

Do Science and Religion Belong to Two Different Cultures?¹

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ABSTRACT: It is a commonly held view in our time that science and religion have different underlying cultures. Some scholars believe that they belong to two independent cultures, some admit, some overlapping grounds, and some consider them to have complimentary cultures. In this paper, I want to argue that science, as is commonly understood, does not have a self-sufficient culture and has at least some common grounds with religion. Furthermore, science is based on some metaphysical presuppositions of one kind or another and scientists have to deal with some ethical considerations. Thus, the least we can say is that science and religion do not belong to two completely different cultures. In fact, as far as I can see, they may have a common underlying worldview.

KEYWORDS: science, religion, ethical values, metaphysical assumptions, worldview, common grounds.

Introduction

It is a commonly held view in our time that science and religion belong to two different cultures, i.e. they have different underlying cultures. Some scholars believe that science and religion belong to two independent cultures, some admit some overlapping elements, and some consider them to have complimentary cultures. In this paper, I want to argue that they do not belong to two different cultures. Rather, they may have a common underlying worldview.

Scientific knowledge involves a systematic search for understanding the structure and functions of our natural world. Religion is a response to the transcendent which transforms our lives and gives it a meaning. Both science and religion deal with the same world. Science seeks to discover the order present in nature and describes this order in the form of laws. Religion seeks to find the meaning and telos in the world and our position in it. Furthermore, both science and religion have ontological and epistemological claims about the physical world, and this does not cause any problem, because we can have different levels of understanding.

Many contemporary scholars consider science as objective, universal and rooted in observational evidence and they see religion as subjective, emotional and based on faith and authority. These scholars consider scientific knowledge as the only kind of knowledge which can be reliable, and they consider science as the ultimate source of explanation of everything.

Here we want to argue that

I. The Underlying Cultures of Science and Religion are not Quite Distinct

In fact scientific knowledge and religious knowledge have some common features:

a) Both science and religion take certain assertions about the physical world, such as the orderliness or the comprehensibility of the natural world, as a matter of faith. As Max Planck put it:

Anybody who has been seriously engaged in scientific work of any kind realizes that over the entrance of the gates of the temple of science are written the words: Ye must have faith. It is a quality which the scientist cannot dispense with.²

Einstein concurs:

The basis of all scientific work is the conviction that the world is an ordered and comprehensive entity which is a religious sentiment.³

In fact, science has its own faith-based convictions and without it scientific endeavour would not make sense. In the elaborate words of Paul Davies:

Science, we are repeatedly told, is the most reliable form of knowledge about the world because it is based on testable hypotheses. Religion, by contrast, is based on faith...

The problem with this neat separation into “non-overlapping magisteria”, as Stephen Gould described science and religion, is that science has its own faith-based system. All sciences proceed on the assumption that nature is ordered in a rational and intelligible way. You could not be a scientist if you thought the universe was a meaningless jumble of odds and ends haphazardly juxtaposed.⁴

The faith in the reliability of science, however, can be justified at a meta-scientific level. Roger Trigg argues⁵ that science can get its legitimacy only in a theistic context. His argument goes as follows:

- i. For doing scientific work, we must accept, as a matter of faith, that the world with which science deals is orderly and lawful.
- ii. Why should mathematics, apparently a product of human mind, be successful in unraveling the mysteries of our universe?
- iii. The success of science indicates that our universe is orderly and that it is the tuning between human mind and the rest of the cosmos which makes the universe understandable to human beings.

To explain these facts one may say that this is just the way things are, but a more acceptable answer is that this is the state of affairs because God has made it that way.

b) If religion is rooted in revelation, some of the scientific discoveries are made through intuition. As Charles Townes puts it:

Most of the important scientific discoveries come about very

differently and are much more closely akin to revelation. The term itself is generally not used for scientific discovery, since we are in the habit of reserving revelation for the religious realm. In scientific circles one speaks of intuition, accidental discovery, or says simply that 'he had a wonderful idea'.⁶

c) Contrary to what is commonly claimed, physicists cannot claim finality for physical theories, as these are heavily based on mathematics. But, all mathematical systems are based on some underlying axioms and according to Gödel's theorem one cannot prove the consistency of a set of axioms, unless one appeals to a larger system. Thus, to explain science one has to appeal to meta-science (metaphysics).

d) In both science and religion one has to deal with ethical issues. All religions have an underlying ethical base. On the other hand, it is a commonly held view among scientists that facts and values are separate. But scientists cannot ignore ethical values, as the whole scientific enterprise involves value-judgments, i.e. there is no possibility of doing science in a moral vacuum. In fact, all scientists usually observe certain values in their scientific work, e.g. being unbiased, truthful, etc. So, even Popper who is advocating the separation of facts from values admits that

The fact that science cannot make any pronouncement about ethical principles has been misinterpreted as indicating that there are no such principles, while in fact the search for truth presupposes ethics.⁷

Furthermore, the selection between theories is always made on the basis of some value-judgments, such as consistency of parts, unification power, generality, etc.

But ethical values cannot be derived from science per se. Thus, scientific culture is not purely scientific. Religion can supply a source for ethical values.

The divorce of science from ethics is one of the main causes of the destructive effects brought about by the misuse of science. This, in turn, is the result of

the materialistic outlook dominant in scientific circles of our time, an outlook which has neglected the spiritual dimension of human beings and the ethical responsibility of scientists. The remedy is the replacement of the present empiristic philosophy of science by a new philosophy of science in which all concerns of humanity is taken care of. Dr. Richard Thompson, of La Jolla Research Institute in California, has elaborated on this subject:

The understanding of nature as a machine has resulted in much technological progress, but now we find people throughout the world abandoning supremacy – a struggle that culminates in the construction of more and more deadly machines of mass destruction.

It can be argued that this trend of modern civilization has been strongly encouraged by scientific theories that appear to contradict any philosophy of life other than materialism. It may be very difficult to change this dangerous trend. But an essential ingredient for such a change could be the wide dissemination of a valid approach to scientific knowledge that allows for tangible spiritual dimension to human life and is compatible with the ancient understanding that mankind is dependent on a transcendental Supreme Being. Such an approach opens up the possibility of directly human energy towards higher spiritual goals and of providing a solid ethical basis for the conduct of our material affair.⁸

II. Scientific Knowledge can not Deal with All aspects of Human Life

This can be seen in the following way:

- a) Certain questions arise in science, for which science by itself cannot supply any response, e.g.
- Where do the general laws of science come from?
 - Why do we understand these laws?

Science per se cannot provide a response to these so-called “limit questions”. In the words of George Ellis:

The point is that physics can comment on physical laws actually in operation, but not on where they come from or why they exist? This is obvious if you think about the scientific method and the restrictions on verifiability considered previously ... Such meta-physical issues have to be decided on the basis of criteria that lie outside of physics itself.⁹

To have a response to these kinds of questions a more general framework is needed. Again religion can provide a response for these kinds of questions, i.e. it enriches the scientific culture.

b) Because of the limitation of its scope, modern science cannot answer the so-called ‘ultimate questions’ of human concern-questions like ‘What are we doing here?’, ‘What is the purpose of life?’, etc. Science keeps silent about these types of questions. In the revealing words of Eugen Wigner:

I don’t think physics deals with everything. Whether I am happy or unhappy, whether I am afraid or fearless, whether I am noble or I am mean, how does this get represented in science? Even if there are people who would say there is a chemical imbalance, I would like to think that there is something else.¹⁰

And in the elaborate words from Freeman Dyson:

The greatest unsolved mysteries are the mysteries of our existence as conscious beings in a small corner of a vast universe. Why are we here? Does the universe have a purpose? Whence comes our knowledge of good and evil? These mysteries and a hundred others like them are beyond the reach of science. They lie on the other side of the border, within the jurisdiction of religion.¹¹

Some scientists pretend not to be concerned about these types of questions. But, if a scientist neglects these “ultimate questions” at one time or another, he cannot dispense with them all the time. The experience of Max Born is revealing:

Long years of neglect have not deleted the deep impression received in my youth by the age-old attempts to answer the most urgent

questions of the human mind: The questions about the ultimate meaning of existence, about the universe at large and our part in it, about life and death, truth, and error, goodness and vice, God and eternity. But just as deep as this impression of the importance of the problems, is the memory of the futility of the endeavour. There seemed to be no steady progress as we find in the special sciences, and like so many others, I turned my back to philosophy and found satisfaction in a restricted field where problems can actually be solved. Yet getting old, I feel, again like many others, whose productive powers are declining, the desire to summarize the results of the scientific research in which, during several decades, I have taken a small part, and that leads unavoidably back to those eternal questions which go under the title of metaphysics.¹²

There are also some scientists, like Dawkins, who claims that science will finally answer these questions. But considering the nature and scope of empirical science, I think this is out of modesty. In the elegant words of Roger Penrose:

There is a certain physicist's arrogance about it that suggests that knowing all the physical laws would tell us everything about the world, at least in principle. Does a physical theory of 'everything' include a theory of consciousness? Does it include a theory of morality? Or of human behavior, or of aesthetics? Even if our idea of science could be expanded to incorporate these things, would we still think of it as 'physics', or would it be reducible to physics?¹³

III. The Role of Metaphysics in Science and Religion

Both science and religion are based on some metaphysical principles. The issue is clear in the case of religion. But, the present scientific communities, which are heavily under the influence of empiricistic philosophies, deny any relevance of metaphysics. The empiricistic philosophy, which had started with some celebrated British philosophers of the seventeenth century, got dominance

in the nineteenth and the first half of the twentieth century. The schools of positivism, operationalism, pragmatism and similar trends are different species of empiricism. The common feature of all these schools is that they give primacy to sense experience and reject metaphysics. They also hold that sense perception is the only source of our knowledge about the physical world. Thus, metaphysical concepts should be excised from any physical theory since they are not rooted in sense experience. The empiricistic philosophy, especially in its positivistic form, affected physicists tremendously, and in spite of the decline of positivism, in the second half of the twentieth century, the positivistic spirit is still dominant in physics circles.

Empiricists' claim that sense experience is the sole source of our knowledge and their denial of metaphysics can be refuted on the following grounds:

a) We never encounter nature with empty minds. Our interpretation of experimental data depends to some extent upon presuppositions that are held by the investigator. Andre Linde, an eminent Russian cosmologist, sums up the matter elegantly:

When scientists start their work, they are subconsciously influenced by their cultural traditions.¹⁴

b) A scientist's work is always based, consciously or unconsciously, on some general principles. These so-called *guiding* or *regulative* principles are not deducible from experiments, but they are metaphysical assumptions which provide a framework for a scientist's line of research. For example, for Galileo the metaphysical doctrine that nature is describable by mathematics was a guiding principle. Similarly, simplicity was a heuristic principle for Newton or Einstein.

As Einstein puts it:

A Theory is the more impressive the greater simplicity of its premises, the more different kinds of things it relates, and the more extended its area of applicability.¹⁵

And in the words of Heisenberg:

Mathematical simplicity ranks as the highest heuristic principle in exploring the natural laws in any field opened up as a result of new experiments.¹⁶

Furthermore, in their acceptance or refutation of theories, scientists often appeal to certain metaphysical principles. For example, when in 1926, Max Born denounced determinism in the atomic real; he admitted that his decision was philosophical:

I myself am inclined to give up determinism in the world of atoms, but that is a philosophical question for which physical arguments alone are not decisive.¹⁷

Similarly, quantum physicist's rejection of any sub-quantum level was a *philosophically-based decision*, not derivable from the requirements of physics. In the Broglie's words:

The usual interpretation of the formalism of wave mechanics is purely probabilistic, i.e. no attempt is made to look beyond the laws of probability which we have explained, and the idea of a hidden reality, on which the laws of probability are based, is rejected. This positivistic interpretation is based on the assertion that everything which is unobservable is non-existent and should have no place in theoretical physics.¹⁸

c) Contrary to what Empiricists claim, no collection of empirical data can ever lead directly to the construction of a theory. One has to assume some general principles or conditions or both before one can set up a theory. In fact, a theory can be considered to be a direct result of an experiment if we can show that there can be no alternative explanation for that experiment; but we can never claim this, and our past experiences have warned us against this type of mistakes. The agreement between a theory and a set of experimental facts does not necessarily mean that it is a correct one because, logically speaking, a conclusion can be drawn from different premises. Thus, we can

never claim that a theory is a direct result of experimental data. Infinitely many theories could be set up to explain a set of experimental facts. One has to add other information to single out one of them. In the words of George Ellis:

People need to be aware that there is a range of models that could explain the observations ... For instance, I can construct you a spherically symmetrical universe with Earth at its center, and you cannot disprove it based on observations ... You can only exclude it on philosophical grounds. In my view, there is absolutely nothing wrong in that. What I want to bring into the open is the fact that we are using philosophical criteria in choosing our models. A lot of cosmology tries to hide that.¹⁹

d) The number of experiments that verify a universal law of nature is always limited. Thus in accepting a proposition as a general law one is exceeding experience. In Max Born's words:

It looks as if science has a methodical way of finding causal relations without referring to any metaphysical principle. But this is a deception. For no observation or experiment, however extended, can give more than a finite number of repetitions, and the statement of a law – B depends on A – always transcends experience. Yet, this kind of statement is made everywhere and all the time. Philosophers call it inference by induction, and have developed many a profound theory of it ... I am willing to call induction a metaphysical principle, namely something beyond physics.²⁰

A strict following of positivistic trends, however, reduces the whole physics to mere restricted prescriptions.

Conclusion

The conclusion we want to draw from our discussion in parts I, II, and III of this paper is that when we are dealing with fundamental problems in science, problems which are mostly metaphysical in nature, decision making is

difficult within the science itself, and it is here that scientists use their metaphysical commitments and value judgments.

Furthermore, from the foregoing considerations, we conclude that:

1. There are many problems of human concern that scientists, as human beings, are confronted with, and for which science *per se* cannot deal with and has to appeal to different spheres. Specifically, there are some metaphysical issues that scientists, knowingly or unknowingly, have to handle. Thus, the culture of science is not a self-sufficient one and has to be supplemented with some staff from other cultures. Even Some eminent positivists admitted that confinement to sense data alone does not lead us to anywhere. Thus, when Ayer was asked by Bryan Magee about the shortcomings of logical positivism, Ayer responded:

Then, the reductionism just doesn't work. You can't reduce statements, even ordinary simple statements about cigarette cases and glasses and ashtrays, to statements about sense data, let alone more abstract statements of science ... If you go in details very little survives. What survives is the general rightness of the approach.²¹

2. Some of the problems that science cannot singly handle are of real interest in the culture of religion and, in fact, some religions have definite positions about them. The comprehensibility of the world provides a good example.

Thus, it appears that the two cultures of religion and science are not completely independent spheres and at least have some overlapping zones. These are predominantly in the metaphysical principles underling science and in the ethical issues, and it is specifically in these two areas that world's major religions have contributed to the enrichment of science. For example, Einstein considered the idea of the comprehensibility of nature to have been taken from the sphere of religion:

To this [sphere of religion] there also belongs the faith in the possibility that the regulations valid for the world of existence are

rational, that is comprehensible to reason. I cannot conceive of a genuine scientist without that profound faith. The situation may be expressed by an image: science without religion is lame, religion without science is blind.²²

Similarly, Andre Linde, who is not a theist, believes that the idea of searching for a final theory of everything is rooted in the monotheistic religions:

The whole of modern cosmology has been deeply influenced by the western tradition of monotheism ... the idea that it is possible to understand the universe through one ultimate 'Theory of Everything' is an outgrowth of belief in one God.²³

And so is John Barrow who believes that our most engaging questions are rooted in our religious quest for meaning:

Many of the deepest and most engaging questions that we grapple with still about the nature of the universe have their origins in our purely religious quest for meaning. The concept of a lawful universe – with order that can be understood and relied upon – emerged largely out of religious beliefs about the nature of God.²⁴

3. Another sphere in which both religion and science have to deal with concerns the applications of science and the problem of human responsibility. As science by itself cannot deal with ethical issues, the orientation has to come from a different source – a source which is concerned with human welfare and felicity. Here, religion has shown to be an effective source of insight. In the words of John Brooke (a leading contemporary historian of science):

The direction and application of scientific research clearly can be different under different value systems. And since human values are often organically linked with religious beliefs, the latter can still be presented as relevant to the orientation of science and technology.²⁵

In the light of the last three considerations, some scholars consider science and

religion as two complementary spheres that have to be taken together to handle problems of human concern. As Freeman Dyson puts it:

Science and religion are two windows that people look through, trying to understand the big universe outside, trying to understand why are we here. The two windows give different views but they look out at the same universe. Both views are one-sided, neither is complete. Both leave out essential features of the real world. And both are worthy of respect.²⁶

In my view, and here I am speaking as a Muslim scientist, theistic worldview can provide a comprehensive framework in which both cultures of science and religion can be accommodated, and this worldview can supply the metaphysical basis of science. This comprehensive worldview can cope with the whole spectrum of human experience, including ethical issues, and can provide a common culture for both science and religion. My argument is based on the following premises:

- i. Scientific knowledge needs some metaphysical underpinnings and religion can provide a metaphysical basis for science at the fundamental level.
- ii. Science cannot provide a basis for the proper applications of science in the human and environmental domain.
- iii. Religion can account for the underlying order of the universe and provides a sound metaphysical explanation for the reliability of science, morality, and meaning.

Notes

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