

THE CLASH BETWEEN SCIENTIFIC AND RELIGIOUS WORLDVIEWS: A RE-EVALUATION

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In European culture, the change from the sixteenth to the seventeenth centuries brought with it a dramatic change in worldview. In 1664, René Descartes published a book entitled *L'homme de R. Descartes et un traité du Foetus*. To explain binocular vision, it included a particular kind of line drawing of a woman, a drawing not dissimilar to some contemporary abstract portrait paintings.¹ The image is far removed from what we see in daily life. The woman's two eyes are deliberately enlarged to show how they are able to receive light rays from an external object and how they send messages to the brain via the optic nerve. There is no interest in the beauty of the face, or in the expression of the posture. Instead, the image attempts to expose the mechanism that lies hidden under the skin, inside the eyes, and within the head. The person, as it were, disappears. Descartes' drawing vividly illustrates a new worldview that differs from the one we normally adopt in daily life. It represents what we now call the mechanistic worldview – a new perspective, a new picture showing not only how people see themselves but also how they see the entire universe. From a worldview that highlights a holistic understanding, we pass to one that highlights analysis and mechanism. Since a personalistic appreciation of the world is characteristic of religion while an interest in hidden mechanisms is characteristic of science, we can interpret the relation between religion and science in terms of such a shift of worldviews. The shift,

however, does not entail the substitution of one view by the other. The coexistence of science and religion seems to be like double vision, a bifurcation of a worldview. My main question in this paper therefore has to do with the relation between these two simultaneous worldviews. Do science and religion represent a clash of worldviews? If so, what are the implications? Of course, we first need to clarify carefully what we mean by 'worldview'. This will be the aim of my first section. In the second section, I will offer a brief overview of clashes between science and religion, and finally, in the third section, I will briefly present some current areas of research in this area. Since the topic of science and religion is vast, I am obliged to focus only on some issues without pretending to solve all the problems.

1. WORLDVIEWS

What is a worldview? As a first approximation, we can say that a worldview is a way of seeing the world as a consistent whole. When Descartes and others like Galileo Galilei and Thomas Hobbes viewed the world as a complex mechanism, they launched a new logically consistent and comprehensive conception of the world. They showed that it is possible to substitute a previously coherent conception of the world by one according to which nature is a self-creating and self-maintaining machine. This new view held that matter has passive attributes only. Change is explainable in terms of the mathematical laws of nature. Living things behave in their characteristic ways simply because of the complex interaction between their constituent parts. In this framework, the laws of nature are a kind of guarantor or dispenser of motion and regularity. Whatever happens happens of necessity. There is no escaping the explanation in terms of particles and laws. No other explanation is needed. No other explanation is compatible. As this worldview paved the way for the invention of all kinds of new machines, we can view it as a new form of human encounter with nature.

Nature is not to be feared. It is to be manipulated to serve human needs. Nature is at the disposal of humans, a thing to facilitate the achievement of human goals, a source to be exploited.

This worldview is quite different from a religious worldview. What makes a worldview religious? Pre-technological societies had an understanding of nature that we may call animistic. They saw many of the major movements of nature as the result of deliberation and judgement on the part of some invisible personal agent or agents, usually called spirits. The rough seas were an expression of anger on the part of the spirit of the ocean, considered as a person or a god. A good harvest was due to the benevolence of the land, again considered as a person. A contagious disease indicated punishment by a god or forest spirit. This kind of understanding produced a deep reverence towards nature but also restrained intrusive questioning and experimentation. It displayed an uncritical tendency to personalize the forces of nature. People who explained nature in this way considered themselves surrounded by more persons than there actually were. But is this animistic worldview an ancestor of the religious worldview of today? This is a disputed question. Given the variety of religions, it may be a serious oversimplification to talk about one single religious worldview. To minimize such problems, I will focus on the Judeo-Christian tradition. In this case, the religious worldview includes the basic idea that God is the fullness of existence; that God is omnipotent, omniscient, beyond time and space; that God created the universe out of nothing; that God created all its creatures, all its laws; that the Trinitarian God of Father, Son, and Holy Spirit is personally engaged with the history of each human being and with the history of the universe as a whole. God's providential care ensures the fulfilment of creation and its actualization.

Before we move on to consider in detail the way in which this religious worldview clashed with the mechanistic worldview that emerged with the rise of science, I would like to

mention some very significant contemporary developments in science. Science no longer supports the mechanistic worldview as it once did. Other worldviews have emerged. We have, for instance, the dynamic worldview. Deriving from Aristotelian insights, this worldview assumes that things have specific powers. For instance, an acorn has an inherent power, the power to become an oak. Nature is full of such intrinsic powers. Things are not static but dynamic. Then there is the evolutionary worldview. This worldview introduces a time-scale that differs considerably from the time-scale we use normally. It sees nature as a process that is not measured by units of time corresponding to hours, days or years but by units of vast duration, eras spanning millions of years. This view starts with a special focus on living organisms, seeing them as a tree of life from which the various species we see today are like branches that have spread out in all directions during the vast sweep of evolutionary time. Unfortunately, in the limitations of this paper, I cannot discuss these worldviews in any detail. I will however focus on the main point of my topic, namely the conflicts between the scientific and religious worldviews.

2. CONFLICT ZONES

In the course of history, the religious worldview has faced many challenges, the decisive one being the apparent incompatibility between God's infinite goodness and the reality of evil in the world. Many of these challenges are not particularly related to science. They existed before the rise of the scientific mentality. In what follows, I will focus on the challenges that arose specifically from the scientific worldview. These challenges stimulated various kinds of religious responses and in many cases produced debates that lasted for a long time. In this sense, we can call them conflict zones between worldviews.

Two important conflict zones arose very early on as the natural sciences emerged. The first one was a conflict regarding authority, the second one regarding the laws of nature. The question on authority emerged dramatically when Galileo Galilei used his empirical method to refute some fundamental assumptions that we had held since time immemorial, for instance that the earth was stationary. For many centuries before Galileo, the ultimate source of truth, including truth about the universe, was the Bible. As regards the truths that we could extract from the Bible, the church had established with great attention general methods of interpretation, involving structures of government with checks and counterchecks, to guarantee an acceptable degree of objectivity. Consequently, when Galileo introduced the idea of two sources of truth, the Book of Revelation, namely the Bible, and the Book of Nature, he was effectively challenging the monopoly of the established tribunal structure. Moreover, if there are two sources of truth, a new problem arises. What are we to do when the Bible says one thing and science says another? Conflict arises precisely here. There is, of course, much more to say about the Galileo case, but I want to highlight this particular and important feature. I think that the best way to characterize this clash is in terms of authority – with all its implications for epistemology, culture, society and even politics. A clash of worldviews is really a clash as regards who is in charge of what. It is a clash of paradigms.

The second early conflict zone I mentioned deals with the laws of nature. Galileo had concluded that, as he put it, mathematics is the language of nature:

Philosophy is written in this grand book (I mean the Universe) which stands continually open to our gaze, but it cannot be understood unless one first learns to comprehend the language and interpret the characters in which it is written. It is written in the language of mathematics.²

With the use of mathematics, we could discover and articulate the hidden laws of nature that governed all motion. Other scholars followed his example, and, with the achievements of

Isaac Newton and Pierre Simon de Laplace, the scientific worldview could eventually boast of the knowledge of precise laws of impressive generality. Prominent natural philosophers were so impressed with the power acquired through the knowledge of these laws that they imagined the possibility of knowing all laws and thereby the possibility of predicting all motion within the universe, including our own motion in daily life. The universe therefore is nothing more than an enormous deterministic machine whose laws are necessary and eternal. The clash of worldviews arises precisely here. The laws are immutable, necessary, omnipotent, governing all. They become a substitute for God. Who needs God, if we have access to the laws of nature? Facing this challenge, defenders of the religious worldview sometimes try to overcome the conflict by showing that in our scientific explanation there are still open gaps. These gaps, they argue, are a reminder that we cannot do away with God. For instance, we still do not know what consciousness is. We still do not know how a lizard whose tail is severed is capable of growing a new one. We still do not know how birds find their way during migration. In the quantum world, particles can be in two places at once. We still do not know why apples or people cannot do the same. So, religious defenders say, we need God in spite of all our knowledge of the laws of nature. The conflict between the two worldviews, however, is not so easily resolved. Its effects are still present today.

Have recent developments in science made any difference to these conflict zones? The twentieth century has seen three major innovations: the consolidation of the theory of biological evolution with the synthesis between Darwinian principles and genetics, the introduction of relativity physics, and the revolution of quantum mechanics. As I mentioned briefly above, because of these developments, science today remains strictly within the realm of matter and motion but does not support the mechanistic worldview as it once did. Some new conflict zones have emerged. For instance, evolutionary biology holds that natural selection is the major mechanism for the diversification of life on the planet. This aspect of

the current scientific worldview apparently clashes with the religious worldview as regards the possibility of seeing the intricate balance between the structure and function of the biological world as a proof for the existence of God. Evolutionary biologists, at least some of them, argue that the stunning harmony between structure and function – between the structure of the parts of living things and their function within the organism – is the product of random mutations and environmental filtering only.³ Defenders of the religious worldview, on the contrary, argue that this harmony between structure and function is at times so complex that no evolutionary explanation could ever be entirely adequate. The universe, they say, is simply not old enough for such outcomes to happen when their probability of happening is so small.

Another new conflict zone has to do with the ubiquity of the scientific method. This conflict zone is, in a way, an extension of the one dealing with authority. I explained above how, at first, all authority over truth used to be confined to the religious worldview. A conflict zone then emerged when some of this authority had to be shared with the scientific worldview. In the twentieth century, especially because of the extension of scientific explanation to include the extremely small, as in quantum mechanics, and the extremely large, as in relativity and cosmology, authority over truth shifted more and more towards the scientific worldview and is no longer shared with any other worldview. The new conflict zone therefore arises because people assume that only science can deliver the truth.

Philosophical researchers call this position ‘evidentialism’. According to evidentialism, we are obliged to believe something only if we have good evidence for believing it. ‘Evidence’ here is understood just as in science. Defenders of the religious worldview take this position to be impossible, not only in religion but also in science. We cannot, they argue, live without accepting some beliefs on trust. Evidentialists retort that believing on trust exposes the believer to the possibility of believing unfounded claims and of propagating mistakes. So the conflict continues.

3. DEEPER ATTITUDES

It was not my intention in the previous section to present a complete, or exhaustive, list of conflicts that have arisen, or could arise, between science and religion, nor was it to take sides. Rather than trying to show that one worldview is better than another, I sought to indicate only those clashes that dominate much study and discussion today. These clashes between worldviews have significant effects on our thinking because a given worldview determines, to some extent, how we ask questions and how we answer them. A worldview even determines how we try to organize society. A clash of worldviews, therefore, creates a tension between competing ways of thinking and of living. Unfortunately, the deeper effects of a given worldview on our minds, on our cognitive dispositions and attitudes, are frequently neglected, with the ensuing exploration of the conflict remaining somewhat superficial. Contemporary debate on science and religion often remains on the abstract level of arguments and counterarguments, disregarding the shifts that occur at the deeper level of psychological or cognitive dispositions. The conflict between worldviews at this deeper level, however, merits careful study. The rest of this paper will therefore deal with this particular aspect, focusing on two main points.

The first has to do with a phenomenon that we might call interdisciplinary mimesis. Mimesis is a word that has recently regained its importance mainly through the work of René Girard.⁴ Used extensively in various senses by many thinkers of Ancient Greece, most notably Plato and Aristotle,⁵ the word ‘mimesis’ generally refers to imitation, representation, or mimicry. Humans, compared to other species, are extremely good at mimesis, at representing nature. They draw, they paint, they carve, they imitate nature in narrative form, and so on. In the context of science and religion, I will follow Girard and focus on desire and

the human tendency to imitate other people as regards desire. We call this effect mimetic desire. Girard's point was that, because of mimetic desire, people want what other people want. This, of course, is one of the current basic principles of advertising. People end up desiring what other people desire. They all desire the very same thing, thus becoming rivals. Girard's way of using this idea to gain insight into the hidden nature of religion and of human nature is complex and merits further study but in what follows, this will not be my main focus. My argument is rather that the concept of mimetic desire helps us gain crucial insights into the conflict between science and religion.

Consider again the conflict zone about authority. Before Galileo, the only source for our knowledge about the universe, about morals and faith was religion. From Galileo onwards however, the rise of natural science began to use some methods that had not been central before, such as observation, prediction of quantifiable observations, and confirmation between researchers. The discovery of various laws of nature led to spectacular technological innovation. The scientific worldview began to grow and eventually became a significant competitor to the religious worldview. I think that we can account for the rising tension between these worldviews in terms of mimetic desire. Both those on the side of religion and those on the side of the new science became entangled in a struggle to acquire the same object of their mimetic desire. They desired what the other desired, namely a monopoly on truth. They both desired the central position within culture. They both desired to sit on the same throne.

Let me begin with religion. We see some clear effects of this mimetic desire in some trends in seventeenth and eighteenth century theological writings. Some theologians were carried away by their desire to be like scientists. They started reinventing their discipline on the model of scientific demonstration and syllogism. Historical studies of this phenomenon, like Michael Buckley's *At the origins of modern atheism*, have shown that prominent

seventeenth-century religious thinkers like Marin Mersenne and Nicolas Malebranche sought to establish religious belief on empirical foundations, highlighting observation, probabilities and logical conclusions.⁶ They did this with the best intentions. Nevertheless, they ended up undermining theology. For them, theology became the search for syllogistic or empirical demonstration, somewhat like theology-by-experiment. Without knowing it, they initiated a process of deformation. They sidelined the centrality of Christ, de-Christianized theology, and produced the very thing they wanted to overcome – atheism.⁷ The main problem was that, if the religious worldview and the scientific worldview were alike in their fundamental structure, God would be relevant only within the gaps that science leaves unexplained. In that case, God would indeed be allowed to exist but only as a retreating figure, a fossil of something that used to command the entire landscape but must now give up one patch after another. Mimetic desire on the side of theologians, therefore, had unintended consequences.

What about mimetic desire on the part of scientists? The scientific worldview, for its part, suffered its own adverse effects because of this kind of mimesis. With the rise of science, some scientists began to desire the status that religion had previously enjoyed. They began to present the new science as the only source of knowledge and wisdom about all things in life, even about existential concerns. They proposed a reading of history according to which the new science would replace both religion and philosophy. A clear example of this trend is the positivism of Auguste Comte who, in 1848, published *A General View of Positivism*. According to him, we should divide the entire history of civilization into three periods.⁸ There is the theological phase, during which people adopted a religious worldview; the metaphysical phase, during which people adopted a philosophical worldview; and finally the positive phase, during which the scientific worldview takes over. In this last phase, all human needs are satisfied by the collaboration of reason and observation. Comte is indeed a good example of the point I wish to make because, towards the end of his life, his desire to be

like religion – his desire to acquire all that religion used to possess – obliged him to extend his positive philosophy. In fact, he invented what he called ‘the religion of humanity’. The expressions he used in French were *Religion de l’Humanité* and *Église positiviste*, giving the impression that he saw himself the founder of a church. Yet Comte wanted this to be a purely secular religion founded on scientific notions such as altruism and progress. Followers of this religion are still active today. They founded secular humanist societies to replace the religious worldview. They see themselves as the new priests and use any new scientific theory available, especially evolutionary biology, to establish their priestly role in society. Some followers have even constructed positivist chapels in France and Brazil. Such examples illustrate the adverse effects of interdisciplinary mimesis as regards scientists.

In both these cases, problems arise because we do not acknowledge the legitimate difference between the two disciplines of science and theology. Their modes of inquiry are different. Yet difference should not imply that science as such is detrimental to theology, or theology to science. It is simply because the two modes of inquiry are associated with different aspects of rationality. They can indeed operate in harmony, but they have different methods and different perspectives on truth. Science seeks facts and avoids mistakes; theology and religion seek God and avoid sin. It is not the main business of religion to describe the world. And it is not the main business of science to tell people how to conduct flourishing lives. The purely existential aspect of human self-fulfillment will remain forever invisible for people limited to science. Similarly, the hidden, spatio-temporal causation within the universe will remain forever invisible for people limited to religion.

Interdisciplinary mimesis, then, was the first area I wished to highlight regarding the deeper dispositions that the two worldviews generate within us. The second area has to do with spirituality. In this context, I use the word spirituality in a very broad sense. By spirituality, I mean the art of living that increases self-awareness and clarifies an array of our

innermost states: feelings, emotions, longings, fears, desires, moments of darkness and moments of light. Spirituality in this sense helps us accept life as a whole, as one continuous project. It crystallizes meaning within the unfolding of a personal narrative. It encourages us to face the unknown and to deal honestly with suffering and death, our own and others. My contention is that both the scientific and the religious worldviews have something to offer in this regard. In some ways, the beliefs and values they generate do pull in different directions, but in others, they exist in harmony.

At least two conflict-attitudes regarding spirituality are worth mentioning. Firstly, there is the manner in which science systematically disregards the scientist as a person. It disregards his or her joys, sorrows, or concerns. The scientific worldview is not interested in the personal life of the discoverer. It is interested in the discovery. In philosophical language, we would say that science deals with primary qualities and not with secondary qualities. The language of science is representational. It is not self-involving. Science's ingrained objectification of experience is opposed to what we find in the religious worldview. The religious worldview is, or should be, directly centered on the relevance and personal value of the individual: what does it profit you if you were to know all the equations of the entire universe and then forfeit your own soul? Here we see how the two deep attitudes pull in different directions. Another conflict-attitude concerns emancipation or salvation. The scientific worldview often puts pressure on us to believe that, for the sake of progress, we need to forget God. It induces us to believe that we achieve full emancipation only when we can survive without God. This is somewhat like the relation between parent and child. The child needs to grow, become an adult, and then say goodbye to the parent. The scientific worldview often harbours within it the idea that, because of science, we no longer need God. We are adults now. When facing a problem, we should say to God, 'We do not need you any longer. We can deal with it ourselves.' This, of course, is in direct opposition to the religious

worldview: ‘Into your hands Oh Lord I commend my spirit.’ The greatness of human beings is most evident when they are ready to surrender themselves willingly and lovingly into the hands of God, thus acknowledging Him as Lord of their lives. Salvation, which is genuine emancipation, arrives only when religious believers surrender themselves in faith and trust into God’s embrace, and do so against all odds. This gives religious believers the freedom to love others even when it means self-effacement: ‘He saves others but cannot save himself.’ Here again, therefore, we see another kind of tension at the deeper level of dispositions generated by the two worldviews of science and religion.

Not all is negative, however. Some deep dispositions are in harmony. There are places – zones if you like – that are not conflict-zones but are mutually enhancing zones, or harmony-zones. Two examples will clarify what I mean. The first one deals with the *appreciation* of the world. The scientific worldview consolidates a sense of wonder and appreciation of the material universe. There is little doubt about that. The more we know, the more fascinating the world appears. There is always something new to discover. The applicability of mathematics is itself an important ingredient within this fascination. Because of this aspect, the famous bacteriologist Louis Pasteur used to say in his lectures that a little science will drive you away from God, but more science will make you return to Him. Many great scientists had a genuine spiritual experience because of this aspect. Albert Einstein, for instance, wrote, ‘Everyone who is seriously involved in the pursuit of science becomes convinced that a spirit is manifest in the laws of the universe – a spirit vastly superior to that of man, and one in the face of which we with our modest powers must feel humble. In this way the pursuit of science leads to a religious feeling of a special sort.’⁹ This attitude is certainly in harmony with the religious worldview. Another example of a harmony-zone concerns *humility*, the kind of humility that Einstein mentions. The scientific attitude, deep down, involves an element of humility because it assumes that truth originates from outside

of ourselves. It assumes that, even if I want something to be true, it may turn out to be false. It assumes that I must be open to surprises. I do not have the last word. I am not the source and centre of the universe. I must learn how to receive. This fundamental attitude is in full harmony with the religious worldview. We may remember how the fundamental notion of revelation involves precisely the same attitude of openness to what is new, to what may be surprising. Revelation involves our need to receive rather than just to conceive. In one of his homilies, Pope Francis has said, ‘The word of God is living. And therefore it comes and says what it wants to say: not what I expect it to say or what I hope it will say or what I want it to say.’¹⁰ So here again, we see that the two worldviews, as regards the deeper attitudes they engender, can in fact pull in the same direction. This is not a conflict-zone. It is a harmony-zone.

CONCLUSION

The aim of this paper was to re-evaluate the way in which science and religion are said to represent worldviews in mutual conflict. To do this I first clarified what is meant by worldview and then I explored some major conflict zones. This exploration allowed us to illuminate the hidden processes and dispositions involved in typical clashes between science and religion. I highlighted two areas: the phenomenon I called disciplinary mimesis and the area I called the art of living or spirituality. We saw that, at this deep level, the two worldviews are, in some respects, in mutual conflict, but, in other respects, they are in harmony. Some degree of conflict seems inevitable, especially because the intentionality of religious life is not the same as the intentionality of scientific enquiry. The tension arises because at times we attend to the gift, the creation, while at other times we attend to the Giver, the Creator. And we often cannot attend to both at the same time – at least not easily.¹¹

Notes

¹ René Descartes, *L'homme de René Descartes et un traité de la formation du fœtus* (Paris: Jacques le Gras, 1664), appendix.

² 'La filosofia è scritta in questo grandissimo libro che continuamente ci sta aperto innanzi a gli occhi (io dico l'universo), ma non si può intendere se prima non s'impara a intender la lingua, e conoscer i caratteri, ne' quali è scritto. Egli è scritto in lingua matematica.' Galileo Galilei, *Le opere di Galileo Galilei* (Firenze: Barbèra, 1929-1939), vol. 6, *Il Saggiatore* (original 1632), chapter VI (my translation).

³ This was the majority view for many decades, roughly up to the year 2000. A number of recent studies show how biology is now moving beyond the simple reductionist program of previous decades, for instance Denis Noble, *Dance to the Tune of Life: Biological Relativity* (Cambridge University Press, 2017).

⁴ See for instance René Girard, *Des Choses Cachées depuis la Fondation du Monde* (Paris: Grasset, 1978).

⁵ For instance Plato, *Republic*, Books II, III, and X; Aristotle, *Poetics*.

⁶ Michael J. Buckley, *At the Origins of Modern Atheism* (Yale University Press, 1987).

⁷ This happened in the seventeenth century. A century or so later, some theologians started to see through the confusion. They started becoming aware of the self-destroying trends emerging from the inherited dispositions of the early modern period and they did their best to expose the problem. John Henry Newman, for instance, dedicated much energy to denouncing the reduction of reason to mathematical deductive reasoning and to scientific empirical demonstration. He struggled to create a new vocabulary precisely to recall the neglected multifarious richness of human rationality. He began to speak about religious belief in terms of weak and strong reasoning, in terms of the illative sense, in terms of the accumulation and convergence of probabilities, in terms of the real and the notional. See for instance his *An essay in aid of a grammar of assent* (London: Longmans, 1903).

⁸ Auguste Comte, *Discours sur l'ensemble du positivisme* (Paris, 1848).

⁹ Letter dated 24 January 1936 to a New York City sixth grader. See Albert Einstein, *Albert Einstein, The Human Side* (Princeton University Press, 2013), pp. 32-33.

¹⁰ Pope Francis, 'The God of Surprises: Morning Meditation in the Chapel of the Domus Sanctae Marthae, Monday 20 January 2014', *L'Osservatore Romano* (Weekly ed. in English, n. 4, 24 January 2014).

¹¹ Previous versions of this paper were delivered at the Universidad Pontificia de México and also during the conference entitled *Science and Religion – Two views or two realities?* held in Malta and organized by the Faculty of Theology, University of Malta, in collaboration with the Faraday Institute, Cambridge.

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