

Science affecting Religion

Should science affect religion?

The answer to this question depends on what you think religion is about. If religion is a set of arbitrary rules like the rules of football, science can have very little to say. The rules of football are not true or false, they are simply what people accept when they say they are playing football. If you do not follow these rules you are playing another game, like rugby or American football. There are no real grounds for saying that one is better than another, or for saying that one is true or false. Of course science can be applied to these activities to work out the consequences of the rules, but the rules themselves cannot really be subject to scientific testing and reasoning can only be applied to show some form of consistency: for example to show that you can actually play a game according to these rules.

Anyone following a religion would say that their religion is not like this. What you do in religion has some connection with reality: it may be only a subjective reality within ourselves or it may have something to say about the world outside ourselves, but in either case religion and science have some common ground and consequently, science can affect religion. It is only by allowing science to affect religion that you can hold to the position that religion is more than an abstract set of rules.

By “science” I am including rational thought, but a word of caution is appropriate. The results of a repeatable experiment are fairly incontrovertible: if you ignore them you are guilty of wishful thinking. But rational thought does not always deliver the truth about reality, which is one of the reasons why quantum mechanics, with its counter-intuitive concepts, is so fascinating. It is not that rationality cannot be made to apply to quantum mechanics, but rather that the way in which it applies has to be discovered. Religion is concerned with things which we believe are beyond our understanding and is inherently less likely to be subject to reason than the physical world, so paradox is to be expected.

Religion is also inherently difficult to study scientifically. Religion today is about subjective things, namely the values and goals we pursue in our daily lives. This area, although a part of reality, is one where experiments are difficult to carry out because you have to live the religion to test its truth: we can all say, ‘love your neighbour as yourself’, but that only begins to mean something on the road to Jericho when you actually have to do something about it. Religion is more than what you say, it is about what you do and how you live. The test you make of your belief is within: you live by it. Consequently, it is a subjective test and not independently repeatable. You can observe other people’s behaviour, but human behaviour is inherently complicated and difficult to observe objectively. So in religion one must be particularly careful not to wander into over-simplified descriptions of reality and be prepared to accept some paradoxes. But with this caveat you must accept that science and reasoning can surely have something to say about beliefs.

This worries some who feel that this opens the floodgates to anarchy. If you adapt religion to modern thinking where do you stop? We all know about the uncertainties of science and fashions in philosophy. How can you follow the religious life, with all its costs, if you are uncertain about whether it is true or not? I would say this is a very important issue for today, but that you do not answer it by quoting the authority of the pope, or the church, or tradition, for that is to say that what is true is what the pope

says, or what the church says or what we have always believed. People and organisations are fallible and truth takes time to emerge. The religion we practise today is not the religion of Abraham, although we believe it is the worship of the same God. Authority, of whatever form it takes, does not constitute truth; it can only act as a guide to truth.

The gold standard for truth is a test against reality and as religion is about how we live our lives, this is the ultimate test: we are testing religion when we live according to its precepts. We might be mistaken, but the best assurance against that is not to keep our heads in the sand and ignore modern thinking but to keep the questions it raises in our minds, recognising the limitations of our thought, but nevertheless getting on with our lives.

As science is a relatively modern activity, this question about whether it is legitimate to use observation or reason to test religion has only arisen recently, but was first encountered over the issue of creation. For the Judaic religions this crystallised as the question of the age of creation. Was the earth formed in seven days, six thousand years ago, as seems to be required by a literal interpretation of the bible or was it over billions of years as the scientific evidence indicates? This may be a fascinating question, but it is not going to affect the way we live, so apart from the issue of authority, people are fairly happy to accept that science should inform our interpretation. Most people have been prepared for and indeed welcome a non-literal interpretation of the bible, so in this case, science does help us to understand religion.

But as science turned towards the nature of man this raised doubts which I have argued can be addressed by understanding exactly what the science is actually saying. Usually this means that science can be understood as simply providing complementary information to religion, on how our bodies work, for example. But there are some issues which cannot be so easily dismissed: these are the issue of miracles and how God works in the world, together with the theological concepts of the soul, and heaven and hell. Science and reasoning do lead to the need for a radical re-appraisal of these things.

Miracles

There are two attitudes scientists have to miracles: either miracles do happen, but science is irrelevant as it only deals with repeatable events; or miracles do not happen and if something seems to be miraculous it cannot be so because miracles do not happen. Both of these attitudes are statements of faith and the only thing you can say scientifically is that miracles, if they happen at all, are rare. And no one quarrels with that, so that you might think that as far as the science and religion debate is concerned, that is the end of the story.

But the problems are on the theological side. Different religions have widely different views of how God interacts with the world, ranging from paganism which sees the gods as essentially arbitrary agents giving rise to the changes and chances of life, to an atheistic view of events as being entirely understandable, of the universe as being causally closed and at heart meaningless. People who call themselves Christians have a range of views within this, ranging from an essentially Old Testament view of God as punishing misdemeanours, to the deist God who does no more than set the world in motion according to His created laws and stand back and watch the results.

I suspect that most modern Christians tend to the deist view, but do not quite get there. This is just as well because if you believe in something that may or may not exist, but in any case has no effect on what goes on, it is simpler not to believe at all. So any belief in the existence of something transcendent, of something beyond the world around us necessarily implies a belief that that something can affect the world around us. Inevitably, we have to believe in miracles.

In primitive times, miracles seemed to abound. A spring, the return of the seasons, a volcanic irruption, were all seen as manifestations of the gods. Nowadays we understand how these things happen and are less inclined to call them miracles. Even in those cases where we do not know underlying causes, we remain sceptical. As an example, take flying saucers. Do we believe that sightings of extraordinary flying objects are caused by visits from extra-terrestrials? Most people are sceptical, even in the face of lack of knowledge of what gives rise to any individual event, because there are sufficient possible scientific explanations for the event without invoking extra-terrestrials. And this scepticism arises because those sightings which can be investigated scientifically have been found to have causes which may be unusual, but can be understood scientifically.

In a similar way, not many claimed miracles would survive a full scientific investigation, if one could be made. But does this mean that total scepticism is justified? The answer can only be a statement of faith and speaking personally, there are sufficient cases reported in the papers and to me personally to make me inclined to believe that miracles do indeed happen – but only rarely. A belief in miracles is a necessary part of Christianity, but even so, Christians show a considerable range of degrees of scepticism. Some events in the life of Christ have to be miraculous, but it is hard to take the Old Testament story of Aaron's rod turning into a snake (*Exodus* 7. 8 – 13) as anything other than folk religion. But anything short of total denial of miracles raises the moral issue. If God can intervene in the world, why does He not do it more often? In particular why did He allow Hitler to survive, to bring about the Holocaust?

Now we can attempt to justify God's inaction in many ways. Man is unique among the animals in being able to make moral choices and to live by them: that, as far as we can see, is the purpose of man. To rectify his mistakes and insulate him from the consequences of his actions would cancel out that purpose. Man has intelligence and reasoning ability. Science is a gift of God. It is there to enable us to foresee events in the world and do something about them. This is really the essence of what it means to say that man was created in the image of God. God gives us the power to control our destiny and intervention by God would negate that.

One can to some extent justify God's inaction along these lines, but most of the answer must be that we do not know. We use words like omnipotent and omniscient to describe God as if we knew what they meant, but they might be meaningless. We neither know what God can do, nor understand what He chooses to do. It is useless speculating about the motives of the creator of the universe. They are beyond our comprehension.

In the face of this unknowable, religions should teach how to react to the events around us. We should not be too concerned with the images of God they portray, but rather with what reactions and attitudes we should deduce from them. So if we are faced with a miracle, the point of it is not to make us wonder how it was done, like

our reaction to a conjuring trick, but rather to learn something about God. Miracles are about revelation and that is how they should be understood.

With this in mind, we can look through the miracles in the bible. There are plenty of them: Genesis is full of God telling humans what to do and Exodus has miraculous happenings in almost every chapter. Each of these can be understood as saying something about the nature of God, but what we have understood has developed, sometimes as a result of a greater scientific understanding, but more often from a wider knowledge of God.

Abraham sacrificing Isaac is a case in point. In the bible (*Genesis 22*) God tells Abraham to sacrifice Isaac, the son born to him in his old age, through whose line God had promised he would become a great nation. And Abraham made to obey this command, interpreted at the time as an act of faith because he thought God would still fulfil his promise. And Isaac was not sacrificed because of a miraculous intervention by God. To us today, this does not square with a God who abhorred human sacrifice: it simply does not make sense with the rest of the Old Testament, never mind the New. We know enough about our own nature to know that our thoughts can appear to us as voices and it is easy to interpret voices as coming from God. Imagine the effect on Isaac of the old man Abraham binding him to a sacrificial pyre. Are we going to say that God planned to traumatise the youth, no doubt to make the following chapters of Genesis more interesting? We are forever getting our own ideas about God and suffering the consequences.

Moses and Aaron before Pharaoh (*Exodus 7,8*) convey another misleading message. Aaron throws his rod down on the ground and it turns into a snake, but Pharaoh's magicians do the same. But the situation is rescued: Aaron's snake eats up the others. If God was behind Aaron's rod, who was behind the others? This is the story of a tribal god, which may have made sense to the hearers of the story, but does not do so to us today. Other Old Testament miracles are equally unsatisfactory. Pharaoh's refusal to let the children of Israel go in the exodus was in the end due to God *making* Pharaoh obstinate. The miraculous fall of the walls of Jericho in *Joshua 6* was followed by the killing of all in the city: men, women and children. The problem with these miracles in the Old Testament is not so much to do with the science of how they could have happened, but rather with the theology of how God could have used his power to this end.

For myself, I prefer to believe that these miracles did not happen. We know much of the Old Testament was written down from an oral tradition which had been circulating for centuries. Embellishments are inevitable and form part of the message of how men regarded God in those days. You should not pick up a 2,000 year old document and expect to read it like a modern instruction manual. But this does not mean that the Old Testament has nothing to teach us, far from it. But the understanding is helped by a dose of scientific scepticism.

The miracles in the New Testament tell a different story of God. They are miracles of healing rather than destruction and of transformation rather than conflict. I would not be a Christian if I did not think these miracles were wonderful, but did they actually happen? Needless to say, this is an unanswerable question. Like the Pentateuch the gospels in which the miracles are recorded, circulated in an oral form, but only for decades, not centuries. The conversion of Paul was, of course, always in written form. But 2,000 years still separate us from New Testament times and it is hard

enough to verify a miracle happening yesterday. After this length of time, the most positive thing one can say is that it is an open question.

But whether we can verify the miracles or not should hardly matter for faith. Jesus himself discounted the miracles. Salvation is not a matter of believing impossible things. And you can take comfort from the fact that things happened during the life of Christ which drew people to him who remained committed after his execution. There were many apocalyptic preachers in the centuries around the time of Christ, but only one with a world wide following who is remembered today.

But was the time of Christ special? Should we look for miracles today?

Today, we have a much greater understanding of the world around us and that raises an interesting philosophical question. If we know the means by which an unusual event takes place, does that mean that it is not miraculous? After all, God must use some mechanism to achieve a miracle – if we understood that mechanism, would it be miraculous? In this light, quite common events could be miraculous: the birth of a baby, for example. The more we understand of the interplay between mother and baby in the womb, the more miraculous it seems. A miracle in this case means an extraordinary and complex mechanism, but with the additional emotional colouring of wonder and respect as the work of God. In other words, it is a miracle because that is how we are regarding it.

The interaction between God and man represented by what we call the work of the Holy Spirit within us is not normally regarded as miraculous, but it is of this nature. We do not understand how we come to take decisions to undertake good and noble deeds or to break out of our self interest to look at the world with God's eyes but in saying that it is the work of the Holy Spirit we are giving it a significance which goes beyond an explanation like social pressures, even if we admit these exist. There can indeed be social pressure to do good, as well as influence from the Holy Spirit. It is important to realise that a scientific explanation can complement rather than contradict the religious one. We can also be misled when we think we are following God and it is important to be aware of the pressures that do surround us and affect our decisions and actions. But nevertheless we do believe that God affects our lives.

This leads on to the subject of prayer. Do we pray for a miracle? And would it do any good if we did? One clear message from the Bible is that creation happened once. The result was good and it did not need fiddling with thereafter. This is not to say that creation cannot be changed. In fact the best way to regard it is as a kit of parts and it is up to religion to guide us in what to make of it. Certain things, such as sickness and death, we would regard as evil. Could creation have been made without them? We shall never know, but from our knowledge now it seems extremely unlikely. The goodness of creation lies not in the absence of these evil things, but rather in that we can do something about them. Many religions have regarded bad things as punishments sent by God. This is not the teaching of Christ. God has given us the means to heal the world's wounds but our problem is that we do not use these means but concentrate instead on exploiting and seeking advantage over one another.

The conclusion of this is quite clear: if you have a problem, you do not pray for a miracle to cure it. This squares with the teaching of the Bible on prayer. All the great prayers in the Bible, for example Abraham before Sodom and Gomorrah, Jacob wrestling with the angel at the brook Jabbok and Jesus in the garden of Gethsemane, all show people engaged in struggle, but a struggle to come to terms with the will of

God, a struggle to look at the world with God's eyes. And this sort of prayer is very powerful. Jesus' sayings in *Matthew 21.21f*, "Whatever you pray for in faith, you shall receive" should be understood in this light. Prayer is not like rubbing Aladdin's lamp to be granted three wishes; but then that is not effective. Working with God is.

Two examples to illustrate this come to mind, namely the evacuation of the British Expeditionary Force from Dunkirk in the second world war and the Apollo 13 disaster. During the evacuation, was it a miracle that the weather was so good it enabled barely seaworthy pleasure boats to cross the channel or that the technical fixes for Apollo 13 successfully brought the astronauts back to earth? In the sense of the birth of a baby being a miracle, the answer is yes. Did prayer bring this miracle about? And the answer has to be that prayer was effective in getting people to set out on the rescues and putting everything they had into it. Seeing the hand of God in both these incidents does not mean that the laws of physics were suspended.

Practically speaking of course, if you are praying you start with what is concerning you. If you have a sick child it is natural to ask for that child to be cured. But prayer is about coming to terms with the possibility that there might not be a cure. But cure or no, it is certainly going to involve some action. Just because the Lord's prayer says, "give us this day our daily bread" does not mean we should not go out and sow crops. Prayer is dangerous because it should lead to action.

So what should be a religious, yet rational attitude to miracles? The first thing is to accept that there will always be events in the world we do not understand. In the past, people have called these "acts of God", meaning unforeseeable, arbitrary events. This leads to the idea of capricious deities, which in the Christian view is quite wrong. When we call an event a miracle, we are saying things about it which tell us something about the nature of God. They should invoke wonder and awe. What I am arguing is that this should be entirely independent of whether we have a rational explanation for it or not. A miracle should make you reflect on God, and if one happens to you it should make you thankful, but also cause you to act on it. Like Paul, we should not be disobedient to the heavenly vision.

As to the general philosophical problem of how God interacts with the world, I see no hope of our ever getting our heads round it. The Creator of the universe, who made space and time is not going to be understood by His creation. But our only practical interest in this is in prayer: how should we do it, and how should we approach God? We use various metaphors to describe this, often amounting to aligning our wills with the eternal purposes of God, but at the end of the day, after prayer things may be possible which were not before. The situation has changed and we should not be too concerned as to how.

The soul

Could we build a machine with a soul? Computers are becoming more and more powerful and it will be feasible sooner or later to assemble one with as many elements in it as there are neurons in the human brain, although connecting them up might be more of a problem. Even with existing technology, computers can undertake amazing feats: beating a grand master at chess or driving an unmanned vehicle 150km through a desert, for example. There is no doubt that the robots of science fiction will one day be within our power to construct. Would they have a soul? Should they be christened? Would someone have to design the soul? And how could you tell if they had one?

This last question, or rather the related one of whether a machine could manifest human intelligence, was answered by Alan Turing who proposed a test that if, using the machine's method of communication (a typewriter, say) you could enter into a dialogue with either a computer or a human and not be able to tell the difference, the machine would be manifesting human intelligence. There are web sites where you can actually try this out and the demonstrations are impressive but leave you in not much doubt that you are talking to a machine. Sometimes, it has to be said, people leave a similar impression, so one can see that the test has its limitations.

In fact all of this area associated with the word, 'soul', to do with consciousness, spirit, the mind and intelligence, is fraught with philosophical difficulties. We tend to use these words in many different ways and it is very difficult, and may be impossible, to be perfectly precise. A few quotations will illustrate this. From a newspaper report of a disaster one has: "Twenty souls perished". That is rather old fashioned language, but it does convey something more than the more modern and neutral, "Twenty people died" because it conveys the idea of individuals each with an identity, a life, families, a background; not just a cipher, a statistic for the insurance companies. From the bible, we have the parable of the rich man building barns to store his harvest, in which Jesus says, "Thou fool, this night shall thy soul be required of thee". And this associates our souls with judgement. The word is to do with our responsibilities, our intentions, what we make of life. And finally, we have the phrase, "soul-less architecture" to characterise that architecture inspired by the idea that buildings are machines for living in. Here, soul is being used almost in the aesthetic sense to cover those aspects of humanity we associate with the word, "spirit".

Out of these many uses of the word we can see two different usages, one concerned with how we value others and one with how we value ourselves, that is, how we set goals and purposes for ourselves and judge our own actions. Under the former aspect are issues like when does the soul begin and when does it end. How do we treat newly conceived embryos, and what should our attitude be to our friends and relatives suffering from Alzheimer's disease, as we see their personality gradually fade in front of our eyes.

Setting goals and purposes for our lives is a different sort of activity and it is where we take responsibility for our lives and judge the moral consequences of what we do. We all understand that judgement is an absolutely essential part of this, but when we use the word soul in this context there is often an element of eternity coming in. Jesus often uses heaven and hell to make a distinction between temporal values and eternal ones. For example, in Matthew 22, Jesus answers the Sadducees' trick question with, "At the resurrection, men and women do not marry". Sex is irrelevant, a similar point being made by Paul later in 1 Corinthians 12, "In Christ there is neither Jew nor Greek, bond nor free". Earthly distinctions are irrelevant. This is not to say that we should not marry, or recognise national differences, but the ultimate goal is to transcend these.

Thus "soul" is used in many different ways and its relationship to science and reasoning is determined by the way in which it is being used. The words soul and spirit, and one could add mind, are often used in dichotomy with the word, body: soul and body, spirit and body, mind and brain. Sometimes our body gets in the way of fulfilling our soul's aspirations. Religion is often about overcoming the natural inclinations of the body, or at least it is about subduing them. This dichotomy is a

very deep rooted part of what it is to be human. “We” regard ourselves as in some sense separate from our bodies. If I fall over, it is not “my” fault, it is just that my leg has let me down. Our experience of our bodies is often like wheeling one of those supermarket trolleys which has a mind of its own where to go.

The dichotomy of mind and brain was put in its acutest form by Descartes who proposed that mind was somehow entirely different from the messy stuff of the brain. Descartes felt that there must be both physical things and mental things and these two must somehow be totally different. Today, being used to the idea of artificial intelligence, we have no problem with thinking of the brain as a computer (an analogy, it has to be said, with profound limitations) so the necessity of making this sharp distinction is not so apparent to us today. However, the church saw this as a way of explaining souls and bodies. The soul again was some special stuff, created by God and immortal. Life was really a training ground for the soul. At death, the souls were judged and the rejected sent to hell while those who had been good were promoted to heaven, although what happened then was not entirely clear.

This position is riddled with inconsistencies and must be in error. The philosophical part of the problem is that if the soul is some different kind of stuff from the body, then how does it interact with the body? How does it tell the body what to do and how does the body tell the soul where it is? There is no socket in the brain allowing a connection to another world. And where does this soul come from? A Roman Catholic view is that souls are created by God and endowed on individuals at conception, but this cannot be right. It makes God to be constrained by human actions. And the science is really against it. Identical twins are formed by an embryo dividing into two individuals *after* conception. Identical twins do not share one soul. But the reverse is also possible. If two eggs are released at ovulation both can be fertilised normally, usually giving rise to non-identical twins, but they can sometimes fuse, resulting in a chimera, an individual having organs with different genes. You can end up with eyes of differing colours. Does such an individual have two souls? And there is the problem of spontaneous abortion and peri-natal mortality. Is God frustrated by these untimely deaths?

These problems are concerned with how we view others and are solved by allowing the word soul in this context to mean that when we are using it we are looking at the religious aspects of consciousness and consciousness is a manifestation of the behaviour of our bodies. From this point of view, souls develop, starting from non-existence in the embryo, but developing in childhood and eventually maturing in old age – and possibly decaying too. This is surely what most people believe. For example, we do not hold children to be morally responsible for their actions because their souls have not yet developed that capability.

Scientists tend to adopt this point of view without thinking and in many situations they are correct to do so. Unfortunately, once having accepted that the soul is built from neurons, which are nice and easy to measure, they tend to get out the brain scanners and talk only in terms of brain activity. Neurons are irrelevant to a discussion of the soul just as they are, say, to the truth of Pythagoras theorem, which is likewise a product of brain activity. It is a mistake to say that the electrical activity in the brain determines moral actions just as it is to say that atomic forces determine the electrical activity in the brain. When you are looking at neurological impulses, you are not concerned about Ohm’s law or any other manifestation of the interaction of electrons and atoms. This is the wrong level of reasoning to apply when dealing

with neurology, just as neurology is the wrong level of reasoning to apply when we are talking about morals. We look at the world in differing ways and it is important to realise the independence of these different ways of doing so.

The model of the soul as high level brain activity seems to me to be correct when dealing with the morality of actions, with responsibility and with legal issues such as abortion and the difference between manslaughter and murder or the question of the effect of mental impairment on responsibility. But for other issues, the model is less relevant. One obvious one is the question of identity which has a large social component. To look at what it means to be human without taking into account the interactions between people is clearly a mistake. What you think of yourself is affected by what people think of you and how you have been brought up. English people tend to think they only speak English in heaven. Not true of course, but our thinking about our lives and ourselves is related to the family circumstances and the culture of the country we were brought up in and brain activity is irrelevant to that. Anthropology is relevant, of course, but the fact that there is a cultural explanation for the fact that I have an inclination to Anglicanism, for example, does not mean that it is wrong, but rather that it may help an understanding of different approaches to religious ideas. It needs to be constantly reiterated that religion is about life and what to do next: science may help us to come to these decisions, but does not constrain them.

So far we have talked about the mechanics of conceptions and touched on anthropology and the mind – body problem, but it is on this last issue that most of the fundamental interest lies. When we are talking about the soul, to what extent are we talking about consciousness? Unfortunately, this word is even more elusive than “soul”. The science of consciousness is very tentative, a fact which is not necessarily apparent from the sayings of practitioners in the field. The problem lies in the essentially subjective nature of consciousness. We are talking about what we actually experience, not electrical impulses in the brain. This is not to say that one cannot make objective statements about these subjective experiences, but it is very difficult to do so.

The problem is best illustrated by considering mental images, for example the visual one. I have a mental image of the pencil writing these words, the books on the shelves opposite and the room in which I am sitting. But the image on the retina in my eyes is not half so clear: it is upside-down for a start. The mental image is the result of brain activity and is refreshed from details provided by the optical image in the eyes. This process is only just being understood and is extraordinarily fascinating. We have other mental images too: for example, the attitude of my body and the various sensations of pressure which I use to move about. If you think that climbing a ladder is easy, try to program a computer to do it. The artificial intelligence community is only now just about managing to make a robot that walks. Another interesting image is the one we form of time. “Now” does not exist in science: there is no particular distinguished time which is the present moment. But for our experience, “now” is just about the most important fact there is, which leads to our image of time flowing. Time does not flow, but our experience increases over greater intervals of time, which gives rise to our image of time flowing.

These mental images have in common that there is an “I” who observes them and it is this “I” which is at the heart of consciousness. I think it is what Descartes meant by mind and the question for us is, what relationship does this have to our ideas of souls.

Consciousness is an extremely difficult subject to grasp. Where does this “I” come from? What is it made of? Workers in the field of consciousness studies are sometimes heard saying that “I” is just an illusion, which to my mind indicates they have an inadequate theory. “I” is the most prominent experience in our lives. If a theory does not include it, it is not talking about consciousness. The Turing test is in fact no test of consciousness. It is not until a machine starts telling me about its own troubles, like Marvin the paranoid robot in *The Hitch-hiker’s Guide to the Galaxy*, that I would say that we have a machine with consciousness.

When scientists say that the “I” is an illusion, they mean that it is what the philosophers would call an emergent property, that is a property which is only an effect, not a cause. The reflections on the surface of water, so beloved of painters, are such a property. You can understand water by understanding its structure and electrical properties and the behaviour of surfaces. The reflections emerge from these but do not have any significance in understanding the deeper properties of water. But “I” cannot be of this nature. As an illustration, it is possible, by stimulating a nerve, for someone else to make your arm move, but anyone who has been subject to this experience knows when the arm moves as a result of the surgeon’s action and when it moves as a result of their own volition. The will to do so is a cause of the action. It is true that some of our actions are unconscious but even these we can learn to control and it is the “I” that does it.

It is not clear what this “I” is, but it is clear that it is closely associated with the brain. We go in and out of consciousness when we sleep, and under anaesthetic, and these are states of the brain. But it is equally clear that studying nerve impulses will not lead us to a theory of “I”. Whatever “I” is, if it is a property of the brain, it is a very high level property, but it is essential to understanding our thoughts and actions.

In order to understand the impact of the scientific work on consciousness, it is important to understand that scientists are working on an intuitive idea rather than a precise definition. Consciousness covers a great many ideas, certainly more than we would understand by the word “soul”. Some of these ideas are at a very low level. For example an autonomous robot must have some sense of self, if only a “you are here” mark on a map. The robots currently exploring Mars have a degree of autonomy which is necessary because signals take too long for them to be controlled directly like a remote manipulator is. This means they must keep information about where they are and what they are doing, a primitive degree of consciousness. But they still have to be told to get round a rock or up a hill.

The degree of autonomy in robots like this will undoubtedly increase as we discover how to do it, but we are unlikely to have a robot whose goals did not derive from a human being. If something goes wrong, we are not going to sue the robot, but rather the designer. The same applies to animals, which have a degree of consciousness above that of any robot we might create over the next century or two. Much animal behaviour is instinctive, that is, placed in the same situation, the animal will react in the same way, but some animals, such as chimpanzees, undoubtedly have independent, goal-directed, behaviour. In these cases the level of consciousness is sufficiently complex for us to talk about feelings and choice. But it does not necessarily follow that this means that animals have the subjective experience which I have called “I”.

The question now is, what is the relationship between consciousness, this experience of “I”, and the soul? There is a clear area of overlap between consciousness and soul

when talking of responsibility and when we are thinking of others. To be responsible, you must be aware, you must have free will and you must be rational, all aspects of consciousness. To some extent this could be a question of degree: “naughty boy”, you say to a pet dog when it misbehaves and the dog presumably understands that something is not quite right. But by and large, you do not blame an animal when it misbehaves, although you try to ensure that it does not misbehave again.

So, to the question, do animals have souls, from the responsibility point of view, we answer, no. Going back to spiritual aspects of the soul, and in spite of elephant art, I would also say no. One can question whether modern art similarly manifests spiritual values, but I would personally answer yes, it is just that I would deplore many of the spiritual values manifested. But I cannot think that an elephant with a paint brush in its trunk is attempting to manifest spiritual values.

But the issue of the value we place on animals is a different matter. Some degree of consciousness does seem to entail some degree of value. This is undoubtedly a religious question concerned with our relationship to creation. Different religions answer this question in different ways, often strongly influenced by culture. For example, the English love of animals is well known. As an Englishman, I think that this is quite right, although carried to excess in some individuals, but I would say that all religions place a value in creation and that science may inform our religious choice, but does not determine it.

Similar reasoning may be applied to ethical questions concerning embryos on the assumption that they are unconscious, but with the difference that the human embryo has a potential which is lacking in an animal. So surgical manipulations on an embryo can be judged by the outcome. This judgement is again a religious issue and different religions take different views. A simplified view would be that all human life is valuable and no embryo should be terminated. I cannot take this view as I believe that diseases like Huntington’s Chorea are against God’s will and purpose for creation. By terminating embryos with this genetic defect we are carrying out God’s will, not frustrating it. But then, where do you stop? Science can inform the debate, but at heart it is a religious one and should be placed before God.

These are difficult issues, not resolvable in a few pages. But at least we can see how science and religion interact in this area concerned with the value to be placed on others. For the other use of the word, soul, when we are talking about our own destiny and purpose in life, we need to look at the religious words, heaven and hell.

Heaven and hell

In medieval times, you knew where you were with heaven and hell, and you knew where they were. Heaven was just beyond the stars, quite close really, just a mile or two up in the sky. Hell was under the earth – in certain spots you could smell sulphur fumes emerging and clearly there was fire down below. We know of course that this is not so, but where exactly are heaven and hell? Our telescopes are now so sensitive they can observe objects billions of light years away, distances incomprehensibly large. No sign of heaven there. By tracking seismic waves we can also look into the earth and understand its structure and the immense forces at play there. But there is no sign of hell there. Heaven and hell are nowhere.

But if they are nowhere, they are nowhen either. Just as the immensity of space leaves no place for heaven and hell, the immensity of time makes them meaningless.

The problem is one of change. If we are to experience heaven and hell we must change, and change, even imperceptible change, carried out over millions of years will turn us into something we would not recognise. I have my school photograph taken at the age of 8 or 9 showing a little boy, unkempt hair, untidy jacket, smiling at the camera. On the back my brother has written, "Chris is the daftest boy in the world". In my writing, the "is" is crossed out and replaced by "isn't", demonstrating a failure to grasp the weakness of a negated universal. Whenever I look at this photograph, I think, "Was that me?" Of course it was, but the "I" I am today would have been incomprehensible to that little boy and that was only 60 years ago. A million years is time for a new species to evolve. Perhaps after a million years in heaven I might develop golden hair, wings and learn to sing in tune. But the "I" at the end of that time will have nothing in common with the "I" at the beginning.

But there is a problem even within one lifetime. We are born, our bodies grow and develop and then decay and we can die at any point along this trajectory. Does heaven contain the scarcely formed souls of the newly born, or the crotchety and confused souls of those with dementia? If not, how does the "I" in heaven relate to the "I" on earth? Is it distilled essence of me which ends up in heaven? And if so, who does the distilling?

The crucial point in this is, what is it like to be dead. Is it like anything? Is there some sense in which we are conscious? The traditional view is that being dead is like being alive, but in a different place. Nowadays we might update this to say that the different place is in a different space, another dimension. Scientifically, this seems very doubtful: these dimensions cannot be detected by any experiment we have performed, yet there must be some interaction with this different space in order for souls to get there. And there is no guarantee that this space is anything like our own. Perhaps there is no time dimension and heaven really is timeless, but with the consequence that "being" is meaningless.

These logical problems with heaven and hell are supplemented by a number of theological ones for which there are various resolutions. It seems unjust of God to punish sinners *for ever*, no matter what they had done on earth, so the doctrine of purgatory is invented. It seems illogical that God should endow man with free will and then punish him for choosing evil. The sacrifice of Christ on the cross as a means of our avoiding hell makes no sense to us today and conveys an image of God which is out of keeping with the teaching of Jesus and the rest of the New Testament.

There are various ways of reconciling these problems, according to the different Christian traditions. But fundamentally these problem, it seems to me, arise from interpreting heaven and hell in far too concrete a way and from trying to impose a logical structure on God. When talking about the nature of God, we are talking about something we can neither know or test. Metaphor is the only tool we have for speaking of these things, and metaphor gives us only a glimpse of reality.

Many of the problems are associated with our understanding of time, always a tricky concept. For most people, the future is about seven years away. Beyond that it is unknown territory which they do not worry about. If pressed they might go to a lifetime, or even the biblical seventy times seven, but a million years is inconceivable, a concept unimaginable throughout human history. Eternity in religion is not a duration, it is about the presence of God. When the bible talks about eternity it is not saying anything about cosmology. In the bible, the word, "heaven" appears many times, often meaning the abode of God, itself an anomalous phrase. Most uses of the

word simply mention it as the ultimate destiny of our lives, possibly at the end of time. In most cases, it is a word which is understood, not needing a definition. There is indeed a description in the book of Revelation, but the description is a vision of the author. This vision is expressed in the language and imagery of the time and actually means very little to us today. If heaven is as described, I am not sure many people would want to go there. Revelation needs to be understood as metaphor.

In 1 Corinthians, Paul does give some clear and inspiring words on the resurrection, addressing some of the logical problems already touched upon, in particular, that if the resurrection body is eternal, it must be of a different nature to our earthly body. Granted, but if this is so, what is it like to be a resurrected body? Are we conscious? Is it like anything to “be” a resurrected body? And the only answer can be that we do not know. I cannot do justice to the immense amount of analysis which has been expended on this issue, but the only conclusion I can come to is that we cannot know, but can only have faith and trust in God. Perhaps the most helpful quote is Jesus’ words in John, ‘This is eternal life: to know thee who alone art truly God, and Jesus Christ, whom thou hast sent’.

So what is the bottom line? What does this somewhat enigmatic saying of Jesus mean for us today? Jesus did not use the idea of hell to frighten people into heaven, but he did use those words. It is hard to preach about the purpose of life and the goals we should have in it without using them. I certainly do: but I am not talking about a time or a place. Heaven is a goal, an eternal goal. It is making a distinction between that which is transitory and earthbound and that which has an ultimate significance. It is meant to be a guide to life. People who have had a near death experience in which they feel they are being drawn into heaven often live transformed lives after the experience. This is what heaven is all about, an idea of the value of goodness we should all aspire to.

Hell, on the other hand is about justice. It is not there to frighten us into heaven, but rather to encourage us to leave it to God to pursue justice. Not that we do not care about justice here on earth (*metaphor, need I say?*) but we can never hope to give everyone their just deserts. The idea of hell is a goal of justice – it says something about the nature of God who abhors evil and it says something about how we should live our lives.

But what about when our lives are over? What can you usefully and with integrity say at the graveside with grieving relations around? One thing I am not prepared to say is that we are headed for a nice party in heaven. *Death is nothing at all* is a frequent reading at funerals, but it seems to me to be quite wrong. Death is a blow to anyone who has loved and the greater the love the greater the blow. But death is a part of life. We cannot have life without death and the comfort comes from focussing on the life, not the death. In religious language we say we offer that life to God, which means we look at it with God’s eyes, in the light of eternity. See how thick the metaphors are! You cannot speak sensibly about these things without them. But it must be understood they are statements of faith in the darkness, not just of our ignorance, but rather of our inability to know.

Philosophy tells us that if this is so, we should keep silent: but silence is not an option for the human soul. We must choose the way we live. We cannot help but ask, Why are we here, and What should I do with my life? And because we cannot answer these questions we make statements of faith which act as a guide for life. Beyond that, we should not go. The relevance and reality of heaven and hell are determined

by how they are used. And they are used to underline the importance of the choices we make in our lives. Choices affect outcomes and these are important for all, not just a few famous people or those in positions of power. And these choices are not just questions of lifestyle. We believe in a transcendent God, that good and evil are real choices and consequently it is worth self sacrifice to choose good and reject evil. Do I believe in heaven and hell? Not as places or times, certainly. But this transcendence means that I believe in the reality of heaven and hell as things beyond reflections of our immediate human nature. They should control my choices in life, but beyond that it would be unwise to say.