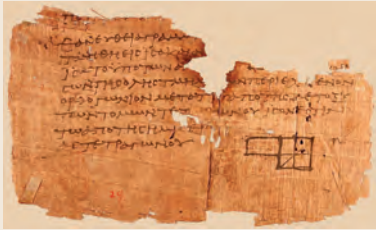


12 The Reformation and the birth of modern science

Prior to the Reformation scientific understanding largely depended on the work of Greek, Islamic and Chinese scholars. The birth of modern science however came with the development of the scientific method which harmonised with the biblical worldview of the Reformation. This encouraged many Protestant scientists to make fresh observations of the natural world and universe and begin the scientific experimentation which enabled modern science to emerge.



The Greeks were sophisticated mathematicians, especially in geometry. This is one of the oldest surviving fragments of Euclid's Elements, found at Oxyrhynchus and dated to c.100.
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Though previously the Greeks, the Chinese and Muslim scholars had made some headway in mathematics and trying to understand the workings of the world, the turning point in the development of modern science came in Europe between 1500 and 1700. So the Scientific Revolution was closely associated in time with the rediscovery of biblical faith during the period of the

Protestant Reformation, but was there a causal connection? There are three lines of evidence and a plausible rationale for such a link between the beginnings of modern science and the Reformation.

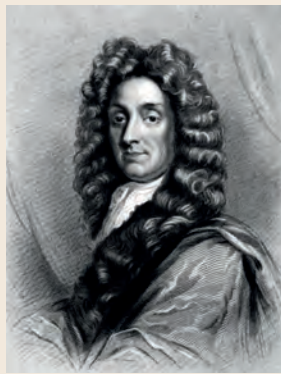
First, the biblical worldview gives a solid foundation for scientific endeavour

The Bible tells of one God over all creation. This God is not capricious but a God of order, wisdom, faithfulness and law (as well as grace). With this outlook the idea of universal laws that apply throughout the physical universe makes sense. This is foundational to the whole feasibility of the scientific project.

Further, the biblical view of human beings is that we were originally made in God's image with a mandate to be stewards of his creation. One of the great questions is 'Why should we as human beings expect to be able to understand the world?' Being made in the image of God provided the early scientists with reason to think that they could uncover God's laws for the physical world he had made.

Second, many of the early scientists were either Protestants or supported by Protestant benefactors

In 1543 a Lutheran nobleman, Duke Albrecht of Prussia, subsidised the publication of the work by the astronomer Copernicus, *De revolutionibus orbium coelestium*, which proposed and defended the idea of the sun, rather than the earth, being at the centre of our planetary system. And it was Andreas Osiander, a Lutheran theologian who arranged for the book's printing and who wrote the Preface. The astronomers Tycho Brahe and Johan Kepler were both devout followers of Luther. Johann Fabricius, a Lutheran layman, first observed sun spots and the rotation of the sun and Samuel Dorffel, a Lutheran pastor, first demonstrated that comets move in a parabola.



The very first meeting of what shortly became the Royal Society followed a lecture given by Sir Christopher Wren at Gresham College in 1660.
Willcome Images

Meanwhile in England in 1645 meetings began which in 1661 were formalised as the scientifically prestigious Royal Society. Seven of the ten men who formed the nucleus of these meetings were Puritans. 62% of the members of the Royal Society in 1663 were clearly Puritan by origin – at a time when Puritans were only a small minority in England.

Third, the Reformation opened the way for the experimental method

Immediate observation of natural phenomena is important, but a deliberate and carefully planned experiment will give less ambiguous results for understanding the natural world. Greek philosophy, guided by Pythagorean and Platonic ideas, gave prominence to human thought in such a way as to major on the theoretical and neglect the practical. Dominated by the thought of Thomas Aquinas, the Catholic Church had adopted much of the ancient Greek outlook into its theology.

The scientific revolution would take off with the rise of experimentation, which required manual work as well as intellectual thought, but this needed to be seen as a respectable and worthy pursuit in order to be accepted. With the Reformation came a new understanding of the dignity of manual work. After all, God had created Adam to be a gardener and Jesus, the Son of God, was the carpenter of Nazareth. This understanding gave both permission and impetus for intellectuals to pursue experimentation. Thus the experimental method, which is the foundation of modern science, was enabled to emerge and be embraced.

The Reformation doctrine of the priesthood of all believers, that all our work be offered to the glory of God whoever we are, underpinned this attitude. Today there is commonly assumed opposition between science and 'religion'. But at the beginning of the scientific revolution, rather than there being conflict, the two went together.

Francis Bacon (1561–1626) is regarded by many historians as the 'father of the scientific method'. He wrote in his famous essay 'On Atheism': 'It is true that a little philosophy inclineth man's mind to atheism; but depth in philosophy bringeth men's minds about to religion. For while the mind of man looketh upon second causes scattered, it may sometimes rest in them and go no further; but when it beholdeth the chain of them confederate and linked together, it must needs fly to Providence and Deity... I had rather believe all the fables... than that this universal frame is without mind.'



Portrait of Francis Bacon, Viscount St Alban, by John Vanderbank, about 1731, after a portrait by an unknown artist (c.1618).
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