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Disciplinary Note

THE ROOTS OF ORDER IN THE NATURAL SCIENCES

Denis Alexander

Founding Director [Emeritus] of The Faraday Institute for Science and Religion
Emeritus Fellow, St Edmund's College, University of Cambridge

The created order provides the starting framework not only for the moral order, but also for the possibility of science. And as with the moral order, key aspects of the created order were observed and formalised in parallel with Biblical revelation and insights. For example, the Pythagorean passion for seeing mathematical harmony in the order of the cosmos had a profound influence on Plato, and on through Plato to Kepler and the scientific revolution of the 17th century in Europe. 'All things were together, then Mind (*nous*) came and set them in order'. According to Diogenes, this was the opening of Anaxagorus's first book of his one and only treatise, the *Physica*.

Aristotle developed the ideas of earlier Greek thinkers in seeing everything that existed as having its own *physis* or physical nature, which thereby determined its 'natural' place in the hierarchical order of the universe. Aristotle's teleological stance was vigorously continued, now in a Christianised form, by Galen of Pergamum (AD 131-201), whose extensive writings on biology and medicine were translated into Latin, Syriac, Arabic and Hebrew. But it was really amongst the European Christian natural philosophers of the 17th century that the cosmic order of the universe impacted most profoundly upon their thinking and upon the emergence of what we now call modern science.

As Newton wrote in his *Principia Mathematica* (1687): 'the most beautiful system of the sun, the planets, and comets, could only proceed from the council and dominion of an Intelligent and powerful being'.

The Laws of Nature

The emergence of a concept of 'laws of nature' is visible most strongly in the 17th century in the writings of Newton, Descartes and Boyle [1]. The idea was introduced specifically "to replace the Aristotelian concepts of substances and qualities, which up to that time had been used to explain the created order". [2] By general consensus, the very idea of a 'law of nature' has deep theological roots. The idea was that just as there is a creator God who establishes moral laws for the universe, so there must be scientific laws that describe God's rational mathematical activity in His creation. And these laws can only be discovered empirically, they cannot be worked out from first principles as some of the Greek rationalists mistakenly thought.

As Descartes wrote to Mersenne, on April 15, 1630: "God established these laws in nature, in the same way as a king establishes laws in his kingdom." What is more, God put them in our souls, "as a king would inscribe his laws on the hearts of all his subjects, if he were able to do it". In 1690 Boyle writes that "The laws of motion, without which the present state and course of things could not be maintained, did not necessarily spring from the nature of matter, but depended upon the will of the divine author of things". Therefore, we cannot second-guess God ahead of time to infer what those laws might be: we can only find out by making observations and doing experiments. René Descartes, writing in 1644, makes the point in these words:

Since there are countless different configurations which God might have instituted here, experience alone must teach us which configurations he actually selected in preference to the rest. We are thus free to make any assumption on these matters with the sole proviso that all the consequences of our assumption must agree with experience [3].

If one believes in God as author of creation, the one whose will and purposes underlies and sustains all that exists, then it is a perfectly rational step towards believing that we live in a rational universe with properties that can be described using some very rational and elegant mathematics, as well as some very convincing laws. But science itself can never answer the question as to why an ordered universe exists – which is what makes science possible – it just inherits the assumptions and traditions established by the theological assumptions of past centuries and carries on regardless.

The Secular Dilemma and the Laws of Nature

The secular dilemma is that historically it seems quite clear that the concept of laws of nature has deep roots in Christian theology, but this does not sit easily with the secular idea that scientific advance was accelerated by the overthrow of religion. The tension is highly visible in the writings of philosopher Nancy Cartwright [4]. Cartwright is critical of the idea of universal scientific laws, maintaining that we live in a dappled world in which laws apply only in special circumstances and to a small domain of the empirical world. This stems at least partly from Cartwright's antipathy to theism and the necessity, as she sees it, for belief in a rational law-giving God to undergird the very notion of universal scientific laws [5].

So here we see the creeping influence of the kind of post-modernist philosophy that Biggar highlights. For in a dappled world in which order, as described by laws, is only found in special circumstances, then the progress of science itself becomes problematic, for it is in the study of order – including that expressed in quantum mechanics and in chaos theory – that scientific explanations become most fruitful.

For in science, viewing the reasons of others as "merely the disguises of unjust power", as in Michel Foucault, will lead to no new discoveries. For these depend on an empirical search for truth that in turn depends on the coherent and rational structure of the created order. Loss of belief in the creative rational divine mind who is immanent in all that exists (John 1:3; Colossians 1:15-17) can lead to a loss of faith in the order expressed in the world around us and, in turn, as in Cartwright, to a degrading of the very idea of laws of nature. The Christian concept of created order lies at the roots of the modern scientific enterprise.

End Notes

- [1] Jaeger, L. 'The Idea of Law in Science and Religion', *Science and Christian Belief* (2008) 20, 133-146; Harrison, P. 'The Development of the Concept of Laws of Nature' in Watts, F. (ed.), *Creation: Law and Probability*, Aldershot: Ashgate (2008), pp. 13-36.
- [2] Jaeger, L. op. cit.
- [3] Descartes, R. 1983. *Principles of Philosophy*, transl. R.P. Miller and V.R. Miller. Dordrecht: Reidel, page 100.
- [4] L. Jaeger, Nancy Cartwright's Rejection of the Laws of Nature and the Divine Lawgiver, *Science and Christian Belief* 22:81-86, 2010.
- [5] L. Jaeger. Op. cit.

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