humans can properly relate to divinity per se.

The definition also sheds light on the fact mentioned earlier that in some polytheisms where the divine and the gods are not identical, there are gods which have no important role in human affairs or are even malevolent.⁵ It has puzzled some scholars how belief in such gods could arise despite their not doing anything good for those who believe in them. This definition makes it clear why this is possible - and is the only one that does so - by making clear why it is not beneficence or usefulness to humans that is the defining characteristic of divinity or of a god, but non-dependence which characterizes divinity and greater participation in divine power which characterizes a god.

Yet another feature of the different ideas of the divine which this definition handles is the large variety of ways the non-divine can be thought to depend on the divine.⁶ For example, there are religions which believe all non-divine things to be partly divine, while in others there are two or more divine principles and every single non-divine thing is partially dependent on both. Still others hold that a particular range of non-divine things depends on one divinity while another range of non-divine things depends on another. There are also religions that believe in a whole realm of divine beings, thus increasing the number of ways these can be thought to relate to one another and to the non-divine world. This definition covers all these variations.

V. REPLIES TO OBJECTIONS

1. The Definition is Too Broad

The most frequent objection to this definition is that although it seems to cover all religious beliefs, it also seems to make some non-religious beliefs count as religious because it defines *anything* believed to have unconditional reality as a divinity belief. The rub is that this would include not only the divinities of traditional religions but also the proposals of many metaphysical and scientific theories such as matter, Forms, numbers, monads, substances, sense perceptions (or their “permanent possibility”), logical sets and laws, etc. All these - and more - have been overtly defended or tacitly presupposed by theories as being ultimate explainers because they have independent reality. So, it is objected, isn't the definition too broad? Isn't it obvious those are not religious beliefs?

But why is that obvious? To be sure, these beliefs don't occur in the context of a cultic tradition. Neither are they always accompanied by an elaborate set of beliefs and practices concerned with how humans may stand in proper relation to whatever is divine. That's true - but irrelevant! The question wasn't whether such beliefs are *employed* for the same purpose in theories as they are in cultic traditions. Surely they're not. In religions they're aimed at obtaining the proper personal relation to the divine, while in theories they guide the construction of explanatory hypotheses. But how can those differences possibly cancel the fact that something is being accorded the status of divinity in both cases? If unconditional non-dependence is really the essential characteristic of divinity, merely employing such beliefs differently can't alter that fact. *What is shown instead is that beliefs about what has divine status play an important role in theories as well as in cultic traditions.* This happens because whatever serves a theory as its ultimate explainer could only have *that* status if it also had the status of divinity (and the fact that it may be called “metaphysically ultimate” rather than “divine” changes nothing, so long as the status of unconditional reality is ascribed to it.). Thus determining what has divine status turns out to be as crucial for theories as it is for religion. Whatever has that status is the ultimate guarantor of human destiny in a religion, and is the ultimate explainer in a theory.⁷

If this sounds strange, recall some of the points made earlier: in many cultic religions the divine isn't personal; in a number of religions the divine isn't worshipped, and in several religions the divine is matter. Moreover, some religions have no ethic attached to them. For these reasons the “too-broad” objection strikes me as nothing more than the narrowly culture-bound reaction that it's too different from what the objector is most familiar with. It stems from taking, say, belief in God as the proto-type for all religious beliefs, and regarding a belief as religious only to the degree it is like the proto-type. So notice that if this objection is allowed to count against the religious nature of the beliefs that guide metaphysics and science, then it must also count against the religious nature of the divinity beliefs of the ancient Greek Mystery religions, Brahman Hinduism, Theravada Buddhism, and a number of other religions.

One final point. It can't be denied that Bible writers regard taking anything other than God as unconditionally real to be idolatry as it is ascribing to something other than God the status that belongs only to God. So if belief in God is the true religious belief,

how could believing anything else to have divine status fail to be a contrary *religious* belief? Matter, numbers, sense perceptions, logical sets and classes, etc. are different ideas of *what* is divine from the idea found in the biblical writings, but they have clearly been accorded divine status so far as *what it means to be* divine.⁸

2. A Belief is Religious Only if Taken on Faith

This objection says that even if the status of non-dependence correctly picks out what is common to all divinity beliefs, that still doesn't make every such belief religious because it is also essential that religious beliefs be taken on faith. The difference, then, is in the *ground* of a belief rather than its content. Such beliefs are religious when taken on faith, whereas if they are held on the basis of arguments and reasons they're metaphysics.

The first thing to notice is that this objection violates the god rule, having the utterly implausible consequence that belief in God is non-religious for anyone who accepts any proof of God's existence! What is worse, its plausibility depends on assuming that "faith" means belief without any evidence or belief beyond the evidence. This is a widespread misconception, but it is still a misconception; it is not a biblical use of "faith". No Bible writer *ever* uses "faith" to mean blind trust that God is real. The biblical use of "faith" always means trusting the *promises* of God, while the existence of God is called "knowledge".⁹ This is why Augustine, Aquinas, Luther, Calvin, and Pascal – to name but a few - all held the existence of God to be certain knowledge rather than evidentially deficient belief. The defense of this point is a complex issue that can't be adequately argued here, so I can only say that a number of recent works in the epistemology of religious belief have offered convincing defenses of it. These show why there are as good reasons for saying that belief in God can be knowledge without proof as there are for saying that logical and mathematical laws can be knowledge without proof.¹⁰

I find, therefore, that there simply is no good objection to the definition offered above. Taking it to be correct, I will now argue that: 1) any scientific theory is bound to contain or presuppose¹¹ some metaphysics and 2) any metaphysical view is bound to contain or presuppose some religious belief. If this is right, an important consequence for the S/R relation follows immediately, namely, that *understanding the S/R relation as the project of harmonizing two independent sources of information is seriously misguided*. No (consistent) metaphysical or scientific theory can fail to be compatible with its own presuppositions, just as it can't fail to be incompatible with presuppositions contrary to its own. *Thus the project of harmonizing a theory with a divinity belief is either unnecessary or impossible*.

Let me reiterate right away that religious and metaphysical beliefs more often guide a theory by *regulating* it rather than providing *constitutive* content. Such presuppositions set parameters for hypotheses rather than supply the hypotheses themselves; the presuppositions under-determine which particular entities a theory will postulate. So I am not suggesting that a scientist who holds religious belief A will propose or accept hypothesis X, whereas a scientist who holds religious belief B would propose or accept hypothesis Y instead. My claim is that *one or another divinity belief regulates how any theory conceives the nature of whatever hypothetical entities it proposes*. For example, if matter is regarded as divine, then some form of materialist metaphysics is assumed and the postulates of the scientific theory will be *physical*. By the

same token, if sense perceptions are accorded divine status, then a phenomenalist view of reality is assumed and the hypothetical entities will be exclusively *sensory* in nature. For a theory to do otherwise would be for it to postulate entities while at the same time admitting those postulates are not the real explanation of whatever they're being offered to explain. So if, say, a materialist postulated a non-physical entity to explain anything, it could only be as a pro-tem, stopgap measure pending the real explanation. The upshot is that whenever a theory presupposes some kind of properties-and-laws found in creation (physical, sensory, logical, etc.) as qualifying the nature of divinity, that belief requires that *the nature of its postulated entities correspond to the nature of whatever is believed to be divine*. And there is no way to avoid the issue of the *nature* of the entities postulated by a theory. It's never enough just to say, e.g., there are atoms. We have to know what *kind* of a thing an atom is to know what it can explain.

VI. RELIGIOUS BELIEF, METAPHYSICS, AND SCIENCE

The foregoing description applies equally to the construction of both metaphysical and scientific theories. The central issue in metaphysics is to specify the ultimate nature of reality. Traditionally, the way such theories have been tackled is by picking a particular kind of properties and laws things exhibited by the objects of our experience as the essential nature of all reality because it is the nature of whatever has non-dependent existence. The theory then explains all the rest of reality as either identical with, or dependent on, the divine reality. Whatever can't be understood in those ways is dismissed as illusion. Examples of such theories were mentioned in the list given earlier, which I'll now repeat in a more precise way. This time I'll use italicized adjectives for the *kinds* of properties (and laws) selected to qualify the nature of the divine, and will use unitalicized nouns to name the class of entities supposed to possess that nature and thus have non-dependent existence. A brief list of samples from the history of metaphysics goes like this: *mathematical* laws, sets, or numbers; *physical* matter/energy; *sensory* perceptions; *logical* sets, laws, or Forms – to name but a few. Combinations of these have also been advocated, claiming that reality is ultimately: *logical* Forms and *physical* matter, *sensory* perceptions and *logical* categories, *logical* minds and *physical* bodies, etc. Thus metaphysics plays an intermediary role between divinity beliefs and scientific theories, and it does so by regulating not only the natures of scientific postulates, but also the very notion of “explain”. For once the divine is located within the universe, what else could an explanation consist of than showing how that which is to be explained is either eliminated in favor of, identical with, or dependent on, the divine? In other words, from a pagan religious outlook, explanation can't mean anything other than some form of *reduction*.¹²

Let me reiterate that this does not mean that there's no difference between metaphysics and religion. As I said earlier, in cultic religions a divinity belief is the basis for other beliefs about how to acquire the benefits of a proper personal relation to the divine. By contrast, metaphysics primarily uses a divinity belief as the basis for constructing explanatory theories. That's an important difference in emphasis, but not one that cancels the religious character of a divinity belief. For whatever is taken to have ultimate reality regulates the explanation of *all* the rest of reality - human destiny included. If anyone wants to say that when such a belief occurs in a metaphysical theory

it can just as well be called metaphysical as religious, I won't quibble about terms - so long as that isn't taken to mean it has been stripped of its religious import. A divinity belief is the point at which religion and metaphysics converge and so can be spoken of, used, or evaluated, in either way. But even in a metaphysical context it still purports to yield personal benefit by supplying the correct view of human nature and destiny.

VII. THREE SAMPLE THEORIES FROM SCIENCE

We have now seen the sense in which scientific theories are regulated by some metaphysics, and any theory of reality is regulated, in turn, by some divinity belief. To illustrate this I will now offer a brief account of how the three major versions of atomic theory held in the 20th century varied relative to what they presupposed as divine.

Ernst Mach held the view that atomic theory is a "useful fiction" because he took the nature of all reality to be *sensory*. For him, all that we can know to exist are sensations and the feelings that arise from them. So there are no distinctively *physical* properties or laws. He says:

If ordinary matter [is] a...natural,
unconsciously constructed mental symbol
for a...complex of [sensations], much
more must this be the case with the arti-
ficial hypothetical atoms and molecules
of physics and chemistry?¹³

Moreover, Mach is clear about the metaphysical ultimacy (divinity) his view ascribes to the sensory:

The assertion, then, is correct that the world
consists only of our sensations. In which case
We have knowledge *only* of sensations.¹⁴

By contrast, Einstein takes physics to be about real, exclusively physical things that exist independently of us and are, in fact, the cause of our sensations. He holds this view despite admitting that we never directly experience anything physical. So whereas Mach starts by taking all we experience to be sensory and claims we can't get past that, Einstein agrees that all we experience is sensory but denies we can't discover that there's more. This is because although our perceptions are purely sensory, our concepts have a *logical* nature that is independent of sensation:

the concepts which arise in our thought...
are all... the free creations of thought which
cannot be gained from sense experiences...¹⁵

This is what makes it possible for us to infer the existence of physical objects independent of our sense perception:

...the concept of the "real external world"

of everyday thinking rests exclusively on sense perceptions... what we mean when we attribute to the bodily object a "real existence" ... [is] that, by means of such concepts...we are able to orient ourselves in the labyrinth of sense perceptions.¹⁶

Anyone familiar with the history of metaphysics will immediately recognize this as virtually the same position made famous by Descartes. For both Descartes and Einstein the mind contains both sensory percepts and logical concepts while extra-mental reality consists of physical/spatial objects. Although perception never directly acquaints us with anything extra-mental, logical/mathematical thinking enables us to conceive of physical objects and to confirm that they exist. As Descartes summed it up:

...all things which, generally speaking, are comprehended in the object of pure mathematics, are truly to be recognized as external objects.¹⁷

Einstein admits this means that we are less than certain there are physical objects, and calls belief in them "the physicist's faith". But he adds that the successes of science "give a certain encouragement to this faith."¹⁸

Is there a divinity belief regulating this view? Einstein thought so. Besides the independent existence of the physical/spatial world, he also acknowledged the divinity of the logical/mathematical principles which make possible both human thinking and the order of nature.

I cannot conceive of a God who rewards and punishes his creatures, or has a will of the kind we experience in ourselves. I am satisfied with... the awareness and glimpse of the marvelous structure of the existing world...of the Reason which manifests itself in nature.¹⁹

The difference between Einstein's and Heisenberg's views of the nature of reality is subtler than the difference between Mach and Einstein. Both Einstein and Heisenberg believed in the divinity of both the physical world and the principles of rationality, with the latter both ordering the world and making human thought possible. But for Einstein rational principles can be known for certain to govern our thinking minds, whereas it is uncertain to what extent they apply to the purely physical reality outside our minds. That is why he called belief in an external world the physicists' "faith".

Heisenberg, however, takes a more restricted view of rationality than Einstein did. For Heisenberg it was not logical *and* mathematical laws that chiefly characterize rationality, but the mathematical alone. So while he, - along with Einstein - holds that the extent to which our logical concepts apply to reality is doubtful ("we do not know how far they will help us to find our way in the world"), he maintains that mathematical concepts are immune from that doubt. For him, the mathematical order of reality is

universal and certain because it is the very nature of reality; mathematical laws govern everything absolutely. This means that although the extra-mental realities physics deals with are forms of energy, they have an essentially mathematical nature. Thus he affirms the old rationalist motto: “the real is rational and the rational is real” while Einstein holds only to the first part, that the rational is real. So while they all believe that whatever mathematical thinking can calculate is to be taken as real, they disagree on the second part as to whether every real thing is mathematically calculable. Whereas Einstein held that real objects might have properties we can't calculate mathematically, Heisenberg denied it:

...when modern science states that the proton is a certain solution of a fundamental equation of matter it means that we can deduce mathematically *all possible properties of the proton* and can check the correctness of the solution by experiments *in every detail*. (Italics mine)²⁰

Clearly, the difference of Heisenberg's view of physics from Einstein's was due to the different metaphysics he employed, which in turn rested upon a different religious conviction concerning the nature of divinity. For Einstein, reality has a non-rational side as well as a rationally ordered side, and each side has its own independent (divine) principle. But for Heisenberg all reality is essentially mathematically ordered – a view he admitted to be a religious conviction:

...we may hope that the fundamental law of motion will turn out as a simple mathematically simple law...It is difficult to give any good argument for this hope...[It]... *fits with the Pythagorean religion* and many physicists share their belief in this respect, but no convincing argument has yet been given to show that it must be so.²¹ (Italics mine)

VIII. THE GENERAL S/R RELATION

A similar case can be made for the religious regulation of theories in every other discipline from mathematics to ethics.²² And this provides a powerful case for the view that the most general S/R relation lies at the level of divinity beliefs acting as regulative presuppositions to theory making. That doesn't mean there is no work to be done dealing with conflicts between specific hypotheses and specific religious beliefs, or with occasions on which a religious teaching may actually be part of a theory. Ditto for cases of specific religious ideas inspiring a specific scientific hypothesis. These have their place. But none of these can be properly evaluated without examining the metaphysical/religious presuppositions that determine the precise meaning of a hypothesis. Without recognizing this underlying relation, trying to understand the specific ways this or that religious belief may relate to this or that hypothesis is like trying to understand the

outline of the continents by examining the impact of each wave on their shoreline while ignoring the movement of their tectonic plates. Waves make some difference to a shoreline, just as specific religious concepts occasionally impact scientific theories and vice versa. But the first isn't the best way to explain the shape of the continents any more than the second is the way to explain what is most basic to the S/R relation.

But if there are distinct interpretations of scientific hypotheses that vary with whatever is believed to be divine, *this means that there should be an interpretive stance for scientific theories that is unique to theism*. To put the same point another way: if every other belief about what is divine makes crucial differences to metaphysics and hence to science, why would belief in God be the only one that doesn't? This must especially be the case if the belief that God alone is divine rules out anything else as having that status. In that case it's not the mathematical, physical, sensory, logical, or any kind of properties and laws found in creation that qualify the ultimate reality and explain all the non-divine kinds. So how could this view fail to make a difference?²³

IX. A THEISTIC PERSPECTIVE FOR METAPHYSICS AND SCIENCE

1. The Perspective Approximated

The earliest theories we know of were invented by thinkers who did not know God. So what the Psalms, prophets, and New Testament say is typical of fallen humanity was true of these people too: they took something about the created universe to be divine rather than God (Romans 1:25). As Werner Jaeger put it, "When Hesiod's thought at last gives way to truly philosophical thinking, the Divine is sought within the world – not outside it as in Judeo-Christian theology that develops out of the book of Genesis."²⁴ The paganism of the Greek thinkers, e.g., was expressed in their holding the divine to be earth, air, fire, water, atoms, numbers, matter, and Forms plus matter. And from the start, such theories defended their candidates for divinity with the strategy we now call "reduction": they argued that everything is either identical with, or dependent on, their favored candidate for divinity.

Unfortunately, when theists joined the theory-making enterprise they generally pursued the same reductionist strategy for explanation. Despite the fact that they recognized and rejected the pagan religious assumptions behind that strategy, they failed to recognize that it is by requiring its rejection that theistic belief can play its proper regulative role. So instead of developing distinctively non-reductionist theories, most theists attempted to neutralize the paganism of the reductionist strategy so as to maintain the strategy itself. To do that, they devised a simple ploy, namely, they stipulated that whatever it is in creation that everything else reduces to, in turn depends on God. In this way everything still depends ultimately on God, even though the resulting theories still explain their data in exactly the same way whether the theistic stipulation is appended or not. So although the explanatory power of a theory still rests entirely on something in creation, that something is taken to be a penultimate rather than the ultimate reality. This allows belief in God to be compatible with virtually any theory, and so supports the idea that belief in God has no role for theories other than ruling out those that flatly contradict it. It leads to a position that an atheist philosopher once criticized this way: "Don't you see that God is just a fifth wheel for theories? It makes no difference to the content of a

theory whether you add belief in God or not, so why bother?”

2. The Universal Impact of Religious Belief

The most regrettable thing about this ploy for making reductionist hypotheses theistically acceptable is that it is outright denied by biblical teaching, and thus violates its own rule that a theory is unacceptable if it contradicts revealed truth! The texts referring to the fear of the Lord as “the principle part of wisdom and knowledge” (Ps. 111:10; Pr. 1:7, 9:10, 15:33; Jer. 8:9) are well known, of course, but are often dismissed as poetic hyperbole. So I’ll pass them by for now. More significant is Jesus’ remark in Luke 11:52 that those who distort God’s law have “taken away the key to knowledge”. Notice he does not say – as those who try to retain reductionist theories would have it – that distortions of God’s word take away the key to the knowledge *of God*. He just says “knowledge”. Those who favor the ploy for keeping reductionist theories may want to claim the expression is elliptical in this respect. But compare it to I Cor. 1:5 where St Paul asserts that knowing God through Christ has enriched us with respect to “*all* wisdom and *knowledge*”. This doesn’t sound at all like hyperbole or an elliptical expression, and it can’t mean only the knowledge of God. For in later in the same book (12:8) he speaks of the various gifts God gives to believers, and includes the gift of knowledge. Then, in chapter 13 he says that the gift of knowledge will pass away along with other gifts such as tongues and prophecy, but the knowledge of God will be perfected. Hence the knowledge that is impacted by knowing God is not (redundantly) the knowledge of God. Finally, it’s important to notice the way many scriptures use the metaphor of light to stand for truth, and use being “enlightened” to mean acquiring knowledge. Psalm 43:3 confirms this usage when it declares “send out your light, even truth”. So when Ps. 36:9 asserts that “in [God’s] light we see light” it certainly sounds *prima facie* that it is saying precisely what I Cor 1:5 says, namely, that the knowledge of God plays a key role in the acquisition of all other sorts of truth. The New Testament continues the use of these metaphors. For example, II Cor. 4: 3-6 says that unbelievers are blind to seeing the light of the gospel and affirms that this “light” is the “knowledge of God”. With this in mind, Eph 5:9 gives the strongest statement of all by insisting that the consequences of that light are to be found “in *all* that is good, just, and *true*”.

I conclude, therefore, that the cumulative effect of these passages is to teach that no knowledge is religiously neutral. And that bequeaths to us the question of understanding how belief in God could have such a universal impact. Surely it can’t be the fundamentalist program of deriving (or confirming) theories from scripture; not even the most fervent fundamentalist ever thought that *all* knowledge and truth could be so derived! But what if this point is taken in conjunction with the way we’ve now seen divinity beliefs impact even the most abstract theories? What if we understand it to refer to the way belief in God can regulate how the natures of postulates are conceived? We have noted how the reductionist strategy for explanation originated with the religious outlook that identified the divine as some part or aspect of the created universe. And we have seen why the traditional ploy for neutralizing the anti-theistic roots of that strategy fails. So why isn’t the most plausible interpretation of the universal impact of belief in God precisely that it requires the rejection of reduction? Why not say that the regulative principle to be derived from theism is that since nothing in creation is divine, nothing in

creation is that to which all else is to be reduced? Instead of trying to stay as close to the pagan-based strategy as possible, why not start with the principle that whenever a theory is reductionist it's gone astray?²⁵ (Please notice that this would make non-reduction a necessary but not sufficient condition for a theory. A theory may be non-reductionist and its hypothesis simply wrong; but no matter what truth it hits on, it will be partly false if reductionist.)

At its heart, this principle is no more than an extension of the doctrine that God created the universe. Nothing within the universe is uncreated: no thing, event, state of affairs, or relation, or class of them. Ditto for the kinds of properties those entities possess and for the laws governing them. All depend on God. There is, therefore, no reason for a metaphysics that eliminates either the entities we experience or any of the kinds of properties and laws we experience to be true of them. Nor is there any reason for claiming that there are entities whose nature is to have only the kind of properties that qualify divinity, and then take those entities to be the cause of the existence of all the other kinds of entities, properties, and laws found in creation. (For example, the theory that there are solely physical/spatial things which combine so as to produce new things in which emerge other kinds of properties such as biotic, sensory, logical, linguistic, etc.). From a non-reductionist point of view, there is no created kind of properties and laws that *causes* the existence of the other kinds of properties and laws. Although specific properties of one kind are often preconditions for the *occurrence* of specific properties of other kinds, such preconditions are never the sufficient condition for why there are such other kinds at all. Rather, all the entities found in the universe, along with all the kinds of properties they possess, all the laws that hold among properties of each kind, as well as causal laws, and all the precondition-relations that hold between properties of different kinds, depend not only ultimately, but directly, on God.

This notion of a systematically non-reductionist metaphysics able to regulate scientific theories, is not merely a promissory note or future hope. Such a theory has already been worked out brilliantly and in impressive detail, and I find it to exceed any other I know of in its explanatory power. As you'd expect, it's far too complex to be explained here.²⁶ It does not, however, rest only upon religious objections to reductionism but offers a philosophical critique of it as well. So I will close with a brief statement of (part of) that critique.

3. An Anti-Reductionist Argument

The key issue for the reductionist strategy is its claim to have located in creation the *kind* of thing(s) that exist(s) independently. That is the reductionist's reason for explaining by reducing everything else to that kind of thing. Thus the reductionist – whether pagan or theist – has to say that whatever is identified as basic to everything else is basic in the sense of being able to exist independently of the things it explains.

So let's now focus on the alleged independence of any particular *kind* of things. Can any kind of properties and laws so much as be conceived apart from all the others? Reduction says, yes. It claims the basic realities are purely *physical*, or *sensory*, or *logical*, or whatever. To see if this makes sense, I ask that you now perform a thought experiment. The experiment is to try to think of any of these kinds of properties and laws as having independent reality. In other words, let's try to conceive of what it would mean

for anything to be *exclusively* physical, or sensory, or logical, etc. Can we really do this? To make the experiment more specific, let's try it on the three views of an atom we discussed earlier. Start with Mach's theory.

Try to conceive of any meaning for "sense perception" that is *purely* sensory - restricted to only sensory properties. Take your ordinary notion of what you mean by sensory, and one by one strip from your idea every property that is quantitative, spatial, physical, biotic, logical, and linguistic, etc. Now tell me what you have left. When I try it, I get nothing at all. I can't so much as frame the idea of anything as purely sensory. Yet that's what Mach says everything is, and thus rejects that there are physical objects and holds atomic physics to be a "useful fiction".

Now try it for Einstein's metaphysics. Start with his view of percepts. It's the same as Mach's, so if you couldn't conceive of anything purely sensory in the last experiment you won't get anything now either. Next take his view of concepts. As opposed to Mach, Einstein held that our minds contain purely logical concepts in addition to purely sensory percepts. This is what he regarded as our share of the divine Reason in the world. But what is left of the idea of "logical" once it's stripped of all connection to every other sort of property and law? Even the fundamental axiom of non-contradiction says that nothing can be both true and false in the same *sense* at the same *time*. It therefore contains an essential reference to other "senses" (other kinds of properties) and to time. But if we can't so much as conceive of logical properties or laws in isolation, how can we justify the claim that they have independent existence? What reasons can be given for believing the truth of a claim we literally can't frame any idea of? Finally, take Einstein's view of the nature of extra-mental objects. They're supposed to be purely physical. But can you form a concept of anything purely physical? If you strip all that is quantitative, spatial, sensory, logical, and linguistic from your idea of "physical", what is left?

The same conceptual failure plagues the metaphysics of Heisenberg's theory as well. Reality is essentially physical *and* mathematical for Heisenberg (recall that he admitted his view regarded mathematical laws as divine). But once again: can you conceive of what it means for anything to be quantitative if that idea is held in isolation from all other kinds of properties and laws? What, for example, is left of our notion of a law of mathematics if it is stripped of every logical and linguistic property? Can there be a mathematical concept that does not logically distinguish what it includes from what it excludes? Can such a concept both include and exclude the same thing at the same time? Or can we have a concept of a mathematical law that is not expressed in language?

Please don't misunderstand the purpose of this experiment. It is not intended to show that every pagan idea of divinity is false, and still less is it a proof of God. Its purpose is to show that there is no good reason to retain the reductionist strategy for theories. That strategy does not possess powerful theoretical advantages the theist needs to salvage. On the contrary, every argument ever given for every version of it has failed for over 2500 years because every deification of some aspect of the creation is *unjustifiable* because *inconceivable*. Pagan divinity beliefs (like belief in God) are not conclusions of arguments or inferences from evidence; they are imported to science rather than derived from, entailed by, or required by it. *And it is high time theists brought relief to science from the dogma of reduction.*

Consider just one benefit of a nonreductionist standpoint relative to the atomic theories discussed above. From this view, there are no such things as purely physical

atoms, purely sensory percepts, or purely logical concepts. In a non-reductionist metaphysics, everything in the universe has *all* these (and other) kinds of properties and is governed by *all* these (and other) kinds of laws. This means that not only the things of everyday experience, but also the postulates of science are to be thought of as “multi-aspectual”. So if atoms really exist – and surely the evidence for that is overwhelming! – they too are multi-aspectual. Atoms have not only quantitative, spatial, kinematic, and physical properties but also (though in a different sense)²⁷ biotic, sensory, logical, linguistic, and many other kinds of properties, and are governed by every kind of laws that hold in the created universe. This point alone yields a distinctive results for atomic theory as compared with the three just reviewed.

This same approach can yield a distinctively non-reductionist version of theories in math, biology, psychology, logic, etc. as well as physics. There is, for example, a non-reductionist version of human evolutionary origins²⁸ just as there is a non-reductionist view of atoms. In recent years a number of thinkers have produced some remarkable work from this non-reductionist standpoint, and in some cases have actually solved or obviated some long-standing problem in a science. For example, there has been an impressive treatment of the history of physics,²⁹ of the old question as to whether there is a real or only potential infinity in math,³⁰ and there have been innovative cases of problem solving (or avoidance) in biology.³¹ Moreover, I find it significant that an increasing number of non-theistic thinkers in many fields have been calling for, and attempting to develop, non-reductionist theories. But then, why not? After all the years of one-sided exaggerations provoking and being replaced by other one-sided exaggerations, it is high time that theism lived up to its own legacy and delivered science from reductionism by replacing it with a program of thoroughly non-reductionist theories.

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ENDNOTES

1. For example, W.C. Smith, The Meaning and End of Religion. Harper & Row, NY, 1978. See esp. pp. xiv, 11 ff., 141 ff.
2. This shows that atheism and religion are not opposites, and that the rejection of God (or gods) is not the same as having no religion at all. Atheism relates to religion the way vegetarianism does to eating: what someone doesn't believe to be divine doesn't tell us what he does believe to have that status, any more than knowing someone is a vegetarian tells us what she does like to eat.
3. For an account of yet other difficulties with this definition and with several other definitions, see chapter 2 of The Myth of Religious Neutrality, University of Notre Dame Press, (Revised edition, 2005).
4. This definition was held by both Plato and Aristotle, and Werner Jaeger has shown that it was common property of a number of pre-Socratic Greek thinkers (The Theology of the Early Greek Philosophers, Oxford University Press, 1960). In the past century alone it was also held by:
 - Wm. James, The Varieties of Religious Experience (Longmans, Green and Co., NY, 1929, pp. 31, 34);
 - A.C. Bouquet, Comparative Religion (Penguin Books, Baltimore, 1973, pp. 21, 38, 45, 48.);
 - M. Eliade, Patterns in Comparative Religion (The New American Library, NY, 1974, pp. 24 - 30);
 - H. Dooyeweerd, A New Critique of Theoretical Thought (Presbyterian & Reformed Pub Co., Phila, 1955, vol. 1, p. 57);
 - N.K. Smith, The Credibility of Divine Existence (St Martin's Press, NY, 1967, p. 396);
 - Paul Tillich, Systematic Theology (University of Chicago Press, 1951, vol. 1, pp. 9, 13.);
 - Hans Kung, Christianity and the World Religions (Doubleday & Co., Garden City, 1986, p. xvi);
 - C.S. Lewis, Miracles (Macmillan, NY, 1948) chapters 2 & 4.
5. This is so for those religions in which demons and jinn are regarded as minor deities or where there are malevolent divinities such as the Dakota Indian evil Great Spirit. (See The Golden Bough, James Fraser. Macmillan Co, NY, 1951, p. 308.) Plato is also an example since he insisted on an evil world Soul as well as a good one (Laws X, 896.).
6. Even though the monism of Hinduism and Buddhism seems to preclude any dependency relation, the very distinction between the divine and the illusory world (Maya) still leaves a relation to be explained. Hinduism explicitly deals with the point, teaching that Brahman-Atman generates the illusion; Buddhism generally avoids the topic on the grounds that it is spiritually unhealthy to think about the illusory world at all. Cmp. Robert Neville's The Tao and The Daimon (SUNY Press, Albany, 1982, p. 116).

7. Scripture accords this status to God in several places. God's holy name revealed to Moses is said to be: "I am that I am"(Exodus 3:13) which connotes God's self-existence. In Isaiah 42:8 God says: "'I am' is my name; my glory I give to no other, nor my praise to graven images." thereby connecting God's identity with his self-existence which is the glory not to be ascribed to anything else. Is. 6:3 confirms this when it says: "Holy, holy, holy, is the I am of hosts; *to fill* the whole earth is his glory." This connects God's holiness to his self-existence and his self-existence to his being the Creator who fills earth with creatures. Moreover, Isaiah calls giving that status to anything other than God "idolatry" (having a false god). And finally, Revelation 4:8-11, after repeating the quote from Isaiah 6, declares that God is worthy to receive glory, honor, and power, *because* he has created all things.

In short, while the average worshipper may not always focus on God's aseity, the things for which he is most often praised and thanked all presuppose it; God's promises are reliable just because his existence is unconditional and all else depends on him. Cmp. Calvin's remarks: Institutes, I, x, 2 and I, xiv, 3.

8. In many theories, however, it functions both metaphysically and as cultic religion. It provides personal guidance for values, attitudes, ethics, happiness, and a view of human destiny. This is evident for the theories of Pythagoras, Plato, Aristotle, Epicurus, and Lucretius, and also of Hegel, Marx, Bradley, Whitehead, Heidegger, Sartre, and Russell. This prayer to the number 10 evinces that for the Pythagoreans numbers were divine in both the cultic and metaphysical senses:

Bless us divine number, thou that generatest
gods and men! O holy, holy tetraktys, thou
that containest the root and source of eternal-
ly flowing creation. For number begins with the
profound, the pure unity until it comes to the
holy four; then it begets the mother of all,
the all-encompassing, the all-bounding, the
first born, the never-swerving, never tiring
holy ten, the keyholder of all. (T. Dantzig,
Number: the Language of Science. Garden City,
NY, Doubleday Anchor, 1954, p. 42.)

Also keep in mind that some ancient Greek mystery religions referred to the divine as the "everflowing stream of life and matter", and one form of present day Hinduism teaches that Brahman-Atman is matter. This shows that it is not *what* is believed to be divine which makes a belief religious, but whether it is accorded unconditional reality.

9. Bible writers always speak of believers as "knowing God". For example, Deut. 4:35 says that God has revealed himself so that Israel may "know" him, and Psalm 19:7 says that God's word is certain. John 6:69 says that God's people "both believe and *know*" the truth about God, and I Tim. 4:3 also speaks of those "who know and believe the truth". I John 2:21 addresses believers as those who "know the truth and that no lie comes from the truth". Believing God is real, then, is never *mere* belief but is also knowledge.

10. For example:

1) Alvin Plantinga: "Reason and Belief in God" in Faith and Rationality, Plantinga & Wolterstorff Eds. (University of Notre Dame Press, 1983, pp. 16 - 91); and Warranted Christian Belief (Oxford University Press, 2000).

2) Nicholas Wolterstorff: "Can Belief in God Be Rational If It Has No Foundations?" (Ibid. pp. 135 - 186), and "The Migration of the Theistic Arguments: From Natural Theology to Evidentialist Apologetics" in Rationality, Religious Belief, and Moral Commitment, Audi & Wainwright Eds. (Cornell University Press, 1986, pp. 38 - 81).

3) Wm. Alston: Perceiving God. (Cornell University Press, 1991).

4) Roy Clouser: Knowing with the Heart: Religious Experience and Belief in God (InterVarsity Press, 1999).

11. "Presuppose" is used here in a broadly epistemic sense as a belief condition, rather than a strictly logical truth condition. Formally: a belief x presupposes another belief y, if and only if x and y are not identical; one would have to believe y in order to believe x; y is not believed on the grounds of x; and x is not deduced from y.

12. It should be clear by now that not every use of "reduction" is of the ontological sort I'm finding theistically objectionable. A rough breakdown of objectionable types is as follows: 1) Meaning Replacement: the nature of reality is exclusively that of X kind of properties governed by X laws, since all non-X terms can be replaced by X terms with no loss of meaning. (Berkeley, Hume, and Ayer argued this way to defend positivism.) 2) Factual Identity: the nature of reality is constituted by exclusively X kind of properties governed by X laws, even though non-X terms can't be wholly replaced by X terms. The defense of X is that the only or best explanations of everything whatever are those whose primitive terms refer to X properties and laws. (J.J.C. Smart defended materialism this way.) 3) Causal Dependency: the nature of reality is basically constituted of X properties and laws, while there is a one-way dependency of all non-X properties and laws on the X kind. (Aristotle and Descartes defended their theories this way.) 4) Epiphenomenalism: is much like causal dependency except that the non-X kinds of properties are thought to be much less real. They have no laws of their own, e.g., and can't be objects of scientific investigation. (Skinner defended his behaviorism this way.)

These strategies can be combined in various ways. It should also be noted that some thinkers use "supervenience" to designate an order in the appearance of properties without wishing to commit to an ontological reduction in any of the senses defined above. That would be unobjectionable if it didn't entail any of the objectionable types.

13. The Conservation of Energy in J. Blackmore's Ernst Mach (Berkeley: University of California Press, 1972), 49.

14. The Analysis of Sensations, quoted in Blackmore, Ibid. p. 327, n. 14.

15. Ideas and Opinions, (Bonanza Books, NY, 1954), 22.

16. Ibid. p. 290 - 291.

17. Descartes Selections, Ed R. Eaton. (NY: Scribners, 1953), 178.
18. Einstein, *Ibid.* 295.
19. *Ibid.* p.11.
20. Physics and Philosophy. (NY: Harper, 1958), 74 - 75. In reply to this Einstein once quipped: “Not everything that can be counted counts, and not everything that counts can be counted.”
21. *Ibid.* p. 72 - 73.
22. For an account of how such religious regulation also holds for theories in math and psychology see chapters 7 and 9 of The Myth of Religious Neutrality. For the case as to why such regulation is unavoidable, see chapter 10.
23. This bears on the controversy about whether both theists and non-theists should do science as “methodological naturalists”. If that meant only that science, as such, should not appeal to miracles, I’d agree. But it cannot be correct that it’s proper for theists to proceed as though any part of created reality exists independently of the rest of it, and is thus the ground of its existence.
24. The Theology of the Early Greek Philosophers, 17.
25. Notice that although I’ve been speaking of theories, this point has universal impact because it extends to every *concept*, not just every hypothesis. Any concept, fully explicated, is either reductionist or not. The point therefore impacts all truth and knowledge as scripture requires.
26. This point, along with the rest of the non-reductionist theory of which it is a part, is developed in Herman Dooyeweerd's A New Critique of Theoretical Thought (Lewiston: The Edwin Mellen Press, 2005, 4 vols.) His non-reductionist metaphysics is in vol. 3. I have summarized many of its main points in chapters 10 -13 of The Myth of Religious Neutrality.
27. A thing may possess a property actively or passively. Thus objects can be seen (passively) to be red that cannot (actively) see, and objects can be (passively) conceived that cannot (actively) form concepts. In this same way, it is plausible that all things have passive properties of every kind including: biotic, sensory, logical, linguistic, economic, ethical, etc. See The Myth of Religious Neutrality, chapter 11.
28. See my articles: “Genesis on the Origin of the Human Race” in Perspectives on Science and Christian Faith, vol. 43, no.1, March, 1991; and “Is Theism Compatible with Evolution?” in Intelligent Design Creationism and It’s Critics: Philosophical, Theological, and Scientific Perspectives, Ed. R. Pennock. (Cambridge: MIT Press, fall 2001).

29. Time and Again, Marinus Dirk Stafleu. Wedge Publishing, Toronto, 1980.
30. D.F.M. Strauss used a non-reductionist metaphysical basis to solve the old conundrum in mathematics as to whether there is actual or only potential infinity. See "Primitive Meaning in Mathematics: The Interaction among Commitment, Theoretical Worldview and Axiomatic Set Theory" in Facets of Faith and Science, Ed. J. Van der Meer, vol. 2 (Lanham: University Press of America, 1996), pp. 231 ff.
31. In "The Influence of Evolutionary Biology on Hierarchical Theory in Biology, with Special Reference to the Problem of Individuality", Uko Zystra exposes some severe difficulties with regarding evolution reductionistically. See Facets of Faith and Science, Ed J. Van der Meer, vol. 2. (Lanham: University Press of America, 1996), 287 ff.