

WHERE SCIENCE AFFECTS FAITH¹

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summary

Christian faith had already been challenged by Greek astronomy and by the Copernican revolution. Einstein, however, replaced absolute space and absolute time by 'spacetime', which offers openings for a new understanding of God's nearness: His 'tangency' in His transcendence. Further, the ongoing unification of forces in modern physics suggests a transcendent Law of Nature, the 'practice of everything'. Through this Law, God offers creation rich opportunities for development. The evolution of life shows not only natural evil but, in higher animals, also natural good. Hominization centres on the great step from natural good and evil to human responsibility for good and evil (Genesis 2-3), guided by God's Inspiration.

introduction

Are science and religion so incompatible that convergence is impossible, or should one aim for integration? Does religious language differ from scientific language? Should religion be 'upgraded' to meet scientific standards³? Can God foresee future events when these depend on the unpredictability of quantum fluctuations?⁴ Is evolution an autonomous process, or is it the result of a series of designs? Although this last question has come under the spotlight, the others also deserve attention.

In their answers most authors restrict religion to *theology*, so that everything is fitted more or less into a rational framework. My intention, however, is also to deal with the tensions between science and *faith*, as experienced by believers, both scientists and non-scientists, together with theological issues.

The title summarizes the problem definition: it indicates a clear-cut separation between faith and science, from time to time interrupted by challenges presented by new scientific developments. Why such a separation?

- faith had already existed for at least several millennia before the birth of modern science;
- science has no place for emotions and visions, while they have an important function in faith;
- scientific terms should have only one clear-cut meaning, whereas the formulation of faith leads to a variety of interpretations.
- science strives for truth, objective certainty, which is acceptable to any interested person. In contrast, faith, with all its ups and downs, revolves around personal convictions and attitudes, often in communion with fellow-believers. Moreover the Christian faith demands that the road indicated by the Torah and by Jesus⁵ be followed in daily life. There is no such requirement inherent in science.

The first impact of science on faith occurred as long ago as the Middle Ages, when the worldview of Antiquity (familiar to the authors of the Bible), with the earth as a platform on pillars, was replaced by the spherical globe of Greek science. Consequently the 'ends of the earth' and 'water under the earth' as found in the Bible have lost their

¹ Summary of John E. Rijnisdorp, *Waar wetenschap geloven raakt* (Damon, the Netherlands, 2005)

² I am grateful to Gay Howells (Enschede, the Netherlands), who has greatly improved the English of this text.

³ An example is the internet book by Arthur D'Adamo, *Science Without Bounds, a Synthesis of Science, Religion and Mysticism*, p. 156.

⁴ Arthur Peacocke, *Theology for a Scientific Age, Being and Becoming* (Basil Blackwell, 1990), p. 155.

⁵ In its widest sense, Torah is found in all books of the Old Testament.

meaning. This impact on faith was, however, cushioned by the cosy Scholastic worldview, in which the religious heaven is found not too far above the spires of Gothic cathedrals.

Copernicus delivered a severe blow when he degraded the earth to the status of a planet. This was opposed not only by theological arguments, but also by a scientific objection: if the earth orbits the sun, how come there is no parallax movement of the stars⁶? Copernicus suggested, rather lamely, that the stars must be too far away for the parallax to be visible. In hindsight he was right, but nobody then could have imagined the tremendous distances involved, trillions of kilometres and more. As a consequence, if Copernicus is right, how can prayers reach the Biblical heaven, so far beyond the stars? This brought Blaise Pascal (1623-1662), the great French scientist and theologian, to his cry of isolation: “The eternal silence of these infinite spaces fills me with terror” At the end of the 17th century this problem had not been solved but overruled by Newton’s mathematical explanation of the heliocentric worldview. Not until the beginning of the 20th century did a satisfactory solution become possible when Einstein introduced the theory of special relativity. This possibility has still not yet been thoroughly explored by theologians (see Sections 2.1 and 2.4 for more detail). This paper is based on my book on faith and science (in the Dutch language)⁷. Here I shall restrict myself to a brief description of the two main lines of thought in this publication. The first one starts with the laws of nature, moving on to the Law of Nature and the Creator, through the evolution of life, by way of natural and human good and evil, to Inspiration by God. The second one moves from spacetime, by way of God’s transcendence and ‘tangency’, to the possibility of an afterlife.

FIRST LINE OF THOUGHT

1.1 the laws of nature

In Antiquity people experienced nature as fragmented, unpredictable, or even threatening. There was no notion of an underlying relationship between the force found in such things as the sun rays, muscles, seeds, floods, and so on. Conversely, there was an assumption of a connection which does not exist in reality, e.g. the influences of the stars on human destiny. These experiences led to polytheism, where each god or goddess reigned over a segment of reality. To ward off mishap, people tried to humour the relevant god or goddess by offerings and prayers. We still behave in a similar way when, after saying that things are going well, to ensure that our good luck continues, we touch wood: unpainted wood, in order to be nearer to the tree god residing inside. The faith of Israel, however, opposes polytheism. God is one, unique, and ruler of everything. All natural phenomena are under His jurisdiction, so prayers have to be directed to Him alone. In the first creation story (Gen. 1) the sun, moon, and stars are no more than lamps attached to the firmament, created after light had come into being. They merely mark the times for religious celebrations and thus do not indicate favourable or unfavourable days for activities.

Millennia later, modern science has also presented unifying results. Mathematics appears to be a surprisingly effective tool for explaining of natural phenomena, although it is not more than an abstract science, the result of systematic thinking. These explanations have become not only increasingly accurate, but also more integrated. A classic example is Newton’s force of gravity, which describes, among many other things,

⁶ A well-known parallax is the virtual movement of the landscape as seen from a train window, in which faraway objects move slower than nearby ones.

⁷ John E. Rijnsdorp, *Waar wetenschap geloven raakt* (Damon, Budel, Netherlands; www.damon.nl, 2005),

the orbit of the earth around the sun, as well as the fall of an apple from the apple tree. In the last century all the forces of nature were combined into just four basic ones (gravity, the electromagnetic force, and the strong and the weak nuclear force). Later, further integration left only two basic ‘forces’: gravity⁸, and a marvellous unification of the other three. Physicists are now developing ideas for the final reduction to a universal basic ‘force of nature’⁹. This may lead to a ‘theory of everything’¹⁰; in which, of course, ‘everything’ pertains to the ‘*physical reality*’ only. It goes without saying that in human experience reality has many more faces outside the realm of physics.

1.2 Law of Nature

Even if a feasible ‘theory of everything’ were ever to be realized, ‘physical reality’ would still continue to exist without any influence from scientific developments. The moon orbits the earth without any knowledge of gravity or of the revolution caused by Einstein’s theory of relativity. Evidently, explaining it is far from being the same as realizing it in practice. We, as human beings, are not able to manufacture our own brand of elementary particles, however minute, and introduce them into nature.

To make a distinction between the man-made laws of nature and any ‘theory of everything’ on the one hand, and the ‘practice of everything’ in physical reality on the other, I propose to call the latter the ‘Law of Nature’. Such a law is transcendent because it is outside human capabilities. This is not a matter of belief but an extrapolation from the state of affairs in science. Albert Einstein called it ‘Ratio’, which to him was almost the same as ‘God’. The German theologian Hans Küng has designated it as the ‘cosmic principles of order’¹¹.

In discussions on this Law of Nature, one question often asked is: “What is it that obeys this Law?” Certainly not Aristotelian ‘matter’, as opposed to ‘form’. In everyday life, this distinction may make some sense, but it loses its meaning at the level of elementary particles which underlies all natural phenomena, where ‘matter’ is transformed into form, in particular into (mathematical) formula’s. Thus, “rather than attempting to answer the ‘what’ question, most modern scientists try to evade it. ... we should not try to ask *what* reality is; merely, *how* does it behave”¹². At the lowest level of physical reality this behaviour appears to be very far from our experiences, which pertain to neither the extremely small nor the extremely fast. Mathematics, however, remains a powerful tool for explaining the results of experiments and observations, even when it leads to results incomprehensible to common sense. For instance: what is one to think of an elementary particle such as the electron, which can be described by a ‘field’ of complex numbers (purely mathematical entities) stretching to the limits of the Universe¹³? If the Law of Nature is transcendental, this applies all the more so to the nature of elementary particles!

1.3 the Creator of the Law of Nature

We make a great step when asking another question: “What is the origin of the Law of Nature?” Agnostics cannot answer this question because they do not know. Atheists do not accept the question¹⁴ or might say that this Law just exists, without any further analysis or comment. ‘Something-ists’¹⁵ hope there is something or somebody behind it and wait for an

⁸ In fact, Albert Einstein has shown that gravity can better be represented by a curvature of space than by a force.

⁹ See The Frontiers of Physics, Scientific American Special, vol. 15, no. 3 (2005), and Scientific American, vol. 296, no. 2 (2007), p. 12-13.

¹⁰ Stephen Hawking, A Brief History of Time (Bantam, Books, 1988). More recently he has abandoned hope that such a Theory of Everything will ever be realized.

¹¹ Hans Küng, Der Anfang aller Dinge, Naturwissenschaft und Religion (Piper, Munich, 2005), p. 75

¹² Roger Penrose, The Road to Reality, a Complete Guide to the Laws of the Universe (Vintage, 2005), p. 1028.

¹³ According to the so-called Schrödinger-equation, which describes the states of the hydrogen atom.

¹⁴ Richard Dawkins, The God Delusion (Transworld, 2006).

¹⁵ An attempt to translate a recently invented Dutch word.

experience. Some present-day Christian theologians sidestep the issue and turn to Jesus Christ, leaving God the Creator in the margin.

I believe in a Creator of the Law of Nature and the way it works, Who surpasses us by far and about Whom we can only speak in inadequate terms. This belief is not a proof, but it can be illustrated by an SF-story I read some time ago. It was about a person who was engaged on the development of a basic idea, during which he had to solve many different types of problems. Finally, he succeeded and delightedly exclaimed "Let there be light!" (Genesis 1:3). Here storytelling confronts atheists with the contradiction that some form of creative mathematics must be operational before it can finally lead to the intelligent life required for providing it. Clearly, they have good reason to avoid stories on this subject. Moreover, they cannot maintain that believing in the existence of a supreme being¹⁶ has been shown to be contrary to science. According to the German philosopher Immanuel Kant any proof or disproof is invalid, at least as long as the path of pure reason is followed and experience is ignored¹⁷. In any case, in faith there is no need for any proof whatsoever, as faith is based on belief in God, and on being touched by God's Inspiration (see Section 1.9).

The SF-essay also suggests a new meaning of providence: the Creator looks forward and designs a Law of Nature with an astounding variety of opportunities for development, not as a 'blind watchmaker'¹⁸! The result could be called an intelligent design if this expression had not already been claimed by the movement of the same name. The Law of Nature stands for autonomy, hence God grants great freedom to its development. This leads to a theological problem: does God still show His power over creation, a major theme in the Bible? This question will be discussed after an analysis of human evil in the first line of thought, and again after the explanation of spacetime in the second.

1.4 where is the Devil?

Satan plays a role in some parts of the Old Testament. In Biblical Hebrew, this word means prosecutor in, among other places, the book of Job, where God allows him to severely test Job's faith. The New Testament uses the terms 'Satan' and the 'Devil' for an opponent of God. Recently, Sjoerd Bonting puts the blame on an evil chaos remaining in the world after Creation¹⁹, which will eventually be eliminated by God.

The comprehensive effects of the Law of Nature, however, do not leave any space for a Devil *inside* Creation. It is only possible from the *outside*, which is moving in the direction of transcendental dualism, of a bad God versus a good God as it existed in Zoroastrianism. Nonetheless, the victims of severe discrimination and blatant hatred can hardly avoid seeing an evil force in their sufferings.

1.5 emergence

The Law of Nature stands for incredible variety and fertility. Substances, stars, and living organisms grow into more complex structures as more or less hidden possibilities enable the emergence of new properties. This will be elucidated by two important examples:

1. Since the middle of the last century we have known that genetic properties are stored in DNA, molecules shaped like spiral staircases, with rings consisting of two 'bases'. The latter consist of four types: 'A', 'C', 'G', and 'T'²⁰. Thus a DNA-molecule can be characterized as a text of millions to billions of letters in terms of this simple alphabet.

¹⁶ The term 'supreme being' does not go well in faith.

¹⁷ Kant has a low opinion of empirical knowledge. In defense he has stated: "I have found it necessary to deny knowledge, in order to make room for faith". See: Immanuel Kant, *Kritik der reinen Vernunft* (Reklam, 1945, p. 32).

¹⁸ R. Dawkins, *The Blind Watchmaker* (Norton, 1985).

¹⁹ Sjoerd L. Bonting, *Creation and Double Chaos, Science and Theology in Discussion* (Fortress Press, Minneapolis, 2005)

²⁰ These letters stand for Adenine, Cytosine, Guanine, and Thymine.

These letters function as chemical matrices for the production of proteins and enzymes, which are essential for life. The emergent property here is the provision of information for chemical reactions, to be put into effect by partial copies of the DNA. Evidently, DNA functions as information, much more than just as chemistry.

2. Neurons in the brain have many mutual links, so that activation in one spot leads to activations in others. Each individual activation can be explained at the level of molecules and ions. Still the extremely complicated activation patterns can contract or relax muscles, memorize experiences, learn another language, jump to new insights, have an awareness of themselves, and so on.

How is emergency realized? Autonomously, or through a series of 'Intelligent Designs'? I shall not discuss this lively controversy here, but only state that the ongoing rapid progress of molecular biology may upset the criticisms of ID. Long after Copernicus, is this another defeat for faith in the making?

1.6 natural evil

The evolution of life includes competition between plants and animals, which leads to 'survival of the fittest'. One can see this happening in a forest, where small trees and seedlings die if they are in the shade of large ones. Frogs eat insects and bacteria cause disease. Some types of animal behaviour seem evil to us, for instance a cat playing with a mouse it has caught before killing it, or chimpanzees eating the tasty lips of smaller monkeys and leaving the victims to their fate. In the Bible God shows His care for forms of 'animal evil in creation'. He challenges Job to compete with Him: "Do you hunt her prey for the lioness and satisfy the hunger of young lions, as they crouch in the lair or lie in wait in the covert?" (Job 38:39-40)

Further there are also natural catastrophes, such as earthquakes, tsunamis, hurricanes and floods, which kill many plants, animals and human beings. The Isaiah of exile indicates the source of natural evil: "I am the Lord, there is no other; I make the light, I create darkness, author alike of prosperity and trouble." (Isaiah 45:6b-7). All this points to the problem of theodicy, which is as old as monotheism: Why does a good God tolerate evil? This is a subject beyond the scope of this brief paper.²¹

1.7 natural and human good

Yet, apart from natural evil, there is also natural good. Many examples of symbiosis exist, in which one or more species survive thanks to cooperation. To mention a few: lichen, common in town streets, consists of fungi and algae which keep each other alive. Zebra's, gnus, and giraffes roam in the African savannah together. They warn each other of lions and hyena's and restrict attempts to isolate one of them. Within species there are also forms of sacrifice: swallows fly around with open beaks in order to catch mosquitoes. They screech when they detect a swarm of these insects, inducing other swallows to join them. It seems that in this way they sacrifice food, but they also reduce the probability of losing swarms, so that all swallows derive benefit from it. These, and other forms of cooperation can be seen as an extension of the neo-Darwinian selection mechanism: 'cooperation can repay'. Nonetheless, some higher animals show forms of behaviour without any relation to a 'struggle for life'. After the death of a male elephant in Amsterdam zoo, two female elephants trumpeted loudly as a sign of mourning. Frans de Waal describes an accident in Chicago Zoo, where gorillas live in a pit 6 metres deep. In 1996, a little boy fell from the parapet. Immediately a female gorilla went over to him, lifted him up carefully and carries him to the exit gate for the ambulance²².

In Arnhem Zoo Frans de Waal saw two male chimpanzees involved in a quarrel. They tried to avoid a fight by not looking at each other. After some time, a female chimpanzee

²¹ See Chapter 5 of my book (in Dutch)

²² Frans De Waal, Good Natured, the Origin of Right and Wrong in Humans and other Animals (Harvard, 1996).

approached one of the males and started to groom him, as a way of appeasing him. After succeeding she went to the other male, accompanied by the first male, who was behind her, still avoiding eye contact. Then the female appeased the other male as well; this was followed by the two males catching her fleas. Finally she walked away because peace had been established.

The Talmud contains a very similar story to this, about Aaron²³: “When two men had quarrelled with each other, Aaron would go and sit with one of them and say to him: ‘my son, mark what thy fellow is saying, “He beats his breast and tears his clothing saying: ‘woe unto me! How shall I lift my eyes and look upon my fellow! I am ashamed before him, for I it is who treated him foully’”’. Aaron would sit with him until he had removed all rancor from his heart, and then Aaron would go and sit with the other one and say to him exactly the same. He would also sit with him until he had removed all rancor from his heart. And when the two men met each other they embraced and kissed one another”.

1.8 human good and evil

Evidently, humans have much in common with their nearest relatives among the animals. All have a disposition to good and a disposition to evil²⁴. Animals, however, cannot be held responsible for their deeds, since they lack an awareness of guilt. We, as human beings, live under different conditions, as is beautifully related in the second creation story²⁵ (Genesis 2:4b-3:24). In this, the Lord²⁶ takes care of the *human* Adam²⁷ by providing him with a beautiful garden which has to be tended. Without his asking, Adam is given animals for company. By giving them names, Adam shows that he is more than an animal. Then the Lord puts him into a ‘deep sleep’, again without discussion, in order to transform him into the couple *man* Adam and *woman* Eve. Everything changes, however, after the couple have eaten from the Tree of Knowledge of Good and Evil. Traditionally this transgression is interpreted as the Fall, but it also brings about a great step forward to real humanity, characterized by responsibility, accountability and an awareness of guilt. In this way animal good and evil turn into human good and evil. The Lord acknowledges the change by approaching humanity on an equal level, as indicated by the remark “Man has become like one of us ...” (Genesis 3:22).

The disposition to evil remains a difficult problem, through evolution inherited from our early ancestors. Our intelligence and ingenuity turn it into atrocities, such as the extermination of animals and plants, terrible slaughter in war, concentration camps, and mass murder. The benefits of our disposition to good pale into insignificance besides these horrors. The Lord knows that the disposition to evil can strike again and again. He could intervene, but, above all, He respects human autonomy. He therefore restricts Himself to advice²⁸. In the Bible this starts with a warning to Cain to control his temper: “Why are you so angry and cast down? If you do well, you are accepted; if not, sin is a demon crouching by the door. It shall be eager for you, but you must master it.” (Genesis 4:6b-7). In Exodus 20 the Lord offers the Ten Commandments to Israel, which are in fact not commands but recommendations for life²⁹. In the Jewish tradition they are rightly called the Ten Words. Later, the prophets warn the people and remind them of the covenant at Sinai.

²³ Juda Goldin, *The Living Talmud, the Wisdom of the Fathers* (Mentor, 1957), p. 65.

²⁴ These two dispositions are an important theme in the Jewish tradition.

²⁵ This is one interpretation among many. In the Jewish tradition every Biblical verse has 70 interpretations, the symbolic number of peoples.

²⁶ ‘Lord’ is the common translation of JHWH, the God of the Covenant. According to Deut. 6:4, the ‘Shema’, ‘Lord’ and ‘God’ are unique and one.

²⁷ Apart from the proper name, ‘Adam’ is also the Hebrew word for ‘human being’.

²⁸ The Old Testament, also tells the history of God’s actions with respect to the people of Israel.

²⁹ In the Ten Commandments the imperative is only used in “honour your father and mother”

In the Sermon on the Mount, Jesus indicates a third way between fighting the Roman establishment and silent submission, by putting the opponent in a situation where he or she does not know what to do. Among other stories, Walter Wink tells of an incident in South Africa during Apartheid³⁰. Soldiers with bulldozers approached a shantytown and ordered everybody (mostly women and children) to leave right away before everything was demolished. In response, the women walked up to the bulldozers and stripped off all their clothes. The soldiers were so shocked, they turned and left. In fact, these women were following the example in the Sermon on the Mount, where a poor man is sued for his shirt and reacts by offering his coat too, his only remaining garment, to shame the claimant (Matthew 5:40). Moreover, in caring for the underdog, Jesus advertises a society of universal 'shalom', the kingdom of God.

1.9 Inspiration

How does the Lord offer advice? At various times and places blessed people have experienced and communicated unique divine Inspiration. Afterwards their messages have often been put into writing, so that many more people may experience Inspiration, albeit indirectly. For many, the books of the Bible are such an indirect source of Inspiration, from which one hopes to receive, 'sometimes briefly', direct Inspiration as well. This is not restricted to Jews and Christians: exceptional people, such as Mahatma Gandhi, have shown it, as have many others who remain anonymous. It is in line with the Jewish tradition, where "the righteous of the peoples have a share in the world to come". The Lord's wish is control of the inclination to evil and development of the inclination to good. (See, for instance, Mathew 25:37-40.)

SECOND LINE OF THOUGHT

2.1 spacetime

Until about a century ago, time was considered as something absolute. When clocks show different times, people say that they are running faster or slower than the true time and so are in need of correction. Space too is fixed, irrespective of whether you are standing still or moving, the three dimensions of space remain totally unaffected. In 1905, however, Albert Einstein proposed special relativity, a revolutionary theory in which space and time are unified into one four-dimensional structure: spacetime. When you see somebody walking, then his or her watch is running slower than your time. In the case of walking the difference in speed is immeasurably small, but it really *is* there. Furthermore, the other person is imperceptibly thinner in the direction that he or she is moving than when is standing still. In many observations and experiments, this theory of relativity has been shown to be true (in particular those for measuring the strong effects when the relative speed approaches the speed of light). Nevertheless, many publications on the subject of science and religion ignore the consequences. They place God in time and/or space, which conflicts with His transcendence.

To clarify the idea of spacetime I now remove one dimension of space. The remaining two spatial dimensions are combined with time in a three-dimensional structure, which is populated by (imaginary) 'flatlanders'³¹. These have experience of 'left-right' and 'behind-before', but have no notion of 'below-above'. Their 'Einstein' introduces the concept of spacetime, consisting of the three dimensions mentioned above, which influence each other when there is relative movement. The succession of positions can then be compared to a growing 'chain of pasts', with the present at its head³². A sculptor in our world could build a combination of such 'chains of pasts', visualizing the movements of a female

³⁰ Walter Wink, *Jesus and Nonviolence, a Third Way* (Fortress Press, 2003), p. 22.

³¹ Edwin A. Abbott, *Flatland: a Romance of Many Dimensions* (1884).

³² Paul Davies, 'That Mysterious Flow' (*Scientific American*, Vol. 287, nr. 3, Sept. 2002), pp. 24-29.

flatlander, her falling in love with a male flatlander, their sexual intercourse, and the birth of a baby, which is represented by a new chain of pasts.

Our spacetime goes one dimension higher, so our personal histories have the shape of four-dimensional 'chains of pasts', consisting of three-dimensional bodies more or less along the time dimension. We can get an idea of this by photographing a loved one from time to time, cutting out her or his shape and stacking these shapes into a 'chain of pasts'.

2.2 spacetime as structure of creation

The concept of spacetime³³ indicates the structure of the universe or, if one believes in a Creator, of creation. The Creator is not part of this structure, just as a sculptor is not part of his work of art. On the contrary, the Creator can connect to everything and everyone in Creation, infinitely better than we would be able to approach flatlanders from above or below, if a Flatland existed. This differs from the idea that God is both transcendent and immanent. Instead, it is more appropriate to replace the term 'immanence' by 'tangency'³⁴ - touching from the outside - as an important feature of His transcendence. In the Bible, Psalm 139 offers a poetical sketch of God's nearness: "Thou knowest me through and through; my body is no mystery to thee, how I was secretly kneaded into shape" (Psalm 139:15). In fact this is much better than the medieval worldview, where God had been placed in His heaven above the earth, or the worldview of the seventeenth century, where He was banished to infinity. And yet many Christians who have no interest in science embrace the medieval worldview, in which God's heaven is above us, and still try to ignore the infinitely distant Newtonian heaven.

St. Augustine had already stated that God masters time. Since Einstein, this has gained a firm footing in physical reality. Consequently the idea we have of creation, as something happening only in 'the beginning' (Genesis 1:1³⁵) is not correct: it is firmly linked to the ongoing development of stars, planets, the earth, and forms of life.

2.3 the Creator's self-restriction

If God rules time, this would imply knowledge of our future. But if He knows what I am going to eat tomorrow, do I possess the freedom to put something else on the menu? Moreover, prayer seems to make no sense: why would I ask for something if He already knows what is going to happen³⁶? This is a problem as old as monotheism. One solution is to assume that God does not know the future. John Polkinghorne and Arthur Peacocke, two influential British authors on the subject of 'science and religion', follow this line to some extent³⁷. Peacocke considers, among other things, radioactivity, the transmutation of atomic nuclei accompanied by the emission of elementary particles and high-energy (gamma)-radiation. He postulates that God knows the average number of transmutations per second, but cannot predict the moment of time when a particular nucleus will transmute³⁸. In my opinion this makes God subordinate to His own creation and belittles His transcendence.

³³ In future theories spacetime can receive more dimensions, but there is no return to the absolute time and absolute space of classical physics and human everyday experience.

³⁴ I am grateful to Pieter Tijmes for proposing the term 'tangency'.

³⁵ The literal translation of the first word of the Bible is 'in a beginning', which can be interpreted as 'in principle'.

³⁶ Taede Smedes, *Avoiding Bileam's Mistake, Exploring Divine Action in an Age of Scientism* (Ph.D., Univ. of Groningen, Netherlands).

³⁷ See, among others, John Polkinghorne, *Kenotic Creation and Divine Action*, in: J. Polkinghorne (Ed.), *The work of Love: Creation as Kenosis* (Eerdmans, Grand Rapids, 2001); and Arthur Peacocke, *Theology for a Scientific Age, Being and Becoming* (Basil Blackwell, 1990), pp. 128-134.

³⁸ See Arthur Peacocke, *op. cit.*, p. 155.

For those who believe in Him, God reveals Himself as ‘Someone’ Who is with us, Who accompanies us along the boundary of expanding spacetime. In the Jewish tradition it is called the Shekhina, while Christians refer to it as the Holy Ghost, Who inspires us and receives our prayers. Psalm 113:5-6 states it very clearly: “There is none like the Lord our God in heaven and on earth, who sets His throne so high but deigns to look down so low.” Perhaps His transcendence is even accentuated by showing His sovereignty in not utilizing His omniscience.

2.4 afterlife?

Many Christians expect a separation between body and soul at the moment of death, when the soul immediately joins God. The body, however, has to wait for the ‘last day’, the day of judgement for the living and the dead: the resurrection of the body, as it is called in the Apostolic Confession. However, the present development of molecular biology thwarts any separation between body and soul. The latter depends on the extremely complex microstructure of the brain, hence it is not separately available. Moreover, the Biblical word ‘flesh’ stands for the mortality and limitations of the *complete* human being, as a union of body and soul. This raises doubt about the possibility of a life after this life.

However, in my opinion this doubt is avoidable. Other arguments may play a role, but anyone who believes in a powerful and loving God need not loose heart. Modern physics has replaced absolute time and absolute space with an absolute spacetime, in which both time and space are relative and where everything exists, as I have discussed earlier, as a chain of pasts. This also applies to human beings. As God transcends spacetime, He has at His disposal these chains of pasts and the power to utilize them for recreating life. In this way, a new life can begin in another time.

When talking about the ‘last things’, some theologians acknowledge Einstein but, sooner or later, remove time from the spacetime structure and subdivide it into several concepts of time³⁹. In contrast, keeping the unity of spacetime intact offers space for an afterlife.

Conclusion

Modern science has succeeded to a great extent in unifying the laws of nature. However, nature is not governed by these laws, but by the transcendental Law of Nature. This Law was created by God, Who has foreseen its features and grants great freedom for its development.

Evolution shows not only natural evil, but also natural good, particularly in our nearest relatives among the animals. We, as human beings, also have dispositions to good and to evil. However, we surpass animals by possessing an awareness of guilt. God respects our autonomy, so His Inspiration offers us advice on finding the way to human good and resisting human evil.

Modern physics has done away with absolute time and absolute space. Instead, the cosmos is structured by some form of spacetime, which conserves all events in a chain of pasts. These chains also conserve us. God not only transcends this spacetime, but He also wishes to be tangent to it and thus comes very near to us, much nearer than in the medieval and Newtonian worldviews.

³⁹ See, e.g.: Antje Jackelén, A Relativistic Eschatology: Time, Eternity and Eschatology in Light of the Physics of Relativity, Zygon, vol 41, no. 4 (Dec. 2006), pp 955-971.

