Isaac Newton and the Study of Chronology
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For it was revealed to Daniel that the prophesies concerning the last times should be closed up & sealed until the time of the end: but then the wise should understand, & knowledge should be increased [...] And therefore the longer they have continued in obscurity, the more hope there is that the time is at hand in which they are to be made manifest.

Yahuda Ms. 1.1, fol. 1'
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Abbreviations

5-III, 7/8-VII, etc., refer to chapters of the ‘Originals’

Ms./Mss. manuscript/s

OR-B, OR-1, etc., refer to versions and sections of Newton’s ‘Origines’ manuscript

APS American Philosophical Society, Philadelphia, PA
ASC Advent Source Collection, JWL
Babson Grace K. Babson Collection of the Works of Sir Isaac Newton, HL
CUL Cambridge University Library
HRHRC Harry Ransom Humanities Research Center, University of Texas, Austin, TX
HL Huntington Library, San Marino, CA
JWL James White Library, Andrews University, Berrien Springs, MI
Keynes J.M. Keynes collection, King’s College, Cambridge
LHL Linda Hall Library for Science, Engineering and Technology, Kansas City, MO
NCL New College Library, Oxford
RS Royal Society Library, London
TCL Trinity College Library, Cambridge
WACL William Andrews Clark Memorial Library, Los Angeles, CA
Yahuda Abraham Yahuda collection, National Library of Israel, Jerusalem
Acknowledgements

This is a book about Newton, the scholar. Back when I was still an undergraduate at Utrecht University, I was introduced to the history of science and, by default, to Newton, the scientist. It was only as part of an intriguing course titled ‘Newton in Context’, organized by Rienk Vermij, that I met the other Newton, the scholar, the Newton I never knew. Thus began a fascinating journey into the history of scholarship, especially into the domains of scriptural prophecy and ancient chronology, and one early modern individual’s idiosyncratic interpretation of how these disciplines should be studied.

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Conventions

With a handful of exceptions, manuscript transcriptions are taken from the Newton Project, generally opting for the diplomatic version to show Newton’s editorial interventions; occasionally, the normalized version has been given preference to enhance readability. Conventional symbols are used to indicate that text has been deleted, \inserted above the line/, \inline/, or /below the line\|. Quotations are given in the original spelling, including the abbreviations ‘ye’ for ‘the’, ‘yt’ for ‘that’, ‘wch’ for ‘which’, and ‘wth’ for ‘with’.

Because this book focusses in great detail on Newton’s writing practices, his own editorial conventions are kept as much as possible. These include his use of underlining to indicate a quotation, of dashes to abbreviate sentences and paragraphs, and of square brackets to mark a passage for deletion. Since nowadays square brackets are commonly used for interpolation and textual modification, I have marked those instances where Newton’s use is to be understood.

Julian calendar dates (Old Style) between and including 1 January and 24 March are given with double years, as in 15 February 1667/8, with the year dated from 1 January. All translations are mine, unless otherwise stated.
Introduction

In the fall of 1725, a French translation appeared of a short chronological work, composed by an Englishman about a decade earlier. Following a brief introduction, the work consisted mainly of an extensive list of dates for key historical events. These included important episodes in the history of the Jewish people, such as the ascendancy to the throne of King David in 1059 BCE, the building of the Temple under his son Solomon (1015 BCE), and the invasion of Syria and Judea by the Babylonians under Nebuchadnezzar (606 BCE). In between were listed pivotal events in world history, such as the Argonautic expedition (937 BCE), the fall of Troy (904 BCE), the building of Rome (627 BCE), and the conquest of the Persian empire by Alexander the Great (332 BCE). Remarkably, these dates differed significantly from established scholarly consensus. For example, Dionysius Petavius (1583-1652), the renowned French theologian and historian, had arrived at 1226 BCE for the voyage of Jason and the Argonauts and 1184 BCE for the fall of Troy, putting these events almost three centuries earlier.\(^1\) The Paris publisher Guillaume Cavelier appended to the translation a critical analysis of the chronology presented and the methods the author had used to arrive at his dates, from the hand of the renowned scholar Nicolas Fréret. According to Fréret, everything was ‘très curieux’, and, moreover, entirely wrong.\(^2\) The author had misunderstood – or misinterpreted – several ancient sources, his calculations were off, and so were his conclusions.

That author was Isaac Newton, and the appearance of a work of chronology from the hands of England’s greatest natural philosopher must have surprised many of his contemporaries. After all, apart from a handful of people close to him and the circle around Cavelier and Fréret, hardly anyone knew about Newton’s chronological studies. The ‘Short Chronicle’, translated and published as *Abregé de la Chronologie de M. le Chevalier Isaac Newton*, had been a summary of his studies, written for Princess Caroline in 1717 at

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the instigation of the Italian Father Antonio Conti. Conti had made Newton's acquaintance the year before and was impressed with his understanding of ancient history.\(^3\) Afterwards, Newton was less impressed with Conti's understanding of friendship, suspecting it was he who had supplied the French with a copy of his work.\(^4\)

In a letter to the *Philosophical Transactions* in which Newton explained the provenance of the manuscript the editors had used, he included several complaints about how his work had been misunderstood. He also stated that, contrary to the impression given by Fréret, he was not working towards the publication of any kind of chronological work. On the contrary, he made it seem as if his chronological studies had been nothing more than a hobby: ‘When I lived at Cambridge, I us'd sometimes to refresh myself with history and chronology for a while, when I was weary with other studies’.\(^5\) As the manuscript record testifies, this was at minimum a severe understatement. From the mid-1670s onwards, chronology had never been far from his mind. It is probably true that at the time the *Abregé* saw the light, he was not actively working towards publication of his chronological writings – but that soon changed. During the final eighteen months of his life, Newton frantically drafted version after version of the various chapters that would posthumously be published as the *Chronology of Ancient Kingdoms Amended* (1728). The final iteration of that work turned out be rather different from the preceding drafts, misleading both contemporary critics and modern students of his scholarship as to the purpose of his chronological writings.\(^6\)

In this book, which draws upon the research I completed at Linacre College, Oxford, I argue that the traditional image of Newton as a chronologist composing a universal history of the main Mediterranean civilizations is incorrect, or at least incomplete.\(^7\) Indeed, the posthumously published *Chronology of Ancient Kingdoms Amended* dealt with exactly these themes; but it differed in crucial ways from the preceding drafts. These drafts clearly show the intimate connections between Newton’s chronological studies and that other major scholarly project of his, the study of the prophecies in

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5 Newton, ‘Remarks’, p. 320.

6 For the editorial history of the *Chronology of Ancient Kingdoms Amended* and the *Observations upon the Prophecies of Daniel and the Apocalypse of St. John*, published in 1733, see Schilt, ‘Of Manuscripts and Men’.

Scripture, vestiges of which can still be found in the *Chronology*. These connections become all the more obvious once we begin exploring the complex gestation of Newton's chronological project and discover how the various earlier works Newton composed on the topic are related in time and space.

So far, no historian has attempted to unravel the maze that is Newton's chronological manuscripts, primarily on the grounds of its sheer complexity. There are thousands of undated draft folios found in archives all over the world, with chronology-related lines and paragraphs included with his writings on nearly every other topic. As I show in this volume, the only way to reconstruct these writings and to understand the evolution of Newton's ideas is by paying close attention to his work habits. Only by studying with Newton can we understand what Newton was actually working on, and why it mattered so much to him.

Therefore, this book provides a detailed analysis of Newton's quotidian working practices: his reading, note-taking, writing, and ordering habits, with a particular focus on his chronological studies. Newton's library contained hundreds of books related to the ancient world, many of which show signs of intensive study. Likewise, his manuscripts contain dozens of folios chock-full of notes and excerpts taken from both classical authors and contemporary scholars. But although it is clear that he was influenced by his contemporaries in topic and argument, hardly any research has been done on what exactly Newton took from their works and how he subsequently incorporated this data into his own writings.

The second topic this book deals with relates to the fragmented corpus of Newton's chronological writings, and their order of composition. As no Newton scholar has failed to notice, the manuscripts that bear the fruits of his decade-long studies of ancient civilizations are in significant disarray. Not only have they been dispersed all over the world, the manuscripts in even a single collection frequently appear as a haphazardly arranged series, with folios out of order, seemingly inserted in the wrong place, or missing. So far, attention has been devoted to what at first sight appear to be more or less coherent treatises and chapters. Regrettably, this has led to a fragmented discussion of Newton's chronological writings, as fragmented as the writings themselves, with many unwarranted conclusions about the development of his methods and ideas. By first reconstructing Newton's own ordering and reordering practices, and then restoring the corpus in the order of composition, this book provides the first chronology of Newton's chronology.

Emerging from this reconstruction are the clear connections between Newton's chronological project and his studies of the prophecies in Scripture,
the third topic this book addresses. Indeed, during the last four decades, Newton's various interests have been studied in depth. Similarly, questions of how particular aspects of Newton's intellectual activities were connected have sparked ample debate, from 'embarrassing controversies' over Newton's alchemical studies in the 1970s and 80s to sophisticated discussions about how Newton compartmentalized his interests. Yet so far, historians have either ignored the question as to what motivated Newton's chronological studies or assumed that he was simply writing a universal history of sorts, either to demonstrate the accuracy of scriptural chronology or the inaccuracy of pagan records. But this does not answer the question of why he felt the need to do so or how such a universal history would fit into the greater scheme of his scholarly work. In fact, the manuscript record itself demonstrates the clear connections between Newton's chronological project and his desire to correctly interpret the prophecies in the books of Daniel and Revelation.

These three topics are closely interrelated. Newton's reading, note-taking, writing, and ordering practices inform us about how he approached his

8 The bibliography is vast, but important publications include Guicciardini, Reading the Principia; Guicciardini, Newton on Mathematical Certainty and Method; Guicciardini, Newton and Natural Philosophy; Shapiro, Optical Lectures; Smith, ‘Methodology of the Principia’; Ducheyne, Main Business of Natural Philosophy; Newman, ‘Background to Newton's Chymistry’; Newman, Alchemist; Iliffe, Newton: A Very Short Introduction; Iliffe, Priest of Nature; Mandelbrote, ‘Newton and the Writing of Biblical Criticism’; Mandelbrote, ‘Newton Reads the Fathers’; Snobelen, ‘Theology of Isaac Newton’s General Scholium’; Buchwald and Feingold, Origin of Civilization. On the web, both the Oxford-based Newton Project and the Chymistry of Isaac Newton project at the University of Indiana-Bloomington have greatly contributed to our understanding of Newton's life and writings.

9 Casini, ‘Classical Scholia’, paraphrased from pp. 12-13. A. Rupert Hall and Marie Boas Hall, in their initial studies of Newton's alchemical notebook, refused to call it by that name, claiming that Newton did not practice alchemy; see Hall and Boas Hall, ‘Newton's Chemical Experiments’, p. 116. In his Isaac Newton: Adventurer in Thought, written more than three decades later, A.R. Hall maintained his opinion. Betty Jo Teeter Dobbs's arguments were diametrically opposed to those of the Halls, as expressed in her Foundations of Newton's Alchemy, Janus Faces, and her often overlooked 'Integrated View of Newton's Work.' For proponents of the middle ground, see e.g. Westfall, ‘Newton and Alchemy’; Henry, ‘Occult Qualities and Experimental Philosophy’. Rob Iliffe has shown how Newton compartmentalized his interests, to some extent drawing clear methodological distinctions between his theological and philosophical reasoning; see his ‘Abstract Considerations’, pp. 431-32. See also Force, ‘Newton’s God of Dominion’; Newman, ‘Newton’s Early Optical Theory and its Debt to Chymistry’; Iliffe, ‘Connected System’; Henry, ‘God and Newton’s Gravity’; Snobelen, ‘Theology of Isaac Newton’s General Scholium’; Snobelen, ‘Newton’s Heterodox Theology and his Natural Philosophy’; Schilt, ‘Created in our Image’.

chronological studies, and hence provide the keys for reconstructing the manuscript corpus. Likewise, the purpose of Newton’s chronological studies becomes clear once one starts unravelling the genesis of what would become the *Chronology of Ancient Kingdoms Amended*.

In the first chapter of this book, I introduce the reader to what was once a thriving part of scholarship, the study of ancient chronology. I explore both its early modern heyday with the efforts of scholars such as Joseph Scaliger and Dionysius Petavius, and the origin of the tradition in which they operated, stretching back to the days of the Church Fathers. I pay particular attention to the seventeenth-century religio-political climate in which chronology was embedded, and its eschatological dimensions. Against this background I briefly discuss the results of Newton’s chronological studies, a more detailed account of which I will provide in the following chapters. I then turn to how these studies have been discussed in the literature so far, and the pressing problems of ordering and dating the manuscripts.

Chapter 2 is devoted to Newton’s reading and note-taking practices, with particular emphasis on the materials he collected to write his earliest chronological treatise, ‘Theologiae gentilis origines philosophicae’ (‘On the [natural] philosophical origins of pagan theology’). Somewhere in the 1680s, Newton started reading up on the histories of Assyria, Greece, Egypt, and other Mediterranean civilizations. Although he initially made use of the libraries of various other Cantabrigians, he soon started to amass a wealth of books on history and chronology-related topics of his own, including editions of most of the classics and the works of contemporary scholars. Through a careful study of his trademark habit of marking passages via dog-ears, and the analysis of the hundreds of pages with notes he left, I trace what Newton took from the books he read and how he navigated back and forth between primary and secondary sources. I also pay attention to Newton’s note-taking practices, both in terms of form and function, and in how these notes were subsequently incorporated into his writings.

Around the time Newton left Cambridge for London to take up his position at the Royal Mint in 1696, he had significantly rewritten the ‘Origines’. From what was originally a short treatise on the Egyptian origins of star worship, the work now also included a full comparison of the pantheons of the major Mediterranean civilizations. From this, Newton deduced that the origins of all these nations lay with Noah and his progeny. In Chapter 3, I trace back the development of the ‘Origines’ and its various stages, by reconstructing its order of composition. I then turn to the writing, editing, and ordering methods Newton employed in his research, to try and understand how Newton continued his chronological studies throughout the late 1690s and
early 1700s. I pay particular attention to two key writings, the ‘Original of Monarchies’ and the ‘Original of Religions’, which so far have been significantly misdated and misunderstood. Informed by Newton’s writing and ordering practices, I then reconstruct, through a careful examination of the manuscript record, the connections between these and Newton’s other chronological writings. The picture that emerges is one of continuity, both in writing and focus. Instead of discarding the ‘Origines’ for a more detailed study of the origin of civilizations, Newton in fact expanded his earlier tract. This has clear implications for our understanding of the connections between Newton’s writings, including his religious studies, and the reasons why Newton became interested in chronology in the first place.

In the final chapter, I explore the origin of Newton’s chronological studies from the perspective of the visions from the book of Daniel. I discuss his studies of the prophecies and his interpretation of the four monarchies, and how Newton tried to harmonize the prophetic record with sacred and secular history. Through a careful examination of the gestation of the Chronology of Ancient Kingdoms Amended, I show how the chapters on Assyria, Babylon, Persia, and Media originated directly from Newton’s studies of the prophecies and how at some point he combined what were, until then, related but distinct projects. I pay particular attention to how Newton tried to harmonize classical and sacred history, and how he applied a literary criticism to biblical chronology that exceeded that of many of his contemporaries.

As a result, the Newton that emerges from the labyrinth of his chronological manuscripts is an inspired individual. Frantically writing and rewriting to get every word, sentence, paragraph, and chapter right, convinced that Scripture provides a relatively accurate description of the origin of all peoples and nations and that other narratives are but mere derivatives, distorted through time, space, and idolatry. We readers can open the doors to his study, sit down, and through his books and manuscripts observe Newton, the man, at work.

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