

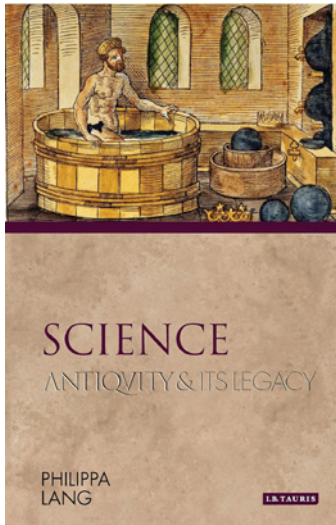
Book Review

Science: Antiquity and Its Legacy

Lang (P.), Pp. xiv + 226. London: Bloomsbury Academic, 2019 (first published 2015). Paper, £23.99. ISBN: 978-1-350-12151-5

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'It seeks to engage, provoke, and stimulate, and to show how, for large parts of the world, Greco-Roman antiquity continues to be relevant to debates in culture [...] and society' (p. xiii). So writes Phinoze Vasunia in the foreword to clarify at the outset the stakes of Philippa Lang's work and of the books belonging to the Bloomsbury series *Ancients and Moderns*. Aware that the scale of the subject-matter obviates anything like a comprehensive treatment, the author has written a book which aims to offer some sense of the legacy

of ancient exact sciences and technology by presenting a closely interrelated set of arguments and colourful examples.

Despite its brevity, the book treats a big wealth of evidence, ranging from the sixth century BC, when Greek culture started developing 'the concept of abstracting a mathematical technique and demonstrating that it must necessarily hold for any and all particular cases' (p. 130) and the notion of an axiomatic-deductive proof, until late antiquity, despite focusing especially on the Hellenistic and Roman ages, which saw the rise of astronomers like Aristarchus of Samos, who first proposed a heliocentric model of the universe, or Hipparchus, whose impressive contributions included the discovery of the precession of the equinoxes; moreover, the Hellenistic age saw the invention of complex machines like the 'Antikythera mechanism', an analogue computer designed 'to perform a limited but complex set of calculations concerning astronomical bodies' (p. 161), or like the *automata* invented by Heron of Alexandria, such as the first automatic vending machine operated by pneumatic means.

Lang's book offers a beguiling mixture of ancient accounts and modern examples arranged in an often thematic order. To give

some examples, in the first chapter, which is devoted to a wide range of cosmologic questions, including the origin of the universe, the issue of whether the cosmos has always existed or whether it had a beginning, as it was discussed in Plato's *Timaeus*, leads to a curious anecdote on how the Big Bang theory was proved: a group of pigeons roosting around an antenna built in New Jersey allowed the scientists to discover the 'Cosmic Background Radiation', which confirmed that the universe began if not from nothing, then from something completely different, that, just like the *chaos* in the origin stories, was incomprehensible to explication and reason because it lacked structure. In the third chapter, which is devoted to natural laws and the methods to discover them, the story of Archimedes proving that the golden crown of the Sicilian king was actually an amalgamation of gold and silver, relying on the measurement of its density, gives the cue to talk about Lavoisier's 'Law of Conservation of Mass'. In the fourth chapter, devoted to illness and medicine, Galen's method used to demonstrate that the kidneys were responsible for separating excess and poorly-concocted bodily humours and for the secretion of urine, which could provide a diagnostic mirror of internal imbalances, is compared with the Q.E.D. test which detects the imbalanced alcohol consumption by measuring the presence of ethanol in the body. In the fifth chapter the author, challenging every claim that Greek science was only a theoretical one, deals with instruments and means of controlling the world, and focuses on mechanics, which was able to 'dramatise' the power of mathematics and science 'to explain and manipulate the world' (p. 162). Here she mentions a famous quotation by Archimedes: as several ancient sources after Plutarch report, the scientist, 'emboldened by the strength of his demonstration' about the so-called 'Law of the Lever', said, 'give me a place to stand and I will move the world'; Lang persuasively explains that this was the 'extreme claim about the power and the truth of mathematical physics, mechanised in the three-dimensional form (the lever) and specific to a precise, quantified place in a mapped universe (the right place to stand)', and sets a comparison between Archimedes' words and the ones pronounced by J. Robert Oppenheimer after watching a nuclear test bomb explode, 'I am become death, destroyer of worlds': this was not a lever but a powerful demonstration that science has not only a creative but also a destructive power and that machines, if created to expand nature's repertoire, sometimes apparently work against it. Such considerations lead to the final chapter, where the author draws some conclusions on the bioethical impact of medicine and technology.

The weakest points of this book are that the juxtaposition of the examples is sometimes hard to follow, and comparisons with modern science are not always effective; moreover, the breadth of the subject-matter often risks simplifications or historical inaccuracies. For example, the author says that 'in spite of a considerable loss of texts throughout classical antiquity and the subsequent Dark Ages, some treatises were preserved in the Arabic intellectual tradition...'; or that the maps of Ptolemy's *Geography* 'are lost but can be reconstructed from the text' (p. 142), that are evident trivialisations.

Although lacking some academic rigour, Lang's contribution offers several miniature sketches that give a vivid overview of certain issues in a style that is approachable for general readers or

students. Even though there are factors that limit the utility of the book for the Classics teacher, like the fact that many ancient terms and scientific concepts are introduced without adequate contextualisation, taken as whole this volume demonstrates the ongoing pertinence of the Classics and their outstanding

contribution to our idea of 'science' and it may definitely serve as a stimulant for discussion within a classroom setting or a non-specialistic context.

doi: 10.1017/S2058631024000060