

John Gwilym Jones
Walter Idris Jones Lecture
Aberystwyth University
1 May 2014

The Science of Religion and the Religion of Science

A. Self confidence on both sides

I remember my father telling me about a boy on a neighbouring farm being kept until he was seven years of age before sending him for his first day at school. When he came home at the end of the day his father asked him, "Well, Daniel, what did you learn in school today?" "The whole lot," he said and he didn't see any use in going back there for a second day. There are some scientists like that, in their self- confidence, believing that science has the adequate tools to know the whole lot about the world and life. Their next step then is to assert there is no being or other dimension beyond what can be sensed or proved. On those grounds some would deny the existence of God, forgetting the adage (attributed to William Cowper): "The absence of proof is not proof of absence." This attitude is called scientism, a scientific fundamentalism. There are also equally self-confident believers in religion, who know through faith that there is a life higher, deeper and richer than the world visible to human perception. Many of them are willing to declare that all other religions apart from theirs are false. And on the basis of their faith they maintain that the truth regarding life will never be realized by science. And between those two fundamentalisms there is an ongoing conflict.

I must apologise at the outset that we are confining our discussion to science and religion. We learn about our lives and our world in other ways, through the arts and literature, and it could be argued that science and religion are just two younger sisters in our universal family of knowledge.

I've called them two young sisters because they are just in the process of growing up. Over the centuries theological insights have developed. From the early concepts of a pantheon of gods regulating the fortunes and misfortunes of human lives, on to a monotheistic concept of the deity, one can detect a kind of progress in theology. From the concept of a God pleased by burnt offerings to a God of mercy and forgiveness: again some progress. Science also will develop from age to age within the confines of human ability and that of computerised robots. So both science and religion hopefully will grow and mature in ages to come.

But there are in the family of knowledge elder sisters who have always been here. One of them is philosophy and she has matured ages ago. Humanity is not old enough to have recorded the beginnings and growth sculpture: it is timeless. So also is art, music and poetry. They were old in their childhood. Who among today's artists surpasses Leonardo da Vinci. Are there better poets today than Dafydd ap Gwilym? Is there a 21st century composer greater than Beethoven? In their essence these fine arts have not developed or progressed over time. The only element that has developed in all these are their technological modes of expression. What philosopher today stands taller than Socrates? A.N. Whitehead once wrote that European philosophy was generally a series of footnotes to

Plato. These gifts are ageless and timeless. But for this lecture we confine our comments to the junior sisters, religion and science.

B. Greek Philosophy

Like little sisters science and religion occasionally tend to quarrel. We hear some squeals during the golden age of Greek philosophers, when the great thinkers started examining objectively the basics of religion. Xenophanes in the fifth century BC was a poet, a theologian and a philosopher. We see him criticising the anthropomorphism of contemporary religion:

The Ethiops say that their gods are flat-nosed and black,
While the Thracians say that theirs have blue eyes and red hair.
Yet if cattle or horses or lions had hands and could draw
And could sculpture like men, then the horses would draw their gods
Like horses, and the cattle like cattle, and each would then shape
Bodies of gods in the likeness, each kind, of its own.

This reminds us of the depiction of Jesus as a fair skinned blonde haired European. One could say that Xenophanes here gives us the first example of human intellect looking critically at popular contemporary religion.

One God alone among gods and alone among men is the greatest.
Neither in mind nor in body does he resemble the mortals...

This passage again embodies a rejection of anthropomorphism, and commending monotheism adding the insight that god is qualitatively unlike man.

Then on the subject of knowledge, he suggests that there is often a gulf between truth and opinion. Xenophanes believed that there is a truth to be known, independent of human beliefs and perceptions, a truth known to god, and originally to god alone. In other words, reality or the truth, is what the gods know. Human beings have to struggle to find it. Here is another fragment:

The gods did not reveal, from the beginning,
All things to the mortals; but in the course of time,
Through seeking they may get to know things better.

Xenophanes's saw the possibility of intellectual progress over time. Man can reach the approximation to objective truth, a closeness to truth. Again another fragment:

But as for certain truth, no man has known it...
And even if by chance he were to utter
The perfect truth, he would himself not know it;
For all is but a woven web of guesses.

This is a remarkable articulation of the theory of objective human knowledge. It is really astounding that a philosopher poet two thousand five hundred years ago could have expressed ideas that are echoed by twenty-first century thinkers. But this is one of the first examples of an astute mind criticising the religion of his age, and at the same time warning

the learned that there are limits to their knowledge.

We must mention Plato and his teacher, Socrates. According to Socrates, physical objects and physical events are "shadows" of their ideal or perfect forms. For Socrates the material world is not the real world. It is natural for us to believe that it is the objects that we can see and feel and hear are the real substances. This could be interpreted as a warning to the scientific mind that was about to come to rule the world of knowledge. Socrates scorned those who hold the idea that they must be able to grasp any object to prove that it is real. And here we come across a very interesting phrase of his: he calls such people "eu a-mousoi", people who are "blissful without the muses". The "musoi" are the goddesses of the inspiration of literature, science and the arts. In English the "muse". So again we have a philosopher in the ancient world foreseeing exactly modern contemporary ideas regarding the development of scientific knowledge, namely that the course of scientific learning depends, not only on the processes of reasoning, but in its crucial and key advancements on revelations beyond human understanding. With the suggestion that there are some who happily plod along without these moments without getting anywhere.

In Aristotle we come to a completely different philosophy. Indeed he could be said to be the first philosopher of science. He spent much of his life studying objects in the natural world, researching natural sciences such as botany, zoology, chemistry, physics and astronomy. He more than any other was the pioneer of reason as a basic principle in the development of science and philosophy. Since Aristotle was the greatest influence on the theologians of the church throughout the early centuries it isn't surprising therefore that the theologians analysed their theology according to the principles of logic.

C. Christianity and science up to the Middle Ages.

In the same way as Christianity was swallowed into the Roman Empire under Constantine, Christian theology was swallowed by philosophy. So called Christians then became kings and rulers of the countries, and Christian theologians ruled the world of philosophy. Therefore in the early centuries we see no tensions between Christian theology and science. Theology was in the hands of philosophy, or you could say that philosophy, and even science in its infancy, was in the hands of theologians. In Europe the church had a firm grip on centres of learning and the minds of the people. So, almost without exception, Christian scholars led in any progress in the branches of the sciences, and it would not have occurred to the early medieval mind that science was competing with religion.

D . Other faiths and science

What about other religions? Over the years other world faiths did not have any difficulties with the progress of knowledge and the influence of science.

Hinduism has always shown tolerance towards other faiths and disciplines and has historically embraced rational thinking, affirming that science brings authentic knowledge of the universe, although it is incomplete. Similarly most Buddhists today view science as complementary to their beliefs. Their sacred texts are generally accepted as pointers to an ineffable reality beyond the reach of ordinary cognition and senses.

Confucian thought is more akin to philosophy, and therefore in harmony with scientific thought. But it originated as a result of the attitude of concern for humanity and the

universe, and it led, not to a theory of knowledge as in Western science, but to universal practice. It was because of his concern with the destiny of the individual and society that the Chinese mind began to philosophize. It's attitude towards science has varied over time. Confucianism and science view life in different but not in conflicting ways.

Science and Islam

We are on different ground when we consider Islam. Much of the scientific method was pioneered first by Islamic scholars. Science, from an Islamic standpoint, is the study of nature as stemming from the conception of the "Oneness" of God. In Islam nature is not seen as something separate from God but an integral part of a holistic outlook on God, humanity, the world and the cosmos

The modern scientific method was pioneered Alhazen in the eleventh century, whose contributions are similar to those of Isaac Newton. And it could be argued that the very existence of science, as it is understood in the modern sense, is rooted in the scientific thought and knowledge that emerged in Islamic civilizations between the eighth and the sixteenth century, what is known as the Islamic Golden Age or the Muslim scientific revolution. One example was the use of dissection in Islamic medicine during the twelfth and thirteenth century influenced by the writings of the Islamic theologian, Al-Ghazali, who encouraged the study of anatomy as a method of gaining knowledge of God's creation.

Another Islamic scholar, a few years later than Al-Ghazali, Fakhr al-Din al-Razi, studied Islamic cosmology, criticizing the ideas of Aristotle regarding the Earth's centrality within the universe, and even explored the notion of the existence of a multiverse beyond this known universe. He argued that God has created more than a thousand thousand worlds beyond this world. In the fifteenth century Ali Kusçu (1403–1474) conceived the idea of the Earth's rotation.

According to many historians, science in the Muslim civilization flourished during the Middle Ages, but began declining at some time around the fourteenth to the sixteenth century. At least some scholars blame this on the "rise of a clerical faction which froze this science and stifled its progress. One example of this opposition was the demolition of the observatory of Taqi al-Din in Istanbul in about 1580.

By the nineteenth century, Muslim scholars came to react to modern science in broadly the same ways as Christians. Some rejected modern science as corrupt foreign thought, considering it incompatible with Islamic teachings. Some thinkers in the Muslim world saw science as the only source of real enlightenment and advocated the complete adoption of modern science. While the majority of faithful Muslim scientists tried to adapt Islam to the findings of science.

E. Christianity and Science post Renaissance

For the Christian church the growth of science became much more problematic. One of the outcomes of the Renaissance was the setting free of the sciences from the domination of the church. Immediately after the Reformation arrived to puncture the authority of the Roman Catholic Church. That was the beginning of the modern period of tension between Christianity and science. With the freeing of Universities from the grip of the church free

reign was given to the development of the sciences. Yet with time it was seen that one authority had been deposed only to become subject to another authority namely the authority of the scientific attitude. Interestingly the Protestant Reformation made a very similar mistake. Among the central principles of Martin Luther was the dogma of "sola scriptura", the Scriptures as the only authority. After overthrowing the authority of the Pope and the Church and its dogma they had to have another authority in their place, and the Protestants, in all matters ecclesiastical and doctrinal, walked into the domination of the text of the Scriptures.

F. Fundamentalism

Come on to the 19th century when progress in scientific discovery was becoming a flood, and accept unquestionably as pure truth, some factions within the church decided to compete with this "dangerous" authority. The Princeton Seminary in the United States became a centre of literalism and fundamentalism. The principal, Charles Hodge, produced one of the first reactions to Charles Darwin's book, *On the Origin of Species*, and declared Darwin an atheist. Darwin became an iconic figure in the encounter between religion and science. Hodge and his followers held: if science insisted on speaking with authority regarding the creation, God through the revelation of his Word has already spoken in the Bible, and the Bible, they maintained was infallibly true. These Christians fell into the trap, and insisted on turning the Bible and its interpretation into a scientific document. In reality Christians through the ages had never read the scriptures purely as a literal historical document. They saw through all the books of the Bible allegories with parabolic and mythological meanings, and those interpretations deepening and enriching their significance, and conveying profound truths.

The literalists had decided fight science on its own territory, and lost the battle miserably. Religious people were taken in by the success of scientific discourse and wanted theology to sound scientific. For them it wasn't sufficient to affirm that the Bible contains deep truths. It had to be literally true.

Fundamentalism took its name from a series of pamphlets entitled 'The Fundamentals of the Faith' published by a group of American conservative evangelicals between 1910 and 1915, which set out what their authors claimed were 'the primary Christian themes'.

The growth of fundamentalism and literalism resulted in a new demarcation among Christians. On one side the fundamentalists and their literal reading of the Bible. On the other the liberal progressives who followed modern Biblical criticism resulting in a reinterpretation of their faith. But since the conservative Christians are more explicit in their beliefs and doctrines, their fundamentalism and creationism being well defined, the conservative camp is taken as being representative of Christianity. And whenever atheist scientists decide to attack religion this fundamental Christianity is always their sitting target.

Religious Fundamentalists, be they Christians or Muslims or Zionists, claim that some source of ideas, usually a sacred text, is inerrant and complete, and they strive to impose those ideas as absolute truths to be followed by all. While this doctrine is basically religious, it also entails a desire "to reshape the world at large" and advocate society-wide obedience to the texts. It develops into a political ideology that intends to impose traditions, resorting to violence if necessary to achieve its ends.

We could cite a mild example. In 1983 a group of Christian families in Tennessee complained against to the local Board of Education, challenging a primary school reading program which referred to several major religions in the world. Christian parents argued that this was denigrating their religious views; the very exposure of children to a plurality of religious views was understood as interfering in their free exercise of religious belief.

What characterizes fundamentalism, in contrast to religious beliefs in general, is the principle of intolerance. Fundamentalism opposes all forms of democracy. First, because democracy, on all its accounts, involves a sense of autonomy and equality, accompanied by a principle of tolerance.

The connotation of the word fundamentalism remained in the Christian context until the Iran hostage crisis in 1979, when it was also extended to refer to extremist movements in Islam usually associated with Ayatollah Khomeini's revolution. The term has gained several different uses from that time on, most of them related to the term 'religious extremism'. What had happened was that Islam had seen the fervour and missionary attitude of conservative Western Christianity and emulated its aspiration to influence politics. In other words, America has exported fundamentalism to Islam, and we in the West may well reap what we have sown.

G. Scientific Fundamentalism

On the other hand, many scientists have been lured into a fundamentalism of their own, often referred to as scientism: the belief that science alone is the only route to verifiable knowledge regarding the universe. Many scientific authors have displayed arrogance in dismissing religion, showing an uncompromising faith in the scientific method.

Scientific fundamentalism displays the same intolerance as religious fundamentalism. If you had a child at a secondary school and the biology teacher taught a creationist view of the beginnings of the universe according to Genesis, how would you react? Some of us would bring a case against the teacher. We would argue in court that the interests of our children are best served by teaching them the accepted theories of scientific knowledge. The teacher on the other hand would argue that eternal life is more important for your child than a certificate in education. The basis of the teacher's argument would be her faith in God's revealed word in the Bible. And if the teacher's barrister were to ask you to disclose the basis for your trust in the truth of scientific statements, your only answer would be the conviction of your faith in science.

Scientific fundamentalism is just as totalitarian as religious fundamentalism. Science relies on a particular kind of experience, namely publicly observable data, which are interpreted by scientific theories. Objectivity and universality are said to be the hallmarks of science. Yet the history of science shows that widely accepted theories have been replaced or modified, so there is no universal agreement across a span of time. What is worse still, philosophers of science have pointed out that all data carry with them a bias of a theory. A scientist's conceptual framework influences the selection of phenomena for study and the choice of variables taken to be significant. Thomas Kuhn argued that a scientist's paradigms, which are clusters of assumptions, strongly affect scientific data. The tendency in science is to work within the paradigm presently acceptable. It is a kind of "democratic reason". For a scientific fundamentalist that is his faith.

H. Perils of Scientific fundamentalism.

What about the perils of Scientific fundamentalism? Edmund Burke long ago voiced his fears regarding some tendencies among scientists. Natural philosophers, he said, were "simply addicted to toying with novelty... caring nothing for the human objects of their experiments. He goes on: "These philosophers are fanatics: they are carried with such a headlong rage towards every trial, that they would sacrifice the whole human race to the slightest of their experiments." This fear of the arrogance of science is still alive and with good reason. Science, at its most distinguished, is driven by the Unknown, but science, as popularly understood, is thought to be a treasure house of certainties, and to be venerated with awe.

With the rise of capitalism, nature was increasingly viewed as simply a resource for human use and private profit. As result of the growth of technology, human power over nature rose dramatically. It was assumed that there were no limits to our ability to manipulate it for our own purposes. And scientism seems also to believe that science is capable of formulating its own moral code to regulate its own activities.

In the technologically driven growth of modern science there is an inherent competitiveness, among industrial and commercial interests, between nation states and even between cultures. Politicians and sociologists have often commended competition for giving an edge to human aspirations and endeavours. But its destructive effect in science far outweighs its benefits. One glaring example is the rivalry of pharmaceutical companies and their protecting of patents in complete disregard for the essential dissemination of knowledge, especially in health matters.

Science ideally is one of the best fruits of the human intellect and potentially one of the greatest blessings for global life. Yet its vulnerability is that it has to be heavily funded and therefore regulated by technology and commerce. It is motivated by the vested interests of companies, from the dubious to the most destructive. It has wreaked havoc with communities and nations, because one of the most liberally funded research is in armaments and weapons of destruction, which lead civilizations inevitably, not to peace, but to war.

I. Perils of religious fundamentalism

What about the perils of religious fundamentalism? I need not name those. We are increasingly familiar with them. They include the minor injustices in society, when verses from sacred texts are cited to justify discrimination, racialism and prejudice, even within Christian churches. So called religious convictions fan mutual suspicion, fear, hatred and revenge. They develop into violence, aggression, brutality both tribal and international, from the Christian slaughtering of Muslims and Jews during the Crusades, right up to today.

J. The basic confrontation

We should realise by now that the basic confrontation in human knowledge and endeavour is not that between science and religion but rather between any kind of fundamentalism and the fate of the human race, which could well bomb itself into extinction. So is there any way of convincing both these extreme fundamentalisms that they could learn from one another?

(1) Religion under the microscope of Science

From studying the history of religions by a scientific method it can be clearly demonstrated that there are corresponding tendencies in different religions to develop the same undesirable elements. They insist on an exclusivity on the basis of revelations, which are often enshrined in texts which acquire an untouchable sacredness, and leading to extreme measures. Scientific scholarship can examine and compare religions, and reveal the same deviant and perverse tendencies common among different faiths. It could also, and this would be particularly valuable, it could reveal the common seams of mercy, forgiveness and love that run through all of them.

(2) Religion examining Science.

(a) Religion could assist science. Spiritual insight and self-recognition can disclose the fallacies of scientism's self assurance. Religion recognises the fallibility of the human mind. Therefore if science declares that its goal is the uncovering of the truth, appropriate humility should remind it that the way to the truth is doubt. Not to accept the standard knowledge of the hour but to doubt and question what elements of that knowledge is true. Every true scientist should also doubt his own convictions, his own motives, prejudices, weaknesses. Indeed, according to one scientist, he should make himself the enemy of all he reads. Finding the truth is difficult, and the way to truth is rough.

(b) There is a need for "ethical wisdom" and a moral oversight in science. In the words of Elfed:

"In the growth of every knowledge
make us live wiser..."

A spiritual conscience could control and restrain the more deplorable tendencies of scientific developments.

(3) We could also explore the similarity

(a) There is also an affinity between science and religion in their use of models, parables and analogies. For example, even we scientific laymen are familiar with the snooker ball model of a gas, the model of the atom or the molecule, or the old plum pudding model of the nucleus. Scientific models are more than temporary psychological aids, for they can be used to prove modifications of theories. Models are similarly used in religion, particularly in the form of parables and myths. And these are useful to express truths regarding God and his relationship with creation.

(b) Sometimes two parallel models, such as the wave and particle models in quantum physics, can be useful, even though they cannot be combined in a single model. Models play a similar role in religion in the formation of concepts. For example, personal and impersonal models of God: God as father, but God as spirit. In both science and religion, models are not literal descriptions of reality but attempts to imagine what cannot be directly observed.

K. Two languages

But in spite of all these suggestions we are brought down to earth by no less a thinker than Ludwig Wittgenstein. Science and religion, as he said, are different languages. They present

two different pictures. With all the will in the world they will not really understand one another. Certainly they will not learn from one another. Is there any common ground? Is there any way to bring them together? Well there is.

The philosophical insight of a scientist has suggested a way. Religion through doctrine, and science through knowledge both search objectively for truth. Michael Polanyi show that we ignore the role which personal commitments play in the practice of science. Polanyi contends that all knowledge claims rely on personal judgements. He denies that a scientific method can yield truth mechanically. And he says, All knowing relies upon commitments. We must recognise that we believe more than we can prove, and know more than we can say. We have thought that we must know before we can believe. The scientist thinks that he seeks knowledge and concrete proof before he can believe. On the contrary: he must first believe in his scientific system before he can know the validity of his data or formulate his theory. In religion it is sometimes thought that children must be taught the fundamental facts before they profess their belief. On the contrary, in religion belief in God is primary and basic. It is then that the believer can begin to know God.

Polanyi stressed the importance of intuition or instinct in scientific discovery, like a blind man's use of a stick. We fumble our way through information which contains personal knowledge, knowledge which evades explicit formulation. But suddenly we arrive at a realization, a revelation. This ties in with the concept enunciated by Thomas Kuhn, that science consists of long periods of puzzle solving, but then suddenly there come brief periods of changing the pattern, the "paradigm shift". By "paradigm shift" he meant a revolution in knowledge that changes the picture completely. Moments in science such as the paradigm shifts of Copernicus or Einstein. These occur suddenly as if from outside the normal pattern. Rare inspired moments as if triggered by inspiration, by the muses.

So the essential common ground between science and religion is the reliance of both on the paradigm shifts the moments of inspiration, the moment of the muse. When those do not come our search for truth is futile drudgery, or dead ends, or worse. When they come, they bring light and freedom. Going back to Socrates, those of us who choose to live without the muses are blissful enough in our little worlds, though we are doomed to darkness. But those who are willing to be led by the muses can illuminate their world.

But how do the muses come?

Islwyn the 19th century poet said that the inspiration

"comes when it wishes
like the rain and the rainbow.."

No, According to Michael Polanyi: "A knower does not stand apart from the universe, but participates personally within it. Our intellectual skills are driven by passionate commitments that motivate discovery and validation. In the case of religion, we are familiar with the sudden insights of prophets and the revolutionary teaching of Jesus, for us the greatest of all paradigm shifts. What caused the paradigm change that he introduced? The answer is his utter commitment in love towards others. In Jesus the deeds of his love preceded his teachings. The practical comes before the theory. Indeed it precedes the experience. For the Jewish Rabbis religious teaching, what they called "miqra", was essentially a programme for action. According to Thomas Merton, " Love is our true destiny. We do not find the meaning of life by ourselves alone - we find it with another." And for

Jesus the truth was not an abstract idea: truth is commitment to action. John 7.21: "he that does the truth comes to the light". Not *knows* the truth. Not *believes* the truth. But *does* the truth. And involvement in action triggers inspiration.

What therefore of religion and science? What commitment can inspire them? I would say, for science, not the enticements of funding and finance-led research, but the commitment to the beauty and goodness of knowledge. That for me should be the basic principal of university education. And for religion, not, I hope, another futile revival to repeat barren dogmas and to revert to the worship of texts, but a commitment to the beauty and goodness of love for others and for the universe.

If you were to look at a certain house in Anglesea on "Google street view" you would see, overshadowing the gateway, a tree full of shiny green leaves. In reality you would be seeing a tree overgrown and strangled by ivy, and that is how the tree looked when the Google camera van went by two years ago. Last autumn the owner set about stripping the parasite ivy, root and branch, leaving a straggly, lean skeleton of a hawthorn tree. This spring that hawthorn has flowered gloriously, flourishing better than ever. That would be my hope for religion and science alike. Science has been in the stranglehold of technology and commerce, and even the grotesque requirements of warfare, restricting it from being able to serve the world in beauty and goodness. Religion has allowed itself to be tied up in ritual, literalism and the knots of legalism, suffocating it, and rendering it incapable of serving the world in mercy and compassion. Let's start stripping the ivy.