

Science: Friend or Foe?

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Science is often viewed with suspicion by Christians, partly because its sole concern with the material world causes unease that perhaps the reality of God's presence is being ignored by scientists as they do their work: a suspicion that is bolstered when prominent atheistic scientists make claims that, one day, science will provide a 'theory of everything', that will remove God from the scene altogether.

But such claims by atheists confuse categories of explanation: science may explain, to a better or poorer extent, how matter behaves in the universe, but it can never explain why we ourselves are here and are in the state in which we find ourselves. Christians concerned to present the truth-claims of Jesus in a culture increasingly dominated by subjective, relativistic views may actually find that science is an ally because it emphasises objectivity and the distinction between truth and falsehood.

Christianity is unique amongst the world's major religions in the stress it places on the importance of the material world. This underpins our understanding of the relationship between God (the Creator), the universe (his creation), and ourselves (his creatures).

Christians believe that the universe was created by God, with humans at the pinnacle of his creation. God himself pronounced that his creation was good and was pleasing to him (Gen. 1:31). In the Incarnation, 'the Word became flesh and dwelt among us' (Jn 1:14). There can be few stronger statements from God about his attitude to the material world than this; that he chose to take a material body in order to reach us and to bring us back into relationship with himself. Jesus was fully human at the same time as being fully God. Our faith hinges around the fact that Jesus lived and died in real places, and at specific times. A deep respect for matter is embedded in Christianity.

Against this backdrop, there are two errors of extremes into which many non-Christians fall. At one end of the spectrum are those who hold as an underlying philosophy that the material world is all there is; at the other extreme are the 'New Agers' and others, who imbue everything in nature with some level of consciousness and spirituality.

As so often, the Christian path is radically different from the world's ways. It proclaims the transcendence of God as creator of the universe (God would continue to exist even if the universe ceased to exist), while at the same time believing in the immanence of God in his creation.

In other words, Christians believe with the author of Hebrews that God created the universe and 'sustains all things by his powerful word' (Heb. 1:3), year by year, day by day, microsecond by microsecond. The very orderliness and predictability of the world in which we live is itself a measure of God's grace to us: it is not capricious and unpredictable. God's nature is to be loving and kind, consistent and patient; and the universe he created, though marred by sin, still reflects his nature.

It is this very orderliness of the world which makes it open to scientific investigation. And science has been one of the great triumphs of civilisation. It has brought, for example, the

eradication of smallpox from the world and is within sight of also removing leprosy, that social and medical scourge of Jesus' time. Nevertheless, we should never forget that humans are by nature fallen people, inclined to sin, and science has brought not only the benefits of nuclear medicine, but also the burden of nuclear weapons.

The business of science is to investigate the natural world. There are two main characteristics of the scientific method. First, the basis of science is solely evidence from the observable universe: it is this objectivity that makes it a cross-cultural, cross-generational enterprise. The equations that work in Bedford work equally well in Beijing. Science is concerned only with material categories of description and explanation, and with the ways in which matter interacts. It is independent of underlying philosophies. Thus a scientist may be a Hindu or a Marxist, an atheist or a Christian, and still be able to formulate and to understand the same scientific explanations. Second, science is always provisional, in the sense that better explanations often lie just around the corner, and we should expect them to be found as the universe is studied further.

Thus, for example, Newton's laws of motion are sufficient to predict the fall of an apple, or the motion of the planets around the Sun: they are good enough to get a man to the moon, or a communications satellite into orbit. But Einstein showed with his general theory of relativity that Newton's laws were based on conceptually incorrect ideas of how objects move. The important point is not that Newton's laws are incorrect, but that they provide an adequate description of how things work in a set of circumstances that, in this case, are those relevant to many of our daily activities, such as driving cars or playing snooker, and the like. But in more extreme circumstances, such as explaining the existence of Black Holes, Einstein's theory is better and so is an improvement on Newton's laws.

A more striking example, perhaps, is the assumption that the Earth is flat. To a Medieval farmer, this was a rational assumption which fitted all the facts at his disposal, and which would have been perfectly adequate for all his daily activities, such as planning water drainage for his fields. Indeed even today, for someone such as myself who lives in the Fens of East Anglia, the assumption that the Earth is flat is quite adequate for such daily activities as cycling to work, or using a map to plan the distance to London.

But the difference between a Medieval farmer and myself is that we now know that the Earth is round: we have seen photographs of the Earth taken from the Moon and there is no doubt about it. So if I were to maintain in the face of this evidence that the Earth is flat, not only would I be deceiving myself, but other people would probably think that my word was unreliable, and would be unlikely to place much weight on my attempts to convey the truth of the gospel message. Since science merely explains the interactions between matter, we should not as Christians be frightened of what it comes up with: we should acknowledge that our scientific understanding is of necessity flawed and incomplete, but provided it explains all the pertinent observations available, then we should accept it as a good working hypothesis of how the world works.

The very success of the scientific method has sometimes led people to claim far more for it than is warranted. For example, the so-called laws of nature (such as Newton's laws of motion), do not control how things happen in the world. God controls the world. The 'laws' and theories that scientists come up with are simply descriptions of how the world behaves. Powerful they may be, in a descriptive and predictive sense. Often they are elegant and even beautiful in the eyes of the (scientific) beholder. They may lead us to feel awe and wonder at

the power yet the simplicity, the connectedness and unity, the potentiality and the fruitfulness of God's creation. Yet scientific theories remain merely incomplete descriptions of how things work.

To imbue the laws of nature with meaning above this is to fall into a sub-Christian, deistic view of the world. That would be a world in which a god outside the universe set it all going like a clockwork machine, then sat back to leave it to run largely by itself. This is not the personal, loving, involved God of whom we learn in scripture, whose chief joy is to bring his people back into relationship with himself, as a father with his children; and who, one day, will recreate the universe in the way he meant it to be, before it was corrupted by sin (Rom. 8:21).

Christians have responded to the findings of science, and to results that at first blush might seem to contradict scripture, in one of three main ways.

Some have decided that their own reading of scripture overrides scientific evidence, for example on the age of the Earth. Though their high view of scripture is commendable, it would be strange indeed if God's revelation in scripture was not in accord with his revelation in nature. There is a congruence between God's nature and what he has made. As Paul says, 'since the creation of the world, God's invisible qualities - his eternal power and divine nature - have been clearly seen, being understood from what has been made' (Rom. 1:20). So if our understanding of the universe and the world around us from our reading of scripture does not agree with our experience of nature, and of the world in which we live, then we have to allow for the possibility that maybe we have misinterpreted scripture on this point. It is equally important, however, to remember that our salvation does not depend on any secret body of knowledge, be it scientific or any other kind. The Medieval farmer believing in a flat Earth was no further from salvation than a modern man who knows that the Earth is round.

Another common approach used by Christians has been to relegate God to those areas not explained at present by science: we might call this a 'god of the gaps' approach. For example, some people would argue that God acted in the 'Big Bang' at the beginning of the universe, and then left it to evolve to the state in which we find it today. Others, like Michael Behe, claim that certain biochemical pathways are so 'irreducibly complex' that they could not possibly have evolved, but must have been designed and created specially by God's intervention, or that different species must have been created by direct fiat of God. To those with a strong theistic view of God's presence in the world, this too appears to sell God short. By concentrating on a few supposed examples of God's explicit intervention (in areas that are at present poorly understood scientifically), this approach draws attention away from the ongoing, sustaining activity of God in the entirety of the world about us.

The scientific enterprise has a habit of continually turning up new explanations of phenomena that were previously beyond our understanding. Just look at the changes in scientific knowledge that have occurred during the present generation, for example in genetics, or in physics. Yet we are only at the beginning: it is almost certain that many aspects of the natural world that we don't understand now will become clearer in the future. What then of our 'god of the gaps'? He gradually gets squeezed out, and along the way Christians who have put their trust in such arguments are liable to have their faith severely battered as new scientific explanations come along.

A third approach which is consistent with both scripture and nature is to accept the biblical view that God is omnipotent and is active in his world. All Christians believe that God works in the lives of people, through answered prayer and changed lives. Then surely he can work in nature too, through his creation. On this basis, there is nothing surprising, for example, in the idea that God could work his purposes through the mechanisms of genetics that determine much of our make-up, or through evolution.

Indeed, there are further parallels between our experience of God as individuals and our view of him through nature. For example, Christians often attest to God's miraculous intervention in their lives and circumstances: to the non-Christian these may be passed off as mere coincidences, whereas the Christian, by faith, can see God's guiding hand. Similarly, there are many features of God's creation that can inspire in the Christian awe and reverence of God the creator. For example, the physical constants of the universe are so finely tuned that if some were just fractionally different, then we would not be here. Or if all the estimated 1024 (one million-million-million-million) stars were not out there, then the universe would be such that it would be impossible for us, humans, to exist either. This does not prove the existence of God, but to the believer it is again a source of wonder and praise to him.

On a broader theme, it is no coincidence that the great majority of students attending evangelical churches in university towns are studying scientific subjects. In our society, academics in the humanities have largely adopted relativist world-views, with a concomitant denial of any absolutes of meaning, or of right and wrong. This is mirrored in popular culture by an emphasis on doing 'whatever makes you feel good', with scant reference to absolutes of right or wrong other than what society for the time being sanctions as legal or illegal. By contrast, scientists are imbued with a deep sense that some things are true and others false. There is little doubt that the gospel finds more fertile soil amongst those who are already convinced of the difference between truth and untruth, between reality and imagination, between fact and fantasy. To this extent, also, we should be grateful for the benefits that a scientific culture has brought for the proclamation of the gospel.

When Christians consider the scientific method they should bear in mind what it can and can't do. All scientific explanations are tested ultimately against observable facts about the real world. It is patently clear that there are whole realms of our existence that science does not and can not address. Science may tell us 'how' things work, but it can never tell us 'why'. It may explain the genetic basis of disease or the degree of genetic relatedness between humans and animals, but it cannot explain why we are here in the first place: and it cannot explain love, or joy, or peace, or patience, or kindness, or goodness, or faith, or any of the other attributes that we believe come from God (Gal. 5:22,23).

Furthermore, scripture suggests that we should draw a distinction between God's work in creating the universe in the first place, and his ongoing, sustaining activity in it. Science can investigate what happens in the latter, but can never say anything about the former. The distinction, however, is not solely in the creation of new physical matter or new biological organisms in this universe: both are ongoing activities, the processes of some of which, at least, are well understood. For example, as I write, huge amounts of new elemental matter are being created by nuclear reactions in stars. In the biological realm, it is a matter of observation that there are of the order of twenty million living species, but that the fossil record contains an estimated two billion extinct species. So far more species have lived and died in this world than are alive today. In this sense, God's creative activity is ongoing in our universe, although it is different in kind from his creation ex nihilo of the physical universe

and of life itself in the first place. Jesus mirrored this view when in reply to the Jews' complaints that he was working on the Sabbath, he proclaimed that 'my Father is always at his work to this very day' (Jn. 5:17).

A pitfall for some Christians is that their theology of God affects whether or not they accept particular scientific explanations. The opposition of church authorities on grounds of biblical interpretation and papal authority to Galileo's view that the earth circled a stationary sun, rather than vice-versa, is an example with which we are familiar, and which looks faintly ludicrous to us now. Indeed, nowadays we would say that both the sun and the earth move, but who knows how future generations might view it? Galileo himself wrote that it would be prudent 'not to let anyone usurp scriptural texts and force them in some way to maintain any physical conclusion to be true, when at some future time the senses...may show the contrary.'

A modern analogue might be the very real concerns of some Christians that biological evolution is inconsistent with the scriptural view that God created the world and all that is in it. Christians are quite right to be concerned that the scientific explanations provided by evolution have been hijacked for such diverse claims as the materialistic atheism of Richard Dawkins, notions that mankind is 'evolving' to a better state, and the sinister and evil manipulation in support of eugenics and social engineering which underlay the Nazi Holocaust. Yet evolution underpins all of modern biology and as an explanation of how things are, it should not, and indeed cannot carry any of this ideological baggage. The answer is not to throw out the scientific explanations, unless better ones can be found, but instead to draw attention to the error of drawing philosophical, or indeed theological conclusions from scientific explanations.

For example, consider the argument by some Christians that evolution is wrong because there are many gaps in the fossil record. The gaps in the fossil lineages are a poor reason to reject biological evolution. In the first place, only about five percent of organisms have hard body parts that make them liable to preservation as fossils, and not one in a million living organisms is fossilised. Add to this the intermittency of the geological record, which consists mainly of deposits from a series of larger or smaller catastrophic events, such as those produced by volcanic eruptions, earthquakes, landslides or floods, and it is hardly surprising that we don't have a complete fossil record of all the species that have ever lived. Indeed, even if we did, there would still remain the problem that offspring inherit genes from their parents, and not skeletons or shells. Very minor genetic changes can produce major morphological changes, while, conversely, animals with similar morphology are known with very different genetic make-up. So the fossil record is itself an uncertain as well as a sparse and incomplete record of genetic lineages.

For the Christian, one of the main issues we need to affirm is that humans are different in kind from all other animals, although modern molecular genetics shows that there is a deep unity between all living organisms. However much we may share in common with other animals, with similar cellular, molecular and genetic structure, similar skeletal construction, and even some similar behavioural traits, God has said explicitly that we are different, having been created 'in his own image.'

Though some atheistic scientists, like Richard Dawkins, might claim that science shows that everything can be explained by materialist assumptions (i.e. by a philosophy of materialism), our experience, and indeed God's self-revelation recorded in the Bible, cries out that this is not so. And we should continue through our lives and our witness to proclaim this to our

generation. But we should not, because of this, throw out the power of the scientific method - the strength of understanding the world about us by explaining nature in its own terms. Yet many Christians, perhaps bemused by the apparently all-embracing power of the science and, incorrectly, frightened that the methodology of science also requires adherence to a philosophy of materialism, are decrying science itself. This is unwise and unhealthy. It risks cutting Christians off from the mainstream of scientific thought: and if anyone is going to study God's creation, as scientists do, it must be good that Christians should be there at the forefront.

The challenge to scientists who are Christians is to use our knowledge of how the world works for the benefit of mankind in godly and just ways, and to endeavour to follow God's command to us to be good stewards of this world. Certainly, scientific knowledge can be used for good or for evil, for the welfare of others or for selfish ends. As we well know, both from our personal experience and from God's words in the bible, we are fallen people who are liable to sin at every turn. As Christians, with a realistic awareness of the nature of sinful mankind, we have a responsibility and a duty to be alert to, and aware of, both the possibilities and the pitfalls of advances in science and technology.

As scientific knowledge expands, rather than shying away from it, we should use it to point to the omnipotence of our creator God, to the beauty and goodness of his creation, to the very special circumstances that make humanity unique, and to the vast areas of human experience that science and technology does not, and can not touch. We can say with the psalmist how wonderful is the creation that God has made, how amazing is the fact that God cares for each one of us, and how astonishing that he has made mankind just 'a little lower than God' himself, with dominion over all the works of his hand (Psalm 8).

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