

Knowing Nature in
Early Modern Europe

Edited by David Beck

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KNOWING NATURE IN EARLY MODERN
EUROPE

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EUROPE

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INTRODUCTION

David Beck

Through the early modern period, there was no clearly defined intellectual space in which the properties and importance of nature were investigated. 'Science', as we know it today, did not exist. Instead, historians of science point to natural philosophy as an all-encompassing attempt to explain the entire system of the world. Natural philosophy encompassed a, to the modern mind and using modern categories, bewildering array of fields – from metrology to metaphysics, pharmacology to philology, topography to theology. What links them all is the interaction with the natural world – and, from a historical point of view, the enduring impression that between the sixteenth and eighteenth centuries *something* fundamental changed in all of these. That 'something' has been labelled the 'Scientific Revolution' which, through the increasing role of mathematics and personal observation, the declining role of a God who intervenes on a day-to-day basis, and the developing idea of curiosity as a moral good, is argued to have led to the emergence of a recognizably modern scientific mindset.¹

A correlate of that argument is that the early modern innovators to whom we point worked within disciplines or fields of study that were remote from later applications or syntheses. The starting point for each chapter in this volume is that the period's intellectual culture therefore offers a unique opportunity to get behind modern ideas of knowing, dominated as they are by science and technology. The book's central premise is that the early modern origins or antecedents of modern-day scientific ideas are best investigated through the discrete and internally coherent disciplines in which the investigation of nature actually occurred. These include, but are by no means limited to: biblical exegesis, humanism, scholastic logic, art theory and antiquarianism, as well as natural history, natural philosophy, cosmography, craft traditions, medicine, magic and alchemy. Through these discussions, bounded by early modern disciplines, or the interests of an individual early modern scholar, each paper contributes to a picture of the

way in which nature was investigated, *known*, and written about, or more correctly, the ways.

The collection as a whole, then, aims to get behind the methodologies and practices by which nature was known through the scientific revolution by examining the individual and varied disciplines from the perspectives of historians who specialize in each particular area. However, before going on to explore a couple of the productive themes which emerge across the collection, and explaining the structure of the book as a whole, a brief rehearsal of two aspects of our understanding of the Scientific Revolution is in order, as they pertain to the topics covered within this book. Firstly, recent historiography has argued convincingly that the relationship between the study of nature and the study of the Bible, or 'God's two books', in recent historiography, has increasingly been seen as a productive one in the development of early modern science. While most historians prior to the 1980s saw the scientific revolution as partly consisting of the removal of religious blinkers, we now recognise that new interpretations of religious texts had a transformational effect on how nature was interpreted. In *The Fall of Man and the Foundations of Science*, Harrison influentially argues that what we would come to know as scientific techniques were originally created in order to (begin to) ameliorate or overcome the damage caused by the Fall. For Harrison, it was a changing understanding of the Fall that gave an increased impetus to the investigation of nature through the seventeenth century.² As well as this explanation for an interest in the precise or proto-scientific investigation of nature, the Bible was used to make specific naturalistic arguments throughout the period we have come to know as the scientific revolution. Indeed, as Zuber and Zavarský will show in Chapter Five and Six, it was not unusual for the exegesis of the Bible to be given epistemological priority over the investigation of the natural world.

Secondly, there has been a great deal of work speaking to ideas of encyclopaedism and the practices surrounding natural historical study from the fifteenth to the eighteenth centuries. Most strands of this historiography agree that it was the development of natural history in the sixteenth century which began this encyclopaedic drive in earnest. Brian Ogilvie's 2006 monograph *The Science of Describing* argues that natural history as a discipline of description 'was invented in the Renaissance'.³ The development of natural history as a coherent and individual discipline between c. 1490 and 1600, Ogilvie and others have shown, involved the creation of novel methods of studying, classifying and representing the natural world, drawn from a huge range of previous work in disparate disciplines. Through the seventeenth century, Baconianism encouraged the development of what literary scholar Mary Poovey has labelled 'the modern fact' - that is, a nugget of information which can be measured, counted, and used to form general theories about the world. Indeed the modern fact, in

this reading, only exists when it is used to mark and signify a larger theory.⁴ That is to say that the distinction between ‘facts’ and ‘theories’ as we understand it only came into existence through this period, and as a result it was this form of systematized natural history which allowed, for better or for worse, the understanding and exploitation of the natural world by the intellectuals and scientists who followed.⁵ As Kileen and Rzepka show in Chapters Three and Nine, individual bits of information were understood and remembered – whether as part of an encyclopaedia or in one’s memory – as an integral part of a wider system throughout the period under consideration here.

This collection, then, uses a series of specific case studies to argue that the examination of early modern natural knowledge is impossible without taking into account literary interpretation and a wider sense of humanistic enquiry into the natural world, particularly but not exclusively concerning religious subjects; and that this necessity spans the period under consideration here. At the centre of this volume is the idea that we cannot simply put studies of “literature” alongside those of “science” – instead both categories must be opened up within their contemporary context. Thus the question of whether the sun would stop moving when the world ended was seen as both requiring Biblical exegesis and natural philosophical thought, as we shall see in Chapter Five. The question of how much one should laugh was both a question for moral philosophy and medical understanding, as we shall see in Chapter Two. The question as to what the characteristics of an ‘American Pig’ were was dependent on both first-hand observation and particular artistic practices of illustration and description. In both cases each of these examples, and other more naturalistic questions, an investigation which concentrates only upon the antecedents of the modern scientific method would be immensely restrictive. Given our current disciplinary specialisations, this makes the interdisciplinary study of early modern investigation of nature not only defensible and productive in and of itself, but absolutely necessary to give anything approaching a meaningful reconfiguration of our understanding of science in the early modern period. That is, knowledge in the period needs to be addressed as a whole, not just insofar as it pertains to what we now call “science”.

While the approaches of each author rest largely on their own disciplinary background, and each chapter can and does stand alone as a piece of research, the volume as a whole has a shared intellectual aim. That is, we turn our attention to the investigation of nature in the period from which modern science emerged. That period, of course, varies depending on the field of study under investigation and the place being studied – so the volume spans from the sixteenth to eighteenth centuries with contributors from disciplines including history, English, art history and design, and essays on England, Italy, the Polish–Lithuanian Commonwealth, Hungary and elsewhere. In each case, humanistic enquiry

took place alongside and was integral to the development of modern science; and, in an extension which will be highlighted by the last part of the volume, vice versa.

This matters because the epistemological and methodological innovations of the period c. 1450–1750 continue in many regards to be decisive for the shape of knowledge in modernity.⁶ An excellent example of this is the Big History Project, which ‘examines our past, explains our present, and imagines our future’. Covering the Big Bang to the present day, this project aims to reshape the global curriculum for learning based on a multi-disciplinary approach which provides a self-proclaimed ‘framework for all knowledge’.⁷ There have been many attempts to do interdisciplinary work in such a way as to pull apart disciplinary boundaries to provide an overarching framework – and the backing of Bill Gates seems to be helping this agenda gain traction at our present moment.⁸ Big History, like previous projects from the *Annales school* onwards, proclaims an ability to offer a singular incontrovertible lens – the whole knowledge of the world, or at least that which matters to our self-understanding, available through one website. As Weingart has found, previous attempts to make similar leaps to a singular understanding have a striking tendency to oscillate between reporting empirical findings and making normative statements.⁹ The unity which is being created, that is to say, does not just have implications for our knowledge of the world, but for how we can and should comport ourselves within it.

There is a clear parallel here between the desire for unity expressed by some today, and the desire for unity expressed in the early modern period, which is explored in the first part of the volume, Unity and the Investigation of Nature. Paolo Rossi wrote that the universal language idea, after its seventeenth-century apogee in the work of Wilkins, Leibniz and others, was in the eighteenth century (the italics are his) ‘*eliminated from European culture*’.¹⁰ In one sense, this is clearly true; but in another sense, it is not. Fleming argues that the early modern project of universal language generates the modern idea of language as universal. Insofar as ‘information’ is the formal expression of this idea, it needs to be traced to the seventeenth century if it is to be grasped. Pender in Chapter Two entwines laughter, morality and philosophy to show how changing medical knowledge is influenced by, and in turn influences, moral norms and personas – with a particular focus on how the philosopher (especially Descartes) should act. Laughter, Pender argues, may have been controversial when considered as an oratorical or philosophical item; but when seen as part of a wider body–soul interaction, much of this controversy is explained or even resolved. In Chapter Three Killeen argues that encyclopaedic writings in the early modern period are best seen as forms waiting to be filled in – with the knowledge inflected by an aim to discover the providential organization of the universe: ideal knowledge. Every fact discovered acts to emphasize the unity of the whole. Unity, for Thomas Browne, being ‘an inseparable and essentiall attribute of Deitie’.¹¹