

Archimedes 64

New Studies in the History and Philosophy
of Science and Technology

Anna Marie Roos
Gideon Manning *Editors*

Collected Wisdom of the Early Modern Scholar

Essays in Honor of Mordechai Feingold

 Springer

Archimedes

New Studies in the History and Philosophy
of Science and Technology

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Collected Wisdom of the Early Modern Scholar

Essays in Honor of Mordechai Feingold

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Chapter 1

Introduction



Gideon Manning and Anna Marie Roos

It was during the summer of 2021, the summer of Mordechai Feingold's seventieth birthday, that we shared the news that this Festschrift was being sent into production. Miraculously, the editors and contributors had managed to keep news of our work a secret. It was no small thing because Moti, as his friends know him, had been in almost constant contact with all of us during the two years in which the effort was conceived, the contributions written, and the manuscript prepared for submission. Moti's extensive scholarly productivity and participation in the Republic of Letters—in fielding inquiries, putting like-minded scholars in touch with one another, serving as a repository of encyclopedic knowledge, and making sure we all knew he was interested in our ongoing work—is just one of the many ways in which he contributes to our collected and collective wisdom. In truth, the plans for this celebration of Moti's scholarship, and the very personal impact he has had on us, began long ago, when the contributors first met Moti, whether as a postgraduate, in Anna Marie Roos's case, or as his junior colleague, in the case of Gideon Manning. Such has been Moti's role in inspiring, challenging, and sustaining us, that a published celebration was inevitable.

In preparing this introduction, we asked the contributors to offer brief observations about Moti's work and his personal influence upon them. Their thoughts helped shape our effort, but more than this, they reaffirmed something we already believed, that Moti combines the highest scholarly standards with a relentless effort to understand the past, an intellectual generosity for those similarly seeking to understand, and a contagious commitment to learning. He is the author, co-author,

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editor, or co-editor of more than one hundred works, and counting (see the list of his publications included at the end of the volume). The range of topics he studies, and to which he contributes, is long. For those readers who know him only as one of the premier historians of the Royal Society, or of Newton and his long reception, or of European Universities, or of Jesuit science, Moti is all these things, and more. He has studied individuals and institutions, cultural movements and social history, and he has made lasting contributions wherever he has focused his attention.

Take, for example, just a sampling of his monographs and the books he has edited, eighteen in total. First to appear was his book *The Mathematicians' Apprenticeship: Science, Universities and Society in England, 1560-1640*. Published in 1984 after several related lengthy journal articles, Moti argued that the universities of Oxford and Cambridge played a significant role in the so-called "scientific revolution," especially when we consider the Copernican "marriage between mathematics and astronomy." Ending his study at 1640, when the ideas of Galileo, Kepler and Descartes had become widely known, *The Mathematicians' Apprenticeship* took a stand against an older history of science and history of universities that placed all the credit for progress and innovation outside the institutions of higher learning. In his first book, Moti made his case in exacting detail—working with archives, university statutes and everything to be learned about student communities and the scientific societies of the time—and announced himself to the scholarly world as a gifted and creative researcher willing to correct the record when the evidence required it.

Moti's first book was followed by two edited volumes, the first of which was *Before Newton: The Life and Times of Isaac Barrow*, which includes seven chapters, two by Moti himself. Of special note is his 104-page "Isaac Barrow: divine, scholar, mathematician," a tour de force and yet-to-be-surpassed biography of the classical scholar, natural philosopher, mathematician and theologian who preceded Newton as the Lucasian Chair of Mathematics at Cambridge. While Newton's achievements so often color histories of all that came before, *Before Newton* accepts and insists on the confines of the "pre-Newtonian" scientific framework to provide a comprehensive re-evaluation of the life and times of Barrow. With the help of a carefully selected list of contributors who together provided more than 900 notes and references, like his first monograph, Moti's first edited volume showed a willingness to cast aside old truisms to deliver a more balanced picture of the intellectual issues occupying early modern England.

Next came a co-edited volume with Richard Bienvenu, *In the Presence of the Past: Essays in Honor of Frank Manuel*. The first but not the last of Moti's co-edited publications—an indication of the generosity and collegiality that he projects—the volume contained 13 chapters, including Moti's "John Selden and the Nature of Seventeenth-Century Science." Like Barrow, Seldon was one of England's most significant cultural figures, a polymath and scholar, an expert in Jewish law and Oriental languages, whose high reputation extended well beyond England's shores. Seldon may look like someone who only fits tangentially into the story of seventeenth-century science, with no eponymous discoveries or laws bearing his name, but Moti's characteristic sensitivity to the broader context of science's

reception, and England's intellectual life more generally, leads to a different conclusion. Selden's library, to which he added consistently throughout his life, included the "most recent contributions to the sciences." As Moti recognized and argued in his contribution, Selden read extensively in mathematics, astronomy, and optics and his early *Analecta Anglobritannica* (1615) refers not just to Copernicus but Kepler as well. Being well versed in the science of his time, even in his last years, Selden like other "non-scientists" contributed mightily to science's cultural ascent in the seventeenth century.

From Selden and a series of publications related to the early Royal Society, Moti's next published book was an edited volume with his colleague Ann La Berge that moved him to the nineteenth century, to France specifically, and into the history of medicine. *French Medical Culture in the Nineteenth Century* includes 11 chapters reassessing long held views about Paris hospital medicine and its supposed decline in the nineteenth century. Part of the achievement of the volume is that the experts' essays range widely, yet collectively show us how medical practice, education, and ideas combined to form a public image for patients and the state of the "medical professional" that remained stable throughout the century. Moti's and Ann La Berge's introduction similarly brings unity to the diversity of the contributions, emphasizing the value of historical work in national perspective even when that perspective is itself quite diverse.

Returning to the early modern period, Moti's next book was an edited volume with Dale Hoak, *The World of William and Mary*. This 1996 work brought together 15 papers from a conference commemorating the tercentenary of the "Glorious Revolution" of 1688–1689. The essays span topics from politics, economics, and war to parliamentary history and the history of ideas and scholarship. Moti's contribution, "Reversal of Fortunes: The Displacement of Cultural Hegemony from the Netherlands to England in the Seventeenth and Early Eighteenth Centuries" is a comparative piece, tracing perceptions of English and Dutch learning and scholarship. It adds to the vision of the book announced by Hoak in the initial essay (and surely Moti's vision too) of treating the revolution as not merely a moment in English religious and constitutional history but rather as an "Anglo-Dutch Revolution" with its origins and effects in both countries.

The following year Moti published his magisterial and effectively book length "The Oxford Curriculum in Seventeenth Century Oxford" in volume four of *The History of the University of Oxford* under the general editorship of Nicholas Tyacke. The fruit of his many years studying the context of learning and pedagogy at Oxford, "The Oxford Curriculum" remains the authoritative and essential reference on the subject. Joined with Moti's earlier *The Mathematicians' Apprenticeship*, it offers a robust picture of the curriculum that continued to include Aristotle for far longer than has sometimes been thought. At the same time Oxford was far from a university with its head stuck in the sand, with the likes of Descartes and Newton acknowledged and read almost as soon as, and sometimes in manuscript even before, their views were published.

Another co-edited volume followed, *The Influence of Peter Ramus: Studies in Sixteenth and Seventeenth Century Philosophy and Sciences*, edited with Joseph

Freedman and Wolfgang Rother. Containing 12 papers, the volume examines the reception of the constellation of views associated with “Ramism.” Given Moti’s expertise in the university setting, it is little wonder that his contribution, “English Ramism: A Reinterpretation,” examines the university’s interest in teaching logic and the manner in which those interests opened a place to Ramism alongside Aristotle. In characteristic fashion, Moti allows the evidence to inform his subtler approach, rejecting either/or choices—either Ramism or Aristotelianism—which pays dividends in a new interpretation showing that what might look like opposing positions were, in fact, often amenable or at least capable of co-existing.

The next two solo-edited volumes to appear under Moti’s direction were *Jesuit Science and the Republic of Letters* (2002) and *The New Science and Jesuit Science* (2003). Both works originate from his time at the Dibner Institute at MIT and take as their subject the Jesuit’s positive contributions to learned culture and early modern science, including the eighteenth century. A combined 15 chapters in total, not including Moti’s “Jesuits: Savants” from the former and his “The Grounds for Conflict: Grienberger, Grazzi, Galileo, and Posterity” in the latter, the volumes go beyond familiar events like the Galileo Affair to paint a more complete picture of the Jesuits. As Moti explains in “Jesuits: Savants,” Jesuit authors are best seen not as Jesuits in the first instance but as more locally defined historical actors.

Three of the next four of Moti’s books are decisive contributions to Newton Studies. First to appear was *The Newtonian Moment: Isaac Newton and the Making of Modern Culture*, then the exhibition catalogue with Stephen Snobelen, *Newton’s Secrets: Newtonian Manuscripts from the Collections of the National Library*, followed by the co-authored *Isaac Newton and the Origin of Civilization* with Jed Buchwald. It would be unkind to attempt to summarize the content of these three works in a few sentences. Each publication is a complex and profound engagement with Newton’s intellectual heritage and legacy. But in all these works Moti shows his historian’s colors, resisting the temptation to treat Newton as a superhuman icon of science, though that is what Newton became. In Moti’s hands, Newton is much more than that and much more interesting for it. Newton was a man of his time whose interest in philosophy, mathematics, physics, alchemy, optics, and theology co-existed and supported one another in ways which scholars like Moti elucidate.

Between *The Newtonian Moment* and *Isaac Newton and the Origin of Civilization*, Moti returned to another of the consistent themes in his work with the aptly titled *Universities and Science in the Early Modern Period*, edited with Victor Navarro. With 18 chapters, the volume addresses subjects as disparate as medicine, mechanical thinking, and astronomy, all the while continuing the reappraisal of the role of the universities in the construction and development of early modern science that Moti began with his first book the *Mathematicians Apprenticeship*. The volume also shows the geographic growth of the history of science itself, with content ranging from Italy to Scotland, Scandinavia to Iberia. While the attitudes to progress, novelty, and innovation differed country to country, the fact remains that early modern Europe’s scientists, wherever they were from, were by and large all educated by institutions of higher learning, and most would find employment at universities as

well. Thus, as the volume shows, universities remain one of the essential contexts for understanding early modern scientific activity.

Reading Newton in Early Modern Europe, edited with Elizabethanne Boran, was Moti's next contribution to Newton Studies. The volume itself has 11 chapters including Moti's paper "Isaac Newton, Heretic? Some Eighteenth-Century Perceptions." Three additional edited volumes take us to the present in Moti's bibliography. *Labourers in the Vineyard of the Lord: Erudition and the Making of the King James Bible*, which he edited himself, was followed by *The Institutionalization of Science in Early Modern Europe*, edited with Giulia Giannini and then *Early Modern Universities: Networks of Higher Learning*, edited with Anja Goeing and Glyn Parry. There are ten chapters in the first, including Moti's "Birth and Early Reception of a Masterpiece: Some Loose Ends and Common Misconceptions," ten in the second, including Moti's "Between Teaching and Research: The Place of Science in Early Modern English Universities," and 20 chapters in the third. Who else but Moti could so capably move from Newton Studies to erudition and the political history of the King James Bible and then back to the history of early modern universities?

By our count the edited volumes Moti has produced contain 112 unique contributions, not including Moti's own. His diligence as an editor also finds expression in countless articles appearing in the journals Moti has edited, in some cases for many years, like *Histories of Universities*, *Perspectives on Science*, *Erudition and the Republic of Letters*, and, most recently *Annals of Science*. Also uncounted so far is the Book Series he has led at Brill for more than a decade titled "Scientific and Learned Cultures and Their Institutions," which has some 35 volumes published under his leadership as we write this introduction. These numbers alone demonstrate that Moti has been a productive scholar, yes, but also a scholar who has made the work of others possible. He collected wisdom, but also made that wisdom part of a collective. We have made no effort to count the number of times Moti's work has been cited. Yet it is certain that the publications Moti has inspired, improved, or otherwise helped to facilitate is well beyond the 112 to appear in his edited volumes.

The papers included in the present volume also fall into this category, adding 15 more to Moti's total. They are intended as a heartfelt thank you to Moti for all he has done to clear the path and inspire our best scholarship. He has been both a guide and friend, and we hope he finds a bit of himself and his high standards reflected in the work presented here in his honor.

The contributions to this Festschrift are grouped thematically into four parts. In Part I, the unifying theme is the "History of Universities." As Dmitri Levitin remarked to us, Moti's many publications convinced him "it was impossible to do early modern intellectual history of any sort without a profound understanding of the pedagogical worlds from which emerged the ideas that we study." To that aim, several of the papers in this volume analyse the history of pedagogy to delineate the intellectual landscape of Dutch, English, Irish, and Italian universities.

The volume opens with Richard Serjeantson's contribution, "Theology and the Arts Course in Tudor Oxford: An Unknown Treatise on Church Government by John Case." As his title implies, Serjeantson has found a previously unknown treatise on Church government by the most prominent philosopher of Elizabethan times, John Case (1540/41-1600). Case managed to navigate his career at Oxford not as a professor but as an "independent professional teacher of philosophy and the arts," and later as a practicing physician. This left Case between two conventional worlds of the early modern English university: the philosopher teaching the arts course, which Case taught professionally, and the theologian who had taken holy orders, which Case's non-professorial role meant he would not do. Perhaps understandably, Case's situation has left the impression that he steered clear of theological disputes, but Serjeantson shows that Case did indeed turn "his pen to theology." Initiating a new investigation into Case's religion, Serjeantson clarifies, first, that Case's commitment to the church in England can no longer be seen as either a straightforward defence of Catholicism or part of anti-Catholic sentiment per se. Second, that Case was sympathetic to a monastic English church but highly critical of the Reformation sought by his contemporary, the Oxford puritan John Rainold. It may have even been that Case's opposition to Rainold and his more extreme followers that explains why Case's only treatise on theology has been left unknown for four centuries.

Elizabethanne Boran's essay examines the impact of the "new science" on the curriculum of Trinity College, Dublin (TCD) in the seventeenth century. Her task was not an easy one due to scarcity of sources, but her use of the Loan Books for the college library and the papers of the Dublin Philosophical Society from the 1680s permit a better understanding of the teaching of natural philosophy. Simply, the scientific curriculum at TCD in the early seventeenth century matched that of other contemporary European universities.

Her research has also revealed the proclivities of relatively unknown academics at the university, such as Miles Symner (d. 1686) who, in 1652, became the first professor of mathematics. "For much of the 1650s his name does not appear in college records and this was understandable for, prior to 1656 he was heavily engaged in the surveying of lands for the new [Cromwellian] settlement and between 1656 and 1659 he and [William] Petty were responsible for the distribution of the land (p. xx)." ¹ Boran's sleuthing though reveals his philosophy of teaching was much in tune with that of the reformist circle of Samuel Hartlib (1600–1662) which emphasised experimental and applied learning based upon the "new science." No slavish follower of Aristotle, Symer noted in some colourful language,

In all these studies my scope is for reall and experimental learning. I abhor all those ventosities, froth & idle speculations of ye schools. Though they have some small use for yo[u]ng students, yet they prove the Syllas, the Charibdis, the Symplegades, where most of the good wits yt come to our universities suffer shipwracke. For afer a you[u]ng scholler hath gott a little prayse for being able to wrangle in the schools about *universale & parte rei*, yt puffe fills his sayles and makes him steere his course to find out nothing but vanity ...

¹For William Petty, see Rhodri Lewis's essay in this volume.

Not surprisingly, under the influence of scholars like Symner, the Loan Books from the university library showed students had access to works in the new natural philosophy so they were exposed to and could discuss divergent points of view, thus avoiding the shipwreck of their intellect. Although these curricular realities were not necessarily revealed in the official statutes, just as Moti revealed for late seventeenth-century Oxford, the TCD curriculum was similarly inclusive of theoretical and practical astronomy and mathematics.

Sources outside of formal university statutes in fact are often the most revealing of the lived existence of students and scholars. Pietro Omodeo's essay continues in the tradition of Moti's reconstruction of the Republic of Letters to address "the personal and political entanglements of early scientific communities" and to scrutinize "the channels through which knowledge was circulated and advanced." To this end, Omodeo analyses a set of correspondence between the representatives of the University of Padua and Daniel Sennert (1572–1637), the renowned professor of medicine at Wittenberg. Sennert was a great synthesizer, attempting not only to harmonize Galenism with the "new chymical" medicine of Paracelsus, but also to reconcile Aristotelianism with atomism, positing a corpuscular theory of animated "seeds" to account for the origin of life. The letters reveal frequent gifting of books as an expression of scholarly *gravitas*, the accommodation and the inconsistency of confessional limitations at Padua, as well as tragic events such as the premature death of Sennert's son of plague in 1630/1 whilst he was studying at the University and the subsequent disposal of his personal effects. In our own times of pandemic, letters such as these have an extra poignancy. The correspondence also brilliantly demonstrates the interplay between texts and to what Moti called the "confabulatory life" of the scholar, the diffusion of scientific knowledge through informal discussion with colleagues.² Henry Guerlac has commented that "as historians of ideas we are happiest when we can navigate from the firm ground of one document to the next, and we are prone to forget how great a part travel, gossip and word-of-mouth have played in the diffusion of scientific knowledge, indeed of knowledge of all sorts."³ This volume would have been unlikely to come to fruition without the active participation of the editors, and Moti himself, in this confabulatory life.

Omodeo also noted: "At the point of his death on the 20th of June 1631, Sennert Jr. was the councilor of the German Nation" for students. Sennert Jr. participating in a rich undergraduate culture of learning and ritual at Padua. Similarly, Leen Dorsman has analyzed the richness of student life at Dutch Universities from 1575–1820 to understand the transition between medieval *nationes* of students to nineteenth-century manifestations as *corporata*. His essay elucidates the hazing culture of these organizations, accomplished by internal coercion and rites of violence, as well as their connections to eighteenth-century sociability, and regional and national identity. In a detailed reconstruction of student initiation rites, Dorsman shows that the political consciousness of these student groups was heightened in the Napoleonic

²Feingold 2016.

³Guerlac 1981, 46.

Wars and the 1830-1 separation of the Belgium from the United Kingdom, their student *corpora* intertwined with military enlistment. It is a fascinating study of the history of university life, town-gown relationships, and early modern masculinity.

William Poole's "Learning by Crib: Some Seventeenth-Century Oxford 'Systems'" is the final essay in Part I, taking us back again to Oxford, where Part I began, and to the Arts curriculum. Reminding us how we know about the early modern Oxford arts experience, from university statutes, printed books, catalogues, commonplace books, and annotated textbooks, Poole turns to a lessor studied source, though not one that has missed Moti's attention, namely the genre, so dubbed by Poole, of the "curricular crib." These bare bone "summaries of the undergraduate subjects," almost tabular in many instances, are a glimpse into the very beginnings of the undergraduate arts experience. In Poole's hands, and in the remarkable example he utilizes from the rector of Exeter, John Prideaux (1578–1650), the message becomes clear: the "crib" affirmed the traditional Aristotelian curriculum but a gifted teacher could manipulate and modernize the crib, so that pedagogy and scholastic instruction engaged with current trends in research.

Part II is a diverse collection of papers all of which are instances of what we have labeled "Intellectual History." With topics ranging from disputes about how to read early modern histories, to the status of Giants, the law of refraction, and technical accounts of how planets fall, several notable figures make an appearance, including Galileo, Descartes, and Mersenne.

Nicholas Popper's essay "Planks from a Shipwreck: Belief and Evidence in Sixteenth-Century Histories" asks whether early modern fabulists believed their fabulous claims. His particular focus is histories of the German people. Combining in almost equal measure something alluring, like a good story and philological acumen, and something absurd, like the least literal reading of the story of Genesis one might imagine, the histories he identifies nevertheless managed to enter the scholarly world as important and oft cited sources for the credulous and incredulous alike. Popper makes note of the contradictory response to such histories, both skeptical and accepting, and uses it to discuss the way "openness to sources of acknowledged disrepute" features in early modern scholarship. Properly then, Popper's essay is about the "foundation, contours, and consequences" of the scholar's willingness to use and rely, in some measure, on "forgers and fabulists." The extensive empiricism in sixteenth-century historical practice is an outgrowth of confronting the fakes, as Popper has argued elsewhere, and in his contribution here Popper explains the methodologies employed by authors who believed their own fabulous claims and the readers who recognized fully credible evidence was an ideal rather than a common reality.

Anita Guerrini's piece is next. "Galileo Among the Giant" brings to light the correspondence networks surrounding Galileo and Nicolas-Claude Fabri de Peiresc, both members of the Accademia dei Lincei. Guerrini's point of departure is Galileo's *Discourses Concerning Two New Sciences* and the discussion of scaling up from the second day of the *Discourses*. In a curious example cited after the mathematical demonstrations of the square-cube law, Galileo noted that skeletons of immense height could not exist unless their bones were harder or disproportionately thicker

than is typically the case. The example he had in mind, as Guerrini notes, is of a human giant, and it was not an example he chose at random. Human giants had been a disputed topic since antiquity, and the Lincei had actively discussed the fossil bone discoveries of the sixteenth and early seventeenth centuries that seemed to confirm the existence of past giants. Guerrini documents the extensive correspondence about giants in the early modern period, including in the correspondence Galileo maintained with members of the Lincei even after his condemnation in 1633, and she demonstrates how antiquarianism, fossils, and biomechanics, to say nothing of anatomy and physiology, merged to support both Galileo's and Peiresc's skepticism about the existence of giants.

Galileo is also featured in Noel Swerdlow's "Galileo's Fall of the Planets to the Copernican System of the World," which considers his so-called "Platonic cosmology," including the creation of the universe, the continuously revolving globes of the planets, and the immovable center about which they revolve from his *Dialogue of the Two Great Systems of the World*. Effectively, Galileo asks: how is it that the planets, as they fall, would settle to their speeds and distances in circular motions consistent with the Copernican system? In typical fashion, Swerdlow mines to the core of a technical issue arising in mathematical astronomy. Assuming speed v , time t , distance s , and constant of acceleration a , Swerdlow reconstructs what Galileo's thinking might have been, such that " $v = at = (2sa)^{1/2}$, or $v \sim s^{1/2}$ and letting the mean distance of a planet from the sun be r , the distance from which the planet falls be R , and the distance of fall $s = R - r$, by the assumption of natural fall to uniform circular motion, the speed is $v \sim s^{1/2} \sim (R - r)^{1/2}$." If Galileo's cosmology is wrong, Swerdlow points out that the challenge is to show that no single distance R will do for all the planets. Galileo is wrong, and the numbers bear this out, as Kepler and later Newton would be able to calculate, though by means unavailable to Galileo. Galileo himself never realized his mistake. The puzzling "refutation" of Galileo's account in Marin Mersenne's *Harmonie Universelle* (1636) also features in Swerdlow's essay, where he shows, likely for the first time since Mersenne wrote the work, that Mersenne's calculations indicate he was thinking not of planets falling but of planets rising to their Copernican orbits because of changes in their speed. Swerdlow ends with a return to Galileo, giving him the last word on the Platonic cosmology from the *Dialogue*.

The final essay of Part II comes from Jed Buchwald. A collaborator of Moti's on more than one occasion, Buchwald takes this opportunity to recall the genesis of one of the most substantial papers written about Rene Descartes's natural philosophy in the past 20 years, Buchwald's own "Descartes' Experimental Journey Past the Prism and Through the Invisible World to the Rainbow." The paper began with a conversation with Moti about one of the great mysteries surrounding Descartes' work in optics, namely how Descartes' famed method and his explicit statements added up to his discoveries. For Buchwald's ground breaking paper he recreated Descartes's experimental practice in an effort to better understand the merging of quantitative techniques and experimental design used to investigate prismatic colors and the rainbow. The resulting paper demonstrated the extent of Descartes' experimental manipulation of the phenomena of light and the manner in which Descartes'

experiments allowed him to investigate the subvisible world and not simply speculate about it. In recalling the work that went into the paper, and re-presenting some of the material in his contribution, Buchwald reminds us how a conversation with a colleague like Moti can lead to some of our finest work.

Part III collects papers about the life, work, and reception of Sir Isaac Newton, touching on themes Moti has been interested to explore in his own work. The first, by Sarah Hutton, looks to the important moment in Newton's life when he first came to appreciate the significance of Continental mathematics and natural philosophy during his early years at Cambridge. Hutton explains that the "Cartesian Context" of the work of Henry More tells us much that we want to know about the English reception of Descartes and the "receptivity towards Descartes" that characterized Cambridge during Newton's early years. She specifically reminds us it was More's *scientific* interest in Cartesianism, "in Cartesian *natural philosophy*," rather than any interest in Cartesian metaphysics, that set the stage for pupils like Newton to register Descartes' worth. Through an examination of More's '*Epistola H. Mori ad V.C.*' published in 1662 in the collected edition of his works, *A Collection of Several Philosophical Writings*, Hutton makes her case. In the process she demonstrates that More may have been Descartes' most perceptive and productive reader in the early modern period.

Dmitri Levitin's and Scott Mandelbrote's "Newton as Theologian, Artisan, and Chamberfellow: Some New Documents" is next with a description of newly edited letters written by Newton to his chamber-fellow at Trinity College, John Wickins. As they explain in painstaking detail, the letters have significant implications for Newton Studies and the dating of Newton's interest in theology. Transcribing and reproducing the letters in their essay, Levitin and Mandelbrote do a great service. Their analysis is equally valuable, for they conclude, in part, that the letters show there was nothing at all extraordinary about Newton's reading list in theology in his early years at Cambridge, when he was reading the same works as every other undergraduate. Yet, "the way in which this material was studied in Cambridge *did* open up avenues which Newton happened to take to the neo-Arian destination he had reached by 1690."

Marius Stan's piece follows, taking us to eighteenth-century France and the work of the one-time (or part-time) Newtonian Madame du Châtelet. Providing an analysis of what it might mean to be an adherent to "Newtonian science," Stan adduces three broad categories of possible meaning—viz., presentistic, contextual, and straddling senses—each with several of its own sub-meanings. What Stan is seeking, and what those who see du Châtelet as a Newtonian need, is a sense of "Newtonian" that is both historically and philosophically illuminating. After an exhaustive examination, Stan concludes that no such sense of "Newtonian" is forthcoming. Thus, contrary to the near uniform view among historians of science, du Châtelet is not a Newtonian in any meaningful sense. This is not only a corrective to a widely held misconception of du Châtelet but could serve as the basis for reconsidering any number of "Newtonians" from the eighteenth century and later.

Part IV concerns a topic Moti has devoted a good deal of his scholarly life to: the history of The Royal Society. As he has indicated: "The very first 'learned society'

meeting on 28 November 1660 followed a lecture at Gresham College by Christopher Wren. Joined by other leading polymaths including Robert Boyle and John Wilkins, the group soon received royal approval, and from 1663 it would be known as ‘The Royal Society of London for Improving Natural Knowledge.’⁴ Not only has Moti (*inter alia*) reconsidered the Society’s origins, done cross-national comparisons with the Accademia del Cimento, and characterised its archive, but also elucidated the life and letters of one of the Society’s most famous fellows—Sir Isaac Newton.⁵ But not only. Moti has also contributed to scholarship on the lesser-characterised Royal Society fellows, such as John Flamsteed, Isaac Barrow, and also those who were never admitted to the Society due to their heretical views, such as William Whiston. Part IV collects essays about such “Royal Society Luminaries.”

Rhodri Lewis opens with a return to the “temperate, decorous, and polite modes of discursive interaction” that the Royal Society’s Fellows adopted in some of their exchanges with one another. Without naming names, it has been a standard claim for a generation now that the Fellows were kind to one another and wrote accordingly. But as Lewis shows, such a view is unnecessarily and anachronistically limited. In fact, only by setting aside the Society’s “engagements with the cultures of correspondence and scribal publication” could one maintain that temperate, decorous, and polite discursive interactions were the Fellows’ typical manner of exchange. Lewis makes this point with a detailed case study of Sir William Petty, whose correspondence remains largely intact and unexplored, and whose business interests in Ireland meant he was often away from London and received written accounts of what transpired at the Royal Society. One of the insights to glean from Petty is his hostility to print publication, but another and deeper one, on which Lewis ends, is the reality that “scribal and print cultures were mutually and deeply interpenetrative clusters of activity” with the language of the two influencing one another to unsettle simple assumptions about Restoration literary culture, even Petty’s very own.

Stephen Snobelen’s essay characterises Whiston’s career of experimental lecturing undertaken after his 1710 ejection from the Lucasian Chair at Cambridge for Anti-Trinitarian views. His paper, based upon his 2013 Royal Society lecture at a conference organised by Moti, also analyses the geographical and intellectual overlap of Whiston’s work with the Royal Society, then housed at Crane Court on Fleet Street in London. Through an extensive survey of newspaper advertisements, Whiston serves a case study of “an enterprising—although disestablished—entrepreneur of natural philosophy” in central London. His lectures on hydrostatics, pneumatics, optics, and Newtonian physics and astronomy in London coffeehouses were a stone’s throw away from the Society which would not admit him due to his religious proclivities, but who did share with Whiston the desire to promote Newton and Newtonianism. Confessional divides, as they were at the University of Padua in

⁴The History of the Royal Society 2021.

⁵Feingold and Buchwald 2013. Feingold 1998. Feingold 2000. Feingold 2004 Feingold 2009.

the seventeenth century, could be malleable, and natural philosophers could be united in intellectual purpose if not formally allied.

In an intersection of her interests in history of the Royal Society and the history of pedagogy, developed due to the influence of Moti's work, Anna Marie Roos analyses the Leiden doctoral dissertation of a natural philosopher who, unlike Whiston, was a fellow—Nehemiah Grew (1641–1712). Grew was one of the Royal Society's most significant physicians, botanists and secretaries, and, as such, has been subject to extensive scholarly analysis, ranging from the patronage required for the publication of his magisterial *Anatomy of Plants* (1682), to his cataloguing of the Royal Society collections, to his philosophy of vitalism. However, his contributions to chymical medicine have not analysed as much, nor has his pre-Royal Society career. As interest in early modern dissertations is historiographically timely, the purpose of this paper is thus to set Grew's dissertation in context of seventeenth-century iatrochymical studies of the nervous system, noting the influences of Sylvius and Francis Glisson, as well as Grew's spiritual beliefs upon his scientific works.⁶ Simply, the religious beliefs that caused Grew to journey to Leiden in the first place to defend his dissertation may have also guided its underlying philosophical warrants of immutable chymical principles. Unlike Whiston, Grew was a devout dissenter unable to attend Oxford or Cambridge. However, unlike Whiston, he was able to work with the Society throughout his career.

We began work on this Festschrift for Mordechai Feingold with great enthusiasm to acknowledge what he has meant to all of us. We end it with our enthusiasm unabated and thank all the contributors for helping to make the work possible.

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Part I
History of Universities

Chapter 2

Theology and the Arts Course in Tudor Oxford: An Unknown Treatise on Church Government by John Case



Richard Serjeantson

Abstract This chapter identifies a Latin manuscript treatise (Corpus Christi College, Oxford, MS 321, ff. 22–24) entitled *Epistola quaedam ad reverendum praesulem conscripta adversus Baroistas* (‘A letter to a reverend prelate written against the Barrowists’) as a late work of the Oxford philosopher and physician John Case (1540?–1600). Dating it to shortly before 1596, it places it within the context of anti-nonconformist writings in English against the threat to religion and the state posed by such figures as William Hacket, Francis Kett, and above all Henry Barrow, whose followers were known as ‘Barrowists’. It then turns to use this newly identified work to reassess the debated question of John Case’s religious allegiance, arguing that he expresses tacit sympathy for aspects of Roman Catholic religion and, above all, demonstrates significant hostility towards the progress of the Protestant Reformation.

2.1 Introduction

The University of Oxford has been (so to speak) the sun around which the orbs of Mordechai Feingold’s scholarly interests have revolved throughout his distinguished and wide-ranging scholarly career. The politics, religion, scholarship, and natural philosophy pursued in that academic institution across the sixteenth, seventeenth, and eighteenth centuries have been the subject of several deep studies, from his first book, *The Mathematicians’ Apprenticeship*, to the monograph-length chapters on the studies pursued in the seventeenth century published in the *History of the University of Oxford*. Oxford has also been important as an institution which—on Feingold’s persuasively revisionist interpretations—helped to foster, rather than discourage, some of the developments that culminated in the emergence of the

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different kinds of natural science that were beginning to flourish by the end of the seventeenth century: mathematical physics; natural history; and the institutional home that natural knowledge was offered by the Royal Society of London that was founded (by several prominent Oxford figures) in 1660.

The subject of this study is an Oxford scholar of a rather earlier generation than this: John Case (1540/41?–1600).¹ Case was the most prominent philosopher in the Elizabethan university. When the recusant scholar Miles Windsor (a graduate of Corpus Christi College, Oxford) came to praise his own university in his *Catalogue of Universities in Europe* (1590), he named Case immediately after the professors of divinity, law, and medicine, and described him as ‘that most knowledgeable of philosophers and physicians, a man second to none.’² Yet unusually, John Case spent his career at Oxford not as a professor, nor even as a fellow of a college, but rather as an independent professional teacher of philosophy and the arts, and latterly also as a doctor of medicine and practising physician.³ His house served as a private hall housing undergraduates, and his books were published at Oxford’s press; but because he taught the central undergraduate discipline of philosophy professionally, rather than as a stepping-stone on the path to taking holy orders, he existed in a distinctly uncertain situation in relation to the conventional structures of the two early modern English universities.

Nonetheless, by virtue of his commitment to the philosophical studies of the arts course, John Case represents the high point at Oxford of a phenomenon whose dissolution Feingold’s work has gone on to explain: a unified intellectual culture, in which a single individual might be the authoritative exponent of subjects as diverse as logic, moral philosophy, political philosophy, natural science, and even household economy.⁴ Case was the first author to be published from the new university press set up by Joseph Barnes in 1585, and from then until the end of his life he was the only author in late-sixteenth century Oxford whose publications in philosophy might stand alongside the productions of Italian universities or Jesuit Colleges. Indeed, this quality was recognised by the rapid piracy of his books at Frankfurt following their appearance from Barnes’s press at Oxford.⁵

For all these reasons, James McConica, in his important re-assessment of ‘Humanism and Aristotle in Tudor Oxford’, yoked John Case together with another figure who has long fascinated Feingold: the leading Oxford puritan John Rainolds. McConica presented both figures as representative exponents of a pedagogic

¹For an account of Case’s work as an Aristotelian opponent of Petrus Ramus, see Feingold 1997, 291–92.

²Windsor 1590, 34: ‘Philosophus, & Medicus scientissimus, Casus, nulli secundus.’ (All translations are my own.) On Windsor, see further the valuable studies by Gajda 2019, 280–86, and Grafton 2019, 305–07.

³The fullest study of Case’s life and printed writings remains Schmitt 1983.

⁴On the structure of the sixteenth-century arts course, see Fletcher 1986.

⁵See Schmitt 1983, 99, noting that there were ultimately more German than English editions of most of his works, and listing them, 261–63; Maclean 2009b, 349–50; Maclean 2009a, 305, 307–8; and Feola and Mandelbrote 2013, 316.

mind-set which regarded the humanistic interpretation of Aristotle as a ‘convenient vehicle’ for mobilizing the knowledge taught across the undergraduate arts course.⁶ This is an attractive and plausible interpretation, and its insistence on the intellectual flexibility of late-sixteenth century Aristotelianism has been further developed in the recent analyses of Case’s political theory by Sophie Smith.⁷

Rainolds and Case were among the academic superstars of late-Tudor Oxford: the one a humanist and philosopher who also became a physician; the other a humanist who went on to become a leading Reformed theologian. They may, as McConica proposed, have shared a vision of the nature of the undergraduate arts course. Nonetheless, there were definite limits to the sympathies that they had for one another: above all in matters of religion. These differences are hinted at in their well-known, and diametrically opposed, views on the legitimacy of academic drama. Whereas Case—who acted in such dramas in his youth⁸—took the side of his friend William Gager and of the civilian Alberico Gentili in defending stage-plays,⁹ Rainolds (notoriously) condemned such plays as ‘hurtfull and pernicious’, as ‘ignoble games’ (*ludos illiberales*)—worse, as ‘the fodder of desire’ (*escam veneris*)—and in short as the vainest sort of corrupt distraction from more decent university studies.¹⁰ The religious differences between these two Oxford grandees will emerge even more clearly from this contribution. It will reveal that John Case was—rather unexpectedly—the author of an overlooked treatise on church government. Like Rainolds, it transpires, he too could turn his pen to theology; though the religion he sought to defend was very far from being Reformed.

2.2 John Case and the *Letter Against the Barrowists*

Corpus Christi College, Oxford, MS 321 is a tall folio paper-book containing two distinct Latin treatises. The first of these is a complete and polished book, 24,000 or so words long, entitled *Apologia Academiarum* (‘In Defence of Universities’).¹¹ A contemporary manuscript title-page—the existence of which demonstrates the document was intended for prompt publication in print—ascribes its authorship to John Case and dates it to 1596. An additional note in a slightly later hand confirms that it was written during the reign of Queen Elizabeth and that it was intended to be dedicated to the Earl of Dorset; that is, Thomas Sackville, Chancellor of Oxford between

⁶McConica 1979.

⁷Smith 2013; Smith 2018; Smith 2019.

⁸At Christmas 1577 John Case played the ‘Prince’ of St John’s College in some college revels. See Elliott and Nelson 2004, 1:347, 2:1103.

⁹See further Blank 2017, discussing Case 1585, 183. See also Tucker Brooke 1951.

¹⁰Rainolds 1600, 1; Rainolds 1580, 30 (*Praefatio ad Academiam Oxoniensem*).

¹¹Corpus Christi MS 321, fos. 2r–20r.