

AN UNFINISHED DEBATE: WHAT ARE THE AIMS OF RELIGION AND SCIENCE?

by *Mikael Stenmark*

Abstract. I discuss the kinds of fundamental questions that must be addressed by people who develop theories about how religion and science are (or should be) related. After categorizing these questions as axiological, epistemological, ontological, or semantic, I focus on those that concern the goals of religion and science (the axiological issues). By distinguishing between epistemic and practical goals, individual and collective goals, and manifest and latent goals, I identify seven axiological questions. The various answers that religion/science theorists give or presuppose to these axiological questions help to explain why such deep, ongoing differences continue among them.

Keywords: axiology; cognitive or epistemic values; epistemology; goals or aims of religion; goals or aims of science; practical or pragmatic values.

During the last few centuries many philosophers, theologians, scientists, and others have tried to understand how religion and science are related, but today perhaps the subject is receiving more attention than ever before (at least in the academy). As a result, a bewildering variety of different proposals has arisen regarding how we should understand the relationship between religion and science. However, not much of a consensus has developed, and it is sometimes very hard to perceive where these conceptualizations (what will be called *religion/science theories*) converge and where they diverge.

In this paper I develop a strategy for relating these diverse religion/science theories and evaluating them critically. One way of proceeding might be to compare with each other, line by line, the writings of some of the most influential authors to see where they differ and why. That, however, is not the way I deal with the matter here. Instead of taking an author-oriented or school-oriented approach to the religion/science

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debate, I adopt a problem-oriented approach. My strategy is to focus on the following question: *What fundamental issues do religion/science theories have to deal with to relate religion and science to each other adequately?*

I think it is more to the point first to seek a consensus about the *questions* we have to address before deciding what the answers to these questions should be. I attempt to map the religion/science territory by pointing out what road we have to travel, where the road forks (and where we consequently have to make a choice), and where the divergent paths intersect.

Discussing all of the fundamental issues in the religion/science relationship is, of course, far beyond the scope of a single article. Therefore, I only set out the main lines and focus on one particular kind of issue that religion/science theorists (i.e., the people proposing religion/science theories) have to deal with—the axiological issue, that is, the issue of the aims of science and religion.

1. THE AXIOLOGY, EPISTEMOLOGY, ONTOLOGY, AND SEMANTICS OF RELIGION AND SCIENCE

How should we identify and classify the fundamental issues of the religion/science debate? We will be able to identify some of these issues, and hence different ways of relating religion and science, by making distinctions among (a) the axiologies of religion and science, (b) the epistemologies of religion and science, (c) the ontologies of religion and science, and (d) the semantics of religion and science.

By the *axiologies* of religion and science I mean, roughly, the goals of religion and science.¹ Religious believers and scientists have some goals in mind when they do what they do; they are trying to achieve certain ends. Some fundamental issues seem to be what the goals of the practices are and what weight these different goals should be given. Are the goals of religion and science the same, similar, or totally different?

Second, beliefs, theories, and methods are acquired, discussed, rejected, or revised in the actual life of both science and religion, taken separately. These processes involve reasoning of some sort. Do practitioners in both fields employ the same kinds of reasoning? More fundamentally, can both science and religion be characterized as cognitive activities? And do they both have explanatory missions? Hence, another fundamental set of issues in the religion/science debate concerns rationality, justification, knowledge, and truth—the *epistemologies* of religion and science.

Third, religion and science are about something. They seem to have subject matters, or *ontologies*. I say “seem to have” because one issue is whether religion and science actually have ontologies. But if they each have one, what kinds of entities are the beliefs, theories, and stories of religion and science about? On a more concrete level, do the contents of

the theories of science and of religious beliefs or doctrines have, at least to some extent, the same subject matters? Thus, some of the fundamental points of discussion in the religion/science debate can be classified as ontological issues.

Finally, we can focus on the *semantic* issues in this debate. Our interest might be in the languages or linguistic discourses of religion and science. Both religious believers and scientists formulate their ideas and communicate with each other and other people through natural language. Do their linguistic discourses fulfill similar or completely different functions? What are the distinctive functions or features of religious and scientific language?

My strategy is to situate the issues on which there is a debate among religion/science theorists in the conceptual space that is provided by these distinctions and to try to determine which of these issues are fundamental ones, that is, issues that must be addressed for a religion/science theory to be adequate. Hence, by understanding the axiology, ontology, epistemology, and semantics of these practices in different ways, we can identify, develop, or defend different conceptions of science and religion and their relationship.

Although I am going to focus only on religion and its relation to science, we should not forget that any practice that fulfills the same or similar functions as religion does is of interest. Hence, secularized versions of environmentalism (or biocentrism), existentialism, feminism, humanism, naturalism, and scientism also need to be taken into consideration. I have elsewhere used the term *views of life* for all practices that fulfill the same or similar functions as religions (Stenmark 1995, 239–52). The broader question is thus in what ways *science* and *views of life* are related.

Now we can see that the first question (What fundamental issues do religion/science theories have to deal with to relate religion and science adequately?) naturally generates another question that we also have to consider: *How are these axiological, epistemological, ontological, and semantic issues related to one another?*

How does the answer to one kind of question affect another set of questions? And should any set of questions be given priority? Some religion/science theorists refuse, for instance, to talk about anything other than the language of either religion or science. In such accounts the ontological questions in particular seem to become unimportant or even meaningless. Such an understanding of the semantic issues clearly determines, or even excludes, some of the other issues. As a result, a religion/science theorist can explicitly or implicitly give priority to one or more of these sets of issues and thereby condition the content or weight of the others. Without being able in any way to fully address these questions, I nevertheless suggest some implications of axiological choices for

the epistemological, ontological, and semantic issues. As we go along I hope it will become clear why I think the axiologies of religion and science are a proper place to start this inquiry.

2. THE EPISTEMIC AND PRACTICAL GOALS OF RELIGION AND SCIENCE

It is clear, I take it, that the practitioners of religion and science aim at something with their activities, that they have *goals*. We can therefore look for a cluster of goals that individuals or the community more or less consciously consider to be the aim of the religious or scientific practice. Hence we can compare the *axiologies* of religion with those of science. (Axiology is, roughly, the study of values and aims.) Do these practices have overlapping goals? Are the goals of religion the same as, similar to, or totally different from the goals of science?

Let us first ask why people participate in or value activities such as religion and science. What do they hope to obtain by them? Recall the situation of "them and us." Human beings are *contingent beings*; we depend on other things for our existence and flourishing. We value practices that do certain jobs for us, very broadly speaking, such as the ones that keep us alive and healthy. Therefore, activities such as religion and science do not exist in a vacuum. Instead, they are practiced and valued by finite beings with limited resources who, because of their constitution and environment, have certain needs. For instance, things happen to us that we do not anticipate and that sometimes threaten our lives and well-being. We also need things that are not always easy to obtain, such as nutritious food, medicine, houses, bridges, and vehicles. In dealing with these things *science* has proved to be of great value. It enables us to control nature, and when we cannot control it, to predict it or to adjust our behavior to an uncooperative world. We could say that science aims to make the world *technologically* and *predictively intelligible*, and we value science because it is useful and because it helps us control, predict, and alter the world.

However, we do not have to satisfy merely material needs to be alive and well. We also have to give attention to spiritual or existential needs. Our well-being thus also depends upon our ability to deal with our experiences of suffering, death, guilt, or meaninglessness. In dealing with these phenomena, *religion* has proved to be of great value. It enables us to make sense out of these existential experiences, to diagnose them, and to find a way through the barriers to our well-being. We might say that religion aims to make the world *existentially intelligible*.

Many people seem to think that this is the major axiological difference between religion and science. For instance, Arthur Peacocke writes that the "religious and scientific enterprises" have in common:

“their search for *intelligibility*, for what makes the most coherent sense of the experimental data with which they are each respectively concerned. What proves to be intelligible is applied, in science, to prediction and control and, in theology [sic!], to provide moral purpose and personal meaning and to enable human beings to steer their path from birth to death” (Peacocke 1981, xii). Further, Holmes Rolston, III, says, “Science and religion share the conviction that the world is intelligible, susceptible to be logically understood, but they delineate this under different paradigms. In the cleanest cases we can say that science operates with the presumption that there are *causes* to things, religion with the presumption that there are *meanings* to things. Meanings and causes have in common a concept of order, but the type of order differs” (Rolston 1987, 22).

There is an overlap between religion and science in that both practices search for intelligibility, although they search for different kinds of intelligibility. Religion and science are helpful for us, but they are useful for doing different things or solving different problems.

Religion is often said to aim at the *transformation of the personal life* (and perhaps by implication also the transformation of society). According to John Hick, the goal of religion (or more exactly, of postaxial religions) is “the sudden or gradual change of the individual from an absorbing self-concern to a new centering in the supposed unity-of-reality-and-value that is thought of as God, Brahman, the Dharma, Sunyata or the Tao” (Hick 1989, 36). The concept of “salvation/liberation” is taken by Hick to refer to this transformation of the human situation from self-centeredness to Reality centeredness. The function of religion is to provide a context for the transformation of human existence from a state of alienation from God or Ultimate Reality to a state in harmony with that reality. The practitioners of religions differ in their accounts of what the appropriate *means* are for bringing about this change, but they all agree that this is a primary aim of religion. We could say that religion on this account has a *soteriological* goal. In Christianity this typically means that salvation lies in a personal relationship with God.²

Science, on the other hand, is generally understood to lack this kind of concern. It does not have the aim of giving us salvation, of delivering us from self-centeredness, or of overcoming our alienation from God or Ultimate Reality.³

However, all of these aims could be interpreted as different kinds of *pragmatic* or *practical* goals. It might be *useful* for us to achieve these aims. For instance, a transformation of human existence from self-centeredness to Reality-centeredness could help us cope with the world better. Some religion/science theorists, like J. Wesley Robbins (inspired by Richard Rorty), think that the only value or aim that both science and

religion actually have is usefulness, in the sense that they help us to cope with the world. Robbins does not deny that religion and science are useful in different ways, but says that usefulness—and nothing else—is the aim of these activities: “The only intellectual value that representations have is that of their usefulness to us in some respect or another. Scientific ideas are no different from any others, religious or otherwise, in that respect. Their connection to reality is a function of their embeddedness within the practices in and by which we cope with the world” (Robbins 1988, 234; see also Robbins 1993).

But of course many other religion/science theorists think that either science or religion, or both, have aims other than usefulness. Wentzel van Huyssteen, for instance, says, “Religious beliefs are normally held to be *true*, not merely useful . . .” (van Huyssteen 1988, 247; italics added). Religious practice provides people not only with useful symbols, stories, and rituals that can guide their actions and be meaningful for them but also with doctrines, claims, and beliefs that can be true (or false). A religious practice like Christianity is meant to tell us something true about who God is, what God’s intentions are, and what God has done. Science also aims to say something true or approximately true about the natural and social world. Philip Kitcher claims that “the cognitive goal of science is to attain significant truth” (Kitcher 1993, 157).

So on these accounts both religion and science aim at *truth*. They aim to say something true about reality in general or some part of it. Or more exactly, I think we should say that religion and science aim at truth and the avoidance of falsehood. These practices strive toward both goals, because if truth was all their practitioners were after, a good strategy to adopt would be simply to try to believe as many things (or propositions) as possible and thereby automatically increase the number of true beliefs. However, by doing this the practitioners would very likely also increase the number of false beliefs, which is hardly their intention. The aim must be to try to increase the number of true beliefs *without* increasing the number of false beliefs. We could say that on this account religion and science both aim to make reality *epistemically intelligible*, that is, they aim at truth and the avoidance of falsehood.

We have thus encountered a fundamental disagreement about the nature of religious and scientific practice. In relation to this disagreement, we can make an important distinction. We can distinguish between two groups of goals: *epistemic* goals and *practical* goals. Broadly speaking, the epistemic goals are those that aim at truth and the avoidance of falsehood, and the practical goals are those that aim at something else. For instance, when a religious believer takes religious practice to reveal truths about God and about salvation/liberation, these goals should be characterized as epistemic ones because they aim at truth and

the avoidance of falsehood. A believer might instead, however, be aiming at happiness, peace of mind, a meaningful life, or relief from feelings of guilt or alienation. Such values do not, or at least not in any straightforward way, increase the number of true beliefs and decrease the number of false beliefs and should therefore be classified as practical goals.

It is of course also feasible for a religious believer to combine epistemic and practical goals, to aim, for instance, at both truth and peace of mind or salvation. The same is also possible in a scientific context. A scientist might think that the goal of the scientific enterprise is both to establish accurate predictions and to gain empirical knowledge. We thus infer that religion and science share a *complex* goal, since it has both epistemic and practical values.

We can now see that when we compare the axiologies of religion and science, a fundamental issue is *what* the aims of science and religion are. This question can be divided into two subquestions. The first is *whether both religion and science have epistemic and practical goals or if only one of them has both sets of goals*. (The second question, whether religion and science have the same or different kinds of epistemic and practical goals, will be considered later.) Perhaps science aims both at true beliefs (or information) about the world and at helping us control and alter parts of it, but religion aims merely to express and provide means for life focused on agape; perhaps religion's only concern is values and moral conduct. Hence the first axiological issue we seem to face is

a. Do religion and science have both epistemic and practical goals?

Here it seems that we can choose between and argue for one of three possibilities: (i) The goals of either religion or science or both are only (or at least essentially) *practical* ones; (ii) the goals of either religion or science or both are only (or at least essentially) *epistemic* ones; (iii) the goals of either religion or science or both are *practical* and *epistemic* ones.

I suggest that both (i) and (ii) are, at least in their stronger versions, *phenomenologically speaking*, clearly false. That is, if we take what in general scientists and religious believers do and say seriously or at face value, they are not true. (As it is understood here, a phenomenological account is based on how things appear to be, whether they really are that way or not.) As I have already pointed out, science is assumed to have practical goals such as the prediction and control of nature. Someone might, however, distinguish sharply between *science* and *technology* and claim that what I just said applies only to the latter. Such a distinction cannot, I think, be maintained consistently. But suppose it could. We can still see that scientists typically do not take science as having a purely epistemic goal if we consider that a central norm in the evaluation of a scientific theory is *simplicity*. The norm of simplicity says, roughly, that all else

being equal, the scientist should believe the simplest theory that explains all the relevant data. It would be very difficult to justify the use of this norm if the correct values for science are merely to increase true beliefs about the world and eliminate false ones. How can we justify saying that the simpler of two theories, all else being equal, is more likely to be true? It seems impossible. Of course if we allow science also to have practical goals, it is not so hard to find a justification. A simpler theory is easier for the scientist to *use* than a complex theory; it is easier to test and control. Consequently, it is theoretical and practical convenience, not epistemic values, that makes the scientist prefer the simpler theory.⁴

Nor is it only practical goals that most scientists seem to think that science is aiming at, since science is also understood to give us information about the world (i.e., a body of true propositions). For instance, scientists believe that there really are such things as planets, oxygen, molecules, genes, and cancer in the world, and this knowledge is something that science has discovered for us. Furthermore, these things exist whether we are here or not and whether these things are useful for us or not.

This observation also shows that the distinction between epistemic and practical goals is not a sharp one. We should instead view science's goal as a continuum with one epistemic pole and one practical pole. If this is correct, simplicity is not a straightforward epistemic goal, but it is obviously closer to the epistemic end of the continuum than, for instance, the goals of staying out of trouble with the government or just feeling good.

However, practical goals clearly *shape* the epistemic goals in science. Scientists seem not—if we take a closer look—to seek just any kind of truths about the world. They do not try merely to increase our stock of true beliefs and eliminate false ones. Scientists seek the kind of truths that are useful for them given the questions and problems that they consider significant and therefore try to solve. They are not trying to acquire true but trivial beliefs about the world concerning, for example, the precise number of trees, stones, or leaves in the world.⁵ Scientists thus try to find *significant* or *important truths*, truths that are broadly speaking useful for them.

With regard to religion, (i) and (ii) are, at least in their stronger versions, phenomenologically speaking, false. We can see this if we try to understand what an ordinary Christian believer affirms that an ordinary atheist denies. First of all, the atheist might deny that the Christian faith is an adequate means to overcome experiences of guilt and meaninglessness or any other practical goal of Christianity. (The very opposite might even be true, as Karl Marx thought.) Sometimes this (the practical and existential adequacy of Christianity) is what the atheist and the Christian

believer disagree about, but at other times it is not. Sometimes the atheist might think that Christianity is quite helpful in overcoming these problems. But atheists deny the existence of the Christian God; that is, they deny that there is a being of the sort Christians believe in (or any other divine beings, for that matter). An ordinary Christian believer recognizes this as a genuine disagreement; Christians believe that it is true that a God of this sort exists and that an atheist denies this. Thus the Christian believer confirms, and the atheist presupposes, that Christianity also has an epistemic goal.

However, in religion, the practical goals typically shape or inform the epistemic goals. This is true at least in the sense that believers do not merely affirm the truth of such beliefs as that there is a God, that God is love, or that God created the world. Instead their aim is to have an appropriate relation to the Divine Reality so that they can implement the divine dimensions of reality in their lives. In Christianity, Christians believe that God's revelation (however defined), although it is incomplete, gives knowledge that is adequate for believers' needs. For Christians it is sufficient to know what is necessary so they can live the life they must adopt in relation to God. Vincent Brümmer thus says, "The questions which [Christian] believers ask about God's factual nature are never asked out of mere curiosity in the way in which they might out of curiosity ask questions about the factual nature of the world around them" (Brümmer 1992, 59). "Never," as Brümmer writes, is probably too strong a word here; "typically" is I think more correct. Nevertheless, believers aim at *significant or important truths*, truths that are useful for them in their relation to God.

This demonstrates that it is not belief *that* God exists that is the focus of Christian believers' concern, but belief *in* God. That is, trusting God, accepting God's purpose, committing one's life to God, and living in God's presence. This does not, however, change—that this might be overlooked—that the belief that God exists is a necessary condition for Christian practice. It only shows that it is not a sufficient condition. Belief in God is much more than accepting the proposition that God exists, but it is at least that. The practical goals of living a Christian life determine to a very high degree the epistemic goals of Christian practice. The belief that God exists is no significant truth *within* the Christian practice. It is simply presupposed. The significant truths are rather about the relation between God and believers and about the fruits that relationship should have in the lives of believers. From an external perspective, things may be different, especially when the question arises as to which (religious or profane) view of life one should be committed to. In such a context belief that (a personal) God exists becomes a significant, and sometimes very controversial, belief.

Hence, one version of option (*iii*)—that the aims of religion and science are both practical and epistemic—has the best support from the actual practices of religion (at least of Christianity) and of science. This is the way things are whether we like it or not. This is of course how it looks only if we adopt a phenomenological point of view, that is, if we take what scientists and religious believers in general say and do at face value. It is clearly possible that both scientists and religious believers in general are wrong, that they have even deeply misunderstood what their practices aim at. There are also groups of scientists and religious believers whose self-understanding is different from the more generally accepted one I have tried to outline. Neither science nor religion consists of strictly unified practices. My account thus offers at most a *prima facie* justification of one version of option (*iii*). Hence, the burden of proof falls on those who disagree with the phenomenological account, especially those who propose radically different interpretations of these practices. After all, we have to distinguish between what one personally would prefer science or religion to be, and how we ought to characterize science and religion as they are understood by most of their practitioners.

3. DIFFERENT KINDS OF EPISTEMIC AND PRACTICAL GOALS

Thus far we have established at least that religion and science *seem* to have both epistemic and practical goals, although exactly what these are and which of them should be considered predominant are still questions that need to be considered. This leads us to the second subquestion about what the aims of religion and science are (or should be). Once we come to a decision regarding the three options I have outlined above, we must consider *whether religion and science have the same or different kinds of epistemic and practical goals*. We must determine what particular types of practical and epistemic goals science and religion try to promote. The second axiological issue we face is,

b. Do religion and science have the same or different kinds of epistemic and practical goals?

We can choose between one of four possibilities: (*i*) The epistemic and practical goals of science and religion are the same; (*ii*) the epistemic and practical goals of science and religion are different; (*iii*) the epistemic goals of science and religion are the same but not the practical ones; (*iv*) the practical goals of science and religion are the same but not the epistemic ones.

One possible view is that the epistemic emphasis in science is essentially on eliminating false beliefs (as Popper thought), whereas in religion it is to attain a few essential truths. In Christianity it might be to know that God is love and that Jesus is God incarnated. Such a view stands as an example

of either option (ii) or (iv). More common is the claim that it is the practical goals of the two practices that are different, that is, a version of either (ii) or (iii). One could, as we have seen, maintain that science aims at prediction and religion at the discovery of patterns of meaning. Stephen Wykstra expresses such a view when he writes that “Sometimes, when our lives cry out for redemptive change, what is important is not precise predictions, but the disclosure of unanticipated new meanings where old ones have been shattered. Demanding that religious discourse here provide precise predictions would be obtuse. Sometimes we find our lives in pits where what we most need to be delivered from is our way of taking things in our own hands” (Wykstra 1990, 137).

Wykstra does not, however, claim that religion and science lack an epistemic goal: “For religion and science do not merely provide useful linguistic constructions; they make claims about reality which either should or should not be *believed*” (Wykstra 1990, 122).⁶ Religion and science should be understood as making claims about reality, claims that are either true or false. But he does not go on to consider whether religion and science have the same or different epistemic goals. This might, however, be an important question, because for one thing, truth in religion seems to be something at least in some respects different from truth in science. Louis Dupré claims that “If one thing distinguishes traditional religious conceptions of truth from modern philosophical ones, it is the absence of, or secondary role, of epistemological concerns. Despite their substantial differences, all religious traditions agree in stressing the ontological and moral qualities of truth over the purely cognitive ones. Truth refers to *being*, rather than to knowledge” (Dupré 1989, 260).

One way of interpreting this difference is to maintain that truth in religion is a richer notion than in science (or philosophy) because it includes more than the epistemic dimension (see Stenmark 1995, 266–67). Religious truth is not reducible to correct beliefs because truth is also something to be done, to be lived. Therefore, epistemic truth can be a necessary condition for religious truth, but it is clearly not a sufficient condition. However, such an interpretation also supports the view that religion can typically be characterized as having a complex goal. The aim of religious practice is on such an account not only to make reality epistemically intelligible but also, and perhaps primarily, to guide people’s actual way of life so they can achieve genuine well-being—a well-being believers think can be obtained only if we let our lives be transformed by the Divine Reality or if we enter into a right relation to it. So it seems that only a religion that can also successfully guide believers in their lives can be really true, satisfying both the epistemic and practical aims of religion.

Another way of arguing about what particular kinds of epistemic and practical goals religion and science try to promote is to claim that science has the epistemic goal of promoting knowledge of the world and the practical goal of predicting events in it, whereas religion has merely the practical goal of providing us with values of different sorts (primarily moral ones) that we need to flourish as human beings.⁷ Only science has an epistemic goal, whereas both science and religion have a practical goal (the answer to the first axiological issue), although they have different kinds of practical goals (the answer to the second axiological issue). (Other accounts are also conceivable. There are clearly a number of different possibilities.)

When we come to the second axiological issue, I think it is much harder to establish by adopting a phenomenological approach a *prima facie* justification of any of the options (i) through (iv) outlined above. The variety we face is simply too diverse. This is especially true when it comes to determining what kinds of practical goals science and religion promote, because more options are available when it comes to the latter set of goals.

One reason why we face such diversity is that within science, different disciplines seem to have, at least in part, different kinds of epistemic and practical goals. The same is true for different religions. So spelling out the particular types of epistemic and practical goals depends very much on what scientific discipline and what religion we are focusing on (and maybe also where it is geographically located). Nevertheless, it is a task that a religion/science theorist must undertake in order to deal with the relationship of religion and science adequately.

4. THE WEIGHT OF EPISTEMIC AND PRACTICAL GOALS

Among religion/science theorists, or among the practitioners of science and religion, we can find different conceptions of the aims of these practices. These goals are sometimes understood to be mutually exclusive and sometimes to be complementary. But even if we understand the aims as complementary and we agree on the epistemic and practical goals, the *emphases* may still differ. One kind of goal (or goals) could be considered more important or more essential to the practice than the other kinds. People may disagree not only about *what* the aims of religion or science are (the first and second axiological issue), but on what *weight* they should be given. The third and fourth axiological issues are thus as follows:

c. What weight should be given to the different aims within either the practical set or the epistemic set of goals of religion and science?

d. What weight should be given to the set of epistemic goals vis-à-vis the set of practical goals of religion and science?

The third issue arises when we recognize that the practitioners, or the religion/science theorists, might give very different weights to the different aims not only within the practical set of goals they maintain but also within the epistemic set of goals. In religion we might see this if we, for example, contrasted (Christian) feminists and liberation theologians with more traditional (especially pietist) believers. The most essential practical goal of feminists and liberation theologians is usually liberation from oppression (the oppressed being primarily either women or the poor). Salvation is consequently interpreted in sociopolitical terms. This does not necessarily mean that these believers have to deny the more traditional idea of salvation as establishing a personal relationship with God, but it does mean that the practical emphasis is strongly on the social, and not the personal, aspect of it. Hence we can find among believers that the weight they give different practical goals can vary, even significantly.

Scientists too might emphasize their practical goals differently; for example, they might disagree about whether the scope or the simplicity of a theory is more important, everything else being equal. Here I instead focus on the different ways scientists might conceive the epistemic goals. In a previous section I maintained that the epistemic goal of science should not really be just truth but rather truth and the avoidance of falsehood. One might easily think that this is just another philosophical distinction of no importance in actual scientific practice, but it does have certain practical consequences.⁸ Assume that some scientists think that seeking true beliefs is more important than eliminating false ones. They would determine whether a hypothesis is true or false; they would believe that it is true not only in situations where the evidence for it is stronger than against it but also in cases where the evidence pro and con is equally balanced. However, this would not be true about a scientist who thought avoiding errors to be more important than discovering truths. More generally, which of these two epistemic values one emphasizes has consequences for the appropriate level of epistemic risk taking in science. On one side of the spectrum we have radical Popperians like P. K. Feyerabend, who seems to fear that we might reject some truths that we should have accepted. On the other side we have people who are concerned that we might accept something that is false and that we therefore should have rejected. Between avoiding all risks and taking all risks, scientists must make their epistemic choices.⁹

Feminist and liberation theologies also illustrate the fourth issue, of what weight the set of practical (in this case religious) goals should be given in comparison with the epistemic set. Clearly the emphasis of feminist and liberation theologians is strongly on practical goals. A feminist

like Mary Daly, for example, thinks that one should reject Whitehead's process theism if it does not actively encourage "human struggle against oppression in its concrete manifestations" (Daly 1985, 20).¹⁰ So a necessary condition for accepting a religious belief would be that it must somehow promote social liberation (especially of women). Hence a sufficient condition for acceptance of a belief could *not* be that a religious belief is true or that one is rationally entitled to believe that it is true. This of course puts feminists in sharp contrast to the philosophically oriented believers,¹¹ who think that truth questions matter greatly and are distinct from any political considerations. The motives of the religious believers do not determine the truth or rationality of these people's religious beliefs. God might be omnipotent even if men (or rich people) have used this idea to oppress women (or poor people).¹² *Some* of them might even think that the epistemic goals are by far the most important and thus hold a position very contrary to feminist and liberation theology.

Scientists, or religion/science theorists, might also think that although science proper has both epistemic and practical goals, scientists should in general aim at the development of practically useful theories, because, for example, science should first of all serve society and the needs of people. (At least a lot of politicians seem to think in this way.) Perhaps the emphasis should be on practical goals because epistemic values are hard to satisfy; there are not many things we really can know, especially about what is not observable (which is after all science's main business). A religion/science theorist like Peacocke—or a scientist influenced by his writing—who thinks that "critical realism recognizes that it is the aim of science to depict reality as best it may . . . [but] this purpose may well be achieved by scientists with but varying degrees of success" (Peacocke 1993, 12) could (but need not) argue in this way.

To sum up, the answers to the third and the fourth axiological questions also matter greatly if we want to relate religion and science adequately.

5. THE PERSONAL AND COLLECTIVE GOALS OF RELIGION AND SCIENCE

It is important never to lose sight of the fact that religion and science are not merely sets of statements, beliefs, theories, or linguistic discourses, but that they are necessarily also *social activities* performed by human beings within particular historical and geographic settings. Religion and science have communities of practitioners that do certain things with certain goals in mind, within certain social situations, and within a common tradition or history. Hence, what I have been saying so far can be interpreted on two levels: the individual level and the social level.¹³ It

can be understood either in terms of what individual practitioners take their own religious or scientific activity to be aiming at or in terms of what the practitioners taken together understand as the goals of religion or science. Consequently, we must add to the theoretical distinction (between epistemic and practical goals) a sociological distinction, a distinction between *personal* goals and *collective* goals. By *personal goals* I simply mean the goals of individual scientists or religious believers themselves in science or religion. The term *collective goals*, on the other hand, refers to those goals that a scientific or religious community maintains, that is, the goals that are shared by the members of the community.

A realistic understanding of the individual scientists' situation and motives will recognize that scientists always have their own epistemic and practical goals as well as the ones maintained by the scientific community. A biologist is probably not just attempting to expand the scientific community's understanding of evolution, when trying to discover, say, some mechanism in the evolutionary processes (a *collective epistemic goal*). If that was all a biologist cared about, it would not matter who actually discovered it. But of course biologists want to make the discovery themselves, either as the result of their own effort or through the work of a team to which they belong. Perhaps the biologist wants, in addition to knowledge, to be recognized as the first to know (a *personal practical goal*). Such a practical goal is of course not part of the goals maintained by the community. The collective goal is that such discoveries be made, that our understanding of nature increase. Who makes them is irrelevant from the perspective of the scientific community.

In the actual practice of science, epistemic and practical goals are then probably woven together in a rather symbiotic fashion. A remark by Kitcher aptly captures how these four types of goals specify what scientists (more or less consciously) could be aiming at with their research: "a scientist may have the goal of contributing to the long-term community project of understanding some aspect of nature [a collective epistemic goal], the goal of advancing her own knowledge in a particular area (a personal epistemic goal), the goal of promoting a more egalitarian society [a collective practical goal], and the goal of attaining a position of eminence within her specialty [a personal practical goal]" (Kitcher 1993, 73).¹⁴

In a similar fashion a religious believer may have the aim of contributing to the religious community's long-term goal of understanding the Divine Reality—to the extent that is considered possible for beings in our predicament (a *collective epistemic goal*). (Different religions, or denominations within a religion, may be more or less optimistic about the achievement of this goal.) Note that even though this formulation

parallels that of science, it is, I think, a more controversial characterization in the religious case. I suggest that this is because the emphasis in religion is so much on *being* religious, on *living* a life in the presence of God. The epistemic goals of religion are typically not purely epistemic but complex in character. Therefore, we should perhaps say that a collective epistemic goal of religion is to promote as much knowledge of God as is necessary for people to live a religious life (knowing that God is love and that God wants to redeem us, etc.). A religious believer can then try to contribute to that collective goal. Further, religious believers may have the goal of advancing their own knowledge in a particular area of religious thought: a Christian about the Trinity, a Buddhist about karma, and so on (a *personal epistemic* goal).

Notice again a crucial difference between the epistemic collective goals of religion and those of science. In science the aim is to increase the *general body of knowledge* about the world, whereas in religion it is to increase the *knowledge of each of the believers* to such an extent that they can live a religious life successfully. To contribute to the collective epistemic goal of religion is first of all to increase, up to a certain level, the religious knowledge (say, at least to the level necessary for salvation/liberation) of as many *people* as possible. It is not, as in science, to move the frontiers of *knowledge* of the world forward as much as possible.¹⁵ This is one of the reasons the religious journals look so different from those of science.

Let us now turn to the practical goals of religion. Here also we can distinguish between personal and collective goals. A religious believer may want to contribute to the long-term goal of the religious community of bringing salvation/liberation to all people (a *collective practical* goal) and to become a more loving, understanding, and caring person (a *personal practical* goal). (People may of course also have personal goals that are incompatible with the collective goals of the religious community. A person might, for instance, participate in religious practice merely because he wants to marry a woman within the community or because it gives him social status.)

There is clearly a whole complex of issues facing the religion/science theorist here: In what way should the differences between the individual and collective goals of scientists and religious believers be taken into account when developing a religion/science theory? To what extent are unity and diversity with respect to goals possible and desirable in religion and science? Are there any differences between how individual and collective goals interact (or should) and are maintained in religion and science? Let us formulate this cluster of issues as just one single question. A fifth axiological question is as follows:

e. How are the individual and collective goals of religion and science related to one another?

6. DO THE GOALS OF RELIGION AND SCIENCE CHANGE?

Recognizing that religion and science are essentially social activities always performed by people living in certain cultural and historical situations should alert us to the fact that religion and science change over time. But what changes in these practices? Do they change only in terms of who practices them and how the relationship between the practitioners in the practice is organized? Or do religion and science also change on a more fundamental level, in terms of what the aims of these enterprises are? So the last of the axiological questions that I maintain a religion/science theorist needs to address is *whether the aims of science and religion are stable or whether they change over time*. This sixth axiological issue can be stated as follows:

f. Do the goals of religion and science change over time, and if they do, to what extent?

One could of course say that we here simply face a choice between two options: either the goals change or they do not. However, I do not think this really captures the discussion, especially in the philosophy of science, about the stability of the goals. Instead I propose that our choice here is between three options: (i) the goals of religion and science do not change; (ii) some of the goals of religion and science change and others stay fairly stable; (iii) most goals of religion and science change drastically.

There are not many now in the philosophy of science who claim that the aims of science do not change at all. There seems to be a growing consensus that the goals of science do change, at least to some extent. These philosophers have come to that conclusion after many detailed historical studies of the development of science. Larry Laudan, one of the most influential philosophers of science today, concludes that these studies show that there is no single set of goals that holds for all sciences and for all times. One of his paradigm examples of an axiological shift in science is the debate among scientists in the late 1700s and early 1800s concerning whether scientists should restrict their theories to observable entities and processes (Laudan 1984, 55–62). Up until that time, scientists had, officially at least, claimed to be *inductivists*, aiming to understand the observable world by purely inductive methods—all hypotheses should be avoided. But during this period scientists developed a number of theories in electricity, embryology, and chemistry that seemed to depend essentially on postulating unobservable entities. These theories received widespread criticism because they were in conflict with the

accepted aims of science. However, to make a long story short, the *hypotheticalists* won the debate and the aims of science changed drastically. It was from then on generally accepted that science should also value and aim for theories with depth, and what we today call the hypothetico-deductive method was recognized as a scientific method.¹⁶

Philip Kitcher, on the other hand, argues that the conclusion of these historical studies should rather be that “the goals of science do not change over time—although scientists may offer different ideas about subgoals in the light of their beliefs about the world” (Kitcher 1993, 157). He thinks, for instance, that the goal of biology (that it should, among other things, explain the diversity of living things and trace the patterns in that diversity) is stable. Kitcher’s interpretation of cases like the one given by Laudan is that it is only our formulations of derivative goals (i.e., the goals we actually hope to achieve at a given time) that change; the more fundamental goals of science do not change. He writes, “On a closer view, I claim, changes in formulations of the aims of science can be understood as expressions of the enduring goal of discovering as much significant truth as human beings can in light of changing beliefs about what is significant, what nature is like, and what the nature of our relation to nature is” (Kitcher 1993, 160). Hence, Kitcher should not be understood as claiming that the goals of science do not change at all (option [i] above) but as maintaining a version of option (ii), that is, that some of the goals of science stay fairly stable whereas others change.

To some extent the answer to the sixth axiological question depends on how *broadly* we interpret the aims of religion and science. The more broadly we understand the aims, the more reasonable the stability option seems; and the more narrowly we conceive them, the more justified the reversibility option seems to be. The same is true for religion. If we accept that one of the goals of religion is to deal with existential concerns or questions, it seems that this goal does not change over time.¹⁷ In fact, something would probably not be a religion if it did not address those kinds of questions. On the other hand, some things appear clearly to change in religion. Today there is a growing awareness that an ecological disaster threatens the earth. More and more religious believers therefore seem to be concerned that their religions should deal with environmental issues. So although a religion such as Christianity, in its early forms was not understood by its followers to have as one of its essential goals the overcoming of ecological crises, today that appears to have changed. The goals of Christianity have undergone a transformation.

The answers to the question of whether the goals of religion and science change over time are thus relevant for the formulation of religion/science theories. If the goals drastically change, then the relations between religion and science will also change. Hence, the ways religion

and science are related can vary significantly in different time periods. A proper religion/science theory must be historically or contextually grounded. If, on the other hand, the goals do not change at all or only insignificantly, then such grounding is not necessary. We can talk about the axiological relations between religion and science without paying much attention to historical and social circumstances.

The gap between religion and science is narrowed if a religion is understood to have as one of its collective practical goals the overcoming of ecological crises. Then scientific theories and methods become much more relevant for the formulation of appropriate religious beliefs, attitudes, and actions.

Religion/science theorists, of course, do not always state their views on this axiological issue. By looking more closely at what they say we can ascertain whether they presuppose a more or less static conception or a more or less evolving conception of the goals of religion and science.

7. MANIFEST AND LATENT GOALS OF RELIGION AND SCIENCE

The focus on the issue of whether the goals of religion and science change also shows that we need to add one further dimension to the picture of the goals of science and religion that I have been trying to develop so far. It is a distinction similar to the one between *manifest* and *latent ideology* often used in studies of ideologies. Roughly, the manifest ideology is what, for instance, a political party explicitly states in its official documents as its views and policies, and the latent ideology of the party is what we can discover if we read between the lines.

In religion we can sometimes find official documents that state the aims of that religion. We can further ask the official spokespeople, or just ordinary believers what they consider the goals of their religious activity to be. This is one way of proceeding if we want to find out the actual goals of a religion. Another way is to study what believers actually do, focusing on their actions and choices. Let us call the goals discovered by using the first strategy *manifest* goals and the ones discovered by using the second strategy *latent* goals. Sometimes there is no tension between these goals. We can approach religious believers and say that it looks as if this is something they do not claim to be aiming at with their activity, but it is something we can infer from their actions and choices—and believers might recognize it as something that is actually a part of their goals. At other times, however, the believers may not accept what we say they are actually trying to do with their religious engagement. This is perhaps especially the case when what we claim are latent goals are in tension or even conflict with the manifest goals.

As we saw in the last section, conflicts of this kind also emerge in science. Laudan pointed out that one of the manifest collective goals of an

entire community of scientists was discovered to be in conflict with the goals that actually seemed to guide the research done within the scientific community. Or it may just be that individual scientists realize that in their actual work, they proceed in a way that is contrary to the aims they explicitly acknowledge.

We now have a *three-dimensional picture* of the axiological structure of religion and science: The first dimension consists of the distinction between epistemic and practical goals, the second of the distinction between individual and collective goals, and the last of the distinction between manifest and latent goals.

For instance, a group of scientists (or maybe a whole scientific community) may at a certain time maintain that they have the Popperian goal of (a) always laying down in advance what would lead them to reject a theory and of (b) actively trying to falsify it (a *collective manifest epistemic* goal). But by analyzing scientific journals, we discover that we cannot find any papers that either explicitly or implicitly state what would falsify the proposed theories, and by studying how scientists actually behave in face of arising anomalies we discover that—contrary to what these scientists say—scientists never seem to reject a theory they believe has something going for it even when many anomalies have been found. In fact, in practice scientists seem never to reject a theory no matter how many anomalies there are unless they have a better theory to put in its place. We thus have reason to believe that scientists have a *collective latent epistemic* goal that is different from, and even in conflict with, the manifest one.¹⁸

In a similar fashion many religious believers claim that they are God's stewards on earth, by which they presumably imply a respect and responsibility for the things that God created (a *collective manifest practical* goal). But by studying how these believers actually act and make choices concerning nature we come to realize that they have no such goal in practice, or that it has a very low priority in comparison with their other goals. A last example: Christianity officially seems to aim for the mutual respect and love of all human beings (a *collective manifest practical* goal): "We are all one in Christ." But after empirical studies we may come to understand that Christianity also has the implicit goal of maintaining a patriarchal relationship between men and women in religion and society. Christianity has then a *collective latent practical* goal of patriarchy. These manifest and latent religious goals seem at least to be in tension with each other, perhaps even in conflict.

The distinction between manifest and latent goals in religion and science creates some specific problems for religion/science theorists. For example, on what kind of goals should religion/science theorists base their comparison of religion and science, the manifest or the latent ones?

And what set of goals should they give priority to when there seems to be a tension or conflict between manifest and latent goals in the actual practice of religion and science?

The centrality of both of these questions can be demonstrated if we focus on the account of religion developed by philosophers and theologians influenced by the writings of Ludwig Wittgenstein. D. Z. Phillips, for instance, thinks that religion is vastly different from science, especially in that religions do not involve any factual beliefs or claims, whereas science does. (See, for instance, Phillips 1976 and 1988.) Any religion/science theory that assumes that religion has some factual content is therefore based on a deep misunderstanding of the nature of religious practice. Phillips does not, however, take this to be a normative claim. Instead he says that we would all be able to see this if we paid close enough attention to the way religious believers speak about and deal with religious matters. A number of people have said that Phillips is just dead wrong. A great number (maybe even the vast majority) of theists believe, as a matter of fact, that God exists, that God is morally perfect and almighty, that there will be a Judgment Day, and so on. However, Phillips is probably not denying this (that would surely be stupid) but would still claim that his account is not normative. Why? I suggest that we should interpret him as saying that although the manifest goals of religion often seem to include a factual element, the latent goals of religion do not. And it is, in fact, these goals that Phillips takes as having more *weight* when developing an account of the proper aims of religion. We should therefore not be misled by the surface grammar of religious language (as some or many religious people and religion/science theorists seem to be).

Suppose Phillips is right; then it matters greatly whether we put our emphasis on the set of manifest goals or the set of latent goals. Even if he is wrong, his claims at least show that it is important for religion/science theorists to try to be explicit about which set of goals forms the basis of their theories about the relationship of religion and science, especially in cases where there seems to be a tension between the two sets. Probably a lot of confusion and misunderstanding could then be avoided.

Let us sum up the cluster of issues that arise in this context, in a last axiological question:

g. How are the manifest and latent goals of religion and science related?

8. CONCLUSION

I have argued that philosophers, theologians, scientists, and others writing about the relations between religion and science must provide an answer to these or similar axiological questions, and their accounts

typically have such presuppositions at least implicitly. The reason why they sometimes come to such different conclusions and seem to be talking past each other is often that they are, in fact, committed to different axiological accounts of religion and science, which are not clearly stated. I am not claiming here that a religion/science theorist always has to address all of these axiological questions when dealing with the ways religion and science are related. I am only saying that if one is trying to give a comprehensive account of the religion/science relationship, these issues cannot be ignored.

Do the differences in axiology have any consequences for the epistemological, ontological, and semantic issues religion/science theorists face? I think so, but it is beyond the scope of this article to address these questions. Why there might be reasons to suspect this is captured by Wykstra, when he writes, "If we approach the claims of a theistic complex like Christianity—claims having to do with Creation, Covenant, Sin, Judgment, Grace, Incarnation, and the like—as if they must embody the values of scientific theorizing, we will not assess them by appropriate criteria; indeed, we will probably not even understand them. Their point is not to help us predict, control, and contrive the world" (Wykstra 1990, 138).

According to Wykstra, the choice of aims for religion and science determines the appropriate criteria or norms for assessing what is going on in these activities. If Wykstra is right, the answers to the axiological questions have serious implications for the epistemological issues (and maybe also, as he says, for the semantic issues). Hence disagreement about (a) the goals of religion and science may lead to disagreement about (b) how to achieve these goals.¹⁹

NOTES

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1. I am not denying that other kinds of axiological issues also arise on the border between religion and science. Ethics, in particular, plays an important role in both enterprises. My focus, however, is on what can be called *theoretical* or *cognitive* values (if the latter are broadly defined) and not on *moral* values.

2. Other goals that have been proposed for religion are the expression of an agapeistic way of life, freeing people from sin and guilt, effecting a personal encounter with God, worshipping God, and liberating the oppressed.

3. We should not forget, however, that some scientists think that science can also fulfill this aim. For a critical discussion of such attempts see Midgley (1992) and Stenmark (1997).

4. For a discussion of simplicity, see Hempel (1966, 40–45) and Foley (1988, 1991).

5. Truth is in fact quite easy to find. One just needs to add disjuncts to the truth one already has. For a discussion of this possibility and other ways of arriving at trivial truths, see Goldman (1986, 123) and Cherniak (1986).

6. Recall also what Peacocke and Rolston said in the quotations in section 2.

7. See Braithwaite (1971) for a classic version of such an axiological account and Herrmann (1995) for a contemporary version.

8. For a classic discussion of this, see William James's essay "The Will to Believe" [1896] in James (1956).

9. For a more detailed analysis of risk taking in epistemology see Rescher (1988, 54–60).

10. This is so even though in process theism, God is portrayed as not being omnipotent and transcendent—which seems to be in line with feminist thought.

11. Philosophically oriented believers such as those influenced by the contemporary analytic philosophy of religion.

12. Logically speaking, we need some additional premises if we want to reach the conclusion that we should not believe in an omnipotent God on the basis of the empirical claim that men (or white and rich people) have used the idea of an omnipotent God to oppress women (or people of color and poor people). Call this the "oppression argument against belief in an omnipotent God."

From the premises that

a. *God is using his omnipotent power to oppress other beings,* and

b. *(white and rich) men should act in a way similar to God's,*

male (white and rich) religious believers might validly infer (an argument is valid if its conclusion must be true if the premises are true) that

c. *therefore, (white and rich) men should, to the extent they can, oppress women (people of color and poor people).*

Then feminist (liberation and nonwhite) theologians would be right, not that such a God does not exist, but that he is not worth believing in. That follows if we add the premise that

d. *it is morally wrong to oppress other human beings.*

But male (white and rich) believers have of course not typically maintained (either consciously or unconsciously) premises such as (a) and (b). Nor, more importantly, should they according to Christianity. So the truth of (a) and (b) seems very hard to prove or confirm. Hence, the oppression argument is not likely to be sound (an argument is sound if it is valid and its premises are true) even if it could be stated in a valid way.

13. I am indebted to Philip Kitcher (1993) for much of what I say in this section. (He, however, focuses only on science.)

14. My only concern with what Kitcher says concerns his formulation of the collective goal. The goal of promoting a more egalitarian society is surely a collective goal. But is it a *scientifically* collective goal? It seems to be too controversial to be taken as a proper illustration of a practical collective goal of science. A better example is perhaps the goal of controlling and predicting forces or processes in nature.

15. This would, however, not be true if we were talking about the aims of theology (especially nonconfessional academic theology) or philosophy of religion. But then, religion and theology (or philosophy of religion) are not the same thing.

16. Laudan thinks that many historical examples of changes in the goals of science could be given. He writes, for instance, that, "The history of science is rife with controversies between, for instance, realists and instrumentalists, reductionists and antireductionists, advocates and critics of simplicity, proponents of teleology and advocates of purely efficient causality. At bottom, all these debates have turned on divergent views about the attributes our theories should possess (and thus about the aims of scientific theorizing)" (Laudan 1984, 42).

17. By *existential questions* I mean, roughly, questions of who we are, why we are here, where we came from, and where we are going. See Stenmark (1995, chap. 9) for a fuller account of existential questions.

18. These are some of the reasons why a majority of contemporary philosophers of science have rejected Popper's account of the choice of a scientific theory.

19. This will be the topic of a forthcoming article of mine.

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