

structures and became useful in capturing and mobilizing support and circulating environmental knowledge. Lastly, the emergence of climate change in environmental discourse came about through, again, a shared danger to the human species – that would emerge from possible global warming. However, through ineffective political and institutional spaces, international climate governance was becoming increasingly recognized as something that may not work efficiently under a global heading due to too diverse aims and commitments needed for agreement between diverse parties with uneven stakes. The environment in this sense was not fit for purpose as it was too broad to make meaningful association with, and too general to include the local specificities and nuance of, the tangible effects of climate degradation.

Throughout, *Surroundings* illustrates the multiplicity of ‘environments’ and how each particular collective of environmental thought or ‘environmentalism’ is situated cultural, political and social contexts that need to be understood in order to truly understand the diversity of the particular epistemic and normative aims that each use of ‘environment’ possesses. What we can take away is that ‘environment’ is a fluid term and can be reconceptualized for more fruitful purposes that are not centred around the dichotomy between natural and social worlds. If so, then what may be the future of ‘the environment’? Benson poses some intriguing concluding ideas – critical zones, indigenous communities and space/place, environmental humanities and arts – whilst also touching upon the wider applicability of the environment in this new era we may or may not be in, ‘the Anthropocene’. The feasibility of these solutions is up to the readers to decide, but what becomes clear through *Surroundings* is that the history of the environment needs to be one that explores the histories and constitutions, diversities and exclusions, space and interrelations, and responsibilities and affects, of the multiplicity of the idea and use of the/an ‘environment’. *Surroundings* begins this and is a must-read for anyone working or studying in science studies and with a keen interest in environmental ideas or knowledge.

doi:10.1017/S0007087421000571

Alexander Wragge-Morley, *Aesthetic Science: Representing Nature in the Royal Society of London, 1650–1720*

Chicago: The University of Chicago Press, 2020. Pp. 272. ISBN: 978-0-2266-8086-6. \$120.00 (hardback). ISBN: 978-0-2266-8072-9. \$40.00 (paperback).

Javier Poveda Figueroa

Universidad Autònoma de Barcelona

Alexander Wragge-Morley’s *Aesthetic Science* presents a new perspective on how science was being constructed during the seventeenth century at the Royal Society of London through the relationship between art/aesthetics and science. Instead of following the traditional narrative that science was an enterprise completely guided by reason,

Wragge-Morley focuses on how beauty, perception and rhetoric were crucial in the development of science at the Royal Society. This is argued over five chapters, the first three of which are related to the relationship between theology and science, while the others speak to the importance of rhetoric in the moment of presenting science to the public.

Wragge-Morley starts with an important concept used by the natural philosophers at the Royal Society during the seventeenth century: physico-theology. Whereas natural theology used deduction as a form of acquiring knowledge, physico-theology used perception for the construction of knowledge. As the natural philosopher of the Royal Society, John Ray, explained in his book *Wisdom of God Manifested in the Works of Creation* (1691), perception can access nature's design as a way to understand God's creation. With the adoption of empiricism by the Royal Society as a form of obtaining knowledge, natural philosophers thought that through perception of nature, humans could find evidence for the existence of God. In that sense, the physico-theology was completely different from other types of understanding the relationship between the humane and the divine.

Aesthetic Science touches upon the importance of imagination in discovering the laws of nature. Some of the members of the Royal Society, like Robert Boyle, believed the impossibility of reason to access to the mind of God. In his book *Discourse of Things above Reason* (1681), Boyle argued that humans could not access and analyse all the intricacies of God's work as they lacked the capacity and experience, especially concerning those human elements that are immaterial like the human soul. However, Boyle believed that imagination, in some way, could be a bridge between human intellect and God's mind. Some elements in nature, like atoms, could not be seen by the human eye. However, that was not a problem for postulating that humans could understand how atoms interacted by watching how the perceptible characteristics of objects changed. In the first part of his book *Three Physico-theological Discourses* (1693), Ray mentioned that he was impressed with the chemical experiments made by Boyle because those experiments showed how chemical reactions could affect the sensible properties of the objects that were worked upon, showing how perception could indirectly access the imperceptible realm.

Wragge-Morley argues that beauty is central to fully comprehending the development of scientific understanding at the Royal Society. During the seventeenth century, the members of the Royal Society were interested in the study of architectural design. The study of architecture by the members of the Royal Society was linked with the study of nature. At first glance these fields of study seem unrelated, yet the members of the Royal Society linked the aesthetic element of ruins with the objects that could be perceived in nature. In *Micrographia* (1665) Robert Hooke explained that the failure in human sensory perception was caused by the original sin and argued that the microscope could be an instrument of both sensory and moral regeneration. Using the microscope to study snowflakes, Hooke saw some geometrical irregularities that emerged from them and analysed them as ruins – a degradation of perfect design. Such ugliness was contrasted by Hooke with other snowflakes that he created by freezing his own urine under controlled circumstances. In those newly created crystals, Hooke believed that he saw the beauty that God wanted to transmit when he created the objects of nature.

What the members of the Royal Society found is that time affects nature's objects as it does the buildings designed by architects. The beliefs of the Royal Society members were close to those of Inigo Jones. In *The Most Notable Antiquity* (1655), Jones wanted to re-create how Stonehenge was just after it was built, showing what Stonehenge's architect wanted to transmit in terms of design and beauty. In that sense, architects wanted to re-create the original beauty of the building, comparative to the case of the members of the Royal Society, who wanted to discover the original beauty God created in nature's objects. Beauty was the main motivation for the members of the Royal Society to compare architecture with nature.

Wragge-Morley explores how rhetoric is used in presenting natural history. Some members of the Royal Society, principally Ray, held that images were more powerful than words when transmitting emotion to readers, and that images could provide a subjective experience that could produce more complex feelings than words. Ray applied his view when he wanted to add illustrations of plants in his book *Historia Plantarum* (1686–1704). Ray proposed using images as a way for shaking the reader's emotions – an intellectual energy related to the philosophical concepts of *energeia*.

Aesthetic Science concludes by highlighting the lack of scholarship surrounding the relationship between taste and science. In that sense, Wragge-Morley wants to add science to the category of other arts such as painting, theatre and architecture. It is 'good' taste that led the development of aesthetics, and *Aesthetic Science* is a book that adeptly makes connections between aesthetics and science, making the latter form of knowledge part of the arts.

doi:10.1017/S0007087421000583

J.B. Shank, *Before Voltaire: The French Origins of 'Newtonian' Mechanics, 1680–1715*

Chicago: The University of Chicago Press, 2018. Pp. 464. ISBN: 978-0-2265-0929-7. \$55.00 (paperback).

Lucia Bucciarelli

University of Oxford

From childhood we are taught not to judge a book by its cover; the outward appearance, indeed, cannot be an indicator of the content's value or worth. In the course of our life, we learn that most of the time this lesson is true – and we make it a rule. J.B. Shank's new book represents the exception that proves the rule. Its elegant cover decorated with a golden version of Newton's diagram of projectile motion reflects the sophistication of content and style of this insightful work.

The title of the book – *Before Voltaire: The French Origins of 'Newtonian' Mechanics, 1680–1715* – provides the reader with enough information to frame the analysis undertaken in this dense volume: Shank explores the origins of analytical mechanics in France between 1680 and 1725, a periodization made clear by the author also in the choice of the expression 'Before Voltaire'. In this regard, it suffices to read the first pages of the rich and exhaustive introduction to understand that the title not only indicates the span of time that the author considers in his analysis; it also represents a conceptual boundary between two different interpretations: on the one hand, there is the canonized image developed during the Enlightenment of Newton as the heroic originator of modern mathematical physics – an image that Shank aims at mitigating; on the other hand, the author proposes 'a fresh and unsweetened reinterpretation of Newton's precise role in the historical beginnings of eighteenth-century mathematical physics' (p. 6). This clarification, which is extensively discussed in the introduction, represents an important preliminary assumption to frame Shank's analysis. Only by downsizing – but not eliminating – the impact of the reception of Newton's work in France is it possible to satisfactorily assess