

**James Hannam**

*God's Philosophers: How the Medieval World Laid the Foundations of Modern Science.*

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Most people don't know much about the Middle Ages, roughly the period from 500 to 1500AD, but the common view is that the medieval centuries were a blank time when little or nothing happened of any consequence and when anything that could have been of consequence was stifled by the Catholic Church. James Hannam argues otherwise. Indeed, he argues that, as his subtitle indicates, the Christian medieval world 'laid the foundations for modern science'. The qualification 'laid the foundations' is important, since Hannam does not refer to the authors he discusses as 'scientists', the word not having been coined until 1833 (338), but instead as natural philosophers. And so his book 'tells the story of how natural philosophy in the Middle Ages led to the achievements of modern science' (9).

This position is not original. It was advanced a century ago by the French physicist, philosopher, and historian of science Pierre Duhem in a number of works, notably his monumental 10-volume *Systeme du Monde*. And it has also been defended more recently by eminent historians of medieval science, notably Edward Grant (*The Foundations of Modern Science in the Middle Ages: Their Religious, Institutional and Intellectual Contexts*, Cambridge 1996; and *God and Reason in the Middle Ages*, Cambridge 2001), and David Lindberg (*The Beginnings of Western Science. The European Scientific Tradition In Philosophical, Religious, And Institutional Context, Prehistory to AD 1450*, 2<sup>nd</sup> ed. Chicago 2007). But Hannam, an Oxford- and Cambridge-trained historian of science, does an especially nice—because at once erudite and enjoyably readable—job of defending them for general readers.

Much of his work is devoted to a detailed debunking of two prevailing myths. The first is that even many contemporary historians, who should know better, are still addicted to the idea that nothing of any importance scientifically happened in the West between the fall of the Roman Empire and the Renaissance. Hannam, in reply, argues that a great deal of importance happened in the period that Petrarch was the first to call the 'Dark Ages' (8). Second, and closely coupled to the myth that there was no science worth mentioning in the Middle Ages, is the belief that the Catholic Church resisted and held back whatever meager advances were made. Although implicit in Petrarch's evaluation, that view and the accompanying idea that there is an inevitable conflict between religion and science, or faith and reason, owes much of its influence to the work of 19<sup>th</sup> century propagandists such as the Englishman Thomas Huxley and the American John William Draper. Draper's hugely influential *History of the Conflict Between Religion and Science* (Appleton 1874) cemented the conflict hypothesis into the general understanding. This, in turn, was given apparent intellectual respectability through the support of Andrew

Dickson White, who in the ‘hordes of footnotes’ at the bottom of each page of his massive, 2-volume *A History of the Warfare of Science With Theology* (Appleton 1896) gave the illusion of meticulous scholarship. Hannam’s evaluation of White is rather mild: ‘...anyone who checks his references will wonder how he could have maintained his opinions if he had read as much as he claimed to have done’ (4). Most contemporary scholars in the field of religion and science would not be so charitable, since they think that White’s book was largely an intellectual fraud. Instead, Hannam argues like them that, overall, the Church encouraged, and in many ways exerted a positive influence on, the proto-scientific medieval scholars whose work gave rise to modern science.

*God’s Philosophers* recounts this complex but fascinating story. In opposition to popular opinion, journalistic cliché, and misinformed historians, Hannam shows that the Middle Ages was a period of enormous advances in science, technology and culture. The compass, paper, printing, stirrups and gunpowder all appeared in Western Europe between 500 and 1500AD. True, these inventions originated in the Far East, but Europeans developed them far beyond their originators. One example: in the 50 years after Gutenberg produced the first printed Bible in 1455, more than 20 million books were published (209). And to these inventions the medieval Europeans added spectacles, the windmill, the blast furnace, the astrolabe, the plough, the navigational compass and the mechanical clock, among others. Technological advances during the Middle Ages led to enormous increases in agricultural productivity and improvements in living standards. Some also had a direct impact on science. For example, Hannam describes how a glassmaker in Venice invented eyeglasses in the thirteenth century, and how the Venetians became expert at grinding lenses (151-52). It is therefore no coincidence that Galileo was working near Venice when he built his telescope (193, 339). The navigational compass inspired the investigation of magnetism by Peter the Pilgrim and William Gilbert (284-7). Other inventions had less direct, but still profound, effects on scientific thinking. The mechanical clock, with its 24-hour cycle, closely resembled the medieval world picture. The heavens themselves supposedly revolved around the earth each day. So the metaphor of the world as a clock built by a divine clockmaker came naturally to Thomas Bradwardine (184) and Nicole Oresme (190).

The intellectual orientation of medieval authors was influential in a deeper way. The starting point for all natural philosophy in the Middle Ages was the idea that nature had been created by God. This made it a legitimate area of study because, through nature, man could learn about its creator. Medieval scholars thought that nature followed the laws that God had ordained for it. Because God was consistent and not capricious, these laws were constant and worthy of investigation. However, these scholars rejected Aristotle’s contention that the laws of nature were bound by necessity. God was not constrained by what Aristotle thought. The only way to find out which laws God had decided on was by the use of experience and observation. This did not usher in an era of the sort of controlled experiment that we now identify with experimental natural science. But it did leave a lot of elbowroom for intellectual disagreement, which, as Hannam describes in detail, scholars willingly exploited.

On the other hand, the Church never offered unqualified support for all forms of

inquiry and set limits beyond which natural philosophers were not allowed to go. Freedom of speculation was not unlimited: scholars ‘were free to speculate as far as they pleased as long as they avoided religious controversy’ (193). So, for example, the Church opposed atomism because it threatened the Catholic interpretation of the Eucharist. Writes Hannam: ‘Certainly, this was a clear-cut case of theological orthodoxy curtailing (natural) philosophical inquiry. But this happened so rarely that we cannot maintain that the Church held back science in general’ (193). He continues: ‘The popular image of the medieval Church as a monolithic institution opposing any sort of scientific speculation is clearly inaccurate...It is hard to imagine how any (natural) philosophy at all would have taken place if the Church-sponsored universities had not provided a home for it’ (ibid.). Hannam concludes: ‘Overall, the relationship between Christianity and natural philosophy...might best be summed up with the words “creative tension”’ (339).

I am not a medieval historian, but the many examples that Hannam describes, and others in the works of Grant and Lindberg cited above, make a good case for this claim. Ideas or discoveries often attributed to Galileo, for example, may be found in the works of medieval writers: the two-books metaphor (65), figurative, non-literal readings of the Bible (63, 187, 315), the mean-speed theorem (176, 188-9, 332), and the parabolic trajectory of projectiles (334-5), to cite a handful of examples. My only reservation is that Hannam’s motives sometimes seem overly apologetic in emphasizing Church tolerance and excusing Church excesses. His blog (<http://bede.org.uk>) perhaps explains this. His goal, he writes, ‘is to show how a person from a scientific background—Hannam studied physics at Oxford—came to Christianity and has had his faith strengthened rather than weakened by argument and reason. It is intended for anyone who is interested in these subjects and wants to see how having faith does not mean sacrificing intellectual integrity.’

Fair enough, and, as a Catholic, I agree. But in his attempt to advance the cause of the Middle Ages, I think that Hannam denigrates what we usually refer to as the Renaissance. His evaluation of Renaissance humanism is especially harsh. It begins: ‘The desire to look back to Greece and Rome was the true mark of the Renaissance, which in many ways was a conservative movement attempting to recapture an imaginary past rather than march forward. It was a time when, in order to keep up to date in writing or architecture, artists had to model their work on a prototype that was over 1000 years old’ (212). In fact, in seeking to turn back the clock, the humanists were ‘really incorrigible reactionaries’ (213). ‘They did not recognize that medieval writers had made great advances. As far as the humanists were concerned, medieval thinkers were far too recent to have produced anything worthwhile. Scholasticism was undeserving of their attention and so they dumped it. The effect was rapid and nearly disastrous for natural philosophy’ (216). Hannam concludes: ‘In traditional histories, the rise of humanism is usually portrayed as “a good thing”, but the truth is that the humanists almost managed to destroy 300 years of progress in natural philosophy’ (219).

Despite this unfortunate exaggeration and (oppositely oriented) distortion, I warmly recommend Hannam’s book as an engaging read. Hannam is a very good storyteller who manages to bring to life a plethora of obscure figures—the ‘mathematical

pope' Sylvester II (Chapter 2), Peter Abelard (49-61), and Giordano Bruno, for example—in ways that help to support his central theses. We should not write off scholars in the Middle Ages as 'superstitious primitives', he says. 'They deserve our gratitude' (342). I couldn't agree more.

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