

ARCHITECTS OF FORTUNE: AUTOBIOGRAPHICAL
PRACTICES OF THE SEVENTEENTH-CENTURY
ROYAL SOCIETY

A thesis submitted to the University of Birmingham for the degree of
DOCTOR OF PHILOSOPHY

by

Caroline Curtis

School of English, Drama, and Creative Studies
College of Arts and Law
University of Birmingham
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Abstract

The Royal Society of London is the oldest extant scientific academy in the world. Founded by a committee of twelve curious and optimistic *virtuosi* in 1660, from its inception the Royal Society was intended to promote and pursue a programme of broadly Baconian natural philosophical investigation. The Royal Society engaged in public experimental demonstrations, licensed its own propagandist literature, and positioned itself as arbiter of international scientific communication in order to promote itself and its aims; this thesis explains how members of the Society used these methods and more to advocate for themselves as both affiliates and individuals. This thesis expands the generic definition and scope of autobiography as an appellative term and demonstrates that autobiographical practice was an integral (rather than incidental) element of the Royal Society's endurance, furthering scholarship which increasingly understands autobiography to be a mutable and porous genre as well as contributing to the sociohistorical turn in the history of science. By querying how the language of the new scientific method influenced the literary language of its promoters and developers, and exploring the philosophical impact of empiricism on the study of the self, this thesis sheds new light on the published and private writings of natural philosophers Robert Boyle and Robert Hooke, diarists Samuel Pepys and John Evelyn, and Royal Society promoters Joseph Glanvill, Henry Oldenburg, and Abraham Cowley, assessing these works as active and continuous records of a new social role in development: the *faber fortunae*, architect of his own fortune.

Acknowledgements

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I have pass'd the Alpes, and have seen as much to admire at in an Ant-hill.

Robert Boyle, *The Usefulness of Experimental Natural
Philosophy* (1663)

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Abbreviations & Transcription Conventions

Abbreviations

Periodicals

BJHS *The British Journal for the History of Science*

ELH *English Literary History*

ELR *English Literary Renaissance*

EMLS *Early Modern Literary Studies*

JEGP *Journal of English and Germanic Philology*

N&R *Notes and Records of the Royal Society of London*

PT *Philosophical Transactions of the Royal Society*

RES *Review of English Studies*

SEL *Studies in English Literature, 1500–1900*

Online Resources

CELM *Catalogue of English Literary Manuscripts, 1450–1700*
<<https://celm-ms.org.uk/>>

ECCO *Eighteenth Century Collections Online*
<<https://quod.lib.umich.edu/e/ecco/>>

EEBO *Early English Books Online*
<<https://www.proquest.com/eebo/index>>

EMLO *Early Modern Letters Online*
<<http://emlo.bodleian.ox.ac.uk/home>>

ODNB *Oxford Dictionary of National Biography*
<<https://www.oxforddnb.com/>>

OED *Oxford English Dictionary*
<www.oed.com>

Archives & Centres

Bodl. Bodleian Library, Oxford

BL British Library, London

CELL Centre for Editing Lives and Letters, Oxford

LMA London Metropolitan Archives, London

- RS** Royal Society Archive, London
TNA The National Archives, London

Editions

- CIN** Newton, Isaac, *The Correspondence of Isaac Newton* 7 vols., ed. H. W. Turnbull, J.F. Scott, A. Rupert Hall, and Laura Tilling (Cambridge: Cambridge University Press, 1959-78)
- CHO** Oldenburg, Henry, *The Correspondence of Henry Oldenburg* 13 vols., ed. A. R. Hall and M. B. Hall (Madison: University of Wisconsin Press; London: Mansel; London: Taylor & Francis, 1965–86)
- CRB** Boyle, Robert, *The Correspondence of Robert Boyle* 6 vols., eds. Michael Hunter, Antonio Clericuzio, and Lawrence M. Principe (London: Pickering & Chatto, 2004)
- HP** Greengrass, M., Leslie, M. and Hannon, M., *The Hartlib Papers* (HRI Online Publications: Sheffield, 2013) <<http://www.hrionline.ac.uk/hartlib>>
- OFB** Bacon, Francis, *The Oxford Francis Bacon* 8 vols., ed. Graham Rees and others, (Oxford: Clarendon Press, 2000-)
- PSC** Petty, William, *The Petty-Southwell Correspondence 1676-1687* ed. the Marquis of Lansdowne (New York: Augustus M. Kelley, 1967)
- RBHF** Boyle, Robert, *Robert Boyle by Himself and his Friends: with a Fragment of William Wotton's Lost Life of Boyle* ed. Michael Hunter (London: Pickering, 1994)
- WFB** Bacon, Francis, *The Works of Francis Bacon* 15 vols., ed. James Spedding and others, (Cambridge: Cambridge University Press, 1857)
- WRB** Boyle, Robert, *The Works of Robert Boyle* 14 vols., ed. Michael Hunter and Edward B. Davis (London: Pickering and Chatto, 1999-2000)

All Biblical quotations are drawn from the King James Version, specifically *The Bible: Authorized King James Version with Apocrypha* eds. Robert Carroll and Stephen Prickett (Oxford: Oxford University Press, 2008).

All URLs last accessed 22nd March 2023 unless otherwise stated.

References to the work-diaries of Robert Boyle, which exist as paper-books of foolscap leaves scattered throughout the Boyle Papers at the Royal Society, are referred to by shelf mark and page number, with the Work-diary and Entry numbers supplied in brackets. For further information regarding the editorial collation of these documents, please refer to Michael Hunter and Charles Littleton, 'The Work-Diaries of Robert Boyle: A Newly Discovered Source and Its Internet Publication' *N&R* 55.3 (2001), 373-390.

Transcription Conventions

A semi-diplomatic standard of transcription has been used when quoting from unpublished archival material. Early modern spelling, capitalisation, and punctuation have largely been retained, with the exception of the silent modernisation of u/v and i/j, expansion of all contractions besides '&' and '&c', and standardisation of the long 's'. Quotations from John T. Harwood's *The Early Essays and Ethics of Robert Boyle* (Carbondale: Southern Illinois University Press, 1991) retain Harwood's editorial

policies, including the use of [square brackets] for Boyle's deletions and <angle brackets> for his interlineations (for further information, refer to pp. lxvii-lxix of that volume).

Old Style/New Style designation for dates has been simplified to reflect the Gregorian calendar, with the new year taken to begin on January 1st.

Introduction

The Proposed Intersection of Natural Philosophy and Autobiography

By treating himself as raw material to be ordered, diagnosing and disciplining his ideas, the rationally curious individual could construct a stable and integral self out of the matter that naturally constituted him. But the individual did not have unlimited freedom to create himself however he pleased, and genuine self-possession did not result in a private kingdom: the self was not privately-owned property.¹

This thesis argues that the literary and rhetorical aspects of seventeenth-century natural philosophy changed public attitudes regarding what constituted fact, how it could be expressed, and most importantly, who was able to express it. This thesis examines such aspects, as well as those associated with contemporary autobiographical practice, and demonstrates that they fulfilled a crucial function in both the construction of knowledge and the construction of a public self who can be trusted to relate such matters. Recent research on autobiographical writing in the early modern period has argued that an awareness of the context in which these works were produced is requisite. To refer to such works as ‘autobiographical’ (as opposed to using the neological noun ‘autobiography’) opens analysis to an appreciation of early modern identity as being ‘oriented in moral space’ and constituted in relation to contemporary spiritual, moral, and epistemological discourse.² The shifting of intellectual and professional cultural paradigms during the early modern period, and the implication of this for notions of the self and self-writing, is currently subject to increasing levels of critical engagement. The histories of both science and autobiographical practice are currently appreciated as interdisciplinary and socially situated, and in combination it can be argued that as understanding of and discourse regarding the external world shifted and modulated, so too did the subject’s appreciation of selfhood in relation to it. Rather than exploring ‘the subconscious underpinnings of identity’, an ‘identification of self-hood with the conscious subject of moral judgement (rather than the subconscious subject of psychological analysis) approximates that [which is] implicit in most

¹ Joanna Picciotto, *Labours of Innocence in Early Modern England* (Cambridge, Massachusetts: Harvard University Press, 2010) pp. 262-3.

² Charles Taylor, *Sources of the Self: The Making of the Modern Identity* (Cambridge: Harvard University Press, 1989), p. 28.

seventeenth-century life-writings' during a period when the matter of identity was reciprocally and flexibly defined.³ This thesis is predicated on the notion that autobiography was a *way* of writing, in which the accumulated, written self was generated through alignment and allusion, and identity itself was a matter of adherence to and divergence from type.

In *The Structure of Scientific Revolutions* (1962) Thomas Kuhn posited that one scientific paradigm replaces another through the promulgation of conjectures, conjectures which are 'sufficiently unprecedented to attract an enduring group of adherents away from competing modes of scientific activity', and which are also 'sufficiently open-ended to leave all sorts of problems for the redefined group of practitioners to resolve'.⁴ Elsewhere Kuhn describes the advent of Baconian natural philosophy as comprising 'a new cluster of research areas that owed their status as sciences to the seventeenth century's characteristic insistence upon experimentation and upon the compilation of natural histories, including histories of the crafts...particularly the study of heat, of electricity, of magnetism, and of chemistry'.⁵ The paradigm shift is defined by the adoption of a novel methodology rather than by the locus of its investigations, and this adoption is precipitated by some form of crisis in the normative model, which for Francis Bacon had been the failure of inherited Aristotelian natural philosophy to descend from its scholastic purview and produce useful, practical knowledge.⁶ An established paradigm encompasses expectations (semantic, proprietary, and epistemological) which dictate comprehension; these are transmuted when the paradigm shifts, and examination of this transmutation forms the basis of a sociological approach to the history of science.

Through the concept of 'structures of feeling' Raymond Williams argues that literary discourse may be taken as the articulation of wider cultural shifts.⁷ Williams contends that literary

³ Debora Shuger, 'Life-Writing in Seventeenth-Century England' in *Representations of the Self from the Renaissance to Romanticism* ed. A. Coleman, J. Lewis, and J. Kowalik (Cambridge: Cambridge University Press, 2000), p. 64.

⁴ Thomas S. Kuhn, *The Structure of Scientific Revolutions* (Chicago: University of Chicago Press, 1962), p. 10.

⁵ Thomas S. Kuhn, 'The Function of Measurement in Modern Physical Science', *Isis* 52.2 (1961), 186.

⁶ Kuhn, *Revolutions*, pp. 75-6.

⁷ First formulated by Raymond Williams in *Marxism and Literature* (Oxford: Oxford University Press, 1977).

works do more than merely describe the mechanics underlying such shifts, positing that they also form an aspect of its rhetorical construction. This thesis examines autobiographical practices of the early Royal Society members and its associates through the lens of a *faber fortunae* narrative of selfhood, in which the science of man as architect of his own fortune existed in parallel development to the establishment of a society dedicated to the promotion of the new natural philosophy, both having cumulative cultural impact. Among members of the nascent Royal Society, a propensity to engage in autobiographical practice can be understood as having its origin in two purposes: to demonstrate aptitude for the new methods of enquiry and communication being promoted, and the study of oneself using these same methods. The result is a body of work which holds both ideological and autobiographical significance through which the identity of the practitioner of the new science, the *virtuoso*, is constructed through its literary advertisement using the self-fashioning mechanics of autobiography.

Kuhn singles out Robert Boyle, Anglo-Irish landed gentleman and one of the twelve founding members of the Royal Society, as originator of a revolution within science for his discovery of atomic chemistry, yet the true revolution heralded by the Royal Society was that of deliberately fostered co-operation through the hegemonic dissemination of printed material. Williams differentiates between the ideological and the hegemonic, stating that that '[a] lived hegemony is always a process...a realized complex of experiences, relationships, and activities, with specific and changing pressures and limits...it has continually to be renewed, recreated, defended, and modified', rejecting the term 'ideology' as implying something both superstructural and static.⁸ Charles Taylor has proposed that examinations of selfhood in early modern literature should be understood as being 'oriented in moral space'; when read spatially, early modern selfhood emerges from a complex and continuous interaction of the spiritual with the secular, the subject apprehending and generating themselves as

⁸ Raymond Williams, *Marxism and Literature*, p. 112.

component of a larger social structure.⁹ Selfhood developed through the appreciation of reciprocal social offices, familial and professional; such offices were ‘expressions of a faith in ethical and social continuity’ and required the exhibition of a suitable persona.¹⁰ This faith was complicated during a period of cultural shift in which the credentials of the *virtuoso* were undergoing a process of establishment, and claims to being a natural philosopher were instead founded on a *desire* for social continuity.

Since the 1980s an increase in theorising autobiographical practice as a form of dynamic performativity (a response to the postmodernist deconstruction of stability) has seen many commentators posit that literary identity is generated through continuous and mutating engagement and interaction with established cultural norms. For Mikhail Bakhtin, the autobiographical act is inherently dialogic, in which the ‘I’ of the text speaks within ‘a multitude of concrete worlds, a multitude of bounded verbal-ideological and social belief-systems’.¹¹ Paul Smith identifies four aspects of the singular first person at work in autobiographical writing: the real or historical ‘I’, the narrating ‘I’, the narrated ‘I’, and the ideological ‘I’ which is the cultural conception of selfhood available to the historical ‘I’ at the point of composition.¹² The relationship between all four involves a process of fictionalisation, be it the purport to close the temporal gap between the historical and narrating ‘I’ or the construction of the narrated ‘I’ in response to the ideological, even as that ideology is itself constructed by each new work of autobiography. This thesis builds on and redirects these concepts by arguing that the advent of inductive natural philosophy in seventeenth-century England resulted in the establishment of a new ideological ‘I’, the *virtuoso*, which was itself elided

⁹ Charles Taylor, *Sources of the Self: The Making of the Modern Identity* (Cambridge: Harvard University Press, 1989), p. 28. This is instead of, for example, one’s preferences and dislikes forming cultural touchpoints for the expression of personal identity.

¹⁰ Conal Condren, ‘Specifying the Subject in Early Modern Autobiography’, in *Early Modern Autobiography: Theories, Genres, Practices* ed. Ronald Bedford, Lloyd Davis & Philippa Kelly (Ann Arbor: Michigan, 2006), p. 37.

¹¹ Mikhail Bakhtin, *The Dialogic Imagination: Four Essays* ed. Michael Holquist, trans. Caryl Emerson and Michael Holquist (Austin, University of Texas Press, 1981), p. 288

¹² Paul Smith, *Discerning the Subject* (Minneapolis: University of Minnesota Press, 1988), p. 105.

qualitatively with the existing trope of the architect of fortune, the self-made man, the *faber fortunae*. This shall be expanded on below.

James Olney distinguishes poetic autobiography from other forms of autobiography on grounds of its content and also by ‘the formal device of recapitulation and recall’ deployed, yet this is the mechanism of all autobiographical writing.¹³ However, autobiographical writing is all, to a greater or lesser degree, fictional: the author writes from a retrospective vantage point, events must be chosen, described, and connected (thematically, if not by narrative causality), and the author:

as its creator, remains outside the world he has represented in his work. If I relate (or write about) an event that has just happened to me, then I as the teller (or writer) of this event am already outside of the time and space in which this event occurred.¹⁴

Sidonie Smith and Julia Watson instead refer to ‘schemes of self-knowing’ to argue that the mode and structure of autobiographical practice can be linked to particular cultural moments (literary examples include the bildungsroman and conversion narrative).¹⁵ Following Andreas Vesalius’s publication of the anti-Galenic work of anatomy *De Humani Corporis Fabrica Libri Septum* (1543), Robert Burton’s *Anatomy of Melancholy* reflects an increasingly physiological approach to mental illness; John Donne’s *Devotions Upon Emergent Occasions* (1624) constituted both anti-puritan polemic and political advice at the moment of royal succession as well as being a devotional meditation on its author’s illness. Conventions of autobiographical writing can therefore be seen as specific to cultural and historical moments, and epistemological shift can cause these to be displaced or used anachronistically to comment on the shift itself. Following Francis Bacon’s rejection of Scholastic teleology and advocacy of using inductive reasoning to explain efficient, not immanent, causes of natural phenomena, the literature of early members of the Royal Society took on open-ended form,

¹³ James Olney, ‘Some Version of Memory/Some Version of Bios: The Ontology of Autobiography’, in *Autobiography: Essays Theoretical and Critical* ed. James Olney (Princeton: Princeton University Press, 1980), pp. 236-67, p. 252.

¹⁴ Mikhail Bakhtin ‘Forms and Time of Chronotope in the Novel’ in *The Dialogic Imagination: Four Essays* ed. Michael Holquist, trans Caryl Emerson and Michael Holquist (Austin, University of Texas Press, 1981), p. 256.

¹⁵ Sidonie Smith and Julia Watson, *Reading Autobiography: A Guide for Interpreting Life Narratives* (Minneapolis: University of Minnesota Press, 2001), p. 70.

with observations collected and disseminated in the genres of journals, diaries, and essays: all genres in which autobiographical practice may be seen at work.

This thesis goes beyond drawing an analogy between these genres, associated with autobiography, and the practice of a philosophy concerned with ontology rather than teleology: rather, the following chapters will demonstrate that use of these genres constituted practical application of the new scientific method and that their deployment served as advertisement for the author as practitioner while also constructing the figure of the *virtuoso* as a new social type. These are not texts of reflection from the vantage point of identity achieved: they record identity in active and continuous development, and when published they became at once both demonstrative and formative. ‘[A] narrative of the self-made man requires a plotting that takes the narrative subject first through an apprenticeship and then through successive stages of public accomplishment and validation’ and this is true of subsequent biographical sketches of the figures considered in this thesis, but the periodic documentation in their own work demonstrate this narrative in progress. Convergence of author and subject indicates that a text makes truth claims of a sort that fiction does not, as per Philippe Lejeune’s ‘autobiographical pact’ made between author and reader; like science or history, autobiography is referential and claims to inform about reality outside of the text, with the author themselves implicit within that reality and supposedly recorded with concomitant truthfulness.¹⁶ Recursively, therefore, the text functions as proof for its own claim.

The Royal Society: its Foundations and Patrons

Robert Boyle’s air pump, constructed by his laboratory assistant and curator of experiments for the Royal Society, Robert Hooke, appeared in woodcut on the frontispiece of Thomas Sprat’s *History of the Royal Society* (1667), a propagandist work aimed at shoring up the incipient reputation

¹⁶ Philippe Lejeune, *On Autobiography* ed. Paul John Eakin, trans. Katherine Leary (Minneapolis: University of Minnesota Press, 1989), pp. 19-21.

of the nascent assembly of natural philosophers.¹⁷ Sprat's *History* 'was, in large part, the validation of pictures of the experimental philosopher and experimental social practices developed earlier by Robert Boyle', written against 'the Detractors of so noble an Institution' which had 'already laid such excellent Foundation of so much good to Mankind'.¹⁸ 'In contrast to the architectural frontispieces of many sixteenth-century books that invite the reader inside a dwelling or palace, pamphlets of the 1640s feature spectacles on the cover, announcing their utility as instruments' and texts produced by the new experimentalists engaged in this trope of associating their instruments with their enterprise; a means to escape fiction, intended to draw a reader further into *this* world than a fictional one.¹⁹ These texts were therefore subject to the same burden as any work which makes a claim to truth, including autobiography, and the reader participated in this construction of truth as co-observer or 'virtual witness' when presented with ocular evidence.²⁰

A spirit of progress semantically invigorated and formally fractured these texts: as knowledge was reworked, so too was the literary means by which it was transmitted as part of an ongoing advancement of learning. List and tallies were published without conclusions, periodical publication promised continuation, and genres, modes, and forms associated with the writing of one's own life, a necessarily incomplete venture, were adopted and adapted to suit these changing epistemological needs. The open experimental demonstrations and emphasis on collaboration which the Royal Society

¹⁷ Philippa Kelly's 'Dialogues of Self-Reflection: Early Modern Mirrors' discusses the role of mirrors in early modern conceptions of selfhood, in which wider technological and cultural developments can be seen to impact on authors' appreciation of themselves in concurrent acts of life writing. By applying this notion to interactive scientific inventions such as the microscope and telescope we can appreciate this development as encouraging new forms of observational perspective, moving from passive receptivity to active engagement and manipulation, magnifying and amplifying in stylistic manner as well as focus. Philippa Kelly, 'Dialogues of Self-Reflection: Early Modern Mirrors', in *Early Modern Autobiography: Theories, Genres, Practices* ed. Ronald Bedford, Lloyd Davis & Philippa Kelly (Ann Arbor: Michigan, 2006), pp. 62-84.

¹⁸ Steven Shapin, *A Social History of Truth* (Chicago: University of Chicago Press, 1994) p.185; Sprat *History of the Royal Society* (London, 1667), p. 2.

¹⁹ Joanna Picciotto, *Labours of Innocence in Early Modern England* (Cambridge, Mass: Harvard University Press, 2010), p. 15.

²⁰ I draw here on Shapin and Schaffer's principle of 'virtual witnessing', where linguistic description or graphic representation is used to create a congruent process of experiment in the mind of the reader so that they may concur with the original experimenter's conclusions without having been present at the time. Steven Shapin and Simon Schaffer, *Leviathan and the Air-Pump: Hobbes, Boyle, and the Experimental Life* (Princeton: Princeton University Press, 1985), pp. 60-5.

had become famous for saw expression in a blurring of boundaries between public and private works, particularly in the case of letters following the example of Samuel Hartlib, intelligencer and nucleus of the Hartlib Circle of European correspondence. Hartlib was a follower of J.A. Comenius, the educational reformer who in 1637 wrote a tract titled *Faber Fortunae* which attempted to expand on Bacon's work by proposing a Baconian, pansophic structure for generating useful knowledge and securing one's fortune.²¹ Hartlib's absorption in plans for educational reform eventually led to his personal correspondence falling victim to his public identity, frustrating a young Boyle, member of the Hartlib Circle (the appellative indicative of Hartlib's elision with the activities of his correspondents) who would mildly complain that

you interest yourself so much in the *Invisible College*, and that whole society is so highly concerned in all the accidents of your life, that you can send me no intelligence of your own affairs, that does not (at least relationally) assume the nature of *Utopian*.²²

The utopian, following Thomas More's coinage of the term and association of it with governance in commonwealth, was itself bound up with Royal Society's justification for its own existence in the face of criticism. The Interregnum Boyle believed that 'Heroical Men ar more frequently observ'd (for the most part) in Common-welths then in Monarchys'; Sprat, however, would explicitly link the founding of the Royal Society with the Restoration, both occurring in that 'wonderful pacifick year, 1660', and expressed hope that the experimentalist endeavour would form a contribution to national social unity and concord.²³ The importance of the scientific paradigm shift was underscored by anchorage to seismic change in national government and freedom from the 'slavery' of Cromwellian succession; this notion of anti-hierarchical collaboration, despite diversity of religion or heritage, meant that knowledge itself should be held in common wealth, and

if any conjectures of good Fortune, from extraordinary Nativities, hold true; we may presage all happiness to this undertaking...as it began in that time, when our Country was freed from

²¹ A copy of this tract may be found among the Hartlib Papers, HP 35/3/1A.

²² Robert Boyle, *The Correspondence of Robert Boyle Volume I: 1636 to 1661* ed. Michael Hunter, Antonio Clericuzio, and Lawrence M. Principe (London: Pickering and Chatto, 2001), p. 58.

²³ Robert Boyle, *The Early Essays and Ethics of Robert Boyle* ed. John T. Harwood (Carbondale: Southern Illinois University Press, 1991), p. 132; Sprat, *History*, p. 58.

confusion, and slavery: So [the Society] may, in its progress, redeem the minds of Men, from obscurity, uncertainty, and bondage.²⁴

As with any enterprise, the precepts of the Royal Society and its actual organisation and conduct differed, evidenced through ‘frequent tension between the received interpretation and practical experience’, but we should keep in mind both that its origins and intentions were egalitarian, and that the Royal Society’s mythology was arguably its most influential invention.²⁵ The identity of the experimentalist, constructed and oriented socially, was purportedly based on curiosity, veracity, and intellectual magnanimity rather than class, wealth or humanist education, to the extent that some members of the Royal Society perceived credibility and inherited conceptions of gentility as being inversely correlated. Pastoral poetry ventriloquised the words of the philosopher through the mouths of the unlettered; in prioritising material evidence over the scholastic curriculum of the universities, the men of the Royal Society consciously celebrated the practical knowledge of ‘extraordinary men, though but of ordinary Trade’ in a reversal of this trope.²⁶ In his *Natural History of Wiltshire*, written between 1656 and 1691 and part-funded by the Royal Society, the antiquarian and FRS John Aubrey felt compelled to defend his inclusion of proverbs by casting his readers as curious and modern intellectuals and invoking Bacon’s notion of *instantia crucis*, the critical experiment, in celebrating such knowledge as having stood test of time to the extent that it had achieved a form of finality while also borrowing the glory of the experimentalist for whom such critical experiments must be ‘deliberately and systematically sought out, applied, and unearthed at last after unremitting hard work’.²⁷

[I]t may seem nauseous to some that I have rak’t up so many western vulgar proverbs, which I confess I do not disdeigne to quote, for proverbs are drawn from the experience and observation of many ages; and are the ancient natural philosophy of the vulgar, preserved in

²⁴ Thomas Sprat, *The History of the Royal Society of London, for the Improving of Natural Knowledge* (London, 1667), p. 58.

²⁵ Williams, *Marxism and Literature*, p. 130.

²⁶ Sprat, *History*, p. 67.

²⁷ Francis Bacon, *The Oxford Francis Bacon XI: The Instauration Magna, Part II: Novum Organum* ed. Graham Rees with Maria Wakely (Oxford University Press, 2004), pp. 320-1.

Old English in bad rhythmes, handed downe to us; and which I set here as *Instantiae Crucis* for our curious modern philosophers to examine.²⁸

The contemporary cornerstones of society were gentlemen, and Adrian Johns describes the gentleman as being understood to be ‘essentially, his own man...disciplined by self-control, but not by external constraints...with no material stake in any particular outcome’, and in possession of independent means to the point of autonomy, whether conferred by birth or dint of effort.²⁹ Charles II’s patronage of the early Royal Society was ceremonial rather than substantial (certainly in financial terms), and ‘Royal was an almost empty signifier’ used to promote the society on the national and international stage and establish an audience.³⁰ The success of the society’s journal, the *Philosophical Transactions* (founded 1665) heralded a transition, however, from a system based on patronage to one of ‘corporate infrastructures’ among peers in which the currency of credit began to circulate rather than trickle down.³¹ Public demonstrations of experiments, whether in person or in written form, relied on performers and witnesses being of honest character; the acceptance of experimentalism as philosophically valid enterprise was ultimately to be based on wider societal conceptions of credit, and both individual Fellows and the Royal Society as institution were required to act in synergy.³² Any burgeoning revolution is defended by its instigators according to their own standards, and this thesis argues that the ideals of collaboration and correspondence in observation were informed by a *faber fortunae* narrative in two ways. Each experimentalist had to prove themselves a suitable agent to contribute to the great corporate enterprise of fact accumulation by acting as architect of his own reputation, his public self: this was achieved through the application of the experimentalist method,

²⁸ John Aubrey, *Natural History of Wiltshire* ed. John Britton (Newton Abbot: David & Charles Reprints 1969), p. 6.

²⁹ Adrian Johns, ‘Identity, Practice and Trust in Early Modern Natural Philosophy’ in *The Historical Journal* 42, No. 4 (Dec. 1999), 1142-3.

³⁰ Mario Biagioli, *Galileo’s Instruments of Credit: Telescopes, Images, Secrecy* (Chicago: University of Chicago Press, 2006), p. 45.

³¹ *Ibid.*, p. 52.

³² This was easier said than done. Aubrey’s proverbs indicate a wider naivety in the Royal Society’s attempts to coax secret knowledge from men of trade, attempts which assumed an essential difference between ownership of property and ownership of a fact. The man whose economic survival depends on his practical knowledge is likely to be unwilling to share it, and the many squabbles over patents even within the Royal Society itself attest to this being a misplaced optimism. Several tradesmen were invited to divest themselves of carefully cultivated and inherited knowledge at public Royal Society meetings, but few ever accepted the offer.

accumulating and recording facts of their own lives in order that they might come to truthful knowledge of their self and their place in the world, acting therefore as architect of their own fortune in steering the Society's direction.

The Thesis in Critical Context: Relevant Literature in Review

This review is split into two sections, one discussing the study of autobiography as a genre and the other a precis of the history of early modern science, to reflect the cross-disciplinarity of the questions of this thesis. Each section opens with a discussion of one or more foundational texts which have attracted significant commentary. From there the focus shifts to texts published (approximately) in the last fifteen years in order to assess the current state of each field. This review is necessarily representative, not exhaustive.

Identity Parade: Defining Autobiography

It is a critical commonplace to discuss Philippe Lejeune's 'autobiographical pact' in any study of autobiographical writing, and many of the works surveyed in this review refer to this concept as a way to determine generic properties. The pact exists between author, publisher, and reader, and recognition of the convergence of author and narrator prompts the text to be read as making truth claims of a sort that fiction makes no claim to.³³ It is far less common for any of Lejeune's later work to be commented on, or indeed referenced, and the collection *On Diary* (2009) attempts to bring Lejeune's work on diaries to the fore. His methodology, which remains the same throughout a group of essays which span his career, is to focus on a social history of the diary which links it to social innovations such as the clock, the account book, and the spiritual journal, connecting the increase in diary writing with the development of western subjectivity, practised as much by 'ordinary' individuals as the 'extraordinary' published authors. The diary is assessed as a form of life-writing distinct from autobiography, which should not be analysed using the tools used to analyse literary fiction or historical narratives that neglect to consider the process of diary creation. The diary is

³³ Philippe Lejeune, *On Autobiography* ed. Paul John Eakin, trans. Katherine Leary (Minneapolis: University of Minnesota Press, 1989), pp. 19-21.

described as ‘a behaviour, a way of life, of which the text is merely a trace or by-product, and Lejeune uses examples of his own diary-keeping from adolescence to the present to make the point that diaries are inherently antifictional: they are written without narrative, without comprehension of an ending, and perhaps for no other reader than the author. Yet an essay concerning the ending of diaries points to knowledge of death as the one inescapable certainty of life, and it remains to be seen if the establishment of inductive reasoning in natural philosophy contributed the practitioners’ perception of their own lives as being ontological.

Paul Delany’s *British Autobiography in the Seventeenth Century* (1969) aims to provide a survey of published and unpublished autobiographies pre-1700 according to a proposed definition of autobiography as a literary work written primarily to give an account of the author’s life (or an extended period of it) in the form of a narrative. The variety of types of autobiographical writing means that Delaney wishes to ‘frame a definition which excludes the bulk of random or incidental self-revelation scattered through seventeenth-century literature’.³⁴ Delany’s introductory discussion works to place autobiographies composed during the English Renaissance within a European cultural context, while acknowledging that few of the texts discussed show continental influence at all. A discussion of the social mobility afforded by the rise of humanist educational practices across Europe does, however, result in a convincing argument that self-directed study led to a growing conception of the self as something protean and subject to change as corollary of rising conception of the past as discrete yet relative. The argument is substantiated by assessing a consequence of humanist scholarship as an increased ability of the historian to view the past as something qualitatively distinct yet continuous, leading to a rise in the exploration of personal genealogy. A wider question of the value of new historical scholarship emerges for the modern student of autobiographical practice as result: to what extent is consideration of the context of production crucial to understanding these texts?

³⁴ Paul Delany, *British Autobiography in the Seventeenth Century* (London: Routledge and Kegan Paul, 1969), p. 1.

These questions are addressed in *Betraying Our Selves: Forms of Self-Representation in Early Modern English Texts* (2000), a collection which aims to trace autobiographical elements in a range of literary modes from the sixteenth and seventeenth centuries. *Betraying Our Selves* resists the hegemony of formulaic and didactic confessional texts within autobiography studies, preferring to examine the idiosyncratic personal narratives to be found in poetry, courtly letters, and philosophy. The essays also consider a diversity of narrative models for the authors surveyed, models drawn from both Christian and pagan antiquity, which may go some way to explaining the rise in textual self-representation in early modern Europe.

The stated editorial aim of the collection *Representations of the Self from the Renaissance to Romanticism* (2000) is to reflect historically on the ubiquity of life-writing during the period examined, and the tendency of such life-writing to reflect a postmodern emphasis on the particulars of experience. *Representations of the Self* demonstrates that experimentation and innovation with form has been part of life-writing from very early on, combining textual analysis with an appreciation of contextual composition and circulation. The suggestion is that such an interdisciplinary approach is necessary in order to wring the best from early modern autobiography, and to identify points where conformity and creativity converge. Three historical developments frame and influence many of the essays: the growth of the publishing industry, the weakening of religious and political authority in the wake of serious upheaval in both, and the subsequent emergence of a new form of civil society encompassing people outside of the traditional public sphere. Contributor Peter Miller points to the early modern scholar Daniel Morhof's defence of the biographies of learned men he collected in *Polyhistor* as an attempt to link the aristocratic virtues of the classical hero to the modern scholar, in turn creating a new social type. A link with *The Advancement of Learning* is proposed, noting Bacon's inclusion of biography as one of the three types of perfect history, and his championing of the lives of unheroic yet worthy contemporaries. For Debora Shuger a Stuart man was known by his rhetoric, and early modern life-writing locates haecceity in the spoken or written word which produced identity differentially. An emphasis on individualistic autonomy is post-Cartesian, post-Lockean, irrelevant to

seventeenth-century texts, and to speak and write of ‘the self’ rather than, say, ‘selfhood’ is to embrace a more modern sense of individualism. Early modern autobiographical texts do not explore ‘the subconscious underpinnings of identity’; rather, an ‘identification of self-hood with the conscious subject of moral judgement (rather than the subconscious subject of psychological analysis) approximates that [which is] implicit in most seventeenth-century life-writings’.³⁵ However, the pervasiveness of rhetorical grandstanding in early modern literature presents difficulties when considering what constitutes life-writing as a genre according to Shuger’s definition.

Delaney’s *British Autobiography in the Seventeenth Century* was intended as a representative survey of early modern autobiographical writing even as it acknowledged the impossibility of achieving this in a single volume. *Early Modern Biography: Theories, Genres, Practices* (2007, developed from a colloquium held at the Humanities Research Centre of Canberra in 2002) highlights some fruitful areas of research which were not discussed in Delaney’s monograph, owing to the former’s overall focus on the porous nature of the genre itself.³⁶ This collection never positions itself wholly as completion or corrective of Delaney’s work but its existence indicates increasing interest and specialisation within the field of research; life writing by natural philosophers is, however, notably absent. The collection’s opening chapters discuss several theoretical approaches to the critical study of autobiography, embracing a relative historiography and seeking to reconcile generic distinctions between spiritual and secular, poetic and prosaic, accepting that such distinctions owe more to the modern reader in a notion which also proves true for appreciating the intermingling of genres within the history of ideas. Early modern selfhood is instead comprehensively appreciated by all commentators in the volume as emerging from a complex interplay of these generic and social distinctions in considering how the individual apprehends themselves as being part of a larger schema,

³⁵ Debora Shuger, ‘Life-Writing in Seventeenth-Century England’ in *Representations of the Self from the Renaissance to Romanticism* ed. A. Coleman, J. Lewis, and J. Kowalik (Cambridge: Cambridge University Press, 2000), p. 64.

³⁶ Wilfred Prest, for example, directly chastises Delaney for his neglect of autobiographies produced by those in the legal profession. Wilfred Prest, ‘Legal Autobiography in Early Modern England’ in *Early Modern Biography: Theories, Genres, Practices* ed. Ronald Bedford, Lloyd Davis & Philippa Kelly (Ann Arbor: Michigan, 2006), p. 80.

and advocates for embracing the early modern autobiographical self as spatially and reciprocally defined.

In 'From Fact to Fiction: The Question of Genre in Autobiography and Early First-Person Novels' (2010) Michael Sinding argues that the scepticism commonly expressed towards genre categorisation may be alleviated by thinking alongside developments in psychological and linguistic research. In cognitive science, prototype theory is a form of polythetic graded categorisation in which some members of a category, the prototypes, are more central than others, and that we learn about categories by referring to these prototypes rather than to criteria of definitions. This is a neat development of Wittgenstein's notion of family resemblances, and stands in opposition to an Aristotelian, monothetic method of categorisation which is based on definition. Lejeune's famous definition of autobiography, accepted or challenged so frequently as a prescriptive formalism, may therefore be read simply as the description of the autobiographical prototype.² Useful as this is in expanding Lejeune's definition, Lejeune himself resolutely rejects just such an interpretation in the very next section of his essay. For a work to be called autobiography, he writes, it must fulfil each condition of every category encompassed in his definition. Genres similar to autobiography but not meeting these requirements are then listed: memoirs, biography, the personal novel, diaries, and the essay.

It may be more profitable to let Lejeune alone. Many theorists (see *A History of English Autobiography*, below) now focus effort on shifting the lexical category of autobiography, examining it as an adjective ('autobiographical writing') or even an action ('the autobiographical act') rather than a noun.³⁷ A.C. Spearing argues that autobiographical elements in medieval writing ought to be called 'autography' as they are 'not being based on a claim to any systematic relation to documentable truth'.³⁸ Yet while not every use of the first-person denotes the author's expression of themselves

³⁷ See Sidonie Smith and Julia Watson, eds., *Reading Autobiography* 2nd edn. (Minneapolis: University of Minnesota Press, 2010), pp. 63-102 for a discussion of the complexities of this definition.

³⁸ A. C. Spearing, *Medieval Autographies: The 'I' of the Text* (Notre Dame: University of Notre Dame Press, 2012), p. 7.

(particularly in clearly fictional works), there is always the implication that the ‘I’ of the physical, written text is the one who created that text.³⁹ Sinding himself cites John Swales’s definition of genre as comprising ‘a class of communicative events, the members of which share some set of communicative purposes’, and suggests that these purposes may be rhetorical functions. ‘Aesthetic, entertainment, instruction, meditation, inspiration, simulation, exhortation’: these functions are shaped by the social-cultural conditions of the time, although Sinding stops short of describing them as ideological.⁴⁰

In their keenness to break new ground, some recent collections exclude almost any texts from the sixteenth and seventeenth centuries, having decided that whatever autobiography may be defined as, whatever was produced in the Renaissance and Restoration eras was not ‘it’. Standard histories, whose titles proclaim comprehensiveness, usually begin around 1750 with a cursory discussion of perhaps Montaigne or Bunyan before beginning proper with Rousseau’s *Confessions* (1782). Linda Anderson’s *Autobiography* (2011) skips straight from Augustine’s *Confessions* to John Bunyan, while *The Cambridge Companion to Autobiography* (2014) ignores anything produced in between the ‘foundational’ authors (Augustine, Montaigne, Rousseau) and the Romantic era. These earlier texts are considered only as foundations for the subjectivity of the romantic era and beyond.

Kathleen Lynch’s *Protestant Autobiography in the Seventeenth-Century Anglophone World* (2012) aims to rescue spiritual autobiography from its scholarly relegation as a result of autobiography’s broadening definition. Lynch studies the circulation of literary materials and models across the Atlantic, and the role that spiritual autobiographies played in reconstituting the church and state across colonial cultures connected by the religious book trade. The interiority of colonial devotional narratives such as the Bermudan settler Richard Norwood’s ‘Confessions’ did not simply express personal contact with God, argues Lynch, but actively created a personal and social religious

³⁹ John M. Swales, *Genre Analysis: English in Academic and Research Settings* (Cambridge: Cambridge University Press, 1990), p. 58, quoted in Michael Sinding, ‘From Fact to Fiction: The Question of Genre in Autobiography and Early First-Person Novels’ *SubStance*, 39(2) (2010), 112.

⁴⁰ Sinding, ‘From Fact to Fiction’, 115.

identity which connected the British Atlantic world: taking advantage of the freedom from Episcopal scrutiny, and participating in the movement in Protestant communion which emphasised experiential worship, these autobiographical narratives acted as catalysts for social change and agents of community formation. *Protestant Autobiography* attempts to reassert the importance of confessional writing within autobiography studies, counteracting *Betraying Our Selves* and the work of Adam Smyth in examining autobiographical elements in different genres.

Lynch's methodology is analogous to that of Shapin and Schaffer in *Leviathan and the Air Pump: Hobbes, Boyle, and the Experimental Life* (1985, to be discussed on page 23 below) in distinguishing between 'truth' and 'locally credible knowledge', and in examining the authorising principle of experience in early modern texts, the experiential practices of radical religion corresponding to the public experimental practices of the Royal Society. This is close to my methodology, viewing autobiographical elements of texts as formative as opposed to incidental. Robert Boyle's youthful autobiography 'An Account of Philaretus' is mentioned, briefly, as an example of the 'paradigmatic search for spiritual assurance' articulated in the first-person, yet the link between experimental practice and the experiential writing of Royal Society members themselves is not made, a connection discussed in Chapter 5 of this thesis. The archival shift in the humanities has discovered vast numbers of non-canonical devotional texts; if, following Harold Love, transmission is understood to be a form of publication, the circulation of these texts can be seen as the transmission of identity as well as information.⁴¹ This thesis, which focuses on the construction and transmission of self-narrative in association with the scientific developments of the seventeenth century, takes into account these teleological, Calvinist self-narratives of conversion, described by Lynch as paradigmatic acts instigated by a foundational experience or crisis.

The Philosophy of Autobiography (2015) is an interdisciplinary collection which attempts to address philosophy's lack of engagement as a discipline with the growing field of autobiography

⁴¹ Harold Love, *Scribal Publication in Seventeenth-Century England* (Oxford: Oxford University Press, 1997).

studies. The attempt is not entirely successful due to the patchy knowledge of current scholarship displayed by some of the contributors. An essay on ‘Autobiographical Acts’ by D.K. Levy defines an autobiographical act as ‘presentation in a medium, with a motive, conveying a judgment of the author’s life’ without citation, and goes on to assess the ethical challenges of ‘finding creditable motives and secure means for the act and the judgment it conveys’, ignoring current work on latent or secondary autobiographical elements within another literary project.⁴² Nor does any contributor tackle autobiographical writing predating the twentieth century, aside from a brief survey of Rousseau. However, an essay which assesses the meaning of written selfhood in terms of the relational ontology of Wittgenstein’s ‘fields of words’ has useful implications for studies of autobiography in the early modern era in which the self was socially constructed. Despite its shortcomings, the fact that this collection exists is testament to the vitality of current autobiography scholarship and its increased recognition as a field worthy of attention, both within and outside of departments of literature.

Adam Smyth’s recent edited volume *A History of English Autobiography* (2016) engages with the latest areas of scholarship and debate: medical humanities, materiality of texts, history of reading, objects and thing theory. Canonical texts are surveyed, but the volume also expands the range and definition of autobiography chronologically. Part 1 of this volume is intended to challenge Lejeune’s definition of autobiography: ‘a retrospective prose narrative produced by a real person concerning his own existence, focusing on his individual life, in particular the story of his personality’.⁴³ This is achieved by questioning the link between self-writing and interiority, and querying if subjectivity is expressed by cleaving from rather to existing literary conventions. The engagement between text and convention is complicated in the case of diaries or continuous autobiographical texts, when the author knows as they live their life that they will soon be writing about it: does the genre influence how the life is lived? What is the relationship between the self which writes and the self which is written? If an event or thought is included, is it because it is exemplary or singular? Difficulties of definition and

⁴² D.K. Levy, ‘Autobiographical Acts’, in *The Philosophy of Autobiography* ed. Christopher Cowley (Chicago; London: University of Chicago Press, 2015), p. 156.

⁴³ Lejeune, *On Autobiography*, p. 4.

genre are now being seen as a condition of autobiographical writing, and Smyth posits three ways in which autobiographical texts engage with generic convention: negotiation (adjustment), improvisation (reorientation), and patchwork (hybridisation).⁴⁴

For Barry Windeatt, autobiography is less a genre than ‘an act of self-assertion’ which can find expression within many genres.⁴⁵ It may therefore be a consequence of a literary project. Besides *The Book of Margery Kempe*, the proem of which declares a desire to ‘schewen in party the levying [life]’, Windeatt surveys implicit autobiography in medieval commonplace books, theological dictionary of Thomas Gascoigne which contained autobiographical commentary on biographical sketches, the dream poetry of William Langland, and the legitimising influence of Chaucer’s authorial persona on his successors. The confessional asides of Richard Rolle occur without personal chronology as commentary and examples alongside his spiritual treatises. Windeatt concludes that medieval self-writing is as fragmented as the medieval conception of the self within a fallen world, but does not take this further in considering how this may be an effect of a socially constructed self.

In common aim with Windeatt’s chapter and Spearing (above), David Matthews seeks to redress a fault in modern autobiography studies which largely misses out the medieval period, focussing on autobiographical elements in poetry. This is a result of the generic definition of autobiography having become much looser, ‘[now] identified with first-person prose texts which soberly recall past events and deliver some kind of narrative of development’, allowing a larger number of texts to be studied.⁴⁶ Matthews agrees with Spearing that the medieval ‘I’ is unreliable and frequently deliberately misrepresented for artistic purposes, but this does not mean that the work is not autobiographically inflected or that there is no truth to be found within it.

⁴⁴ Adam Smyth ‘Introduction: The Range, Limits, and Potentials of the Form’, in *A History of English Autobiography* (Cambridge: Cambridge University Press, 2016), p. 5.

⁴⁵ Barry Windeatt, ‘Medieval Life-Writing: Types, Encomia, Exemplars, Patterns’ in *A History of English Autobiography* ed. Adam Smyth (Cambridge: Cambridge University Press, 2016), p. 13.

⁴⁶ David Matthews, ‘Autobiographical Selves in the Poetry of Chaucer, Gower, Hoccleve, and Lydgate’ in *A History of English Autobiography*, p. 28.

Adam Smyth builds on his earlier work in a chapter which claims that early modern culture was grounded in the notebook, and the copying, transferring and reviewing of the same text. Referring to ‘the accumulative, ongoing, deliberate practice of early modern diary writing’, Smyth argues that financial accounts provide a paradigm for seventeenth-century life-writing, requiring fullness and exactness in the pursuit of balance.⁴⁷ Samuel Pepys has financial matters not only as a theme but as a structure in his diary, which began as lists of expenses, and his diary was not spontaneous but planned. John Evelyn’s diary collapses the generic differentiation between diary and autobiography by increasing the temporal space, completing brief almanac notes with fuller entries many years later. These fuller entries are presented as diary but written as autobiography: is this a true collapse, or an indication that the distinction is itself somewhat anachronistic to the seventeenth century, if not entirely? A moralising early modern lexical shift back and forth between the economic and the social of terms such as credit, debt, interest was therefore, for Smyth, predicated on guides to financial book-keeping which sought to foster truth and exactness. Regularity connotes order and engenders trust. An event or day can be broken down into pieces to be added up, while the notion of completeness urged the author to use all available space so that nothing can be added afterwards. Smyth’s methodology reads texts in terms of their relation to other generic conventions; how much of this convention of completeness and exactness was expected of the practitioner of natural philosophy?

Finally, a chapter by Lynn Festa queries definitions of autobiography in relation to eighteenth-century it-narratives, in which the ‘I’ of the text (a goose feather, a corkscrew, a black coat) is demonstrably *not* the ‘I’ of the author. Fictions which feature objects as appendages to people foreground the transactional nature of autobiography; the human narrator may themselves be seen as a certain kind or type of object, a truth to be bought by the reader via the text. Human lives reduced to the commodity of a book makes identity marketable, an important concept for this thesis which investigates the utilisation of autobiography as a type of propaganda.

⁴⁷ Adam Smyth, ‘Money, Accounting, and Life-Writing, 1600–1700: Balancing a Life’ in *A History of English Autobiography*, p. 91.

On the Origins of Science

To begin with, we should consider two foundational texts in the history of science. In *The Structure of Scientific Revolutions* (1962) Thomas Kuhn writes that one scientific paradigm replaces another as a result of great works, works that were ‘sufficiently unprecedented to attract an enduring group of adherents away from competing modes of scientific activity’, and ‘sufficiently open-ended to leave all sorts of problems for the redefined group of practitioners to resolve’.⁴⁸ Kuhn defines Baconian science as:

a new cluster of research areas that owed their status as sciences to the seventeenth century’s characteristic insistence upon experimentation and upon the compilation of natural histories, including histories of the crafts. To this second group belongs particularly the study of heat, of electricity, of magnetism, and of chemistry.⁴⁹

This paradigm-change is not defined by the field of research but, rather, by the general adoption of a new methodology. Kuhn argues that no paradigm shift occurs without an incident of crisis in the existing model and uses the example of Francis Bacon’s declaration that Aristotelian natural philosophy had failed to produce useful and practical knowledge.⁵⁰ An established paradigm begets certain expectations (such as semantic), which influence interpretation and understanding; if such expectations are removed as a result of a paradigm shift, we can appreciate that there are sociological and historical consequences to scientific and epistemological revolutions.

Paul Feyerabend’s thesis in *Against Method* (1993) is that there is no common structure to the events, procedures, and results which constitute the sciences, and scientific success cannot be explained in one way. Accounts of scientific discoveries must therefore be historicised: it is not enough to simply state the procedures followed (procedures which may be followed in a variety of disciplines and undertakings), but accidents and personal circumstances must be given attention. The current global supremacy of Western science is a result of colonialisation, and to state its superiority over other forms of science and means of acquiring knowledge is a political act. Post-Interregnum

⁴⁸ Thomas S. Kuhn, *The Structure of Scientific Revolutions* (Chicago: University of Chicago Press, 1962), p. 10.

⁴⁹ Thomas S. Kuhn, ‘The Function of Measurement in Modern Physical Science’ *Isis* 52.2 (1961), 186.

⁵⁰ Kuhn, *Revolutions*, pp. 75-6.

English nationalism played a part in the promotion of the Royal Society by Thomas Sprat and its secretary Henry Oldenburg, but within the Society itself there was seemingly little appetite for the 'cultural murder' which Feyerabend decries, in which hierarchies of knowledge reify privilege and power, as its members rejected the humanist curriculum of the universities for folk wisdom and working knowledge.⁵¹

Against Method argues that the modern scientist's religion, metaphysics, and cultural background must be undetected for his scientific activity to be accepted. Yet there is no rule for scientific practice which has not historically been violated, and these violations (be they deliberate or unwitting) are necessary for progress to be made. A crisis or breakdown causes us to collectively adopt new reaction patterns, new orders: in practice, the act precedes the idea, not the inverse, and if a new hypothesis appears to contradict experimental results then it may be that the evidence, not the theory, requires re-examination. In short, either the experimenter or his equipment may be contaminated by an earlier theory. This scepticism, which Feyerabend terms 'counterinduction', is not unique to the development of science alone but should still be considered a crucial element of its progress (however progress is defined) - although, like all methodologies, it has its limits.⁸

For the antipositivist, the critic of scientism, different epistemologies are not only valid but to be welcomed. Feyerabend agrees with Kuhn that the adoption of scientific theories can be explained sociologically: in his study of Galileo, Feyerabend argues that Galileo used Platonic anamnesis (the recollection of innate knowledge) as a psychological crutch so that the replacement of one paradigm with another was made more palatable. Feyerabend concludes that the success of science should not, therefore, be attributed to science itself.

It is clear that allegiance to the new ideas will have to be brought about by means other than arguments. It will have to be brought about by irrational means such as propaganda, emotion, ad hoc hypotheses, and appeal to prejudices of all kinds. We need these 'irrational means' in order to

⁵¹ Paul Feyerabend, *Against Method* 3rd edn. (London: Verso, 1993), p. 4.

uphold what is nothing but a blind faith until we have found the auxiliary sciences, the facts, the arguments that turn the faith into sound 'knowledge'.⁵²

Controversial as *Against Method* was (and is), many subsequent studies in the philosophy of science included reference to or commentary on post-positivist developments. Sociologists and scientists do not escape from the censure of each other, of course. As Noretta Koertge points out, several of these studies contain 'quite devastating criticisms of these new perspectives' even as they include them as a nod to 'trendiness [and] market forces, not disciplinary centrality'.⁵³ Peter Dear subsequently savaged Koertge's *A House Built on Sand*, which assaulted shoddy scholarship under the umbrella terms of 'postmodernism' and 'science studies', arguing that the vague use of such terms means that the assault is 'indiscriminate and uncharitable'.⁵⁴

Scholars of natural philosophy in the early modern era, however, do tend to lean strongly towards social constructivism in their analysis of how knowledge came to be made and accepted, and this is analogous with the recent studies in autobiography of how the early modern self was defined socially. In *Leviathan and the Air Pump: Hobbes, Boyle and the Experimental Life* (1985) Simon Schaffer and Steven Shapin combine a study of scientific practice with the religious, political, and cultural context in which that practice was undertaken. A landmark publication in the sociology of science (although its reception was somewhat delayed), *Leviathan and the Air Pump* uses the Hobbes-Boyle debate to demonstrate that ideas of natural knowledge were unfixed and divergent, as well as being inextricably linked to contemporary politics. The Civil War and Restoration had shown that disputed knowledge could lead to civil bloodshed, and both Thomas Hobbes and the experimentalists claimed that their forms of knowledge could prevent a relapse into social disharmony. The restorative, egalitarian aims of the Royal Society were set upon by the political philosopher Hobbes, who believed that the physical segregation of the Society itself subverted the authority of the newly reunited state. There are echoes

⁵² Feyerabend, *Against Method*, p. 114.

⁵³ Noretta Koertge, "'New Age' Philosophies of Science', in *Philosophy of Science Today* eds. Peter Clark and Katherine Hawley (Oxford: Clarendon Press, 2000), p. 84.

⁵⁴ Noretta Koertge, ed., *A House Built on Sand: Exposing Postmodernist Myths About Science* (New York; Oxford: Oxford University Press, 1998); Peter Dear, 'Science Studies as Epistemography', in *The One Culture? A Conversation About Science* eds. Jay A. Labinger and Harry Collins (Chicago; London: University of Chicago Press, 2001), p. 130.

of Feyerabend here, in a comparative study which claims that forms of knowledge are relative and socially created: Schaffer and Shapin argue that the problem of how scientific practice and social order are created can be viewed (and potentially solved) in the same way.

In a new introduction written for the 2011 edition, Schaffer and Shapin acknowledge that *Leviathan and the Air Pump* was written, in part, to overcome the distinction between science and external factors, such as politics, which affect its development as a discipline. The authors acknowledge that such distinctions, now that the history and philosophy of science is an established discipline, can arguably no longer be said to exist. The influence of Shapin and Schaffer is felt in the sociological history of science coming to the fore, and a default narrative of progress being rejected for a consideration of competing epistemes. Sociological inflections are now being felt in early modern literary scholarship as well, and cross/inter disciplinary work is emerging.

Adrian Johns examines the social identities and relationships of early modern natural philosophers, including Francis Bacon, William Harvey, and John Evelyn, in 'Identity, Practice, and Trust in Early Modern Natural Philosophy' (1999) and emphasises the distinction between early modern and modern scientific practice in seeking to disentangle the identity of the natural philosopher from the modern scientist. Johns draws an analogy between the taxonomical endeavours of early modern natural philosophers and the contemporary scholar's challenge to classify these endeavours, while also arguing against the uncritical mapping of modern science onto seventeenth-century European accomplishments due to the latter's Christian concern with causation. Going further, Johns also states that eliding practitioners of natural philosophy under that one heading is a similarly mistaken approach to take, leading to the question of how claims to truth might be evaluated within a community which focused on different realms of enquiry. For Johns, the answer lies in trust engendered through the staging of public experiments and the drawing up of reliable witnesses based on a wider societal understanding of credit. As quoted above, Johns posits that the gentleman, 'essentially his own man' and therefore most frequently credited with honesty and truthfulness in testimony, formed the basic unit of what made just such a reliable witness.

David Burchell's essay "'A Plain Blunt Man': Hobbes, Science, and Rhetoric Revisited', in *Science, Literature and Rhetoric in Early Modern England* (2007) goes further in describing the role played by rhetorical style in the construction of the image of the gentleman philosopher. Burchell argues that there were two reasons for the sixteenth-century humanist shift away from the Asiatic style of Cicero toward the Attic imitators Tacitus, Seneca, and Sallust: the ubiquity of Cicero in schools, and concerns over the moral character of the pagan republican when attempting to fuse his style with contemporary Christian ethos. Michael de Montaigne and Justus Lipsius had emerged as the most prominent of the late sixteenth century anti-Ciceronians, and both owed debts to Tacitus' use of mnemonic *sententiae* and Seneca's use of the epistolary essay as vehicle for self-reflection. The conscious use of simpler syntax (which can appear either austere or conversational in its effect) can be considered a challenge to ethical complacency, a reaction to Golden Latinity, and part of a search for an appropriate literary medium and isomorphic language for conveying truth during an epistemological and linguistic conflict between things and words, signifier and signified. Burchell argues that it is Hobbes who fills this gap. Burchell's essay forms part of a collection which aims to show that early modern science and literature were part of an interrelated culture, one which believed in the made, rather than found, character of knowledge and of the scientist himself. Hence, Peter Harrison compares the moralising language of Renaissance humanists and the new scientists, and Peter Dear explores the attitudes of the egalitarian Royal Society to Margaret Cavendish, a notable critic whose entry was predicated on her social status as a duchess.

Lorraine Daston and Peter Galison's *Objectivity* (2007) argues that objectivity was not one of the seismic results of the seventeenth-century scientific revolution, only emerging as a ubiquitous and desirable correspondent to truth later from the mid-nineteenth century. Nor is this presented as a Kuhnian paradigm shift, or a Hegelian synthesis, but rather a development which interacted with the preceding epistemic ideal of 'truth-to-nature' (in which reality is amalgamated from the observation of

many individual items) without immediately superseding it.⁵⁵ Daston and Galison argue that objectivity, in contrast to this concept of ‘truth-to-nature’, preserves variation while erasing the observer (an interesting reversal of its original pre-nineteenth century usage, to mean things as they are presented to consciousness).⁵⁶ Seventeenth-century natural philosophers feared different threats to epistemology: the imposition of authority, an imbalance in tendencies, and failures of the senses. The gulf between knower and knowledge was not deliberately widened in the seventeenth century but later, and literature of the period sometimes aligned mastery of scientific practice with self-mastery in quasi-religious terms.

Claire Preston considers the interaction of literary and scientific language in *The Poetics of Scientific Investigation in Seventeenth-Century England* (2015). Preston’s definition of literary texts is those which are *consciously* imaginative or figurative, and makes two claims: that many early modern scientific writers drew heavily from literary genres and humanist education despite their claims not to, and that the relationship between literary and scientific language and structure is mutually influential. From this, Preston looks to extended scholarship to assess literary texts as a form of science themselves. Empirical mythemes (analogy or simile, for example) shape scientific discovery to conform to established narrative patterns; if it aids understanding, it does not matter either to literature or science if the mytheme is actually true. For Preston, the progress of early modern science is inextricably linked with its literary, rhetorical expression, and the two categories were not obviously delineated until the eighteenth century. Antipositivist as she is in her argument that literary developments influenced scientific developments in the early modern era, Preston seemingly disagrees with Feyerabend that contemporary literature can still, accurately, influence the scientific developments of today. There are, of course, more than forty years between the two books. But which ages are more technologically discrete, Feyerabend’s and Boyle’s, or Preston’s and Feyerabend’s?

⁵⁵ Lorraine Daston and Peter Galison, *Objectivity* (New York: Zone, 2007), p.55.

⁵⁶ ‘objective’, adj. and n. *OED Online* <www.oed.com/view/Entry/129634>.

Preston argues that a serious misreading of Bacon, which takes his statements regarding rhetoric in isolation, has informed much of the twentieth century scholarship on the relationship between the scientific and the literary. Rather, when taken in context, Preston argues that Bacon's work warns against unnecessarily ornate language, and her book takes as its subject the rhetorical practice and literary flexibility of Bacon's successors. As with Peter Harrison, Preston attributes these experiments in style and language to the humanist curricula of the grammar schools and universities, but goes further in assessing scientific writing as a functional aspect of scientific thinking and practice. Ultimately, she concludes, it was in literary works (examples provided are his poems, meditations, and essays) that the meaning of scientific developments was discovered. Aside from the opening corrective remarks there is surprisingly little work on Bacon here, whose reputation rests entirely on what he wrote rather than what he did, but the chapter on Boyle's experiments in genre bolsters the chapter dedicated to him as singularity in this thesis.

Finally, two recent explicit mergers of literature and science demonstrate the vibrancy of current scholarship in engaging the two together. *Literature and Science* edited by Sharon Ruston (2008) opens with a discussion of C.P. Snow's two cultures and the subsequent science wars, concluding that the interdisciplinary field of literature and science studies is a fairly new one which still bears some scars following the so-called 'Sokal affair' which sought to criticise the extent to which the humanities can contribute meaningful commentary on the physical sciences. The remainder of the volume is a survey of recent scholarship, although the literary qualities of work by scientists is never discussed. What we have are chapters on poets, playwrights and satirists influenced by the Royal Society as an institution, the dominance of Darwin on the nineteenth-century literary imagination, and the relationship of the mind and body to human identity in contemporary neuroscience. While a profitable collection, the introductory comments on the reciprocal nature of learning in both disciplines are never realised.

Howard Marchitello and Evelyn Tribble's *The Palgrave Handbook of Early Modern Literature and Science* (2017) goes some way towards fulfilling that promise. Among the essays collected here

are some which cover ground which is now well-trodden: on early modern utopian writing of Bacon and Cavendish, medical discourses on virginity in Shakespeare, and John Donne's anxieties regarding the new science. Others take up the challenge of reading science as literature, in which the object is brought to the foreground, regardless of the background of its author, and science itself is taken to be a form of storytelling. Wendy Beth Hyman blurs the distinction between sciences and humanities in a discussion of metaphor as an epistemological device for scientists and poets alike, correcting the prevailing view that Boyle held an antipathy for all aureate language rather than that which was unnecessary for understanding.⁵⁷ Ofer Gal elucidates further in an essay which examines nautical narratives in the writings and frontispieces of early modern scientific texts, arguing that such a narrative is required to 'domesticate and familiarize concepts'.⁵⁸ James J. Bono assesses Boyle's scriptural reading practices and relates them to his reading of the 'book' of nature, finding a congruent cognitive model in his emphasis on the examination of particulars, and Claire Preston argues that Boyle and Donne's differing uses of the 'consilium' genre to describe their illnesses reflects, respectively, confessional and laboratorial perspectives. The collection as a whole goes far to illustrate the imagination present in scientific texts, and that both disciplines (if we were to delineate them) are mutually informative and sustaining.

Many of the authors surveyed in this brief review have considered how the author is present in their text, how scientific discourse acts as its own propaganda, how the boundaries of disciplines were as fluid in the early modern period as they are becoming in scholarship today. However, an exploration of the autobiographical traits of early modern scientific writing, and whether such traits were deliberate, has not been completed. Is this simply because colliding genres, 'autobiography' and 'science', and expecting an exciting critical synthesis, is a futile endeavour? Rather, this thesis argues that the autobiographical impulse was a crucial part of the Royal Society's battle for ideological

⁵⁷ Wendy Beth Hyman, "Deductions from Metaphors": Figurative Truth, Poetical Language, and Early Modern Science' in *The Palgrave Handbook of Early Modern Literature and Science* eds. Howard Marchitello and Evelyn Tribble (London: Palgrave Macmillan, 2017), pp. 27-48.

⁵⁸ Ofer Gal, 'Imaginary Voyages: The New Science and its Search for a Vantage Point' in *The Palgrave Handbook of Early Modern Literature and Science* p. 51.

acceptance, and a thesis exploring this may prove to be profitable study of a neglected aspect of these texts.

Chapters and their Contents

The first chapter of this thesis builds on a masters dissertation which examined occurrences of the phrase *faber quisquae fortunae suae* in the seventeenth century.⁵⁹ The chapter traces use of the phrase, and conceptions of fortune more generally, in the work of Francis Bacon, and highlights examples of the phrase taking on a vocative meaning for members of the early Royal Society when its members positioned themselves as Bacon's inheritors. In doing so, the chapter forms a framework for the wider considerations of the thesis in assessing how autobiographical practices of these individuals may be assessed as incidental productions but also integral to their understanding and promotion of the Royal Society as means of improving both individual and societal fortune.

The second, third, and fourth chapters of this thesis each take a literary genre as their subject, and in doing so argue structurally against a teleological reading of the history of the Royal Society as leading, with inevitable and superior force of reason, to today's institution by spearheading a Western hegemony of 'true science'. In doing so, this thesis rejects several concepts: the supposed 'conflict thesis' between religion and science, the innate validity of the empirical method, and the direct progress of its modern inheritance.⁶⁰ Rather, it is intended that generic organisation releases this study from expectations of linear narrative when discussing the unfixed and experimental uses of autobiographical practices, autobiography itself being a highly malleable genre.

Chapter Two analyses the private diaries of Robert Hooke and John Evelyn as being influenced by their public work. The chapter also discusses the diary of Samuel Pepys, a work which

⁵⁹ Caroline Curtis, 'Restoration Self-Fashioning: *Faber Fortunae* Narratives and the Early Royal Society' (MA dissertation, University of Birmingham, 2016). This thesis expands on this early dissertation in terms of scope and by engaging with questions of how autobiographical practice may be read into (and across) a variety of genres.

⁶⁰ This 'conflict thesis' originated in the nineteenth century work of John William Draper and Andrew Dickson White and has been rejected by commentators such as Lawrence M. Principe (2009), Stephen Gaukroger (2006), Steven Shapin and Simon Schaffer (1985), Marwa Elshakry (2010), and David Wootton (2016) among many others.

straddles the public/private divide, as an architectural work which was later used as an artefact of self-promotion by a figure adjacent to but not (at the time of writing) a Fellow of the Royal Society. The diaries of Evelyn and Pepys are noted for being ‘atypically full and sustained compared with most contemporary diaries’, and the chapter assesses these texts as records of an active, continuous process of forming a public identity, arguing that each tests and trials these identities during their composition.⁶¹ Chapter Three discusses the essay, and argues against the current critical narrative that Robert Boyle epitomised the use of the essay by seventeenth-century natural philosophers; rather, through a survey of essays by Abraham Cowley, Joseph Glanvill, and William Petty it demonstrates that the essay was most commonly used to *promote* the activities and philosophy of the Society, as opposed to communicating the data produced as a result of those activities. Chapter Four considers the role played by the correspondence managed by the Royal Society’s secretaries, Henry Oldenburg and Robert Hooke, in shaping both its reputation and their own. The central consideration is of how intellectual dispute was managed, concluding that each man’s deployment of autobiographical practice led to their success, or otherwise, in the role of secretary. The final chapter discusses Robert Boyle, the most notable figurehead and prolific publisher of the Royal Society, as a singularity, tracing his experiments with autobiographical genres throughout his life. In closing, new directions for study are suggested, following a thesis which aims to prove a profitable synthesis of the various ways in which autobiographical practice was used to demonstrate the versatility of the inductive method. ‘When a Fellow of the Royal Society made a contribution to knowledge, he did so by reporting an experience...rather than being a generalized statement about how some aspect of the world behaves, it was instead a report of how, in one instance, the world had *behaved*’; in bringing together the above examples of how such reports were conceived of, achieved, and promoted, the thesis seeks to

⁶¹ Paul Glennie and Nigel Thrift, *Shaping the Day: A History of Timekeeping in England and Wales 1300-1800* (Oxford: Oxford University Press, 2009), p. 194.

demonstrate that such narrations of the particular had both autobiographical and architectural implicit purpose.⁶²

⁶² Peter Dear, 'Totius in Verba: Rhetoric and Authority in the Early Royal Society' *Isis* 76.2 (1985), p. 152.

Chapter 1| Every Man is the Architect of His Own Fortune

Rumsey is a little haven port, but has most kinds of artificers in it: when he was a boy, his greatest delight was to be looking on the artificers e.g. smiths, the watchmaker, carpenters, joiners, etc: and at twelve years old could have worked at any of these trades...He informed me that, about 15, in March, he went over into Normandy, to Caen, in a vessel that went hence, with a little stock, and began to merchandize; he began to play the merchant; and had so good success that he maintained himself, and also educated himself.¹

4s 6d was layd out in France upon pittifull brase Rings, with cooled glasse in them instead of diamonds and Rubies. These I sold at home to the young fellowes whom I understood to have sweethearts, for treble what they cost.²

Having been abandoned in Normandy with a broken leg by his fellow sailors, the young William Petty found himself in urgent need of funds. He did so by buying and reselling trinkets and ‘upon the trade of playing Cards’, having made his first sixpence two years earlier at the age of 13, ‘got of a Country Squire for shewing him a pretty Trick on the Cards’.³ Reflecting on his life in correspondence with his cousin and close friend Sir Robert Southwell almost fifty years later, Petty relates his early industry and education in financial terms: of paying ten French sol for his leg to be set and eight for a pair of crutches, of pennies earned through the composition of twenty verses for his godfather and of capably paying his own expenses when studying mathematics with French Jesuits. Something more than material goods was being purchased with each transaction; Petty begins his letter to Southwell by promising to answer questions of how exactly he obtained his first shilling and then multiplied it into four, and it is clear that Petty saw his life as being organised around, and dictated by, the principle of self-made economic growth.

At the turn of the eighteenth century, public interest in the activities of the Royal Society was expressed, in part, by increasing demand for profiles of its founding members. In 1703 the theologian and newly elected Fellow William Wotton wrote to John Evelyn requesting an account of the life of Robert Boyle so that he might write his own biography; Evelyn responded with an additional portrait, that of William Petty. This inclusion of a supplementary life indicates two aspects of Evelyn’s

¹ John Aubrey, *Brief Lives* ed. Richard Barber (Woodbridge: Boydell Press, 1983), p. 242.

² William Petty to Robert Southwell, 14th July 1686, in *The Petty-Southwell Correspondence 1676-1687* ed. the Marquis of Lansdowne (New York: Augustus M. Kelley, 1967), p. 216.

³ *Ibid.*, p. 17, 216.

thought: that interest in the early Royal Society should not be restricted to its most famous member, and that Petty's life should also be considered exemplary. The antiquary John Aubrey would place his life of Petty, quoted from above, first in the manuscript of his *Brief Lives*, which indicates its primacy in his collection of biographical sketches of notable figures. The unifying principle of all accounts of Petty's life, by himself and others, is the narrative of *faber fortunae*. Evelyn used the term in his reply to Wotton on account of Petty's resuscitation of a corpse destined for anatomical dissection and acquisition of substantial lands in Ireland as reward for completion of the Down Survey; in his *Brief Lives* John Aubrey describes a conversation in which Petty claimed to have laboriously 'hewed out his fortune himself'; Petty himself advised Sir Robert Southwell, his putative biographer, that he was 'no musherome nor Upstart, but that my Estate is the Oyle of Flint, and that *Ut Apes feci Geometriam*'.⁴

When considering how the ethos (if not the exact formulation) of *faber quisque fortunae suae* became vocational for members of the early Royal Society, and how the independent shaping of one's own fortune became linked with the persona of the *virtuoso*, it is useful to bear Raymond Williams's theory of 'structures of feeling' in mind. Such 'structures of feeling' are, Williams explains, forms of thinking and feeling which are 'indeed social and material, but each in an embryonic phase before it can be fully articulate and defined... a particular quality of social experience and relationship, historically distinct from other particular qualities, which gives the sense of a generation or period'.⁵ These structures are social but unconsciously so, each expression a form of experience 'which is still in process, often indeed not recognised as social but taken to be private, idiosyncratic, and even isolating, but which in analysis... has its emergent, connecting, and dominant characteristics'.⁶ This cultural hypothesis allows us to appreciate *faber fortunae* as indicating one such structure of feeling during the seventeenth century, acting as semantic evidence for a new way in which selfhood was

⁴ Robert Boyle, *Robert Boyle by Himself and his Friends: with a Fragment of William Wotton's Lost Life of Boyle*. ed. by Michael Hunter (London: Pickering, 1994), p. 94; Aubrey, *Brief Lives*, p. 245; William Petty to Robert Southwell, 4th December 1686, *PSC*, pp. 224–225. 'As bees, so geometry' was Petty's adopted motto, in reference to the work of the hive being both collaborative and useful.

⁵ Williams, *Marxism and Literature*, p. 131.

⁶ *Ibid.*, p. 132.

understood, authored, and appreciated. It bears repeating that such structures are unconscious, the midpoint of the conversion of experience as described into prescriptive ideology, and at no point does this thesis seek to suggest otherwise. In speaking of such complex matters of inspiration, imitation, and inheritance, this brief chapter seeks to review uses of the phrase itself and posit that similar narratives of the self-made singularity lie at the heart of autobiographical writing by early Royal Society fellows.

This thesis is not the first work to commentate explicitly on the use of *faber fortunae* by Francis Bacon and its literary inheritance within the Royal Society. Samuel Pepys' recurring interest in a work referred to as 'Bacon's Faber Fortunae' was first noted by historian Rexmond C. Cochrane in 1956, and Cochrane followed up his identification of this volume two years later with a discussion of Bacon's interest in *faber fortunae* and of several origins of the phrase itself.⁷ Cochrane links each of these sources with Bacon's humanistic ambition to liberate man from unquestioned intellectual inheritance, arguing that Bacon's *The Advancement of Learning* was written to serve as doctrinal guide to self-knowledge in order to assist his readers in moral self-advancement. Cochrane claims that Bacon's *Essays* (1625) illustrate the precept of *faber fortunae* most clearly, and that the overarching philosophy is given no explicit analysis until issue 106 of Dr. Samuel Johnson's *The Rambler* in 1751.⁸ Through this remark Cochrane discounts imitation or influence as constituting commentary (as the glass jewel remarks on the popularity for diamonds through its very existence), and neither of his articles explore *faber fortunae* as ethos in the work of Bacon's self-appointed intellectual successors.

⁷ Rexmond. C. Cochrane, 'Bacon, Pepys, and the 'Faber Fortunae'', *Notes and Queries* 3.12 (1956), 511-4; Samuel Pepys, *The Diary of Samuel Pepys Volume IV: 1663* eds. Robert Latham and William Matthews (London: Bell & Hyman, 1971), p. 235 (20th July 1663). Rexmond C. Cochrane, 'Francis Bacon and the Architect of Fortune', *Studies in the Renaissance* 5 (1958), 178-90. Cochrane suggests a possible source for Bacon in letters mistakenly attributed to Sallust, a rhetorician admired by the anti-Ciceronians of the late sixteenth century, while contemporary sources available to Bacon included Montaigne and Machiavelli ('the principal exponent of the new egoistic attitude towards fortune in the Renaissance'). Bacon himself believed its origin to be in Plautus's *Trinummus*; at a similar time of writing, Thomas Draxe attributed the phrase to Cornelius Nepos in his *Bibliotheca Scholastica Instructissima* (London, 1613), p. 41. See Chapter 2, below, for a discussion of the contents of Pepys' volume and his reading of it.

⁸ Cochrane, 'Francis Bacon and the Architect of Fortune', 191-2.

More recently, Kate Bennett has discussed John Aubrey's application of the principle of the architect of fortune to his biographical subjects, a form of commentary (overlooked by Cochrane) in which Bacon's principles of historiography are applied to a suitable subject and Petty is held a singular example of the self-made man.⁹ Bennett reads Petty's place in *Brief Lives* as representing a commitment to data accumulation, a central tenet of Baconian natural philosophy, in which Aubrey makes an original attempt to reconcile mathematics with the inductive method by profiling a mathematician using Baconian principles. Overall, Bennett's study both refutes and acts as a corrective to some of the conclusions of Cochrane's and proposes that the lives of seventeenth-century natural philosophers can be read using their own intellectual inheritance as a framework. Bennett concludes that the narrative of *faber fortunae* was 'one of the stratagems used by the circle of the Royal Society in attempting to demonstrate the real benefits of their interests and the intellectual enterprise and creativity of their luminaries'; this thesis takes up the mantle in exploring to what extent this was the case, as well furthering scholarship by considering *faber fortunae* as autobiographical framework rather than biographical appellation.¹⁰

The Changing Fortunes of Francis Bacon

Bacon explicitly linked his inductive method with the nature of man in two ways, firstly by proposing that the exercise of natural philosophy would allow fallen man to achieve a prelapsarian influence over creation, and secondly that such knowledge would allow man to exercise control over his own self.¹¹ In the *Novum Organum* Bacon stated his desire that the inductive method be applied variously to the study of logic, politics, ethics, and the nature of man himself, his criticism of the 'idols of the cave' warning against multiplicity of individual experience leading to just so many methodologies, rather than critiquing any study of such experiences in and of itself.¹²

⁹ Kate Bennett, 'John Aubrey and the 'Lives of our English Mathematical Writers'' in *The Oxford Handbook of the History of Mathematics* (Oxford: Oxford University Press, 2009), pp. 329-352.

¹⁰ *Ibid.*, p. 345.

¹¹ Bacon, *OFB XI*, p. 447.

¹² *Ibid.*, p. 81.

For I compile history and tables of discovery concerning anger, fear, shame and so on, and also ones to do with examples of civil business, no less than to do with the mental motions of memory, composition and division, judgement, and the rest, just as much as I would of hot and cold, or light, or vegetation, or the like...so direct the mind that it can apply itself by means appropriate in every respect to the nature of things.¹³

Rather than simply tabulating such qualities, however, Bacon would also advocate for using the data thus collected in order to effect change over oneself as much as anything else within the world. The dominant Ciceronian mode, according to which both princes and citizens lead ethical lives for the benefit of the commonwealth at large (the honourable and the expedient being therefore synonymous) began to be abandoned in humanist political thought toward the end of the sixteenth century in favour of the histories of Tacitus and their emphasis on moral scepticism, self-advancement, and belief in politics as confluence of individual objectives.¹⁴ Bacon's later political work espouses such views, in particular the concept of man shaping and controlling his own fortune by seeking and making opportunity for advancement, explored under the heading of a favourite adage of the Renaissance, and of his own father, that of *faber quisque fortunae suae*.

This was not, however, Bacon's original formulation of the phrase; he had rendered it as *faber quisque ingenii sui* (every man is the architect of his own character) in a letter to Henry Savile of c.1596-1604, in which he declared that he 'did ever hold it for an insolent and unlucky saying', one which coaxed its proponent into the slovenly and arrogant belief 'that he can compass and fathom all accidents'.¹⁵ A letter written by Bacon in his brother's name to the Earl of Essex in 1600 reverted back to the more common formulation of the architect of fortune (either a capitulation to the authority of classical literature or a consequence of greater career stability affording a bolder formulation) in which it is clear that political and social fortunes might be improved though the cultivation of good character.

I held it for a principle, That those diseases are hardest to cure, whereof the cause is obscure; and those easiest, whereof the cause is manifest. Whereupon I conclude, that since it hath been

¹³ Ibid., p. 191.

¹⁴ See Peter Burke, 'Tacitism, Scepticism, and Reason of State' in *The Cambridge History of Political Thought 1450-1700* ed. J. H. Burns (Cambridge: Cambridge University Press, 1991), pp. 479-98.

¹⁵ Francis Bacon, *The Works of Francis Bacon VII: Literary and Professional Works 2* eds. James Spedding and others (Cambridge: Cambridge University Press 1857), p. 98. The letter is undated, but its composition must fall between Savile's appointment as Provost of Eton (1596) and knighting (1604).

your errors in your lowness towards her Majesty which have prejudiced you, that your reforming and conformity will restore you, so as you may be *Faber fortunae propriae*.¹⁶

Five years later Bacon would echo his earlier dismissal of the *faber fortunae* philosophy in *The Advancement of Learning* (1605), describing it as having ‘beene thoughte a thinge impolitique and unlucky’ and citing the case of the Athenian general Timotheus who never again prospered after dismissing the hand of fate as having had any influence on his achievements.¹⁷ Substitution of ‘impolitic’ for ‘insolent’ and use of historical rather than contemporaneous example softens Bacon’s earlier opprobrium, however, and the fault becomes one of unwise application of the phrase than any use at all. Rather, Bacon began to praise the *faber fortunae* mentality as a form of private civil knowledge: in (ostensibly) encouraging the Earl of Essex to exercise control over his political fortunes, Bacon advises that philosophies such as *faber fortunae* ‘being taken and used as spurs to Industry, and not as stirops to insolency, rather for resolution then for presumption or outwarde declaration, have beene ever sounde and good, and are no question imprinted in the greatest mindes’.¹⁸ The metaphor brings both training and discipline to the fore, each being active and continuous processes. Bacon expands on the processes of moulding one’s own fortunes in *De Augmentis Scientiarum* (1606), summarising such processes as ‘[taking] an accurate and impartial survey of [one’s] own abilities, virtues, and helps; and again, of [one’s] wants, inabilities, and impediments’, ultimately considering these alongside one’s contemporaries, be they friend or foe.¹⁹

[One must] have a general acquaintance with those who have a varied and extensive knowledge both of persons and things...to keep a discreet temper and mediocrity both in liberty of speech and in secrecy...[and] the gradual reducing of a man’s self to such a watchful

¹⁶ Francis Bacon, *The Works of Francis Bacon IX: The Letters and the Life* 2 eds. James Spedding and others (Cambridge: Cambridge University Press 2011), p. 200. This letter, and its reply, are acknowledged by Bacon as being his own work in his *Apology Concerning the Earl of Essex* of 1604 (see Francis Bacon, *The Works of Francis Bacon X: The Letters and the Life* 3 eds. James Spedding and others (Cambridge: Cambridge University Press 1857), p.157.

¹⁷ Francis Bacon, *The Oxford Francis Bacon IV: The Advancement of Learning*, ed. Michael Kiernan (Oxford University Press, 2000), p. 163.

¹⁸ *Ibid.*, p. 164.

¹⁹ Francis Bacon, *The Philosophical Works* ed. John M. Robertson (London: Routledge, 1905), p. 598.

and ready habit of mind, that in every conference and action he may both carry the matter in hand, and also observe other incidents.²⁰

Bacon's notion of fortune was expanded along with his *Essays* in the second printing of 1612, when a new essay focused directly on ambition and fortune for the first time. Purportedly a counsel for princes, but serving a thinly-disguised self portrait of its author, 'Of Ambition' takes the proposed self-esteem and personal advancement as being linked to the wish to do social good, honour emerging through triangulation of '[t]he Vantage Ground to doe good: The Approach to Kings and principall Persons: And the Raising of a Mans owne Fortunes'.²¹ This notion of active social engagement is the driving precept in 'Of Fortune', in which 'the Mould of a Mans Fortune, is in his owne hands'; there are 'a Number of Little, and scarce discerned Vertues, or rather Faculties and Customes, that make Men Fortunate' and a man must 'looke Sharply, and Attentively' to observe what these qualities are.²² Bacon's attentive reader would find these virtues listed in *The Advancement of Learning*; the fortunate reader would find the relevant passages appended to a Latin edition of the *Essays* printed in Leiden in 1641, the same volume which Cochrane identifies as Samuel Pepys' beloved 'Faber Fortunaee'.²³

Bacon proposes that fortune be studied as like any other topic: 'fortune as an organ of vertue and merit deserveth the consideration' (165), a 'parte of knowledge we doe reporte also as deficient: not but that it is practised too much, but it hath not beene reduced to writing', it being therefore 'requisite' that 'wee set down some heads or passages of it' that it may be understood, as with any other topic of knowledge, in the form of axiom.²⁴ The architect of fortune should observe, in both others and themselves, words, deeds, dispositions, purposes, and countenances, while also taking into account the reports of others; they should 'take an unpartiall viewe of their owne abilities and vertues: and againe of their wants and impediments... consider how the constitution of their nature sorteth with the generall state of the time...consider how their Nature sorteth with professions and courses of life,

²⁰ Ibid., p. 597.

²¹ Ibid., p. 116.

²² Ibid., p. 123.

²³ Cochrane, 'Francis Bacon and the Architect of Fortune', 176. See Chapter 2 below, p. 62. The popularity of this volume in continental Europe is discussed by Vera Keller in 'Mining Tacitus: Secrets of Empire, Nature and Art in the Reason of State' *BJHS* 45.2 (2012) 203n60.

²⁴ Bacon, *OFB IV*, p. 165, 164.

& accordingly to make election', the wisest selection being of 'that course wherein there is most solitude, and themselves like to be most eminent'.²⁵ Friends should be chosen carefully, notable personages emulated only when there is a congruence in their respective natures, and 'above al' one should seek to distinguish oneself and 'shew some sparkles of liberty, spirit, and edge'.²⁶ Within this 'Theater of Mans life, it is reserved onely for God and Angels to be lookers on'; 'nothing is more politique then to make the wheels of our mind concentrique and voluble with the wheels of fortune', and the active, social life of the architect of fortune is blended with the proposed epistemological revolution.²⁷

[T]he outcome will be a matter for the fortune of the human race, and a thing perhaps which men in their current situation and state of mind may not be readily able to grasp or size up. For this is no mere matter of contemplative success but of human welfare and fortune, and of all power to carry out works. For man, the servant and interpreter of nature, does and understands only as much as he has observed, by work or mental activity, concerning the order of nature; beyond that he has neither knowledge nor power. For no powers can loosen or break the chain of causes, and nature can only be overcome by being obeyed.²⁸

By 1612, then, Bacon's published works had established both fortune and scientific enterprise to be socially orientated constructs: the inductive method he proposed would benefit the fortunes of mankind, but as a corollary this was required to be a collective undertaking by men of good character. This would be developed by Bacon's self-appointed heirs over the next few decades through the construction of the autobiographical and vocational narrative of the self-made man when many of these men sought to mould their futures within the emergent Royal Society.

The Vocational Narrative of the *Faber Fortuna*

William Fulbecke's *A Booke of Christian Ethicks or Moral Philosophie* (1587) provides an example of how Christian thought had sought to reconcile the Roman cult of Fortuna with divine

²⁵ Ibid., p. 169.

²⁶ Ibid., p. 172.

²⁷ Ibid., p. 137; p. 172.

²⁸ Bacon, *OFB XI*, p. 45.

providence. According to Fulbecke, it is a vain and foolish man who imagines that ‘he is secundus a Jove, the next to Jupiter’, who ‘like a foolish Weather-cocke, turneth to every proude imagination, as his fancie windeth him, but he must not thinke, that his minde can be *faber fortunae suae*, the carpenter of his owne fortune... Fortune cannot bee faithfull, shee is onely stedfast in unstedfastnes, rowling continually hither and thither, according to the circute of her wheele’.²⁹ Comparisons of such a subject to Jove and Jupiter place Fortuna and her *rota fortunae* in their original pagan context, impassive and beyond mortal influence; this is *faber fortunae* understood to be such an ‘insolent and unlucky saying’ as Bacon would write of in his letter to Henry Savile (Fulbecke and Bacon had been contemporaries at Gray’s Inn, collaborating together with Thomas Hughes on the masque *The Misfortunes of Arthur* in 1588).³⁰ Fortuna had survived in medieval European literature as personification of capricious chance, symbolic rather than extant as deity, but vital in meaning as a convenient and familiar emblem of the unpredictable. The difficulty of reconciling chance as a force in a world dictated by providential cause can be felt; Boethius failed to show how the two might operate in conjunction in his *Consolation of Philosophy*, while Dante cast Fortuna herself as both Christian intelligence and subservient angel in *Inferno*; in England, Fortuna would become elided with the inscrutable, inexorable Anglo Saxon *wyrd* via the Alfredian translation of Boethius during the ninth century.³¹ ‘Philosophy tried to annihilate her, but poetry was able to keep her’; eventually the deity died, and Fortuna underwent semantic shift into metaphor for both economic success and the element of contingency which should be subjugated in order for such success to be achieved.³² Some examples of this formulation follow.

²⁹ William Fulbecke, *A Booke of Christian Ethicks or Moral Philosophie Containing, the True Difference and Opposition, of the Two Incompatible Qualities, Vertue, and Voluptuousnesse* (London, 1587), pp. 52-3.

³⁰ D. R. Woolf, ‘Fulbecke, William (b. 1559/60, d. in or after 1602)’, *Oxford Dictionary of National Biography*, (Oxford University Press, 2004) Online Edition <<http://www.oxforddnb.com/view/article/10221>> [accessed 12 Jan 2023]. *The Misfortunes of Arthur* has now been printed in *The Oxford Francis Bacon I: Early Writings 1584-1596*, ed. Alan Stewart with Harriet Knight (Oxford: Oxford University Press, 2012).

³¹ Dante Alighieri, *The Divine Comedy of Dante Alighieri: Inferno*, ed. Robert M. Durling (Oxford: Oxford University Press, 1996), Canto 7 ll.73-96 p.117

³² Howard R. Patch, *The Goddess Fortuna in Medieval Literature* (New York: Octagon, 1967), p.26

In Richard Baker's *Meditations on the First Psalm of David* (1638) Fortuna appears in malleable form, no match for the neo-Stoic steadfastness of the 'godly man...*Faber fortunae suae*' who can 'worke her, and frame her, to his owne liking... The godly are like a tree, which stands fixt and immoveable'.³³ The second edition of Robert Burton's *Anatomy of Melancholy* (1621) includes a passage which describes how 'Parents, friends, fortunes, country, birth, aliance, &c. ebbe and flowe with our conceit; please or displease, as we accept and conster them, or apply them to our selues'; in appreciated and responding to this, a man becomes '*Faber quis{que} fortunae suae*, and in some sort I may truly say, prosperity and adversity are in our owne hands'.³⁴ Burton's formulation pleased William Ramesey, physician-in-ordinary to Charles II, who would use it almost verbatim in his *Helminthologia* (1668) in discussing how the passions perturb the humours, and *The Gentlemans Companion, or, A Character of true Nobility and Gentility* (1672), deploying it in near-identical format in one book concerning physiology and another about correct societal comporment.³⁵

John Spencer's 1660 sermon *The Righteous Ruler*, given in commemoration of the Restoration, advised that the Prince who wished to be *faber fortunae* need not heed the advice of the untrustworthy, a practice compared to using 'crooked instruments as well as strait'; Spencer would succeed Bacon's chaplain, amanuensis, and executor William Rawley as Rector of Landbeach, Cambridgeshire, in 1667, and it is possible that Rawley, architect of Bacon's posthumous reputation, made an impression on his invested successor.³⁶ In a posthumous 1672 reprint of Sir Henry Wotton's *Reliquiae Wottonianae*, Wotton referred to education as 'moral architecture', acknowledged 'the Architecture of Fortunes...being the ordinary effect of industry', and spoke of James I as architect of

³³ Richard Baker, *Meditations and Disquisitions upon the First Psalme of David* (London, 1638), p.98

³⁴ Robert Burton, *The Anatomy of Melancholy* (Oxford, 1621), p.408

³⁵ William Ramesey, *Helminthologia, or, Some Physical Considerations of the Matter, Origination, and Several Species of Wormes* (London, 1668), p.356; William Ramesey, *The Gentlemans Companion, or, A Character of True Nobility and Gentility* (London, 1672), p.89, 211.

³⁶ John Spencer, *The Righteous Ruler a Sermon Preached at St Maries in Cambridge, June 28, 1660* (London, 1660), p. 23.

the fortune of George Villiers.³⁷ More than forty years after Bacon's death, then, to be an architect of fortune was considered a positive descriptor, used to commend an identifiable individual whose success would be demonstrated through biographical detail.

It was this 'structure of feeling', one which connected biography, proof, truth, and fortune, which would be used by members of the Royal Society to advertise both themselves and their methods. In his history of printmaking *Sculptura* (1662), intended to form part of a Baconian history of trades, John Evelyn expressed the hope that collectors of art did not do so 'for curiosity and ornament only' but that they might also apply themselves to 'the promotement of experimental, & usefull knowledge for the universal benefit, & good of Mankind' in order for their reputation to triumph over fortune.

This, this alone, would render them deservedly honorable indeed; and add a lustre to their Memories, beyond that of their Painted Titles, which (without some solid Virtue) render but their defects the more conspicuous to those who know how to make a right estimate of things, and, by whose Tongues, and Pens only, their Trophies and Elogies can ever hope to surmount, and out-last the vicissitudes of fortune.³⁸

A year later Robert Boyle would write of the usefulness of natural philosophy 'both to [man's] Body and Fortune', the ability to grow better herbs and vegetables as 'a true Naturalist...than theirs that are strangers to Physiology' nourishing one's mind, body, and coffers; in 1665 the clergyman Joseph Glanvill would proclaim the Royal Society to be just such 'a Society of persons that can command both Wit and Fortune'.³⁹ Lacking formal education and inadequately compensated throughout his career, the Society's curator of experiments Robert Hooke tended to associate gentlemen with fortune

³⁷ Henry Wotton, *Reliquiae Wottonianae* (London, 1672) pp.75, 211, 100. It is possible that Richard Baker was introduced by Wotton to this favourable conception of *faber fortunae*; the two had roomed together at Oxford in 1584 before Wotton entered into service (and lifelong friendship) with Bacon under Robert Devereux, 2nd Earl of Essex. G. H. Martin, 'Baker, Sir Richard (c.1568–1645)' *ODNB* (2004), <<http://www.oxforddnb.com/view/article/1131>> [accessed 12th January 2023]. Wotton would later encounter a young Robert Boyle as provost of Eton College.

³⁸ John Evelyn, *Sculptura or, The History, and Art of Chalcography and Engraving in Copper* (London, 1662), pp. 143-4.

³⁹ Robert Boyle, *The Works of Robert Boyle Volume III: The Usefulness of Natural Philosophy and Sequels to Spring of the Air, 1662-3* ed. Michael Hunter and Edward B. Davis (London: Pickering and Chatto, 1999), p. 295. Boyle quickly qualifies this by stating that 'Philosophers may have the acquisition of Wealth more in their power than in their aim'; Joseph Glanvill, *Scopsis Scientifica* (London, 1665), sig. b4v.

in a literal sense, such ‘Gentlemen of our Nation, whose leisure makes them fit to undertake and the plenty of their fortunes to accomplish, extraordinary things’ making up the majority of his colleagues and employers, but advises using a metaphor of building or ‘raising’ a new philosophy out of the ‘Repository of Materials’ provided by induction that ‘in providing a proper History for the perfecting of a new body of Philosophy, the Intellect should first like a skilful architect, understand what it designs to do’.⁴⁰

John Aubrey’s preface to his *Life of Hobbes* sets out his biographical method as the collection of minute details, biography being ‘a short Historie: and there minutenes of a famous person is gratefull...the Offices of a Panegyrist, & Historian, [being] much different.’⁴¹ Aubrey affects modesty in describing such collected details as ‘Observables...tanquam Tabula naufragii; & as plankes & lighter things swimme, and are preserved, where the more weighty sinke & are lost’, but *tanquam tabula naufragii* (‘as planks of a shipwreck’) is itself pulled from Bacon’s *Advancement of Learning*, and Kelsey Jackson Williams argues that Aubrey uses the phrase consciously to distinguish himself from the panegyrist and dissociate from the more hagiographic styles of biography.⁴² In doing so Aubrey also aligns himself with the more conscientiously Baconian members of the Royal Society, and demonstrates a commitment to inductive historiography in presenting himself as historian rather than mere gossip mill.

ANTIQUITIES, or Remnants of History, are, as was saide, *tanquam Tabula Naufragij*, when industrious persons by an exact and scrupulous diligence and observation, out of Monuments, Names, Wordes, Proverbes, Traditions, Private Recordes, and Evidences, Fragments of stories, Passages of Bookes, that concerne not storie, and the like, doe save and recover somewhat from the deluge of time.⁴³

⁴⁰ Robert Hooke, *Micrographia* (London, 1665), sig. D2r; Robert Hooke, *The Posthumous Works of Robert Hooke, M.D. S.R.S. Geom. Prof. Gresh. &c. Containing his Cutlerian Lectures, and other Discourses* (London, 1705), p. 18.

⁴¹ Bodl. MS Ballard 14, fol. 131r, quoted in Kelsey Jackson Williams, *The Antiquary: John Aubrey's Historical Scholarship* (Oxford: Oxford University Press, 2016), pp. 99-100.

⁴² Bodl. MS Aubrey 9, fol. 29r, quoted in Williams, *The Antiquary*, p. 101; Aubrey, *Brief Lives*, p. 148.

⁴³ Bacon, *OFB IV*, p. 66.

As shall be seen, the men of the early Royal Society used life writing as means to promote themselves as a Baconian ideal, one who acts of architect of their own public self, and in doing so they engaged in both conscious and unconscious demonstration of the validity of experimentalism and the fact accumulation which it was the Society's purpose to promote. Not everyone used or referred to this phrase, but we can appreciate certain precepts (or planks) as being distilled from it: the appreciation of the contribution of the individual, the ability to mould one's own and man in general's fortunes through natural philosophy, the possibility of any man contributing to this enterprise, and the importance of self-presentation and -control. It is these precepts which shall be examined, as demonstrated – or, to speak in architectural terms, constructed - through the autobiographical practices, 'Private Records and Evidences', and self-penned monuments which this thesis considers. Mordechai Feingold was correct to issue a note of caution for the historian when encountering 'the marked tendency of such men towards self-aggrandizement' in discussing their propensity to portray themselves as intellectually independent from the Aristotelian universities; it is this self-aggrandisement, this literary motif of the autodidactic self-made man, which this thesis argues constitutes an integral aspect of the autobiographical practice of early members of the Royal Society and their promotion of this project.⁴⁴

⁴⁴ Mordechai Feingold, 'The Origins of the Royal Society Revisited' in *The Practice of Reform in Health, Medicine and Science 1500–2000: Essays for Charles Webster* ed. Margaret Pelling and Scott Mandelbrote (Aldershot: Ashgate, 2005), p. 359.

Chapter 2| Trials of Testimony: The Diaries of John Evelyn, Robert Hooke, and Samuel Pepys

The early modern diary was used as means of reflection and, sometimes, instruction, which in turn contributed to the fashioning of the diarist's identity. The cumulative and summative construction of text from separate documents was a common compositional practice during the period, while Protestantism's stress on the single believer and the search within for signs of grace has been seen as crucial catalyst to the development of longer-form life writing which was composed at distinct intervals.¹ Adam Smyth has done important work in identifying the amalgamation of accounting books into personal diaries and assessing the impact of financial records as both originating structures for more prosaic works as well as reading accounting books themselves as autobiographical pieces.² We can see from this that such diaries began not with a writer seeking to construct a record of their entire life as lived, but with some other, more focused agenda, out of which a broader life-record subsequently emerged while often retaining the original structure. Each of the diaries assessed in this chapter, in its own way, fashions the identity of its author as the self-made man of fortune, an essential facet of the *virtuoso*. Hooke's diary was an aspect of his scientific practice; not being a university man, but a man employed by the society, Hooke was concerned with credentials, and his diary records the diligent practices of the first professional (i.e. paid) experimentalist. Evelyn and Pepys were not scientific practitioners but *virtuosi*, both eventually attaining high office in the Society. Their diaries contribute to the formation of that identity. In the case of all three, the literary practice is an essential aspect of the formation of professional identity. An account of their actions is an important part of the performance of such actions. It is the account of an event which categorises it epistemologically for a

¹ Adam Smyth, 'Diaries', in *The Oxford Handbook of English Prose, 1640-1714* eds. Nicholas McDowell and Henry Power (Oxford: Oxford University Press, forthcoming).

² Adam Smyth, *Autobiography in Early Modern England* (Cambridge: Cambridge University Press, 2010); 'Money, Accounting and Life-writing, 1600–1700: Balancing a Life' in *A History of English Autobiography* (Cambridge: Cambridge University Press, 2016).

third party who encounters the event via the account. To make an account, to verbalise individual experience, is invariably a socially directed activity, in that language functions as an approximated collective experience. To rewrite is to redirect this language in accordance with an intended audience. What ties these diaries together is that they were rewritten (or, in Hooke's case, intended to be rewritten) in order to be directed at a wider audience than that of the author in order to elucidate qualities which made them not simply Christian ideals or masticators of their own moral practices, but self-made men attuned and adapted to – indeed, contributing to the creation of - the modern persona of the virtuoso.

This chapter differs from previous accounts by assessing them together as productions which were intended (either at the point of writing, or when rewritten) to act, to a greater or lesser degree, as an objective 'history' with the diarist as the datum. Lotte Mulligan's ground-breaking article concerning Hooke's diary argues that 'he chose to record a self that was as subject to scientific scrutiny as the rest of nature...[placing] his self-recording within the wider discourse of the New Science with its methodological claims for obtaining objective truth'.³ This chapter seeks to assess to what extent we may discuss two other diaries produced by men associated with the Royal Society, two of the diaries of the seventeenth century noted for their length and range, as either echoing or shaping their authors' pursuits in natural philosophy. The composition of these diaries from notes, almanacs, and logbooks was not a process which was unique to these three men.⁴ What *was* unique was the purpose to which they rewrote, creating a product which they intended be viewed by more eyes than their own in order to proclaim an identity seated in the house of cumulative experience. To assess these works together is not to fall into the trap of the 'mythology of coherence' but identifying similar strains in each while acknowledging the difference in the results allows us to build a better picture of

³ Lotte Mulligan, 'Self-Scrutiny and the Study of Nature: Robert Hooke's Diary as Natural History' *Journal of British Studies*, 35.3 (1996), 311-342; Mark S. Dawson, 'Histories and Texts: Refiguring the Diary of Samuel Pepys', *The Historical Journal*, 43.2 (2000), 407-431.

⁴ Examples extrinsic to this thesis include Anthony a Wood, John Locke, and Samuel Jeake.

the relation of these autobiographical practices to the wider work of the Royal Society as a whole.⁵ A false coherence would not allow for nuance and change, which is particularly important when considering items with such a long period of composition.

This chapter begins by describing the format that each of the diaries survives in as well as its provenance. The evidence for the diaries of Evelyn and Pepys being rewritten from notes and earlier journals is presented. While Hooke's diary appears not to have been written up from other sources, it is shown that the process of composition was not as linear as the dated entries would suggest, with some entries being written at the same time. There is evidence too to suggest that Hooke intended to rewrite his diary later in life as an autobiography – indeed, that he had begun this project by the time of his death. In the case of Evelyn, the rewritten observations are not cast as memoirs from the vantage point of age; similarly, Pepys retains the present tense even when composing from several months after the fact, as in the case of the Great Fire. For these men it was important to preserve the illusion of the experiences having just happened.

In order to understand the significance of this, and to understand why the same desire drove Hooke, it is necessary, then, to consider each diary against the background of the Royal Society. Pepys was writing his diary during its ascent; Hooke's diary covers a period during which he was the well-established master of experiments; Evelyn's final rewrite took place at the close of the seventeenth century, almost forty years after the Society's foundation. By considering the broad scope of the content of each diary, each author's prevailing interest is brought to the fore, and it can be seen that the interests of each correspond broadly to the attributes expected of the virtuoso: self-made success for Pepys, diligent experimental practice for Hooke, and gentlemanly conduct for Evelyn.

Returning to the act of rewriting with this information in mind brings the chapter to its conclusion in answering the question of why these rewrites happened at all. It is argued that each diary was intended for a wider audience than was initially intended so that the attributes identified above

⁵ Quentin Skinner, 'Meaning and Understanding in the History of Ideas' *History and Theory* 8.1 (1969), 16.

might be recognised. In the case of Evelyn and Pepys, these were qualities in development, and so their rewritten diaries preserve the present tense in order for them to appear to be faithful and unmodified records of what had actually happened: a stylistic inheritance from the standards for observational reports promoted as part of the Royal Society's enterprises, from travel accounts to the minutes of meetings. Evelyn's diary was intended for his family, and possibly housed in the ebony cabinet of curiosities he had commissioned while in Paris. Pepys' diary occupies a hazy middle ground between public and private, bound but encoded, and bequeathed to a private college. In the case of Hooke, his diary functioned as such an instrument from the beginning, and publication would have drawn attention to the excellence of his methods at a time when his reputation was waning. Most importantly of all, each of the diaries is *socially orientated*, regardless of its eventual state, written so that each author could formulate and understand his public self. With this in mind, reading these works with an awareness of their rhetorical properties at the fore answers several questions regarding their function, their preservation, and even their sheer length. What is unique to these three diaries is neither the practical methods of composition, nor the spirit of self-scrutiny, but the ideology which drove them: that of the experimentalist, the virtuoso, the *faber fortunae*.

Mixt Masses: The Format of the Diaries

The impulses of bookkeeping and moral self-reckoning appear together explicitly in the first guide to diarising, John Beadle's *The Journal or Diary of a Thankful Christian* (1656). Beadle's fellow clergyman John Fuller makes the analogy clear in his preface: 'Tradesmen keep their shop books. Merchants their Accompt books...A Christian that would be exact hath more need, and may reap much more good by such a Journall as this'.⁶ Beadle himself, however, changes the model in his dedicatory epistle from the fiscal to the experimental:

And what better means can be used for the advancement of faith in the growth and strength of it, then a rich treasure of experience; every experiment of Gods favour to us, being a good prop for our faith for the future...Thou (O Lord) didst overthrow *Pharaoh* and his Host in the Redsea: which experiment of thy power and goodnesse , was as meat to the people in the

⁶ John Beadle, *The Journal or Diary of a Thankful Christian* (London, 1656), p. biv.

Wilderness...Now doubtless such as will be well stored with such a treasure of experiments, had need keep a constant Diary by them of all Gods gracious dealings with them.⁷

Both 'experience' and 'experiment' derive from *experiri*: to try, to prove. A crucial feature of the natural philosophical practice of the Royal Society was that it relied on, and distinguished between, naturally available experience and artificially designed experiments in order to provide empirical data, the experiment frequently relying on the use of apparatus and instruments. The progress of knowledge referred not just to observation being accorded a greater role but also to the correction of sense by practical procedures and mechanical instruments for assessing the validity of the data which the senses presented. The unceasing application of these procedures, the cumulative record of experiment, was the means by which knowledge would be improved, as set out by Sprat in his *History*. The Society, wrote Sprat,

Has reduc'd its principal observations into one *common-stock*; and laid them up in publique *Registers*, to be nakedly transmitted to the next Generation of Men; and so from them, to their successors. And as their purpose was to heap up a mixt mass of *Experiments*...whatever they have recorded, they have done it, not as compleat Schemes of opinions, but as bare, unfinish'd Histories.⁸

The innovation of the Society according to Sprat was not only in methodology but modality. Had they come across Beadle's diary, Hooke, Pepys, and Evelyn might have recognised the structuring of one's own history according to experiment, 'unfinish'd' and to be transmitted to the 'next Generation', the entries forming a great 'mixt mass', the diary as the instrument by which the viability of the self is tested. As with so many of the Society's precepts, a gap exists between its professed ideals and its members' actual productions. None of the diaries under examination in this chapter can be said to be 'nakedly transmitted' (not least because the editorial process may be said to begin with the idea of writing), but each took steps to make it appear that this was the case. Such steps illuminate for us the ontological importance of the precepts governing a Society member's literary self-presentation.

John Evelyn, Royalist horticulturist and founding member of the Royal Society, published on subjects as diverse as architecture, numismatics, and salads. A pious and reserved man, he was

⁷ Ibid., pp. 12-4.

⁸ Sprat, *History*, pp. 114-5.

responsible for coining the Royal Society's motto *nullius in verba* (loosely translated as 'take nobody's word for it'), as well as several charming but ultimately rejected designs for its coat of arms.⁹ From around the age of twenty, following the death of his father and education at Balliol College, Oxford, and the Middle Temple, Evelyn began to make habit of writing a diary, having first begun to set down notes in almanacs in imitation of his father, and the diary now exists in three main documents.¹⁰

The first diary composed by Evelyn is a volume with binding dating from the nineteenth century entitled *Kalendarium* consisting of 732 pages (of which the first twelve are blank).¹¹ Entries in the *Kalendarium* extend to 31st October 1697; the hand is a letterhand of Evelyn's and the few obvious breaks in the text indicate a largely continuous composition, possibly a fair copy, which was not begun until 1660. The text breaks at page 237 and the hand indicates that composition was not resumed until 1680, with contemporary entries beginning in notehand in 1684 when the (presumed) transcript had been brought up to date. The second is a series of loose sheets which continue *Kalendarium* from 31st October 1697 to 3rd February 1706 and which were intended to have been joined to the main body as stated in a note on the first gathering of papers but ultimately were not due to lack of space. The third is a new version of the diary as a whole, bound with the title *De Vita Propria* tooled on the spine, its cover stamped with Evelyn's arms and his cipher 'J.E.' in the corners.¹² Of the volume's 470 pages only 76 are occupied by text, which covers Evelyn's life until late 1644 when the narrative breaks off. *Vita* is written in a bookhand not seen in the *Kalendarium* and

⁹ The designs, including a smiling sun in splendour, two telescopes in saltire, and a hand descending from the clouds grasping a plumb line, are reproduced in Michael Hunter, *Establishing the New Science: The Experience of the Early Royal Society* (Woodbridge: The Boydell Press, 1989), pp. xiv. The designs indicate the primacy of instrument usage for the early Royal Society, as well as heralding its general optimism. For a discussion of the translation of *nullius in verba*, see Chapter 5 below, pages 210-1.

¹⁰ John Evelyn, *The Diary of John Evelyn Volume II: Kalendarium, 1620-1649* ed. E.S. de Beer (Oxford: Oxford University Press, 1955), p. 10 (undated entry, 1631). E.S. De Beer's introduction in the first volume of the diary details the three formats of the diary as they exist today, as well as proposing the evidence for the dating of the text of the *Kalendarium* which is recounted above.

¹¹ Hereafter referred to as *Kalendarium*.

¹² Hereafter referred to as *Vita*.

has few marginal notes; internal dating suggests that it was written in or after 1697, continuously written up during a short period in Evelyn's old age circa 1700.

The earliest possible date for composition of the principal manuscript, the *Kalendarium*, is 1660. An entry on 3rd November 1640 describes the first meeting of the Long Parliament as 'the beginning of all our sorrows for twenty years after' after London 'and especially the Court' were described retrospectively in April of the same year as being 'at this period in frequent disorders, and greate insolenicies committed by the abus'd and too happy Citty'.¹³ It is probable that the first part of the *Kalendarium*, up to the notice of Rouen in March 1644, was copied before 1666 – there are remarks on how houses of Rouen 'are of Timber like our Merchants of London in the wodden part of the Citty', which would not have been the case if written after the Great Fire of September 1666.¹⁴

Wishing to avoid further involvement in the English Civil War, having arrived 'just at the retreat' of the Battle of Brentford in 1642, Evelyn left England for Holland the following year.¹⁵ He then set out for Italy from France in the autumn 1644, arriving in Rome via Florence on 4th November 1644, departing again via Florence in May 1645. This second visit to Florence and journey from Rome in the spring of 1645 includes material derived from the *Journal des Voyages* of Balthasar de Moncoys, published between 1665 and 1666; references to Moncoys are inserted in margins of the first Florence visit, which must therefore have been written before the publication of the *Journal des Voyages*. There was a long interval before the beginning of the account of Evelyn's second visit to Florence based on a break in appearance of the manuscript: Evelyn's writing becomes smaller and begins to the cover margins. By the time of the entry covering events of 2nd July 1649 Evelyn must have been writing after 1680, owing to a reference to his daughter's son being the 'present Earle of Kingston' (he succeeded to the earldom in 1680), and it can be seen that entries from this date onward become much longer and richer in detail than those before.

¹³ Evelyn, *Diary II* p. 26 (3rd November 1640), pp. 24-5 (10th June 1640).

¹⁴ *Ibid.*, p. 124 (19th March 1644).

¹⁵ *Ibid.*, p. 79 (12th-15th November 1642).

The dates of the writing of the *Kalendarium* can be summarised in tabular form as follows:

Dates of Narrative	Proposed Dates of Composition
Prior to account of Rouen 19 March 1644	In or after 1660, probably pre-September 1666
End of account of Rome May 1645	Between 1660 and 1666
Continuation on to Florence 1645	Not long before December 1680
2 nd July 1649	After 8 th December 1680

Two almanacs annotated by Evelyn survive at Balliol College (a third disappeared after a Sotheby's sale in 1925). These annotations, made 'in imitation of what I had seene my father do', formed the basis for the diary when Evelyn later came to write it up as the *Kalendarium*.¹⁶ The diary, as it exists in the form of the *Kalendarium*, is therefore the result of retrospective revision of earlier texts beginning in or after 1660, and not the contemporary transcript of a lived life. In 'Almanacs, Annotators, and Life-Writing in Early Modern England' Adam Smyth compares the almanac notes with the entry in *K* for 2nd July 1637; comparison of both with the final write-up in *Vita* will show how Evelyn's narration of his life 1636-7 changed between versions, including further detail from his almanacs, demonstrating his preoccupation with the accuracy of his remembrances during the final rewrite in *Vita* towards the end of his life.¹⁷

It will be argued that Evelyn's diary was rewritten as an aid to familial moral instruction, and elements of style suggest that Evelyn used his diary as a spiritual aid, to assist in viewing spiritual progress and dutiful self-examination. Evelyn began to note preachers and their texts with greater regularity from 1650, and on his eighty-second birthday he noted reading over his diary for the past

¹⁶ *Ibid.*, p. 10 (undated entry, 1631).

¹⁷ Adam Smyth, 'Almanacs, Annotators, and Life-Writing in Early Modern England' *English Literary Renaissance* 38.2 (2008), 224.

year and giving prayers and thanks to God.¹⁸ Of the sermons he recorded himself as attending in his diary sometimes only the title is given, or brief notes, indicating that these were not to help him recall the sermon but included as subjects for meditation when encountered during a reread. Thus far, little is unique to Evelyn's diary. However, when Evelyn's final rewrite as *Vita* is assessed alongside the two earlier versions, it can be seen that his intentions were for the diary to function as a resource for a wider readership than himself alone. Thus, the private document was prepared for a form of publication (albeit very limited) in which then preservation of the author's experience formed a key educational benefit.

The instrument maker and curatorial fellow of the Royal Society Robert Hooke began keeping a diary or memorandum book on 10th March 1672, leaving off over eleven years later in May 1683, initially using his diary to make links between weather and its effects. In an unpublished proposal for making a history of the weather, Hooke wrote that 'For the better making a history of the Weather, I conceive it requisite to Observ... What effects are produced upon other Bodys. As to [illegible] and Differences in the bodys of Men, as what diseases are most rife as Colds, fervors, agues, &c what putrefactions or other changes are produced in other bodys as the sweating of Marble', and his diary registers his interwoven states of health in attempt to reconcile any correlations between the two.¹⁹ In the document cited above Hooke explicitly criticised almanacs for containing vague and general forecasts, advocating instead for meteorological terminology to be standardised, although his guidelines on how to set out a weather journal clearly draws inspiration from the almanac's capacity for viewing a month at one time.

Now that these, and some other [deleted, things] by and by to be mentiond, may be registred soe as to be most convenient for the making of comparisons requisite for the raising axioms Whereby the [cause or] Laws of Weather may be found out It will be desirable to order them soe that the schem of a whole month may at one view be presented to the Eye. And this may

¹⁸ John Evelyn, *The Diary of John Evelyn Volume V: Kalendarium, 1690-1706* ed. E.S. de Beer (Oxford: Oxford University Press, 1955), p. 518 (31st October 1702).

¹⁹ Royal Society Cl.P/20/2/1, fol. 1v.

conveniently be done on the pages of a book in folio allowing 15 dayes for one side & 15 for the Other.²⁰

From the outset there were two aspects to Hooke's diary, weather observations and personal annotations, given equal weight in two columns on the first page. Hooke maintained this division for more than a year but eventually his personal observations overran their boundaries, and the book was given over to them, with commentary on the weather all but disappearing from 1673 onwards. The focal transition led Robinson and Waters to omit these 'scanty and difficult to understand' early entries from their edition of the diary, and these entries would not be transcribed until Felicity Henderson did so over seventy years later.²¹ Scanty though they may be, it is the origin of the diary as a weather journal which provides the framework with which the diary's value for Hooke may be understood. Hooke was not unique in having the weather as the originating focus for his diary; John Locke had kept a register of the weather in Oxford from 1666 as part of a more general journal, and he would eventually publish some of the data as part of Boyle's *The General History of the Air* (1692).²² When editing his register for publication, however, Locke sifted out any more general memoranda, presenting only the raw figures from his thermoscope and baroscope. Unique to Hooke was the transfer of this methodological purpose to recording data about the activities of the author, and Hooke's first diary entry from Sunday 10 March 1672 records his entangling of self and weather:

Sun 10 [mercury] fell from 170 to 185. most part of ye Day cleer but cold & somewhat windy at the South—[I was this morning better with my cold then I had been 3 months before] [moon] apogeum—It grew cloudy about 4. [mercury] falling still —²³

Entries exist for every day in the majority of Hooke's diary, but these were not necessarily written every day, as seen when he occasionally combines the relation of two days, as on 25th-26th November 1672: 'Took conserves and flowers of [sulphur] after which I slept well, but had a bloody

²⁰ Ibid.

²¹ Robert Hooke, *The Diary of Robert Hooke* ed. Henry W. Robinson and Walter Adams (London: Taylor and Francis, 1935), p. 3; Felicity Henderson, 'Unpublished Material from the Memorandum Book of Robert Hooke, Guildhall Library MS 1758' *N&R* 61 (2007). It is highly likely that Henderson's forthcoming edition of Hooke's diary will include this material.

²² Oxford, Bodleian Libraries MSS Locke d.9; Robert Boyle, *The General History of the Air* (London, 1692), pp. 104-32.

²³ London Metropolitan Archives, Clerkenwell, CLC/495/MS01758, fol. 6r.

dysentery the next day (26) soe that I swooned and was violently griped, but I judge it did me good for my Rhume'.²⁴ Hooke is also forthright when it simply slipped his mind to write up the day's entry: November of the same year skips from the 6th to the 8th, and the entry for the 8th ends with 'Bed 7, forgott'.²⁵ The 30th of December 1672 saw Hooke bracket a note of payments made the previous day: 'I am to speak to Marks (Yesterday after dinner I paid Nell 20sh for last quarter and gave her 5sh for work)'.²⁶ Hooke was fastidious in recording his finances, but it is perhaps a testament to the speed of his writing that this transaction was interpolated in the middle of an otherwise unrelated matter may have been that a glance at the date reminded him of a need to set financial affairs in order as the year drew to a close.

William Matthews, one of Pepys' modern editors, has demonstrated that Pepys also did not write each entry on the day indicated by the date but constantly revised and wrote up at a later time, based on variations in both the writing style and the ink and newness of the pen used.²⁷ In the event that entries *were* made day by day this was never kept to consistently beyond a matter of weeks; rather, Pepys would regularly enter up to two weeks of retrospective entries (on the 22nd of November 1668, for example, he speaks of working 'to perfect' his diary through conversion to fair copy).²⁸ Certain passages or phrases are obscured in the diary by being written in a variety of languages, and this idiosyncratic *lingua franca* is itself a semantic experiment with the concept and appearance of privacy. Pepys' many encounters with women outside of his marriage are related 'frankly, so frankly that part of it is not printed...in a foolish mystery of mixed French and Spanish and Latin that could

²⁴ Hooke, *Diary*, p. 14 (25th-26th November 1672).

²⁵ *Ibid.*, p. 12 (8th November 1672).

²⁶ *Ibid.*, p. 18 (30th December 1672).

²⁷ Pepys, *Diary I*, pp. xliii-xliv. Examples provided include the manuscript entries for 5th August 1662, 26th October 1662, 29th April 1665, and 10th May 1667. These dates suggest a consistent habit throughout Pepys' main period of diary keeping.

²⁸ See also Pepys, *Diary I*, p. 143 (17 May 1660), Samuel Pepys, *The Diary of Samuel Pepys Volume II: 1661* eds. Robert Latham and William Matthews (London: Bell & Hyman, 1971), p. 52 (9 March 1661), and Samuel Pepys, *The Diary of Samuel Pepys Volume VI: 1665* eds. Robert Latham and William Matthews (London: Bell & Hyman, 1971), p. 240 (24th September 1665).

never deceive anyone'.²⁹ [T]he public nature of the literary form and the private nature of its content', is highlighted through linguistic obfuscation as a deliberate display of opposition to the familiar and known, and the mental circumlocution of the diligent reader hunting for titillation is part of the joke when rewarded with a matter of fact account of fumbles on the way home from the cabinet maker, less erotic than clinical, less confessional than observational.³⁰ Pepys' diary is 'concomitant of [his] delight in book-keeping' and, like a ledger, exists somewhere in the hazy zone between public and private during a period when social recognition and affirmation constituted identity.³¹

Pepys' diary as it exists today achieved finality (we should hesitate to substitute 'completeness' for obvious reasons) at a considerably earlier point in its author's life than that of John Evelyn. The diary was written between 1660 and 1669, Pepys taking leave of it in May 1669 owing to fears regarding his eyesight which would prove to be unfounded. The manuscript is in six bound volumes, stamped with Pepys' arms and crest like all the books in the Pepys library, as he had instructed his nephew and heir John Jackson in the codicil to his will of 17th May 1703.³² The identical binding of the fifth and sixth volumes indicate that only those two were bound at the same time, and each volume differs in size – volume one being a quarto, the others folios of varying widths and heights.³³ Pepys organised his library by height, and so the volumes were not united until his final catalogue in 1700, although the diary was inducted into the library as one at some point during the mid-1670s based on the endleaf shelf marks.

Pepys frequently entrusted his diary to others for safekeeping during bouts of fire and plague during the 1660s and wrote the missing sections into the book once it was returned to him,

²⁹ Percival Hunt, *Samuel Pepys in the Diary* (Pittsburgh: University of Pittsburgh Press, 1959), p. 2. Hunt refers to the Wheatley edition of Pepys' diary (published 1893-9), the most modern edition available to him at the time which had expunged multiple passages from the diary on grounds of indecency.

³⁰ Bakhtin, *Dialogic Imagination*, p. 123; Samuel Pepys, *The Diary of Samuel Pepys Volume VIII: 1667* eds. Robert Latham and William Matthews (London: Bell & Hyman, 1971), pp. 53-4 (11th February 1667).

³¹ Pepys, *Diary I*, p. cvi.

³² TNA PROB 11/470/185, pp. 11-13.

³³ For this and the bibliographical information following I draw on H. M. Nixon ed. *Catalogue of the Pepys Library at Magdalene College, Cambridge VI: Bindings* (Woodbridge: Brewer, 1984) and the commentary of Robert Latham and William Matthews in their 11-volume edition of the *Diary*.

reconstituted not only from rough manuscript but notebooks, playbills, and a business journal, which partially explains the breadth and detail of content.³⁴ Each manuscript was, for the most part, written in a form of shorthand based on simple lines and curves invented by the stenographer Thomas Shelton in his book *Short Writing* (1626, renamed *Tachygraphy* in editions from 1635 onwards).³⁵ Shelton's system, lauded by its inventor for its 'secrecy, brevity, celerity and perpetuity', had proved popular: editions of 1635, 1641, and 1647 were printed by the University Press at Cambridge, having been (according to the title page) 'approved by both Unyversities', and was still in print into the eighteenth century when it was translated into German.³⁶ Pepys' library included four of Shelton's books, including the most recent edition of *Tachygraphy* (1691) to have been published at the time of Pepys' death, as part of a larger collection of stenography textbooks. The diary was housed in glass-fronted cabinets of Pepys' own design along with the rest of his library and was consequently included in his bequest to Magdalene College Cambridge on the death of John Jackson.³⁷ Taken together, many of the circumstances indicate that Pepys was not, on the whole, terribly concerned with concealing his diary's existence. On the contrary, each spine was stamped with the title of 'JOURNAL' and a roman numeral indicating its chronology as well as the dates of the years covered within. On opening a volume, a reader would find a typographically uniform shorthand of remarkable clarity, each month beginning on a new page, each line evenly spaced, each manuscript so clean as to bring to mind the printed page – or at least, certainly beyond the neatness of a page written only for the writer's eyes. Coupled with the existence of Shelton's books a few shelves away, as well as his shorthand's popularity (particularly, it would seem, among Cambridge men), a picture begins to emerge of a manuscript which can no longer be wholly described as private.³⁸ For the implications of this to be

³⁴ Samuel Pepys, *The Diary of Samuel Pepys Volume I: 1660* eds. Robert Latham and William Matthews (London: Bell & Hyman, 1971), pp. xcvi-c

³⁵ Pepys used longhand for the names of people, places, and ships, as well as the titles of plays and books.

³⁶ Thomas Shelton, *A Tutor to Tachygraphy* (London, 1642), p. 1.

³⁷ TNA PROB 11/470/185, p. 13-4.

³⁸ As Alan Stewart observes, this shorthand is an integral aspect of the diary's form, one which constituted 'an evolving experiment with shorthand' informed by and informing Pepys' use of Sheltonian shorthand in documents related to his official duties. Alan Stewart, *The Oxford History of Life-Writing Volume II: Early*

considered alongside Hooke and Evelyn's intentions for their diaries, the similarities between their production must be discussed in more detail, beginning with their interactions with the activities of the wider Royal Society at the point of writing.

Catalogues of Curiosity: The Diarists and the Activities of the Royal Society

Across Europe with John Evelyn

Vita largely retains the structure and scope of the earlier *Kalendarium*, yet the texts are not identical, and it is the differences between the two which indicate Evelyn's intention in writing his diary for the third time: for it to serve as an aid to moral instruction. These changes also reflect Evelyn's mature involvement in a Society which considered its highest aim to be the accuracy of testimony, as can be seen by the revised language which he used to describe encounters with some of Europe's more curious sights. The early members of the Royal Society conceived of experiment as an historical event, one subject to the language of 'fact' in reporting what had actually occurred on one particular occasion, and they relied on a trust borne of gentlemanly sociability that experimental practitioners would adhere to this.³⁹ As Serjeantson observes, 'the incorporation of testimony—as opposed to the discussion of authoritative opinions—into natural philosophy is one aspect of that increasing probabilism which is to a degree characteristic of [the seventeenth] century'.⁴⁰ To be truthful in one's testimony meant to have that testimony validated by one's credit, credit being a currency supplied by the perception of a moral character, testimonial argument therefore being itself inherently moral. In silently correcting his youthful observations Evelyn supplants exactitude for honesty, desirous that a future reader who may repeat his journeys consider him reliable. Once again, the gap between Sprat's prescripts and what the Society's members actually practised is made apparent. Indeed, each of the diaries under discussion in this chapter constitute various trials in

Modern (Oxford: Oxford University Press, 2018), p. 254, 261. For commentary on the relationship of Pepys' diary to his professional and social roles, see pp. 63-9, below.

³⁹ See Steven Shapin, *A Social History of Truth: Civility and Science in Seventeenth-Century England* (Chicago: University of Chicago Press, 1994), in particular Chapter 2.

⁴⁰ R.W. Serjeantson, 'Testimony and Proof in Early-Modern England' *Stud. Hist. Phil. Sci.* 30.2 (1999), 208.

testimony, testing how best present their authors as their ideal selves, with the eventual products functioning as seemingly unadulterated objects of testimony themselves.

Evelyn had met Wilkins in Oxford in 1654 and Boyle in 1656 having already published two works: his third, a verse translation of the first book of Lucretius' *De rerum natura* in 1656, established a place for him in the scientific movement, as it was a commentary which showed the relationship between Lucretius and findings of modern scientists. Evelyn was not a scientist, but an enthusiastic supporter of high social status, which he believed the work of the Royal Society would allow its members to attain. Evelyn was familiar with *faber fortunae* and used it as a commendatory appellation for Richard Boyle, first Earl of Cork, and William Petty on the basis of their colonial achievements in Ireland.⁴¹ Evelyn believed in the educational value of travel and his report of his travels in the *Kalendarium* is expansive, intended as an objective account albeit one restricted to his own interests. What is significant is that the account of his travels given in *Vita* differs little from that in the *Kalendarium* in structure but there are additions and elisions which are significant less for their extent than for their existence. These changes point to Evelyn's intention for the rewrite to function not as a private memoir but as an educational document for others: not published, but public in a manner that the *Kalendarium* was not.

For Evelyn, the goal of travel was to become a cultured and social person, not simply to educate oneself regarding languages and political strategy, and in a letter to Edward Thurland Evelyn warns against entrusting his nephew Lord Percy's care to any pedestrian tutor during his continental tour:

It is not enough that persons of my Lord Percy's quality be taught to dance, and to ride, to speak languages and wear his clothes with good grace (which are the very shells of travel), but besides all these, that he know men, customs, courts, and disciplines, and whatsoever superior excellencies the places afford, befitting a person of birth and noble impressions. This is, sir, the fruit of travel; thus our incomparable Sidney was bred; and this, *tanquam Minerva Phidiae*, sets the crown upon his perfections, when a gallant man shall return with religion and courage,

⁴¹ Michael Hunter, ed., *Robert Boyle Reconsidered* (Cambridge: Cambridge University Press, 2009), p. 87; *RBHF*, p. 94.

knowledge and modesty, without pedantry, without affectation, material and serious, to the contentment of his relations, the glory of his family, the star and ornament of his age.⁴²

This guidance echoes that given by Evelyn for public benefit in the dedication to *The State of France* (1652), advising that ‘he that would travell rationally, and like a Philosopher, must industriously apply himself to the pursuit of such things as (throughout all his peregrinations) may result most to the profit and emolument of his own country at his return’.⁴³ Evelyn also prefixed to his *Sculptura* (1662) an account of a slightly earlier traveller, Giacomo Maria Favi of Bologna who had designed a history of the arts and sciences, learned the languages and sports of each Western country, collected models and machines, and met with the learned and the artisan alike, displaying an attitude to travel which Evelyn believed ‘approches so neer to the *Idea* which I have propos’d, and may serve as an encouragement and example to the Gentlemen of our Nation’.⁴⁴ Taken together, these endorsements and aspirations propose an intellectual ideal, a vision of the traveller as one who puts his experience to use in service to the accumulation of knowledge and service to his country, a portrait which emphasises the returning traveller as a singularity. It was these qualities of the curious intellectual which Evelyn sought to promote, amongst a limited familial audience, in his own rewritten travel diary. Evelyn was no great practitioner of experimental science himself, but these observations would translate to his public career through books on the arts, his public services, and memberships of commissions, such as those for rebuilding London after the great fire. Evelyn wrote the fair copy of the *Kalendarium* after the formation of the Royal Society, although it is impossible to say whether or not further scientific interests were inserted in the text from his original notes as a reflection of his most recent interests and occupations.

There are questions of genre to be taken into account when Evelyn’s diary is read, at least in part, as a travelogue intended for eyes other than his own. Narratology usually focuses on fictional

⁴² John Evelyn to Edward Thurland, 8th November 1658, *The Letterbooks of John Evelyn Volume I* eds. Douglas D. C. Chambers and David Galbraith (Toronto, Buffalo, London: University of Toronto Press, 2014), p. 238.

⁴³ John Evelyn, *The State of France, as it Stood in the IXth Yeer of this Present Monarch, Lewis XIII. Written to a Friend by J.E.* (London, 1652), pp. 8-9.

⁴⁴ John Evelyn, *Sculptura*, p. 6.

narratives. Travel narratives may instead be seen either as factual, documenting a journey, or classified as autobiographical. Trying to restrict travel literature generically runs into issues of objectivity and chronology which applies to history as well as autobiography. The travel narrative is often literary, 'often fine literature, as with Addison, Lady Mary, Smollett, Sterne, Beckford, and Radcliffe'.⁴⁵ The diegetic and discursive structures and patterns of travel narratives have their similarities in the novel, and the formal influence of travel narratives on the novel has been noted.⁴⁶ A normative conception of genres also effaces the role of the reader in experiencing the text: a fictional narrative is read as fictional when presented as such, and an autobiographical text likewise. Moreover, autobiographical writing is itself fictional, in that the author writes from a retroactive vantage point: events must be selected, described, and linked (by itinerary, if not by narrative causality), particularly when the sections of continuous narrative describe the events of several days at a time.

It is also important to recognise the homological connection between a journey, a plot, and an experiment, since all three involve transformations and the accumulation of knowledge. It is this process become object which makes the travel narrative literary, as it must be constructed retrospectively through a literary discourse which requires that notes be noteworthy. The journey, from beginning to ending, from unknowing to knowing, is the general pattern of plot construction, just as it is with the progressive stages of experiment and inductive fact accumulation.⁴⁷ The literary concept of the journey allows the reader to confront the not only the unknown other, but the unexamined otherness of themselves. Nigel Leask rejects the binary model of 'otherness' in favour of

⁴⁵ Percy G. Adams, *Travel Literature and the Evolution of the Novel* (Lexington: The University Press of Kentucky, 1983), p. 281.

⁴⁶ J. Paul Hunter, *Before Novels: The Cultural Contexts of Eighteenth-Century English Fiction* (New York: W.W. Norton, 1990) p. 354.

⁴⁷ R.S. Crane defines the synthesising principle of the plot of action, character or thought as 'a completed process of change'. R.S. Crane 'The Concept of Plot' in *Essentials in the Theory of Fiction* eds. M.J. Hoffman and P.D. Murphy (Durham: Duke University Press, 1988) pp. 141-2.

a model of exploration which demonstrates “cycles of accumulation”, a useful distinction which emphasises the incremental and aggregative changes to the epistemology of the traveller/reader.⁴⁸

This reconciliation of travel narrative with experimental practice goes some way towards resolving issues of genre. Steven Shapin has remarked on the importance of travel in the development of natural inquiry in the seventeenth and eighteenth centuries: ‘Indeed’, he writes, ‘it is difficult to imagine what early modern natural history or natural philosophy would look like without that component contributed by travellers, navigators, merchant-traders, soldiers, and adventurers’.⁴⁹ Travel, in principle, shared with experimental philosophy an inductive and experiential dimension, and Daniel Carey draws attention to the value that travel narratives in particular had for the Royal Society, in that ‘[t]he same factors that led natural philosophers to use and rely on travel literature also led them to communicate their own work in the form of narrative’.⁵⁰ Taking this further, it was these same factors, codified in the intervening years, which caused Evelyn to return to his diary. The narrative form is closer to the lived personal experience due to inherent progression organised by the occurrence of events. Moreover, travel’s relationship with the process of induction includes the supposed repeatability of experience: Evelyn’s rewrite of his travel diary for a future reader, as a form of encouragement to travel themselves, implies that the same journey is in fact capable of repetition. By including extracts from other guidebooks Evelyn also confirms their observations as part of a process of inductive accumulation, building on the records of those who have been, and seen, before.

As secretary of the Society, Henry Oldenburg presided over a scheme to furnish travellers to different countries and continents with lists of enquiries so that the information received in return might form a regularised history. The attention to travel continued after Oldenburg’s death with

⁴⁸ Nigel Leask, *Curiosity and the Aesthetics of Travel Writing 1770-1840* (Oxford: Oxford University Press, 2002) pp. 18-20.

⁴⁹ Steven Shapin, *A Social History of Truth: Civility and Science in Seventeenth-Century England* (Chicago: University of Chicago Press, 1994), p. 245.

⁵⁰ ‘Daniel Carey, ‘Compiling Nature’s History: Travellers and Travel Narratives in the Early Royal Society’ *Annals of Science* 54.3 (1997), 291.

volume 82 of Robert Hooke's *Philosophical Collections* (1679) and Boyle's *General Heads for the Natural History of a Country* (1692). It is worth noting in this context that Hooke went on, in December 1697, to deliver a series of lectures, which, as Hunter writes, 'devoted attention to what could be learnt from travel books about art and nature against a background of the "Deficients" of natural history and the need for collaboration in promoting it'.⁵¹ Tempting although it may be to ascribe Evelyn's writing of *Vita* to these lectures, given the date, there is no evidence to suggest that he was in attendance. It does, however, indicate that the potential for travel narratives to serve as good and useful testimony for the Society was still a concept in receipt of attention at this time.

Evelyn's education in Europe demonstrated both early scientific interests and the curiosity of the *virtuoso*. He was enrolled at university of Padua, studying anatomy and medical botany. On his return to Paris from Italy, he began a course of chemistry. Evelyn later discussed chemical experiments with Sir Kenelm Digby, whom he privately called 'mountebank'. Elsewhere, his diary records scientific interest by noting and listing contents of private collections or interesting mechanical processes that he had observed. In Italy he viewed many collections, both public and private, in Florence, Rome, Venice, and Milan; private collections included the 'machines' of Father Athanasius Kircher, the medals of Signor Angeloni, and the rarities of Ferdinando Imperati in Naples. What is important here is less the collections and their contents in and of themselves, but Evelyn's enthusiasm for and diligence in recording them.

Taking Stock with Samuel Pepys

The changes in natural philosophy of the seventeenth century and the advent of this *virtuoso*, inheritor of the encyclopaedic interests of the Renaissance Hermeticists and elided with the philosophy of *faber fortunae*, caused a concurrent shift in the ideological conception of 'I' of those who sought to embody such changes. In his diary Pepys documents himself repeatedly reading a volume of Francis Bacon which he refers to by the title of *Faber Fortunae*, a volume which shaped his attitude to his

⁵¹ Michael Hunter, *Establishing the New Science*, p. 334.

career in naval administration and, perhaps unconsciously, motivated him to begin recording his own fortunes in ascendancy. This book, which he could ‘never read too often’ has been identified by Rexmond C. Cochrane as being a collection titled *Fr. Baconis de Verulamio Sermones Fideles, Ethici, Politici, Œconomici: Sive Interiora Rerum. Accedit Faber Fortunae &c* consisting of Bacon’s translated *Essays*, including ‘Of Fortune’, and excerpts from *De Augmentis Scientiarum* (the expanded 1623 reprint of *The Advancement of Learning*)⁵². As discussed in Chapter 1, both texts discuss a similar theme, that of how a man may come to profitable knowledge of himself and others. A copy of *Sermones Fideles*, printed by Daniel and Louis Elzevier in 1662, was owned by Pepys at his death but the first mention occurs in the diary on 18th May 1661, meaning that he owned a previous edition of one of the three printings made in Leiden between 1644 and 1659.⁵³ There are seven instances in the diary of Pepys recording reading his copy; on three such occasions Pepys describes habitually reading the book ‘with more and more pleasure, I every time’ while commuting by boat across the Thames, on another, its importance to Pepys informed his displeasure at his brother having translated it ‘but meanely...without any life at all’.⁵⁴

At the age of 25 Pepys underwent a highly dangerous surgical procedure to remove an agonising calculus from his bladder in 1658, resolving ‘to keep it a festival’ for the rest of his life with a feast prepared for family and friends (he also kept the stone itself, and sought to have a case made to display it).⁵⁵ This event, in conjunction with his purchase the following year of the 1659 edition of Bacon’s *Sermones Fideles*, may have inspired Pepys to begin chronicling his attempts to shape his

⁵² Samuel Pepys, *The Diary of Samuel Pepys Volume V: 1664* eds. Robert Latham and William Matthews (London: Bell & Hyman, 1971) p. 39 (5th February 1664); Rexmond C. Cochrane, ‘Francis Bacon and the Architect of Fortune’, *Studies in the Renaissance* 5 (1958), 176-195, 176.

⁵³ Pepys *Diary II*, p. 102 (18th May 1661). It is unlikely that this was Pepys’ first reading either, as he refers to it only by title without summarising its contents as was customary for him; for example, Pepys described Hooke’s *Micrographia* as ‘[a] book of microscopy, a most excellent piece, and of which I am very proud’ (Samuel Pepys, *The Diary of Samuel Pepys Volume VI: 1665* eds. Robert Latham and William Matthews (London: Bell & Hyman, 1971), p. 17 (20 January 1665)).

⁵⁴ Samuel Pepys, *The Diary of Samuel Pepys Volume VII: 1666* eds. Robert Latham and William Matthews (London: Bell & Hyman, 1971), p. 242 (10th August 1666), p. 346 (29th October 1666).

⁵⁵ Pepys, *Diary I*, p. 97 (26th March 1660); Pepys, *Diary V*, p. 247 (19th August 1664).

fortunes while enjoying the new lease of life afforded as a result of being cut for the stone. Favoured with the patronage of Edward Montagu, the first Earl of Sandwich, Pepys had begun his career tempted by an offer to purchase his office for a thousand pounds if he ‘found my Lord willing to it’, but would come to see his administrative responsibilities on the Navy board as a matter of national importance and personal moral merit.⁵⁶ A curious and sociable bibliophile, Pepys was elected FRS in 1665 (thereafter referred to in the diary as ‘our’ Royal Society) and would serve as President for two years in the 1680s, overseeing the publication of Isaac Newton’s seminal *Principia Mathematica* in 1686.⁵⁷

Pepys’ belief in the importance of the Royal Society’s activities is underscored by a personal interest and the purchase of scientific instruments and books written by its members is recorded in his diary, as well as his delight in their use; in doing so, Pepys hoped to emulate the principles of the Society in coming to knowledge of the nature of things through experiencing them himself. Meeting a friend John Spong on the way to the old Exchange on 7th August 1664, Pepys was captivated by discussion of a ‘microscope of his owne making’ which allowed him to ‘discover that the wings of a moth is made just as the feathers of the wing of a bird, and that most plainly and certainly’; within the week, Pepys had the celebrated instrument maker Richard Reeve deliver both microscope and scotoscope to his home, and found himself ‘mightily pleased’ with what would he later refer to as the ‘curious curiosity’ of perceiving objects in the dark, of how ‘most excellently things appeared indeed beyond imagination’.⁵⁸ Dining with the same brother who had failed to translate the *Sermones Fideles* to an acceptable standard, Pepys remarked in his diary that ‘he will never make a good speaker, nor, I fear, any general good scholar’ due to his lack of interest in ‘optickes or mathematiques of any sort’; John Pepys may have simply declined a session crouched at the microscope following dinner, but his brother’s condemnation indicates how fixed in his mind the association of the Royal Society, their focus on corrective instruments and observation, and acceptable forms of scholarship, had become.

⁵⁶ Pepys, *Diary I*, p. 219 (10th August 1660).

⁵⁷ The costs for publishing the *Principia* would be borne by Edmund Halley, the Society’s finances having been exhausted by the printing of Francis Willughby’s *De Historia Piscium* earlier that year.

⁵⁸ Pepys, *Diary V*, p. 235 (7th August 1664); Pepys, *Diary VII*, p. 226 (29th July 1666).

The entries in the diary are a patchwork of conversational snippets, commentaries on reading, plays seen, and music performed, collected according to its author's interests in the manner of the *curioso*. Every attendance at church is noted, as were Pepys' judgement of the sermon and any distractions encountered during.⁵⁹ Almost any subject can be tracked in development throughout the diary as a whole: Pepys's wardrobe, cultural tastes, and dinner menus for company are all useful barometers for his sense of a public self and how his growing prosperity, financial and social, enabled him to put on increasingly fine displays of material success. Clothing is a particularly apposite example. Pepys' father had been a tailor in St Bride's Parish in London and his eldest son, Thomas, took over the business in 1661; as a boy, therefore, Pepys would have been well acquainted with the going rate of exchange of farthings for fabric, of shillings for silk, and of material wealth for visible credit.

On 15th May 1660, in the first months of the diary, Pepys records visiting Edward Montagu, the latter having 'called me on purpose to show me his fine cloathes which are now come hither, and indeed are very rich as gold and silver can make them'.⁶⁰ The following month, Pepys commissioned a new silk suit of clothing from his brother Thomas, which would be delivered three days later along with a 'fine Camlett cloak, with gold buttons...which cost me much money, and I pray God to make me able to pay for it'.⁶¹ The financial outlay for a professional wardrobe would continue to bother Pepys (we can read monetary regret as well as social embarrassment in his dejected air after dropping his hat into the Thames at Newington, 'by which it was spoiled, and I ashamed of it'), particularly as he was also required to outfit his wife to a similar standard.⁶² An entry of October 1663 laments that

⁵⁹ Thoughts of occasional *amour* Betty Mitchell within the congregation caused Pepys to have an accidental erection during the sermon on 11th November 1666 (Samuel Pepys, *The Diary of Samuel Pepys Volume VII: 1666* eds. Robert Latham and William Matthews (London: Bell & Hyman, 1971), p. 365); Pepys dropped his hat beneath the pulpit of St. Olave, Hart Street on the 28th of April 1667 but was able to retrieve it after the sermon 'by a stick, and the helpe of the clerke' (Pepys, *Diary VIII*, p. 188). Pepys would be buried under the nave of this church in 1703, joining his wife who had died in 1669.

⁶⁰ Pepys, *Diary I*, p. 141 (15th May 1660).

⁶¹ *Ibid.*, p. 186 (28th June 1660), p. 190 (1st July 1660).

⁶² Pepys, *Diary II*, p. 91 (30th April 1661).

he has spent nearly 6% of his accounts on clothing but also acknowledges the necessity of doing so, and Pepys looks forward to his new apparel enabling him to engage in his business with pride and in comfort, the appearance of prosperity in turn engendering the opportunity to increase it.

Thence to the office; where busy till night, and then to prepare my monthly account, about which I staid till 10 or 11 o'clock at night, and to my great sorrow find myself 43l. worse than I was the last month, which was then 760l., and now it is but 717l...But it hath chiefly arisen from my layings-out in clothes for myself and wife; viz., for her about 12l., and for myself 55l., or thereabouts; having made myself a velvet cloake, two new cloth suits, black, plain both; a new shagg gowne, trimmed with gold buttons and twist, with a new hat, and, silk tops for my legs, and many other things, being resolved henceforward to go like myself. And also two perriwiggs, one whereof costs me 3l., and the other 40s. — I have worn neither yet, but will begin next week, God willing. So that I hope I shall not need now to lay out more money a great while, I having laid out in clothes for myself and wife, and for her closett and other things without, these two months, this and the last, besides household expenses of victuals, &c., above 110l. But I hope I shall with more comfort labour to get more, and with better successe than when, for want of clothes, I was forced to sneake like a beggar. Having done this I went home, and after supper to bed, my mind being eased in knowing my condition, though troubled to think that I have been forced to spend so much.⁶³

Pepys' resolution 'henceforward to go like myself' reveals how deeply appearance and identity were intertwined, both in his mind and in commonly held understanding. Clothing advertised one's occupation, fortunes, and politics (particularly in the case of wigs, made popular through the Carolean court following Charles II's exile in France) in a complex interplay of conformity, distortion, and conspicuous consumption, a visibly legible signifier of self-directed status before one has uttered a single word, and thus a valuable language for portraiture. On seeing Charles I 'in a plain common riding-suit and velvet cap' following his coronation, Pepys notes that 'he seemed a very ordinary man to one that had not known him' in acknowledgement of this relationship between clothing and status.⁶⁴

From early 1664 the cost of individual items of clothing is recorded less frequently and by June 1665, following news of the English victory at the Battle of Lowestoft, Pepys records meeting with his tailor to purchase 'a silke suit, which though I had one lately, yet I do, for joy of the good newes we have lately had of our victory over the Dutch, which makes me willing to spare myself something extraordinary in clothes; and after long resolution of having nothing but black, I did buy a

⁶³ Pepys, *Diary IV*, pp. 357-8 (31st October 1660).

⁶⁴ Pepys, *Diary II*, pp. 157-8 (19th August 1661).

coloured silk ferrandine'.⁶⁵ By this point Pepys is able to buy clothing to celebrate particular successes and the element of personal taste is introduced; Pepys would continue to follow sartorial trends, outfitting himself in 'my new stuff-suit, with a shoulder-belt, according to the new fashion, and the bands of my vest and tunique laced with silk lace, of the colour of my suit: and so, very handsome' before heading to church in 1668.⁶⁶ So sure is he of his continuing fortunes that he is able to pre-engage the services of a barber 'to keep my perriwig in good order at 20s. a-year', looking forward to '[going] very spruce, more than I used to do' in an acknowledgement of his earlier struggles with expenditure.⁶⁷

The English Sumptuary Laws may have been repealed in 1604, but there still existed a conscious association of clothing with societal rank even as those societies became more dynamic, and as late as 1669 Pepys experienced anxiety over a new suit with gold lace protruding from the sleeves, fearing it 'too fine'.⁶⁸ Eventually, having been persuaded by his wife, Pepys donned the suit and went to show it off in conspicuous parade 'with our new liveries of serge, and the horses' manes and tails tied with red ribbons, and the standards there gilt with varnish, and all clean, and green refines, that people did mightily look upon us; and, the truth is, I did not see any coach more pretty, though more gay, than ours, all the day'. Comparison was the objective – of being seen to conform, to be able to afford, to have the knowledge of the court and its style which such styles of dress required – and Hyde Park a central theatre for such performances. Hyde Park was opened to the general public by Charles I in 1637 following it being opened to gentlefolk by his father and had become a venue to both see and be seen; of the 57 mentions of Hyde Park by Pepys in his diary over a third take place in its last three

⁶⁵ Pepys, *Diary IV*, p. 124 (9th June 1665). The previous day Pepys described the death of Richard Boyle, elder brother to Robert, on board the ship of James Stuart, then Duke of York and later James II: 'The Earl of Falmouth, Muskerry, and Mr. Richard Boyle killed on board the Duke's ship, the Royall Charles, with one shot: their blood and brains flying in the Duke's face; and the head of Mr. Boyle striking down the Duke, as some say' (p. 122 (8th June 1665)).

⁶⁶ Samuel Pepys, *The Diary of Samuel Pepys Volume IX: 1668-9* eds. Robert Latham and William Matthews (London: Bell & Hyman, 1971), p. 201 (17th May 1668).

⁶⁷ *Ibid.*, p. 217 (30th May 1668).

⁶⁸ *Ibid.*, p. 540 (1st May 1669).

months, indicating his increased security within this social sphere. In the last month of his diary, Pepys visits Hyde Park alone and relates ‘walking out of my coach as other gentlemen did’, finally happy to include himself in that category.⁶⁹

Crucially, the Pepys of the diary is always socially orientated and his efforts of presentation always publicly directed. It is the rise of this social self which the diary records: the life of a man who had served pleasant dinners, attended coffee house meetings, taught his wife Elizabeth to play music decently in front of company. Nothing in Pepys’ diary escapes the public eye; his worries following rows with Elizabeth consist largely of what the servants are likely to have overheard. Even his reading during this period was ‘dominated by utilitarian motives’, acquiring books that he understood little of except for the importance of being seen to own them.⁷⁰ By recording these activities Pepys testifies about the social richness of his life, and his testimony, in light of the rhetoric of experimentalism, becomes his proof. To isolate single threads within the diary detracts from the text as a summative whole, however; such particulars give rise to general truths, forming a Baconian history of the self in growth in which the narrating ‘I’ examines his fulfilment of the ideological *faber fortunae*. Pepys is more than the details of restoration politics and culture mined for by historians, and the value he accorded to his diary as a whole indicates his views of its contents as being continuous rather than discrete.

Data and Dosing with Robert Hooke

The contrast between the diaries of Pepys and Hooke may be made when considering their accounts of their meetings. Pepys had attended a meeting of the Royal Society after having been admitted a member, signing the register book and taking the hand of Lord Brouncker before witnessing Hooke demonstrate some experiments on fire using the pneumatic engine of his and Boyle’s design. Pepys was delighted, finding it ‘a most acceptable thing to hear their discourses and

⁶⁹ Ibid., p. 557 (19th May 1669).

⁷⁰ Elspeth Jajdelska, ‘Pepys in the History of Reading’ *The Historical Journal* 50.3 (2007), 562.

see their experiments.⁷¹ ‘Above all’, he wrote, ‘Mr. Boyle today was at the meeting, and above him Mr. Hooke, who is the most, and promises the least, of any man in the world that ever I saw.’ Following the meeting, ‘excellent discourses till 10 at night’ was enjoyed at the Crown tavern. Pepys himself is mentioned only a handful of times in Hooke’s diary, and in rather more sparing terms. In August 1676 Hooke was ‘twice with Mr Pepys who was very civill and kind’; in December of the same year Hooke observed that ‘Mr Pepys master of Trinity House made a Long speech to noe great purpose’; by 1678 he merely records the fact that ‘Pepys and Sir R. Southwell eat at Cheshire cheese.’⁷² The apparent relegation of Pepys from kindly acquaintance to cheese consumer is illuminated, however, by a glance at the entry for the preceding day: ‘Heard of Popish Plot Discovered’. Objectivity rendered through sparsity was not reserved for Pepys alone but was the characteristic style of Hooke throughout his record keeping.

Robert Hooke’s *General Scheme, or Idea Of the Present State of Natural Philosophy*, outlines a ‘philosophical algebra’ which describes the duties of the natural philosopher as ‘collecting the Phenomena of Nature’, ‘Discovering the Perfections and Imperfections of Human Nature’ in order to identify prejudices, and finally ‘describing, registering and ranging these Particulars so collected’.⁷³ In order to do so, the natural philosopher should ‘imagine himself a person of some other Country or Calling, that he had never heard of, or seen anything the like before’, and it this distancing between object and observer which characterises Hooke’s diary.⁷⁴ There are three common strands of collected particulars in Hooke’s 1672-83 diary: scientific experimentation, public affairs, and personal diet and dosing. The third aspect of Hooke’s life is unique to the diary, the first two corroborating material to be found elsewhere, most particularly in the journal books of the Royal Society which list Hooke’s demonstrations at the weekly meetings. Hooke’s record of dosing is most systematic in the first diary, although there are some instances in the second. In contrast to the fumbled conquests and incessant

⁷¹ Pepys, *Diary VI*, p.36 (15th February 1665).

⁷² Hooke, *Diary*, p. 248 (28th August 1676), p. 263 (19th December 1676), p. 379 (30th September 1678).

⁷³ Robert Hooke, *The Posthumous Works of Robert Hooke, M.D. S.R.S. Geom. Prof. Gresh. &c. Containing his Cutlerian Lectures, and other Discourses* ed. Richard Waller (London, 1705), pp. 7-8.

⁷⁴ *Ibid.*, p. 62.

groping which Pepys chronicles, Hooke records any kind of sexual experience by simply drawing the symbol of Pisces.⁷⁵ The name of a partner (usually his niece Grace) is occasionally noted but the symbol remains the same when a partner is either unnamed or absent, indicating that Hooke's interest in committing his sexual activities to paper lay more in recognising it as another form of purgation.

Hooke would self-prescribe for every bodily shortcoming, and he recorded the details of both dosage and outcome scrupulously in his diary. The diary becomes akin to a laboratory notebook, with himself as the experimental subject (some examples include entries for 27th April 1674, 30th July 1675, 1st August 1675, and 11th September 1677, to name only a few). Often, the effects of certain dosages are discussed in language which highlights both Hooke's perception of these practices as forming part of his public experimentalist work but also his ambitions regarding personal recognition, as the word 'discovery' indicates here.

Took volatile Spirit of Wormwood which made me very sick and disturbed me all the night and purged me in the morning. Drank small beer and spirit of Salamoniack. I purged 5 or 6 times very easily upon Sunday morning. This is certainly a great Discovery in Physick.⁷⁶

These observations were not restricted to the author himself; the physic administered to close friend Wilkins was recorded equally systematically, and a note of the death of Sir Robert Moray is punctuated by the report that he had 'an howr before his Death drank 2 glasses of cold water'.⁷⁷ Not only did Hooke record the (frequently unpleasant) physical effects of his habitual physic-taking but also the perceived mental effects, effects which require the experimenter to be the experimental subject. Hooke associates a self-induced purge and drinking ale with cured melancholy:

Tooke Dr. Godderds 3 pills which wrought 14 times towards latter end. I was again very giddy and more afrt eating, which continued till I had taken a nap for ½ howr about 5 when I was very melancholy but upon drinking ale strangely enlivend and refreshet after which I slept pretty well and pleasantly. Dreamt of riding and eating cream.⁷⁸

Hooke also associated dosing and purging with increased intellectual capabilities:

⁷⁵ Presumably due to its mythological association with Aphrodite and Eros. See Robin Hard, *Constellation Myths with Aratus's Phaenomena* (Oxford: Oxford University Press, 2015), p. 84.

⁷⁶ Hooke, *Diary*, p. 172 (1st August 1675).

⁷⁷ *Ibid.*, p. 13 (16th-19th November 1672), p. 49 (4th July 1673).

⁷⁸ *Ibid.*, p. 18 (27th December 1672).

Took Childs vomit, Infusion *Crocus Metallicus*. i. Wrought pretty well. Refreshed by it. Dined home. Made description of quadrant. Lost labour. Slept after dinner. A strange mist before my eyes. Not abroad all day. Slept little at night. My fancy very clear. Meditated about clepsydra, quadrant, scotoscopes, &c.⁷⁹

On 6 February 1674, Hooke relates how he ‘tryed new metall’ at a coffee house before he ‘tryed’ a reflex microscope. The conjunction of the two experiments, and the double use of ‘tryed’, links the two as equivalently practical experiments, and suggests that chemical instruments may enhance man’s capacities in the same manner as the microscope and telescope. Mulligan argues that these were designed to be correctives for Hooke’s experimentation elsewhere rather experiments in and of themselves. Rather, as Jardine states, Hooke’s dosing was ‘regular and habitual; he dosed regularly to make himself feel better, rather than to treat individual, specific sicknesses’.⁸⁰ Henderson disagrees with Mulligan that the diary is entirely a scientific enterprise, preferring instead to say it is simply a record of things which Hooke intended to remember.⁸¹ When read in conjunction with Hooke’s lecture on memory, however, we see that this is as much a scientific enterprise in its construction as the content which it relates.

Hooke borrows from the almanac in noting down in his diary everything significant to him, not just the weather, in one place. In looking for causes and effects on his own health, Hooke reflected a wider seventeenth-century shift from time being heard (bells) to being read (clocks), presenting everything to be read at once so that the process may be seen. This construction of a history of human health reiterated both the importance of ‘the principle of seeing the *process* as the most concrete

⁷⁹ *Ibid.*, p. 105 (31st May 1674). The word ‘vomit’ is not used here in a metaphorical sense.

⁸⁰ J.A. Bennett, Michael Cooper, Michael Hunter, and Lisa Jardine, *London’s Leonardo: The Life and Work of Robert Hooke* (Oxford and New York: Oxford University Press, 2003), p. 183 (and the third chapter in general).

⁸¹ Henderson, ‘Unpublished Material’, 130.

historical entity' and an endeavour to record information systematically which was a specific concern of the early Royal Society.⁸²

Hooke was the keeper of the repository of the Royal Society, the storage location of Boyle's air-pump when not in use, and set up a dwelling adjacent to the space in which the objects of the repository were stored. In other words, as Shapin notes, Hooke 'worked where he lived', the repository emerging as part of the texture of Hooke's everyday material, philosophical, and intellectual experience. Going further, it can be expressed that Hooke also lived as he worked – or at least, recorded his life in the same manner. His diary functions as his repository, the visualisation of highly industrious mechanical cognition. To understand both the general aim of the Royal Society in ordering information, and Hooke's application of this understanding, it is useful to refer once again to Sprat's *History* and the expressed goal of the Society in recording its experiments. These experiments, we remember, should be 'as reduc'd its principal observations, into one *commonstock*; and laid them up in publique *Registers*, to be nakedly transmitted to the next Generation of Men; and so from them, to their Successors'.⁸³ Hooke's preface to *Micrographia* expands on the benefits of ordering information into such a commonstock, and the passage is worth quoting in full.

It is the great prerogative of Mankind above other Creatures, that we are not only able to *behold* the works of Nature, or barely to *sustain* our lives by them, but we have also the power of *considering, comparing, altering, assisting, and improving* them to various uses. By the addition of such *artificial Instruments and methods*, there may be, in some manner, a reparation made for the mischiefs, and imperfection, mankind has drawn upon it self, by negligence, and intemperance, and a wilful and superstitious deserting the Prescripts and Rules of Nature, whereby every man, both from a deriv'd corruption, innate and born with him, and from his breeding and converse with men, is very subject to slip into all sorts of errors.⁸⁴

Hooke continues by stating that physical experimentation 'has this advantage over the Philosophy of *discourse and disputation*, that whereas that chiefly aims at the subtlety of its Deductions and Conclusions ... so this intends the right ordering of them all, and the making them serviceable to each

⁸² Paul Glennie and Nigel Thrift, *Shaping the Day: A History of Timekeeping in England and Wales 1300-1800* (Oxford: Oxford University Press, 2009), p. 60.

⁸³ Sprat, *History*, p. 115.

⁸⁴ Hooke, *Micrographia*, p. 7.

other'. Artificial methods and right ordering include making tables to view information and the establishment of spaces to view collected items and experimental equipment. We can extend this sense of right ordering to understand how Hooke would have perceived of and used his diary as an instrument, enabling him to hold swathes of data in front of him at one time. Hooke sets out how experimental notes should be kept at the end of his *General Scheme* and also expands on the usefulness of this method, in terms which serve well to illustrate the style in which he wrote his diary: recording what had happened soon after the fact, excluding all opinions (including his own), initially setting out the diary so that a month may be viewed at once.

The next thing to be taken care of is the manner of Registering: and this, as it ought to be done as fast as the Experiment is made, and as soon as the Observations... occur, because of the Frailty of the Memory, the greatest Significancy there may be in some of the meanest and smallest Circumstances; so ought they afterwards to be several times reviewed... and abbreviated in the manner of Description; so that nothing be wanting in the History, so nothing also be superfluous... .. not augmenting the Matter by Superlatives, . . . not inclining it to this or that Hypothesis, . . . avoiding all kinds of Rhetorical Flourishes... whereby the whole history may tracted into as little Space as is possible; ... for this ... is of huge Use in the Prosecution of Ratiocination and Inquiry and is a vast Help to the Understanding and Memory.⁸⁵

We return, then, to the subject of memory. Hooke's lecture on the subject (given in 1682 but first published posthumously) presents a mechanical model of memory to explain perception, remembering and thinking. For Hooke, there is a point in the brain where the soul has 'its principal and chief seat'. This point receives the impressions from all the senses and consists of brain matter which is of different kinds adapted to receive the impressions from the different senses. Crucially this point, otherwise known as memory, is referred to by Hooke as a repository. The senses collect impressions and deliver them to the 'Repository of Ideas', and the soul directs and controls the formation and storage of ideas in the repository for future retrieval.

My Notion of it is this, that the Soul in the Action of Attention does really form some material Part of the Repository into such a Shape, and gives it some such a Motion as is from the Senses conveyed thither; which being so formed and qualified, inserted into and enclosed in the common Repository, and there for certain time preserved and retained, and so becomes an

⁸⁵ Hooke, *Posthumous Works*, p. 64.

Organ, upon which the Soul working, finds the Ideas of past Actions, as if the Action were present.⁸⁶

In light of this, Henderson's comment that Hooke's diary was simply a place for him to write things to be remembered takes on a far greater significance. For Hooke, his diary functioned as an extension of his own organ of memory, his repository, as much a personal collection of material as any confessional, and one of infinite assistance.

The Mind is the True Man: The Diaries in Public View

Assessing this content helps us to understand why and how these diaries were rewritten into fair copies for relative sorts of public reception by indicating which aspects of himself each author was most keen to highlight. The epistemological shift of the seventeenth century caused the ideological 'I' of Evelyn, Pepys, and Hooke to change with (and/or reflect) the advent of the *virtuoso*, elided with the architect of fortune. Each diary forms a history of the man himself, in which incremental particulars give rise to general truths, and the narrating 'I' reflexively evaluates his fulfilment of the *faber fortunae* ideology.

Assessing the differences between Evelyn's *Kalendarium* and the *Vita* is key to understanding how he viewed the documents themselves. Very little was actually removed entirely from *Vita* when rewritten, although some wording was changed to reflect developed interests and a few passages were inserted to provide more information for a fellow European traveller. *Vita* is shorn of some of the more personal impressions, though on varying bases. Some which are removed would not prove useful for a future reader: at the end of July 1638 Evelyn relates his stay with Mr Michel of Haughton but the comment of 'where we were very well treated' from the *Kalendarium* is cut, presumably owing to the lack of utility in knowledge of the hospitality of a dead man.⁸⁷ A few edits smooth some of the more antagonistic language used by the Royalist Evelyn at the time of the Restoration; further edits work to

⁸⁶ This quotation, and those preceding it, can be found in Hooke, *Posthumous Works*, pp. 138-40.

⁸⁷ Michael being first cousin to Evelyn's grandmother. Evelyn, *Diary II*, p. 21 (31st July 1638).

moderately improve the young Evelyn's character. The infant Evelyn's powers of retention and worldly perspective are also exaggerated somewhat between the two versions: in the *Kalendarium*, Evelyn wrote that 'the very first thing that I can call to memory, and from which time forward, I began to observe, was, this yeare my Youngest Brother, being in his Nurses armes'. This memory is removed in *Vita*, and 'the talke about Count Gundimor, then Ambassador from Spaine' regarding the Spanish Match takes its place.⁸⁸ A very lengthy list of the relics of St. Deny is identical, aside from removal of the comment in the *Kalendarium* that 'There is likewise a greate Crosse of Silver garnish'd with Jewells, and a multitude of other Crosses full of Reliques which I had not time to take notice of', thus giving an impression in *Vita* of a complete and entire viewing.⁸⁹ The narration of his move to the 'handsome' lodgings in Essex Court in the Middle Temple in June 1639, recently vacated by his newly married brother George, takes out the complaint about the four flights of stairs. In December of the same year, however, Evelyn retains judgement of himself of having received bishop's benediction out of curiosity rather than due preparation, as a lesson for the insufficiently pious reader.

The bulk of the material added between the two versions has its origin in the same guidebooks Evelyn first extracted information from for his earlier copy; his travels in the Low Countries are particularly subject to extensions derived from *Cosmographie* (1657) written by chaplain to Charles I Peter Heylyn.⁹⁰ Mining a book which claimed to be the most comprehensive description of the known world for extra material demonstrates Evelyn's appreciation of additional testimony and the reciprocal endorsement both his and Heylyn's observations can lend each other when verified as true by a third traveller, the presumed reader of *Vita*. What is perhaps most pertinent to an assessment of Evelyn's purpose in rewriting his diary is the substitutions that he made, substitutions which indicate what most interested him at the point of rewriting. These substitutions are overwhelmingly concerned with

⁸⁸ The date of the infant Evelyn's first recollections is recorded as 1623 in the *Kalendarium* and 1622 in *Vita*. Evelyn, *Diary II*, p. 6 (1623); Evelyn, *Diary I*, pp. 6-7 (1622).

⁸⁹ Evelyn, *Diary II*, p. 87 (c.17th November 1643).

⁹⁰ Examples include the award of Fort Rammekens to Elizabeth I as cautionary in 1585, and the (false) Dutch provenance of the House of de Vere in the town of Veere. I rely on de Beer's extensive commentary for this information.

accuracy, and the silent emendation nonetheless speaks volumes about Evelyn's concern with being trusted as an accurate observer. In 1643, for example, Evelyn viewed a water clock in Paris:

At foote of this Bridge is a water-house, at the front whereof a greate height is the Story of our B: Saviour and the Woman of Samaria powring Water out of a bucket; above a very rare dial of severall motions with a chime &c: The Water is conveyd with huge Wheelles, pumps & other Engines from the river beneath.⁹¹

The encounter in *Vita* is identical, save for stating more accurately that 'several motions of Clock-work, & Chimes' made up the dial.⁹² At the top of the cathedral in Antwerp meanwhile, the view afforded to Evelyn of the surrounding countryside put him in mind of the moon:

I ascended, that I might the better take a view of the Country about it, which happning on a day when the sunn shone exceedingly hot, and darted the rayes without any interruption, afforded so bight a reflection to us who were above, and had a full prospect of both the Land & Water about it, that I was much confirm'd in my opinion of the Moones being of some such substance as this earthly Globe consists of; perceiving all the subjacent Country (at so smale an horizontal distance) to repercusse such a light as I could hardly looke against; save where the River, and other large Water within our View appeared of a more darke & uniforme Colour, resembling those spotts in the Moone, attributed to the seas there &c according to our new Philosophy & the Phænomenas by optical Glasses.

In *Vita*, the passage is updated, the dark patches of water 'exceedingly resembling the Spots in the Mone according to that of *Hevelius*: and as they appeare in our late Telescop. There is only other mention of astronomer Johannes Hevelius by Evelyn in his diaries, in an entry of 29th June 1671 in the *Kalendarium*: 'steped in at the *Ro: Society* where we had letters from *Dr. Sylvius del Boe* Professor at *Leyden*, with a present of his Booke <newly> published, with others from *Hevelius* of *Dantzique* &c'. Hevelius' work of lunar topography *Selenographia* (1647) to which *Vita* refers was however mentioned approvingly by Evelyn in *Sculptura* (1662) as part of a history of chalcography, and Hevelius himself would be elected a Royal Society Fellow in 1664.⁹³ It was possible that Evelyn simply hadn't encountered Hevelius' work at the time of writing the first part of the *Kalendarium*. By the time of rewriting his earlier diary into *Vita*, however, Evelyn had updated his references and

⁹¹ Evelyn, *Diary II*, p. 93 (24th December 1643).

⁹² Evelyn, *Diary I*, p. 62 (5th November 1643). The description of the water clock has been absorbed into a general description of Paris in the entry which describes Evelyn's first arrival in the city.

⁹³ Evelyn, *Sculptura*, pp. 82-3.

terminology as a result of his involvement in the Royal Society, and the new philosophy was no longer new.

A similar comparison can be made of Evelyn's differing accounts of seeing a pelican for the first time in 1641. On the 13th of August he viewed a pelican at Rotterdam, along with an elephant (who, with his trunk, 'tooke, and reached what ever was offer'd him') as well as various animal monstrosities.⁹⁴ Evelyn observed in the *Kalendarium* that the gullet of the pelican 'would easily have swallowd, a little child, wherein (as Sanctius delivers) in one dissected, a Negro child was found'. Evelyn makes no mention of the shape of the bill or myth of the pelican piercing its breast in this first version. By the time of rewriting the experience in *Vita*, however, Evelyn knows that the gullet is where the pelican keeps a reserve of fish, and also that the story of the pelican piercing its breast to nourish its young has its origin in 'his large Crooked bill: the point whereoff being red & bending towards the brest gives occasion of the fable'.⁹⁵ It may be that in the intervening years Evelyn had paid more attention to Browne's discussion of the pelican in *Pseudodoxia* in which the function of its gular pouch is explained, the shape of its bill is described, and the image of the self-sacrificing pelican is dispensed with.⁹⁶ Once again, however, the corrections are silent: the reader of *Vita* alone would be ignorant to the fact that the writer of the *Kalendarium* saw the gullet of the pelican as nothing but an occasional repository for children.

We can see that Evelyn's writing of his diary held both dynastic and documentary interest for him. Evelyn's diary presents his ideal traveller fused with the interest in the arts and sciences which, in addition to the usual gentleman's pursuits, had come to mark out the virtuoso, while also allied to the Horatian ideal of meditative rural retreat. Evelyn had designed Italianate gardens for his brother at Wotton and his friend Henry Howard at Albury and drew on his experiences in France and Italy for his own garden at Sayes Court: here, too, *otium* became fused with the *vita activa*, as his garden doubled

⁹⁴ Evelyn, *Diary II* p. 40 (13th August 1641).

⁹⁵ Evelyn, *Diary I*, p. 30 (undated, August 1641).

⁹⁶ Thomas Browne, *Pseudodoxia Epidemica or Enquiries into Very Many Received Tenents and Commonly Presumed Truths* (London, 1646), pp. 233-4.

as a laboratory, and his plans for building a utopian garden city in the wake of the Great Fire of London reflected the same Edenic impulse through the prominence of the Italian radial style.⁹⁷ We should also remember that Evelyn had appended a monthly horticultural guide, titled *Kalendarium Hortense*, to *Sylva, or a Discourse of Forest-Trees* in 1664, a published model of activities dictated by the calendar and informed by personal experience which Evelyn intended to be imitated by readers for common benefit; it may be supposed that Evelyn eventually intended for *Vita* to serve a similar if more limited function within his immediate social circles. Time ran out for Evelyn, however, and it was the *Kalendarium* which was first discovered as ‘old Mr Evelyn’s diary’ at Wotton in the 19th century, having stayed in the family as a result of his bequeathing his books to his nephew.⁹⁸ Each change between the two versions of the diary shows Evelyn in a more developed, more mature light, a man who is more exact in both observation and description. These silent amendments mean that the demonstration of supposedly true observations in Evelyn’s *Vita* are, as is often the case, the product of careful and deliberate filtration and rewriting. To return to Thomas Sprat, if one was to only hold Evelyn’s *Vita* in their hands, it would appear to be a ‘bare, unfinished history...[ready]...to be nakedly transmitted to the next Generation of Men’.

Pepys had inducted the volumes of his diary into his library at some point in the mid-1670s, having had them each bound to match the styles of the existing collection, a practice he had engaged in since at least 1664.⁹⁹ Close to death in 1703, Pepys added codicils to his will containing instructions with regard to his library: its enlargement, decoration, and eventual inheritance by Magdalene College. There was no mention of removing his journal, and we can assume that his executor John Jackson had had no private instructions to that effect either – and after all, if Pepys had wished them to be removed, for reasons of propriety or otherwise, he presumably would have quietly done so himself.

⁹⁷ National Maritime Museum Greenwich, G297:20/15.

⁹⁸ National Archives PROB 11/487/241.

⁹⁹ ‘Up and by and by to my bookseller’s [Joshua Kirton], and there did give thorough direction for the new binding of a great many of my old books, to make my whole study of the same binding’. Pepys, *Diary VI*, pp. 14-5 (18th January 1665).

The quietly knowing display of his journal in his library becomes significant when we appreciate that ‘very early in its existence Pepys's book collection had served a range of evolving social functions and as a locus for sociability’.¹⁰⁰ An unpublished manuscript by Pepys (written circa 1701) on private libraries described how books should be held according to ‘theyr Weight, and the particular Genius of their said Owner’, and Loveman links this to Pepys’s bookplate motto from Cicero’s *The Republic*: ‘Mens cuiusque is est quisque’ (‘as is the mind, so is the man’), the library thus functioning as a projection of the mind of its owner.¹⁰¹ Taking this further, the existence of the volumes of his diary among his collection may be taken to form part of this mind: a record of Pepys as he saw himself through the eyes of others, to be observed as part of the library accumulated by the self-made man of means, its existence on display proof of its author’s ascendancy.

As was to be expected Hooke’s curatorial pursuits extended to his private collections, and his diary contains many references to having ‘Rangd & catalogud Library’, ‘setled books & numbrd them’, or ‘catalogued Small books’.¹⁰² Lotte Mulligan draws on the list of Hooke’s public curatorial duties which appears at the end of the volume, including the self-identifying note at the end of one such list (‘AETAM RH July 13 35 bapt. 26’) as evidence for his expectation that his diary would be discovered and identified.¹⁰³ A stronger case may be made when the correlation between Hooke’s diary and the extracts included in Waller’s ‘Life’ is examined, indicating that Waller had access to some form of fair copy if not the diary itself. Waller drew upon at least four distinct sources for his ‘Life’ of Hooke, only two of which are known to survive today: Hooke’s autobiography, his ‘diary’ and/or ‘memorials’ (it is not clear if these are the same), the *Philosophical Transactions*, and the Royal Society journal books. For the periods covered in the extant diaries Waller relies solely on the Society journal books – the first extant diary did not come into his possession until 1708, and there are

¹⁰⁰ Kate Loveman, ‘Books and Sociability: The Case of Samuel Pepys’ Library’ *The Review of English Studies*, New Series 61(249) (2010), 214.

¹⁰¹ Samuel Pepys, *Private Correspondence and Miscellaneous Papers of Samuel Pepys, 1679-1703, in the Possession of J. Pepys Cockerell Volume II: 1700-1703* ed. J.R. Tanner (London: G. Bell and Sons, 1926), p. 248.

¹⁰² Hooke, *Diary*, p. 16 (12th December 1672), p. 265 (1st January 1677), p. 279 (13th March 1677).

¹⁰³ Mulligan, ‘Self-Scrutiny and the Study of Nature’, 316.

no references to any personal papers of Hooke's for 1688-93 either. Waller refers to a diary entry (the first time he uses this word) dated 18th of July 1696 and quotes Hooke's relief on the resolution of his chancery suit.¹⁰⁴ Clearly, Hooke's memorandum or diaries were more extensive than those which have survived. The style of the earlier quoted memorandum passages is far more prosaic than the jottings of the diary, even when it morphed from being a weather journal into a fuller account of Hooke's activities, and has more in common with the passage Waller selects from Hooke's childhood autobiography. We might conjecture that this childhood autobiography was not the only part of his life which Hooke had begun to rewrite in his old age. Regardless, it is clear that Hooke intended to use his diaries as the main source for a fuller autobiography, making the private public, albeit edited in order to demonstrate what the author wanted. For Hooke this was (arguably) his scientific achievements, and he saw his diaries as worthwhile documents in order to aid him.

Hooke's diary was private, focusing on processing thoughts and data after the events. Pepys and Evelyn compiled their diaries from later vantage points, but they were not rewritten at later dates as memoirs; in all three diaries, the immediacy and primacy of experience is artificially preserved. Evelyn and Pepys reworked their diaries for other eyes in order for character, at the point at which it observes and records, to be legitimised through imitation. To a lesser extent, Hooke engaged in a practice of 'future proofing' his designs in his diary, with detailed and numbered figures which could prove legitimate claim to invention in the event of a dispute. More significantly, however, Hooke recorded a practice of self-experimentation which saw the diarist himself not just as datum but as the raw material from which it is produced, and there is also evidence to suggest that Hooke began to write up his diary into a comprehensive history for a degree of public view. The diaries can be united, overall, through this chapter's assessment which has read them as trials of testimony, of the working out of each man's presentation of themselves as *faber fortunae*.

¹⁰⁴ Hooke, *Posthumous Works*, p. xxv.

Chapter 3| Assessing the Experimentalist Essay

Those who commentate on the development of the experimental essay, a proposed subgenre of the essay in seventeenth-century England, present Boyle as the epitome of the experimental essayists, but then either fail to mention any further examples of individual practitioners or lead into a discussion of papers printed as part of the *Philosophical Transactions*.¹ In *Of Essays and Reading in Early Modern Britain* (2006) Scott Black is right to criticise others for focusing on the essay's French history as opposed to its English context but overstates the case for Boyle's influence on other experimentalists. It may be that these are attempts to see the emblematic Boyle as the direct ancestor of the modern scientific report in a misguided adherence to a narrative of teleological historical progress, an approach which ignores three things: the fact that essays in England were nearly always published as a collection by one author, that none of the papers in the *Philosophical Transactions* refer to themselves as essays, and that Boyle explicitly intended for the essay form to be used to persuade others to take up experimental research.² Black argues, too, that the essay form as modified by Robert Boyle excised any autobiographical impulse, which shall be disproved later in this chapter. Rather, it is the precisely the association with personal experience which caused members of the Royal Society, following Boyle, to consider the essay an ideal vehicle for promoting the Society and its enterprises. Boyle vitalised the genre with the truthful association of object and subject so crucial to the acceptance of the new science, and Society Fellows following Boyle used that association and empirical spirit both to promote the Society and its new philosophy and also for their own advancement *as individuals*. This chapter argues that reading these essay collections in parallel allows us to tease out a hitherto unacknowledged adaption of the essay which was not designed to convey experimental data (as the positing of the apparently non-existent genre 'experimentalist essay' would suppose) but was

¹ Maurizio Gotti, 'The Experimental Essay in Early Modern English' *European Journal of English Studies* 5.2 (2001), 221-239; Scott Black, *Of Essays and Reading in Early Modern Britain* (Basingstoke: Palgrave Macmillan, 2006), Chapter 3.

² The sole exception to this is John Wallis' 'An Essay of Dr. John Wallis' published in *Philosophical Transactions* 1.16 (1666), 263-281, which presents his hypothesis regarding the motion of the tides but no observed data.

nonetheless informed by the scientific pursuits of their authors. What groups these men together is that they were the only members following Boyle to title their work as essays: even if these works were produced outside of the Society's official authority, the selection of the word essay invites us to appreciate the influence of both Boyle and the Society's empiricist endeavours on their authors.

This chapter opens with a survey of the common formal features of the early modern English essay before considering the use made of the emergent genre of the essay by seventeenth-century members and associates of the Royal Society. Robert Boyle is often cited as the epitome of the experimentalist essay writers, who used the genre to publish their findings; however, works titled as essays were generally written to advance the Society as well as the scientific method itself, and this is the case with the three Fellows who adopted the essay genre in the forty years following Boyle's example. Abraham Cowley's scientific interests had found expression in a short prose pamphlet published in 1661, *A Proposition for the Advancement of Experimental Philosophy*. Joseph Glanvill's *Scepsis Scientifica* (1665) earned him a Society fellowship, and he continued to use the essay form to promote the activities and philosophy of the Society. William Petty turned to essay writing in his later life, and his essays put a Baconian passion for quantitative precision to political use. Boyle can be seen as an exception to, rather than the epitome of, the use of the essay form by Royal Society members and associates, yet the essay was still a vital tool for the promotion of the new natural philosopher, practitioner of the new natural philosophy. The chapter will conclude by surveying the essays of the Royal Society's promoters as results of essaying, itself an experimental process. The essay form was ethically inflected in two ways: through the conscious eschewing or adoption of rhetoric, and the espousal of ethical theories of how to live. Above all, it was a genre which relied on the communication of personal experience.

Bakhtin defines a novel as 'whatever form of expression within a given literary system reveals the limits of that system as inadequate, imposed or arbitrary', but this can also apply perfectly well to

the essay.³ A genre is a social construct which regularises communication: the formal features of a genre are the linguistic (symbolic) solutions to a problem in social interaction, and a literary perspective on the history of science emphasises the interdependence of ideas with the social and material contexts of their formation and dissemination. For Scott Black, the essay as a genre ‘enabled different moves than writing construed in terms of systems of production, maps of identity, or dynamics of power’; while Black is correct to highlight the kinetic processes of reading and drafting involved (and reflected) in the production of essays, the essays to be surveyed in this chapter can be better understood when considered as texts produced to bolster the social acceptance of the new natural philosophy and its practitioners.⁴ As shall be seen, to construe these essays as ‘maps of identity’ will demonstrate why this medium in particular was deployed by defenders of the *virtuosi*, and bring attention to a hitherto overlooked early modern utilisation of the essay genre.

Rules for Making It: The Essay in 1660s England

By 1665 the essay as a genre can be considered to have been somewhat codified in the early modern cultural consciousness of the middle classes by its inclusion in Ralph Johnson’s school grammar, *The Scholar’s Guide* (1665). Johnson took his cue from classical rhetoric and included composition, poetry, and Latin in his guide; more unusually, however, he also offered instruction on genres such as orations, poetry, hymns, and epistles. The instruction on the essay reads as follows.

An Essay is a short discourse about any virtue, vice, or other common-place. Such be Learning, Ignorance, Justice, Temperance, Fortitude, Prudence, Drunkenness, Usury, Love, Joy, Fear, Hope, Sorrow, Anger, Covetousnes, Contentation, Labour, Idlenes, Riches, Poverty, Pride, Humility, Virginity, &c.

RULES for making it

1. Having chosen a Subject, express the nature of it in two or three short Definitions or Descriptions
2. Shew the severall sorts or kinds of it, with their distinctions
3. Shew the several causes, adjuncts, and effects of each sort or kinde

³ Michael Holquist and Katerina Clark, *Mikhail Bakhtin* (Cambridge, Massachusetts: Harvard University Press, 1984) p. 276.

⁴ Scott Black, *Of Essays and Reading in Early Modern Britain* (New York: Palgrave Macmillan, 2006), p. 2.

4. Be careful to do this briefly, without tautology, or superfluous words, in good and choice language

5. Metaphors, Allegories, Antithetons, and Paronomasia's do greatly adorn this kind of exercise

6. In larger and compleat Essays (such as *Bacon's*, *Feltham's* &c.) we must labour compendiously to express the whole nature of, with all observables about our subject.⁵

Johnson's approach is practical, with succinct explanations and definitions shorn of explicatory models for any category allowing each schoolmaster to illustrate each as he wished. Clearly, each instructor should be familiar enough with each genre included in the text in order to be able to provide such examples. The inclusion of Francis Bacon and Owen Feltham does, however, point to the stature of these two authors in the public knowledge of the essay in English; or, rather, to the most 'compleat' instances of its use.

We should return, then, to the formal features of the essay. The essay is concise, shorter in length than the dialogue or the treatise, making it suitable for communicating singular concepts without prematurely binding them together into systems. Quotations from other sources are not always used as simple sources of authority but are deployed as contradictory evidence. Here the inheritance from commonplacing can be seen: quotations from different sources accumulated under headings, often with observations made by the collector (hinted at by Johnson, above, in reference to 'common-place' topics). When this technique is published by way of an essay, the reader trusts the author as adjudicator. The early modern essay was tentative, unfinished, exploratory; it lacked assertiveness, and required no conclusion. It is precisely this lack of bombast which promoted the essayist as one to be trusted.

Essays should be valued not just as attempts, tries, or assays, of course, but also as critical reflections. The process of trying to write is a critical process of reflecting on the words chosen, and such reflections mean that new thoughts are constructed as part of the essaying process. This ostensibly undogmatic process of reflection also extends to the personal experiences of the essay

⁵ Ralph Johnson, *The Scholar's Guide* (London, 1665), pp. 13-4.

writer: multiple perspectives affirm the essay's purpose as being the discovery of what is possible, rather than simply reiteration of what is commonly accepted as factual. If, as Black persuasively argues, essays were the humanistic digestion of reading, then the reader of the essay participates in the author's reading, and if the essay is the autobiography of a reader then, when read, it becomes a tool of epistemological reform when the essay's reader is presented with the data for themselves, and the essay as experienced by a reader is therefore an advertisement for the cogitating individual author. A reflective essay helps its author interpret their experiences as they write: as will be seen, the essay form was adopted by the *virtuosi* and their defenders because of its association with personal knowledge and experience. The early modern essay was ethically inflected through the supposed eschewing or adoption of rhetoric: in practice, however, the essay simply substitutes one form of rhetoric for another to give the impression of novelty, pretending to be spontaneous and raw (in this sense Montaigne frequently likens writing to speaking as a secondary act) while having actually been extensively revised, art concealing art.⁶

Moving further beyond the merely formal attributes of the early modern essay allows for a consideration of what the common circumstances of their production may be. If we agree with Michael L. Hall that the essay emerged in the sixteenth and seventeenth centuries as a product of, and response to, the Renaissance idea of discovery, and that 'the essayist marshals rhetorical strategies with the intention of conveying to a reader the experience of personal exploration and discovery', we must also accept that there must be a prompt which encourages the essayist to share that experience with his reader.⁷ The essay thus becomes a literary response to crises and doubt, written in reflective calmness after the fact. Strongly affected by the St Bartholomew's Day Massacre in Paris, Montaigne tried to turn outward by collecting quotations, and inward by examining himself, finding universality in neither. Turning inward, he found that he himself was as various as the world without: 'Every man

⁶ Michel de Montaigne, *The Complete Works of Michel de Montaigne: Essays of Montaigne Volume I* trans. Charles Cotton, ed. W. Carew Hazlitt (New York: Edwin C. Hill, 1910), p. 136

⁷ Michael L. Hall, 'The Emergence of the Essay and the Idea of Discovery' in *Essays on the Essay: Redefining the Genre* ed. Andrew J. Butrym (Athens: University of Georgia Press, 1989), p. 82.

has within himself the entire human condition'; others might shape the man but Montaigne narrates him ('I do not paint his being, I paint his passing').⁸ Bacon's challenges were of the New World and the new philosophy: received scientific doctrine had crumbled, demonstrating the validity of the theory of Idols. When confronted with an overthrown model of an ordered universe, the reassessment of received opinions required a re-examination of man's place in the new universe. Bacon was as strongly attracted to scepticism as Montaigne, but believed that empiricism could offer an escape from uncertainty: his dedication of the 1597 edition of his essays says that they are 'medicinal', and the implication of the metaphor is that the reader is in need of a cure. When it comes to the essayists of the early Royal Society, the crisis which prompted them to write was the unstable reputation of the Society itself. The instability of the Society's incipient reputation was the crisis which caused its defenders to write, and the essay was used as seemingly unlicensed propaganda based on its use by Boyle within its institutional context.

Attention must also be drawn to the publication conventions which sprang up around the individual essay. The emerging and formative conventions of the English essay saw it published as part of a collection, suggesting coherence or inviting comparison of the abstract topics of the essays. A discrete series of commonplaces is held together by the methodology of its interpretation, and the subject and the hermeneutic function autobiographically by demonstrating the author's experiences and priorities. Studies of the essay's development in England frequently begin by considering Bacon as a respondent to Montaigne. Roger Pooley assesses their history of expanded and revised publication as pointing to 'the authors' strong sense of the provisional in what they wrote'.⁹ Paul Salzman juxtaposes Montaigne's witty and self-deprecatory inspection with Bacon's 'series of commonplaces, where the impression of an individual response is conveyed more through prose style than personal

⁸ Montaigne, *Essays of Montaigne Volume I*, p. 169, p. 168.

⁹ Roger Pooley, *English Prose of the Seventeenth Century 1590-1700* (London and New York: Longman, 1992) p. 173.

revelation'.¹⁰ Scott Black argues that essays had their origin as the humanistic digestion of reading, where the essay is the autobiography of a reader: both Montaigne and Bacon 're-engage those books...passing down a mode of attention in – and as – the experience of reading'.¹¹ Yet Black also claims that 'Nothing happens in essays...no selves are fashioned...no regimes of publicity, ideology, or subjectivity are instituted or resisted'.¹² Rather, the essay form as adopted and adapted by Bacon and his followers (if not direct imitators) was deliberately intended as a tool of epistemological reform.

English Essays Assayed: Francis Bacon, Thomas Browne, and Robert Boyle

As the narrative of the 'experimentalist essay' so often begins with Bacon (as do so many broader studies of the emergence of the essay in early modern English), it is appropriate to do the same here. The first edition of Bacon's essays (1597) is sparse and sententious, consisting largely of aphorisms in which methods of absorption and digestion of experience, and its dispensation in the form of advice, are obscured by the laconism of expression. For Bacon, however, 'knowledge, while it is in Aphorismes and observations...is in groweth', and his essays would be expanded significantly in two subsequent editions, both in number and volume when supported by additional analogies and metaphorical conceits to more fully explicate the earlier work.¹³ R.S. Crane interprets Bacon's *Essays* in their entirety, published in their most enlarged form in 1625, as 'supply[ing] deficiencies in morality and policy of which [Bacon] had become aware while engaged in...the first stage in his great philosophical undertaking'; this notion can be further developed by understanding that Bacon was also engaged in drawing attention to similar deficiencies in morality and policy in natural philosophy as well, and that his advocacy for the aphorism as a unit of effective communication was intended as a partial corrective to some of these deficiencies.¹⁴ As a basic unit of paratactic literary style the aphorism is formally concise, syntactically sentential, and semiotically sufficient, and to champion it

¹⁰ Paul Salzman, 'Essays', in *The Oxford Handbook of English Prose, 1500-1640* ed. Andrew Hadfield (Oxford: Oxford University Press, 2013), p. 468.

¹¹ Scott Black, *Of Essays*, p.30.

¹² *Ibid.*, p. 12.

¹³ Bacon, *OFB IV*, p. 30

¹⁴ R. S. Crane, 'The Relation of Bacon's Essays to His Program for the Advancement of Learning' in *Essential Articles for the Study of Francis Bacon* ed. by Brian Vickers (London: Sidgwick and Jackson, 1972), p. 278

was consciously anti-Ciceronian. For aphoristic knowledge to be 'in growth' without mushrooming into fuller discourse it must be supported by accurate observation and grounded in wide experience, and in the weightier *Essays* post-1612 this is purportedly the case.

For Aphorismes, except they should bee ridiculous, cannot bee made but of the pyth and heart of Sciences: for discourse of illustration is cut off, Recitalles of Examples are cut off: Discourse of Connexion, and order is cut off; Descriptions of Practize, are cutte off; So there remayneth nothing to fill the Aphorismes, but some good quantitie of Observation; And therefore no man can suffice, nor in reason will attempt to write Aphorismes, but hee that is sound and grounded.¹⁵

In the 1620 edition of *The Advancement of Learning* Bacon would ultimately renounce Atticism as laden with the same affectations of style over substance as the Ciceronian mode; anything written in order to persuade, even blunt taxonomy, is of course ultimately rhetorical in its advocacy, but Bacon's rejection indicates the importance of establishing an appropriate literary medium and isomorphic language for conveying truth during a growing epistemological conflict between things and words, signifier and signified. In the 1623 *De Dignitate et Augmentis Scientiarum*, the Latin expansion of his earlier *Advancement of Learning* (1605) Bacon had it that the best 'assistant to Memory is writing', that 'diligence and paines in collecting Common-Places, is of great use and certainty in studying' but as methods of commonplacing 'meerly represent the face, rather of a Schoole, than of the world', it should not be forgotten that such compilations do not in 'any way penetrate the Marrow and Pith of things'. The epistle to Bacon's expanded 1612 *Essays* emphasises their unique utility for the reader in being drawn from a wide experience of the civic sphere and authored by a 'sound and grounded' individual for the wider benefit of society:

[A]lthough they handle those things wherein both men's lives and their pens are most conversant, yet (what I have attained I know not) but I have endeavoured to make them not vulgar; but of a nature whereof a man shall find much in experience, little in books; so as they are neither repetitious nor fancies.¹⁶

Bacon used an emerging vernacular genre, the essay, to deploy his prescriptive theory of natural philosophical stylistics within a genre associated with personal experience. These anecdotal

¹⁵ Bacon, *OFB IV*, p. 124.

¹⁶ Francis Bacon, *The Oxford Francis Bacon XV: The Essayes or Counsels, Civill and Morall*, ed. Michael Kiernan (Oxford University Press, 2000 [1985]), p. 317.

experiences are not the same as those of natural phenomena, witnessed under reproducible circumstances and subject to mechanical certainty, but their collection and publication, as well the inductive generation of inferable common cause which use of the aphorism presupposes, align the *Essays* with Bacon's wider philosophical pursuits. Bacon's *Novum Organon* was one component of a wider call for public co-operation and the empirical assessment of all facets of human experience, and the *Essays* frequently address the distinction between public and private behaviour in considering and demonstrating what was appropriate for both collective professionalism and individual advancement. 'Of Counsell' approves of a Machiavellian prudence on the part of princes who carefully 'extract and select' what they choose to share with their counsellors. Ostensibly written in advocacy of clarity, 'Of Truth' is honest in its praise of dishonesty. 'Of Cunning' advises a reader to adopt a practice of ventriloquism *a posteriori* by 'borrow[ing] the Name of the World; As to say; The World sayes, Or, There is a speech abroad' in order to discuss without censure 'things, that a Man would not be seen in himselfe' before immediately employing the same technique.¹⁷ Bacon's universalised experience creates a non-narrative self-portrait of the 'Diamond, or carbuncle', the polished and faceted statesman who knows that 'it is good a little to keepe State' in mixed company, brilliant or opaque according to the viewer, and for whom 'a mixture of a Lie doth ever adde Pleasure'.¹⁸ In their final expansion of 1625, the *Essays* convey Bacon's 'alteration in the concept of the learned man...[which required] a new scientist as well as a new science', one who must prove capable of professional survival in order to advocate for systemic renewal and restoration.¹⁹

A recent chapter by Karin Westerwelle situates the early modern essay as a subgenre of autobiography, arguing that the essay as a generic concept is the literary reflection on subjective experiences. Westerwelle traces the development of the essay from Montaigne throughout Europe from the sixteenth to eighteenth centuries, but discussion of the essay's utilisation by natural

¹⁷ 'I knew one, that when he wrote a Letter, he would put that which was most Materiall, in the Post-script, as if it had been a By-matter'. Bacon, *OFB XV*, p. 71

¹⁸ *Ibid.*, p.158.

¹⁹ Moody E. Prior, 'Bacon's Man of Science', in *Essential Articles for the Study of Francis Bacon* ed. by Brian Vickers (London: Sidgwick & Jackson, 1972), p. 140.

philosophers is curtailed at mention of Bacon. Rather, it is stated that two distinct essay forms emerged in England: the personal essay, typified by those of Sir William Cornwallis, and the ‘moral, political and empirical, scientific essay’ of Bacon, which evolved into ‘a conversation-inspiring form conducive to the development of an aristocratic and bourgeois public sphere’ by way of the English advice book.²⁰ Yet these two seemingly distinct forms can be seen to co-mingle in a mid-century work by Sir Thomas Browne, and it is precisely this interplay of the autobiographical and the instructive which defenders of the Royal Society and its practices were to find so attractive.

Until recently, historians of science have often seen the individualistic authorial presence in *Pseudodoxia Epidemica* (1646) as obscuring its worth as a scientific text.²¹ Such analysis subscribes to the ultimately factitious view that epistemological divides existed between early modern scientific and literary practices and ignores the self-conscious narrative which pervades scientific writing of the era. Indeed, such rhetorical strategies were themselves the processes of early modern science, as in the case of Boyle’s experimental dialogues.²² Seen in this context, *Pseudodoxia* should be recognised as a piece of scholarship in the form of a collection of personal essays, a pivotal adaptation of the essay and contribution to the genre. It was *Pseudodoxia* which would secure Browne’s reputation among members of the Hartlib circle, and it provides a useful midpoint example of the Baconian essay style being adapted for use in a work of natural philosophy before Boyle’s conscious adoption of the genre in 1662.

Browne never uses the word essay in *Pseudodoxia*, but the preface identifies all the stylistic elements of the emerging genre. The word ‘attempt’, a play on ‘essai’, is used four times in connection

²⁰ Karin Westerwelle, ‘Essay’ in *Handbook of Autobiography/Autofiction* ed. Martina Wagner-Egelhaaf (Berlin: De Gruyter, 2018), pp. 587-8.

²¹ See Austin Warren ‘The Style of Thomas Browne’, *Kenyon Review* 13 (1951), 678, and A. Rupert Hall’s intentional omission of *Pseudodoxia* from his ‘English Scientific Literature in the Seventeenth Century’ in *Scientific Literature in Sixteenth- & Seventeenth-Century England: Papers Delivered by C. Donald O’Malley and A. Rupert Hall at the Sixth Clark Library Seminar* (Los Angeles: William Andrews Clark Memorial Library, 1961), p. 35. Claire Preston’s *Thomas Browne and the Writing of Early Modern Science* (Cambridge: Cambridge University Press, 2005) is the most comprehensive modern study of Browne’s scientific interests.

²² J. V. Golinski, ‘Robert Boyle: Scepticism and Authority’, in *The Figural and the Literal: Problems of Language in the History of Science and Philosophy, 1630-1800* eds. Andrew E. Benjamin, Geoffrey N. Cantor, and John R.R. Christie. (Manchester: Manchester University Press, 1987), p. 61.

with the project. The fiction of hasty, spontaneous, unrehearsed writing is upheld: Browne claims that the text was ‘composed by snatches of time, as medical vacations, and the fruitless importunity of Uroscopy would permit us’ – a declaration which persists in all editions of *Pseudodoxia*, including the final 1672 edition which contains an author’s note advising readers to expect no further enlargements, as the book was now ‘compleat and perfect’. The essay is the genre of the self reflecting on itself, and Browne calls attention to the solitary nature of his enterprise: Ted-Larry Pebworth identifies a pun on David’s ‘scrip’ (the pouch used to carry the stones in battle against Goliath) and a short written document, when Browne refers to his ‘contemptible pibbles , and feeble arguments drawn from the scrip and slender stock of our selves’.²³

In style, too, the investigations of *Pseudodoxia* mark themselves as essays by means of tentative propositions, digressive freedom, and authorial choice in subject matter. An essay listed in the contents as addressing the tenet ‘That an Elephant hath no joints’ becomes a meandering discourse on this and much more in an essay titled simply ‘Of the Elephant’.²⁴ Chapters continuing beyond their supposed investigative conclusion becomes problematic for readers who approach the book as a scientific text: such readers overlook the fact that *Pseudodoxia* is an avocational book, not a professional one, an important clarification when considering that practice of natural philosophy a profession was non-existent at the time.

Browne turned the essay form to scientific subjects in order to contribute to the advancement of learning, taking ancient authors and subjecting them successively to reason, the relations of history (i.e. trustworthy eyewitnesses), and to experience. The innovation here lies in a more systematic ordering of the essays contained in the volume, and in the more direct application of reason and experience as a result of the scientific subjects. The essay genre celebrates the progress of a mind as it journeys towards a conclusion, not just the conclusions themselves; in *Pseudodoxia*, what makes these

²³ Ted-Larry Pebworth, ‘Wandering in the America of Truth: *Pseudodoxia Epidemica* and the Essay Tradition’, in *Approaches to Sir Thomas Browne: The Ann Arbor Tercentenary Lectures and Essays* ed. C. A. Patrides (Columbia: University of Missouri Press, 1982), p. 169.

²⁴ Browne, *Pseudodoxia Ephemerides* (London, 1646), p. 9, 157.

essays personal is the presence felt by the reader of an individual mind thinking on a subject, not the subject itself. ‘We’ and ‘ours’ are used throughout as invitational plurals, inviting the reader to discover along with Browne.

There are only two references to Thomas Browne in the papers of the intelligencer Samuel Hartlib which predate the first edition of *Pseudodoxia Epidemica*: all others postdate its first publication in 1646.²⁵ Hartlib first wrote to Cyprian Kinner, his schoolmate at Brzeg, for information on *Pseudodoxia* in 1646.²⁶ William Rand then recommended *Pseudodoxia* to Hartlib in 1651 on the basis that Browne was ‘very well studeyed...[and]...has made frequent experiments in nature bestowing much times paines & cost to that end’.²⁷ Hartlib recommended *Hydriotaphia, or Urn Burial* and *The Garden of Cyrus* to Robert Boyle in 1658 and Boyle makes his admiration of Browne clear in 1662’s *Certain Physiological Essays*.²⁸ Boyle’s identified criteria in writing essays are the same as Browne’s: in the second of his essays on the unsuccessfulness of experiments, Boyle relates how he repeats the mixing of *aqua fortis* and oil based on the report of ‘the learned Dr. Brown...being unwilling that so faithful and candid a Naturalist should appear fit to be distrusted’.²⁹ The praise echoes that used for Bacon, described as ‘so great and so candid a Philosopher’ a short drift upwards on the same page; Boyle, evidently, saw Browne as a scientific writer, even if some modern commentators do not. It is therefore arguable that Browne’s essayistic literary style, as well as his philosophical pursuits, would have made its impression on Boyle when the latter came to promote his own scientific enterprises.

By adopting the essay format Boyle wished to avoid ‘none of the least impediments of the real advancement of true Natural Philosophy, that men have been so forward to write Systems of it, and have thought themselves oblig’d either to be altogether silent, or not to write less than an entire body

²⁵ Kathryn Murphy, ‘Thomas Browne and Samuel Hartlib’, in *A Man Very Well Studeyed: New Contexts for Thomas Browne* (Leiden: Brill Intersections, 2008), p. 276.

²⁶ Samuel Hartlib to Cyprian Kinner, 15th December 1646, *HP* 36/1/27A.

²⁷ William Rand to Samuel Hartlib, 1st September 1651, *HP* 62/27/1A.

²⁸ Samuel Hartlib to Robert Boyle, 13th May 1658, *CRB I*, p. 271.

²⁹ Robert Boyle, *The Works of Robert Boyle Volume II: The Sceptical Chymist and Other Publications of 1661* ed. Michael Hunter and Edward B. Davis (London: Pickering and Chatto, 1999), p.78.

of Physiology’, being free to publish experimental findings while lacking the data to build a full explicatory system.³⁰ Systems, or general works of principles are useful only if they ‘bring New Experiments or Observations’ to back up what is already known, or if they ‘consider those that are known already after a new Manner, and thereby make us take notice of something in them unheeded before’.³¹ This is not to say that Boyle viewed his essays as unconnected: references to his other works, completed and planned, litter each essay. Neither is the possibility of synthesis dispensed with: ‘the endeavouring to discern as early as we can the Confederations, and Differences, and Tendencies of things’ is to be encouraged, as long as such axiomatic knowledge is understood to be subject to constant revision in the light of new evidence.³² To this end, the primary function of Boyle’s essays is as inducement to further experimental industry.

Boyle wrote that a natural philosopher’s conjectures should be supported with reference to actual observation lest the reader be obligated to conjecture only; the reporting of experimentation and its results would, however, afford a reader an interpretative opportunity similar, if not identical to, the author’s. It was the experimentalist’s own work which must lend authority to his name, and vice versa. But how are the results of a new form of natural philosophy to self-authorise if the methods which led to their collection have not been commonly accepted? The ethos and credibility of the experimentalist himself, practitioner of the experimental method, must be demonstrated. To relate experiments just as they were (supposedly) conducted was necessary, but not in such a dull manner as to discourage a reader who may become experimentalist ally in turn; in ‘A Proemial Essay’ prefaced to *Certain Physiological Essays* (1661) Boyle used the telescope as metaphor for the clarifying power of the text, arguing that instruments should be as comfortable to use as they are valuable:

I suppose you will readily find that I have endeavour'd to write rather in a Philosophical than a Rhetorical strain, as desiring that my expressions should be rather clear and significant, than curiously adorn'd...though it were foolish to colour or enamel upon the glasses of Telescopes,

³⁰ Ibid., p.11.

³¹ Ibid., p.12.

³² Ibid., p.14.

yet to gild or otherwise embellish the Tubes of them, may render them more acceptable to the Users, without at all lessening the Clearness of the Object to be look'd at through them.³³

Anyone might use the inductive method, if opportunity allowed: what was important that the correct process was followed and that the results were held in common. 'When a Fellow of the Royal Society made a contribution to knowledge, he did so by reporting an experience...rather than being a generalized statement about how some aspect of the world *behaves*, it was instead a report of how, in one instance, the world had *behaved*', and such reports of experiential minutiae, collected *tanquam tabula naufragii*, were required to recommend themselves as truthful.³⁴ This was to be achieved by authorial association, hesitancy in affecting mastery or conclusiveness, and exactness in scrutiny as guaranteed by making clear when, where, how, and who by such knowledge was observed and recorded. We can see, therefore, that experimental reports were both autobiographical and architectural, as were proemial essays and other paratexts. Besides questions of how a written report might recommend itself as a true reflection of reality, however, the Royal Society found itself obliged to demonstrate why such flotsam and jetsam should be paid any consideration at all. Breakthroughs to ease the lot of postlapsarian man seemed rather thin on the ground: what, then, was the point?

The Royal Society in Public Crisis

Gaining its first Royal Charter in 1662 made the Society publicly visible in a way that previous, less formal intellectual groupings had not been. The Society attracted considerable criticism in its early years, and Sprat's *History* was explicitly addressed to 'the Detractors of so noble an Institution' in consequence.³⁵ A sincere belief of Society organisers in the reconciliatory potential of their enterprise led them to try to publicly communicate the non-scientific implications of what they were doing, and this enterprise was coupled with a hope of attracting further patrons, as expressed by Evelyn when he urged Cowley to complete his verses for the *History* in 1667: the aim was to 'bespeak

³³ *Ibid.*, p. 16. Kathryn Murphy astutely observes that, just as seventeenth century telescopes were designed for both looking through and at, so Boyle's essays can be viewed either as an instrument through which experience can be seen, or as an experience in its own right'. Murphy, 'Of Sticks and Stones', p. 94.

³⁴ Peter Dear, 'Totius in Verba: Rhetoric and Authority in the Early Royal Society', 152.

³⁵ Sprat, *History*, sig. B4v.

it some veneration in the world' and 'to raise us up benefactors'.³⁶ Sprat's hopeful catalogue of aristocratic interest groups in the *History* proved unfruitful, and disappointment abounded at the lack of interest and endowment from the monarch and his subjects.³⁷

The Society's founders hoped that the establishment of a permanent institution would win acclaim for their enterprise, and that the new science would be made acceptable because of the public nature of this institution. Bacon and Salomon's House had influenced but not provided an exact model for the Royal Society, which was intended to be public and permanent, and a Baconian inspiration fails to explain why this happened in 1660. The instability of the Civil War had alerted the nation to the rapidity and consequence of change, as well as of the social implications of self-interest.³⁸ Subjects now counselled the state on the adoption of civil tolerance; discussions of the public interest meant that the more impersonal an institution seemed to be, the less volatile it apparently was. According to Paul Delany 'the war had the indirect effect of bringing to many autobiographers a heightened awareness of their particular convictions and predispositions...[a]wareness of the internal tensions of England's social structure undoubtedly contributed to the development of a more sophisticated sense of history during the seventeenth century.'³⁹ Bacon's *New Atlantis* was a utopia in which the interest of the individual superseded the public: religious freedom allows Jobain to practice his Jewish faith, while the scientists of Solomon's House are free to conceal whatever secrets they choose from the state of Bensalem. Published in 1661, Abraham Cowley's *A Proposition for the Advancement of Experimental Philosophy* was conscious of the responsibilities of a public institution and the need for it to appear stable from its foundation. Consequently, his plan for an experimental college allows the resident chaplain to catechise the scholars and administer the Eucharist (largely pandenominational practices), but 'he shall not trouble himself and his Auditors with the Controversies of Divinity, but

³⁶ John Evelyn to Abraham Cowley, 12th March 1667, *The Letterbooks of John Evelyn I*, p. 435.

³⁷ Sprat, *History*, p. 129; Michael Hunter, *Establishing the New Science*, p. 31.

³⁸ J. A. W. Gunn, *Politics and the Public Interest in the Seventeenth Century* (London: Routledge and Kegan Paul, 1969), p. 153.

³⁹ Paul Delany, *British Autobiography in the Seventeenth Century* (London: Routledge and Kegan Paul, 1969), pp. 10-11.

only teach God in his just Commandments, and in his wonderful Works'.⁴⁰ If, as discussed above, the essay is viewed as a literary response to crisis and doubt then its adoption by those who sought to defend this most nascent of restorative projects becomes clear. Those who distinguish between earlier essay forms and the essays of the Royal Society Fellows associates do not make this connection.

The rhetorical, generic, and formal qualities of the early modern essay were analogous to both the scientific writing of the early Royal Society and the natural philosophical method employed by its authors (indeed, as Kathryn Murphy points out, book titles of the mid-seventeenth century 'show that 'essay' could refer to both literary form and epistemological practice', as was the case with many of Boyle's published works).⁴¹ The essay was a speculative, hesitant, self-conscious genre, its narrative dictated by the lived experience of its author, used as a tool to illustrate the process of discovery. However, the difference between the essay and the experimental reports of the *Philosophical Transactions* lay in the essay's more overtly self-conscious projection of the values and identity of its author. The experimental report was a stroll in the country, in which incidental magpies and unanticipated flushes of blackberries are to be noted as they are passed by; the essay, conversely, was a guided tour through a garden by its creator, in which plants are to be admired for the surprising or unexpected manner in which they have been marshalled, and the mind of its architect was to be appreciated as much as the experience which it had designed. There may be many paths through a garden, and the essay was overwhelmingly published as part of a collection of such guided walks. This is the case with both Bacon and Boyle, but also with the only members of the Royal Society to repeatedly write works with the title of 'essay' in the forty years following Boyle: Abraham Cowley, Joseph Glanvill, and William Petty. It is these three authors whose work will be surveyed in detail below.

⁴⁰ Abraham Cowley, *Essays, Plays and Sundry Verses* ed. A. R. Waller (Cambridge: The University Press, 1906), p. 255.

⁴¹ Kathryn Murphy, 'Of Sticks and Stones: The Essay, Experience, and Experiment' in *On Essays: Montaigne to the Present* eds. Thomas Karshan and Kathryn Murphy (Oxford: Oxford University Press, 2020), p. 87.

Any form of propaganda is more likely to be viewed as credible if produced, licensed, and/or publicly approved by a disinterested outside party: an account of the essay's use by proponents of the Society should therefore be contextualised by discussing the publishing strategy of the Royal Society itself. A consideration of the divergent publishing routes of the essayists discussed in this chapter will contribute to a better understanding of their purpose.

The Society's first and second Royal Charters (15 July 1662 and 22 April 1663) authorised it to appoint printers and engravers but did not mention booksellers or stationers. However the Society's President, Viscount Brouncker, reported to a meeting of the Society held on 28 October 1663 that 'because the stationers and printers are of one and the same company [i.e. the Stationers' Company] and may by the confession of both sides practise both trades promiscuously, the Society might choose a stationer for their printer without any violation of their Charter, which gives them power to choose printers'.⁴² John Martyn and James Allestry, who had been recommended to the Society, were appointed its printers and, by extension, its stationers in 1662. The commission passed on the 2nd of November 1662 read as follows.

We do, by these presents, declare John Martyn and James Allestry, citizens and stationers of London jointly chosen, in due manner and form, according to the said Charter, to the office of printer to the Royal Society aforesaid, according to the said Charter, sworn to deal faithfully and honestly in all things belonging to the trust committed to them, as printers to the said Society, during their employment in that capacity. And we do, by these presents, give and grant unto the said John Martyn and James Allestry full power and privilege to print all such things, matters and businesses, concerning the Royal Society aforesaid, as shall be committed unto them by the President and Council of the said Society, or any seven or more of them (whereof the President always to be one) or by the major part of the said seven or more. And we do further give and grant unto the said John Martyn and James Allestry, that no other person (except any duly chosen and sworn as aforesaid) shall print any of the said things, matters, and businesses concerning the Royal Society aforesaid, the said John Martyn and James Allestry duly observing all the orders and directions of the President and Council, or the said seven or more of them aforesaid, concerning the printing of the said matters and businesses.⁴³

Martyn and Allestry had in fact already been doing work for Fellows of the Royal Society before their appointment: Dr Thomas Willis's *Diatribae duae Medico-philosophicae* was published by

⁴² Thomas Birch, *The History of the Royal Society of London, for Improving Natural Knowledge Volume I* (London: Millar, 1756), p. 321.

⁴³ *Ibid.*, p. 324.

them jointly with Thomas Dicas in 1659, with further editions in 1660 and 1662, and the first edition of John Graunt's *Natural and Political Observations* was published in 1662 by the same three booksellers.⁴⁴ The commission appointing Martyn and Allestry was accompanied by two statutes which had been approved at a Society meeting of the previous day, the first of which stating that:

The office of the Printer shall be to take care for the printing and vending such books, besides catalogues and such other things as shall be committed to him by order of the Society or Council...nor shall he reprint any of the said books, or print them in any translation or epitome, without particular leave from the Council.⁴⁵

It would seem clear from this that the publishers were not at liberty to commission, edit, or refuse texts themselves, but this was not the case in practice. Henry Oldenburg had quarrelled with the printers as early as 1665 for when they (for reasons unknown, but possibly owing to the disorganisation caused by the plague) temporarily halted printing of the *Philosophical Transactions*.⁴⁶ Five years later John Beale wrote furiously to Oldenburg about the treatment an article of his in the Transactions had received: 'Ye Printer hath undone us all, & himself also, if he had ye Ingenuity to feele it. I wish he had subscrib'd his own name & not mine, since 'tis such goodly stuffe, as he hath made it. When he left out ye heart and Centre of ye Discourse ... he ought by ye Rules of common honesty, to have given public notice'.⁴⁷ In July 1679 Evelyn wrote to Beale that he had published a third edition of *Sylva, or a Discourse of Forest-Trees* (first published 1664) with additions, most unwillingly, and

in truth only to pacify the importunity of very many (besides the printer), who quite tired me with calling on me for it, and above all, threatening to reprint it with all its former defects, if I did not speedily prevent it. I am only vexed that it proving so popular as in so few years to pass so many impressions and (as I hear) gratify the avaricious printer with some hundreds of pounds, there had not been some course taken in it for the benefit of our Society. It is apparent that we are not yet economists.⁴⁸

⁴⁴ Martyn was by this point married to Graunt's sister Sara.

⁴⁵ *The Record of the Royal Society of London* 4th edn. (London: Printed for the Royal Society, 1940), p. 298.

⁴⁶ Sir Robert Moray to Henry Oldenburg, 23rd July 1665, *The Correspondence of Henry Oldenburg Volume I!: 1663-1665*, ed. and trans. A. Rupert Hall and Marie Boas Hall (Madison: University of Wisconsin Press, 1966), pp. 446-7.

⁴⁷ John Beale to Henry Oldenburg, 15th March 1670, *The Correspondence of Henry Oldenburg Volume VI, 1669-1670*, ed. and trans. A. Rupert Hall and Marie Boas Hall (Madison: University of Wisconsin Press, 1969), pp. 560-1.

⁴⁸ John Evelyn to John Beale, 11th July 1679, *The Letterbooks of John Evelyn I*, pp. 632-3.

The first books to be published under the Society's *imprimatur* were John Evelyn's *Sylva* and Hooke's *Micrographia* (1665). Both were presented as works of the Society: *Sylva*'s dedication to the King describes it as a 'Publique Fruit of your Royal Society', while *Micrographia* emerged from Society meetings and was closely supervised by its members.⁴⁹ None of the works of Joseph Glanvill, Petty's essays, or Cowley's *Proposition* were printed by Martyn or Allestry however, despite them being connected with the Society either in subject or by authorial association, nor were the Society's publishers responsible for any works of Boyle until after his death. This is, perhaps, the less surprising considering the printers' meddlesome reputation as evidenced by the complaints of Beale and Evelyn. Yet Rhodri Lewis's assessment of the publication of John Wilkin's *An Essay towards a Real Character, and a Philosophical Language* (1668) may be extrapolated to explain why so few of the Society's members and associates chose to print their work via the official channels. According to Lewis, 'Wilkins was as deeply aware of the need for credit and integrity in his publications as he was of Martyn's dubious reputation, from which he consequently set about distancing himself from as far as possible' by having the Oxford bookseller Samuel Gellibrand share the cost of publication of his work.⁵⁰ Not only are the costs therefore shared but also the credibility: the title page clearly indicates that Martyn is the printer to the Royal Society, not Gellibrand, but Wilkins had worked with Gellibrand before and knew he was of a more notable reputation than Martyn. As stated above, a text is more likely to be viewed as credible if produced or publicly approved by a disinterested party, and this strategy was not limited to Wilkins.

The inverse is also true: the *Philosophical transactions* were by and large published by the Society's printers despite being a private enterprise of Henry Oldenburg.

Visionary schemes for promoting useful knowledge, belief in science for the citizen and mathematics for the millions, did, to be sure, enter into the views of the group responsible for the *Transactions* of the Royal Society. Nevertheless, contributions to this pioneering scientific

⁴⁹ Evelyn, *Sylva*, (London, 1664), sig. A3; John T. Harwood, 'Rhetoric and Graphics in *Micrographia*' in Michael Hunter and Simon Schaffer, eds., *Robert Hooke: New Studies* (Woodbridge: The Boydell press, 1989), pp. 119-47.

⁵⁰ Rhodri Lewis, 'The Publication of John Wilkins's 'Essay' (1668): Some Contextual Considerations', *N&R* 56.2 (2002), 138.

journal were of significance insofar as they accomplished the purpose Oldenburg conveyed in his letter to Malpighi: to “bring out the opinion of all the learned.” To make possible consensual validation by trained observers, experimenters, and mathematicians entailed a different use of the press than efforts to spread glad tidings to all men. Eventually, access to scientific journals and societies was shut to all save a professionally trained elite.⁵¹

A review of the publishers used by Glanvill, Cowley, Petty and Boyle will demonstrate that spreading tidings (if not glad ones) to all men was in fact their primary purpose.

Joseph Glanvill’s *Scepsis Scientifica* (published in 1665 by Henry Eversden) earned him a Society fellowship, and he continued to use the essay form to promote the activities and philosophy of the Society. This robust defender of the Society never used their official printers, however. Glanvill began employing James Collins after 1665, using him as publisher for *Plus Ultra* (1668) and both Collins and Eversden for *Catholick Charity Recommended* (1669). *A Præfatory Answer to Mr. Henry Stubbe* and *Philosophia Pia* were both printed for Collins in 1671; Glanvill then began using John Baker in 1673, whose most notable publication for Glanvill was *Essays on Several Important Subjects in Philosophy and Religion* (1676). The simple explanation for Glanvill’s use of publishers unconnected with both the Society and the universities is that *Plus Ultra* and *Philosophia Pia*, the two texts which most ardently defend the Royal Society and the new science, had both been conceived of in quarrels with Robert Crosse and Henry Stubbe: quarrels which had descended from the level of a pamphlet war to the composition of unflattering alehouse ballads.⁵² Glanvill may have intended for *Plus Ultra* to serve as a supplementary companion piece to Sprat’s *History*, but the embarrassment caused to the Society by one individual who could not forbear responding to criticism was considerable.⁵³ The condescending attitude of his attack on Aristotelianism was also unlikely to have endeared him to any publisher connected to the universities who wished to keep himself in good standing.

⁵¹ Elizabeth L. Einsenstein, *The Printing Revolution in Early Modern Europe* (Cambridge: Cambridge University Press, 1983), pp. 266-7.

⁵² R. H. Syfret, ‘Some Early Critics of the Royal Society’ *N&R* 8.1 (1950), 25.

⁵³ *Ibid.*, 37.

In reviewing the publishers of Boyle, Petty, and Cowley, the name of Henry Herringman occurs most frequently. Henry Herringman was a prominent London bookseller of the second half of the seventeenth century, having established himself as an independent publisher by 1655. Usually referred to as being primarily interested in the publication of plays, Herringman adopted the sign of the Blue Anchor sometime around 1653 and continued to sell books from his shop in the New Exchange for some fifty years after.⁵⁴ However, C. William Miller's analysis of the seventy copies which Herringman entered into the Stationer's Register from 1653-66 (his 'developing period') led him to conclude that, far from being simply a peddler of plays, the bookseller of the Blue Anchor chose to publish 'almost anything which he thought the better-educated Londoners frequenting the Strand would buy'.⁵⁵ Although 1661 brought with it the death of his main competitor in the publication of *belles-lettres*, Humphrey Moseley, it was only later in his career that Herringman was able to build up the capital to accumulate the copyright to the plays and verses which would earn him the bulk of his wealth, wealth which enable him to purchase a home in St-Martins-in the-Fields by 1682. No letters authored by Herringman are extant; the main source for information about his own character and that of his business is Pepys's diary. Pepys's interactions with 'my bookseller in the Exchange' may indicate why Boyle, Petty, and Sprat (in publishing Cowley) chose to use him.

A visit to Herringman's shop on the 10th of August 1667 gives an impression of the variety of texts which Herringman was publishing at the time. Pepys hears of several new texts due to be sold: Sprat's *History of the Royal Society*, new verses of Katherine Phillips and Sir John Denham, and several plays including Fulke Greville's *Mustapha*. Herringman also informs Pepys at this visit of the death of Cowley 'who, it seems, was a mighty civil, serious man; which I did not know before'.⁵⁶ Two days later Pepys returns to the shop, and hears 'Mr. Cowley mightily lamented his death, by Dr. Ward, the Bishop of Winchester, and Dr. Bates, who were standing there' while purchasing Reginald Scot's

⁵⁴ H. R. Plomer, *A Dictionary of the Printers and Booksellers Who Were at Work in England, Scotland and Ireland from 1668 to 1725* (London: The Bibliographical Society, 1907), pp. 96-7.

⁵⁵ C. William Miller, 'Henry Herringman, Restoration Bookseller-Publisher' *The Papers of the Bibliographical Society of America* 42.4 (1948), 298.

⁵⁶ Pepys, *Diary VIII*, p. 380 (10th August 1667).

The Discovery of Witchcraft.⁵⁷ In December of the same year Herringman ‘did give me a list of the twenty who were nominated for the Commission in Parliament for the Accounts’ at his bookshop.⁵⁸ The following summer Pepys calls in again at Herringman’s shop following a performance of Dryden’s *An Evening’s Love*: Pepys disliked the play, and was pleased that the bookseller tells him that ‘Dryden do himself call it but a fifth-rate play’.⁵⁹

From these examples we can infer that Herringman enjoyed associating with authors and passing on information about them to his customers, that the sign of the Blue Anchor was a place to go for information as well as books. Books sold there would have had the opportunity to be pushed and popularised, potentially reaching a wider demographic than anything published under the *imprimatur* of the Royal Society. If choice of publisher is read as a testimony of authors it therefore offers a valuable insight into the expectation authors had of both themselves and their intended audience; for the modern commentator, this paratext encodes the essential issue of dissemination and demographics. The notion of genre, as discussed above, becomes fixed in the engagement of authors with other authors, both through reading and by associating with other readers. Boyle, Cowley, Petty, and Glanvill all used the essay form for its personal association and ability to effect change in the reader: with the exception of Glanvill (for reasons discussed above), Henry Herringman was selected as the ideal publisher in order for their essays to reach the widest possible audience. It may also be worth noting that Bacon’s essays were reprinted in 1680 by M. Clark to be sold by Samuel Mearne, John Martyn, and Henry Herringman at each of their stalls.

An assessment of Boyle’s publication practices over the course of the first ten years of his philosophical career reveals that he alternated between using either Oxford-based publishers or Herringman depending on the intended breadth of the target readership. Those texts intended as an inducement to experimental and reflective industry in the general populace were published by

⁵⁷ *Ibid.*, p. 383 (12th August 1667). *The Discovery of Witchcraft* was originally published in 1584 and had been reissued in 1665, its third edition, with nine additional chapters.

⁵⁸ *Ibid.*, p. 576 (12th December 1667).

⁵⁹ Pepys, *Diary IX*, p. 248 (22nd June 1668).

Herringman: both editions of *Certain Physiological Essays* (1661 and *A Continuation*, 1669), *The Style of the Scriptures* (1663), and *Occasional Reflections upon Several Subjects* (1665). All editions of *Seraphic Love*, Boyle's most popular work, were published by Herringman and had been since 1659; although Boyle privately despaired of the attention his most juvenile work attracted, its popularity through Herringman's shop may have been what caused him to use the publisher for those works he intended to be most useful and instructive to a wider readership. The exception is *An Invitation to Free Communication*, published in 1655 by Giles Calvert in an anthology for Oldenburg, before Herringman had a monopoly on the popular press in London.

Acting as literary executor, Thomas Sprat's posthumous publication of Cowley's Latin poetry and botanical works (all six books of the *Plantarum*) was printed by Thomas Roycroft for John Martyn as *Poemata Latina* in 1668; Cowley's poetry, including his ode to the Royal Society, his *Proposition*, and his essays were, however, published by Herringman in the same year as *The Works of Mr Abraham Cowley*.⁶⁰ The split of Cowley's work in terms of language is obvious, but what was the reasoning behind Sprat using different publishers? Herringman had obtained the copyright to Cowley's poetry in 1663, but this does not explain why the ode to the Society was published in his volume and not Martyn's, the publisher of the *History* in which it first appeared. If, however, Herringman is understood as being the go-to publisher to reach the widest, non-specialised audience during the 1660s, and if Cowley's essays are read (as they are below) as exercises in encouraging a reader's course of action, then the reason for the split publication becomes clearer. Moreover, yoking Cowley's *Ode* to the rest of his more personal works legitimises its praise as coming from a moralising outsider – even if it had been begged from Cowley by Sprat in the first place.⁶¹

⁶⁰ Martyn would later outsource the printing of the *Philosophical Transactions* to Roycroft from 1673-6.

⁶¹ A note on the page numbering of Cowley's *Works* (1668): the book consists of several books bound into one, each book delineated by title and beginning the page numbering anew. Cowley's essays, along with his *Ode to the Royal Society*, are contained within a section entitled 'Verses written upon several occasions'; the essays themselves begin on p. 79 of this section and are subtitled as 'Several Discourses by way of Essays, in Verse and Prose'.

The Essays of Abraham Cowley, Joseph Glanvill, and William Petty

Earth, Water, Air, and the Sun

Cowley's *A Proposition for the Advancement of Experimental Philosophy* and *Ode to the Royal Society* both clearly set out his interest in the new science and the activities of the Royal Society. The key question is why did Cowley turn to prose, and specifically to the essay form, when the material explored could (and had been) conveyed by him in verse? If the emergent English essay tradition was used primarily as a tool of reform, one that allowed the writer to create a space for themselves outside of institutional structures, a genre which the autobiographical strain is an essential communication of lived observation, Cowley's purpose becomes clearer. His method is analogous to that of Bacon and the natural philosophers of the Royal Society, even if the subject matter is not scientific itself. In these essays, as others discussed in this chapter, the self is mediated rather than recalled, and this method is analogous to the idealised teaching of students in his *Proposition*. The individual must engage with intellectual matters for themselves, and these essays show Cowley's process in doing this. Cowley advocates for a life of useful practice away from city life and argues for his personal retreat and agricultural life, the best engagement he can have with the natural world.

This may, at first glance, appear to contradict Cowley's assertion in his preface to the *Proposition* that 'certainly the solitary and unactive Contemplation of Nature, by the most ingenious Persons living, in their own private Studies, can never effect' the 'vertuous Covetousness' of increasing the public stock of knowledge.⁶² Steven Shapin has argued that the social roles of scholar and gentleman, formerly highly demarcated, underwent a reconfiguration in the seventeenth century as the improvement and promotion of natural knowledge was taken up by the social class which had the leisure, resource, and influence to exact such change; a 'gentle' class defined, in part, by its supposed obligation to public and civic service.⁶³

⁶² Abraham Cowley, *A Proposition for the Advancement of Experimental Philosophy* (London, 1661), pp. 7-8.

⁶³ Steven Shapin, "'A Scholar and a Gentleman': The Problematic Identity of the Scientific Practitioner in Early Modern England" *History of Science* 29(3) (1991), 286-9.

Cowley was not, however, alone in this. There was a pattern of private, exiled, secluded experience among some of the new natural philosophers, dependent on patrons and desirous of retreat. These are themes which are generally latent in seventeenth-century literature, finding particular expression in the country house poem. Such literature provided a lexicon for the *doyen* of the country estate to be transformed into the philosopher who sought investigative seclusion. For men such as Hobbes, Boyle, and Bacon, retirement was explicitly active and an act conducive to intellectual labour. Cowley is not explicit about the Royal Society in his essays, but the method is the same: emphasis is placed most heavily on the moral individual experiencing the natural world for himself, away from corrupting institutions. 'Of Country Life' opens with an Horatian blessing of pastoral retirement, before relating the stories of Corycus from Virgil's *Georgics* and Gyges and Anglaus from Pliny the Elder's *Natural History*. The country house poem is an amalgam of classical impulses to retreat for contemplation, and Cowley would obviously not have been ignorant of this. When used alongside material extracted from in a didactic scientific work like the *Plantarum*, the political ethos of retreat (*noblesse oblige*) becomes epistemological impulse to retreat to achieve intellectual focus. Combined with the similar sentiment in 'Of Myself', this intellectual focus must be a matter of personal experience.

The essays of Cowley have been relatively neglected critically, perhaps due to an over-reliance on his executor Sprat's rehabilitator statement that the collection was to eventually have been dedicated to the Earl of St. Albans as 'a kind of apology for having left human affairs in the strength of his age, when he might still have been serviceable to his country', and was 'intended as 'a real character of his own thoughts upon the point of his retirement'.⁶⁴ This apparent retirement consisted of obtaining the lease on some of the queen mother's lands in Surrey, courtesy of St. Albans, and settling into the role

⁶⁴ Sprat, 'Life and Writings of Cowley' in Abraham Cowley, *Works* ed. Thomas Sprat (London, 1668), p. 15. A recent exception is the illuminating work of Gillian Wright in the third chapter of *The Restoration Transposed: Poetry, Place and History, 1660–1700* (Cambridge: Cambridge University Press, 2019) which discusses the relationship of Cowley's essays to his earlier poetical compositions and shrewdly identifies Cowley's selective editorial policy as having realigned his earlier work in the context of the attitudes expressed in the essays. Wright's assessment of the natural world in Cowley's essays as being 'firmly human-centred' has also confirmed my own reading. Gillian Wright, *The Restoration Transposed*, pp. 165-9, p. 171.

of gentleman farmer at Chertsey in 1665. Yet this supposed retreat inspired a new vigour in Cowley as an author, who first completed the last two books of his *Plantarum* before embarking on the composition of a never-realised 'Discourse Concerning Style'. 'In this', so says Sprat, 'he had designed to give an account of the proper sorts of writing, that were fit for all many of arguments...and to deduce all down to the particular use of the English genius and language. This labour he was very fit to perform'.⁶⁵ This theoretical interest of Cowley's in language had found expression in another endeavour of the mid-1660s. In what was perhaps an echo of the recently formed Académie Française, several members of the Royal Society had discussed the possibility of an English organisation dedicated to the standardisation of the vernacular. A letter from Evelyn to Pepys gives the fullest account of this enterprise, and makes Cowley's centrality to the project clear:

And indeed such was once designed since the restoration of Charles the Second (1665) and in order to it three or four meetings were begun at Gray's Inn, by Mr. Cowley, Dr. Sprat, Mr Waller, the D. of Buckingham, Mart. Clifford, Mr. Dryden, and some other promoters of it. But by the death of the incomparable Mr. Cowley, distance and inconvenience of the place, the contagion, and other circumstances intervening, it crumbled away and came to nothing.⁶⁶

There is no reason to suppose that any of the essays (with the exception of the 'Letter to Mr. S. L.', interpolated by Sprat) were written before 1665. 'The Dangers of an Honest Man in Much Company' refers to Chertsey explicitly; 'Of Greatness' alludes to the two comets seen over London in December 1664 and April 1665, while 'The Garden' was originally written as a letter to Evelyn in August 1665.⁶⁷ Cowley was therefore engaged with writing his first essays at the same time as he was concerning himself with 'the proper sorts of writing' that were fit for argument.

⁶⁵ *Ibid.*, p. 18.

⁶⁶ Evelyn *Diary IV.*, p.310

⁶⁷ John Evelyn to Abraham Cowley, (24th August 1666) refers to this letter, and contains a Pindaric ode in return in which Evelyn expressed the wish to be 'as You, the Arbitrator/Of mine owne life/And could at once breake from those gilded toys,/To taste your well describ'd, and solid joyes', praising his friend 'Who could indeed with your divine Art plant/Might of that celebrated Science vaunt' for his poem in which 'Experience Art and Nature can refine, And wonders can produce, and things divine'. *The Letterbooks of John Evelyn I*, pp. 415-7. The

Cowley's *Ode* lauds Bacon as the heir of philosophy. Robert Hinan has clearly demonstrated Cowley's belief in the importance of philosophy for poets, and Acsah Guibbory has carefully identified the many verbal parallels and allusions to Bacon's work in his *Ode*.⁶⁸ When it comes to the essays, however, Montaigne's influence is overstated compared to that of Bacon.⁶⁹ Arthur H. Nethercot mentions this to be the case but immediately embarks on a discussion of Cowley's relation to Montaigne, acknowledge Cowley's more tranquil nature than that of the 'nervous, quick, unstable' Montaigne.⁷⁰ Bacon's influence is felt largely in the composition of the essays themselves: 'Of Liberty' open with sententious announcement of its topic and divides its material into three parts, discussing and illustrating each by 'examples,' 'sentences' and 'apothegms', while 'Of Solitude' uses Bacon's contrast in 'Of Friendship' between the solitude of a God and of a wild beast.⁷¹ The narrative of philosophical progress can also be felt, however, through Cowley's broadly theological attitude throughout. 'Of Myself' uses the same mechanism of commonplacing poetic sententiae and drawing a thread between themes, but the verse is Cowley's own from his youth to the present (some of which were rewritten for different purposes – a love of poetry, for example, becomes a love of solitude and withdrawal from courtly life), and the *resume* of Cowley's life thus becomes a shared dialectical experience for author and reader, although not necessarily one with a final synthesis.⁷² Rather, Cowley marshals these rhetorical strategies with the intention of conveying to a reader the experience of personal exploration and discovery.

A unifying theme of the essays is liberty. Cowley opens by declaring that 'The liberty of a people consists in being governed by laws which they have made themselves, under whatsoever form it be of government', a statement of striking political ambivalence and one which would have had a particular

significance of these lines, which encapsulate themes of liberty and an appreciation of the applicable functions of plants gained through an experimentalist perspective, shall become clear in the discussion of these elements of Cowley's *Essays* over the following pages.

⁶⁸ Robert B. Hinman, 'Truth is Truest Poesy': The Influence of the New Philosophy on Abraham Cowley', *ELH*, 23.3 (1956), 194-203; Acsah Guibbory, 'Imitation and Originality: Cowley and Bacon's Vision of Progress', *Studies in English literature, 1500-1900* 29.1 (1989), 99-120

⁶⁹ One example being Pooley's *English Prose of the Seventeenth Century 1590-1700*, p.185.

⁷⁰ Arthur H. Nethercot, 'Abraham Cowley's Essays', *JEGP* 21.1 (1930), 121

⁷¹ Cowley, *Works*, p. 79, 80; p. 92.

⁷² *Ibid.*, p. 146.

resonance when read in the years following the Civil Wars.⁷³ Like many others, Cowley had maneuvered his way through the years of political turmoil with limited success, having been cast under suspicion by both Commonwealth and Restoration governments. Even after the Restoration, rural retirement had the potential to be viewed with distrust by those who ascribed to the traditional view of the qualified individual's entreaty to civic duty. 'Any writer', says Brian Vickers, 'wishing to use *otium* in the seventeenth century in a positive sense... would have had to work hard to remove its pejorative meaning, or to cancel out its ambivalence into some innocuous synonym for *quies*'.⁷⁴ Any returning Royalist was expected to participate in the new age of history, and the onus was therefore on Cowley to defend himself and his separation from public life. Sprat's only criticism in his hagiographic biography was for this early retirement, and Cowley's essays promote the activities of his retirement as a way to protect his moral integrity. These arguments are not new, of course, having their origins in Horace, Virgil, and Plutarch; what is more original is that 'Of Myself' speaks of an interior self which has a natural aversion to public life and the world.

As far as my Memory can return back into my past Life, before I knew, or was capable of guessing what the world, or glories, or business of it were, the natural affectations of my soul gave me a secret bent of aversion from them, as some Plants are said to turn away from others, by an Antipathy imperceptible to themselves, and inscrutable to mans understanding.⁷⁵

Cowley's essays contain a greater proportion of informality and confessional immediacy than his verse: the inference is that emotional particularities are relevant to his moral choices, choices justified by appealing to his own sensibilities. The essays are therefore used to convey moral lessons: by paying greater attention to his own innate disposition, he gives greater license to authentic personal experience. This is Cambridge Platonism, as opposed to Calvinist doctrine: free will imbued with grace, against which society attempts to alienate us from ourselves, and the institutions of man rob us of our liberty. Adherence to the inner life is, for Cowley, implicitly and ethically regulatory.

⁷³ Ibid., p. 79.

⁷⁴ Brian Vickers, 'Leisure and Idleness in the Renaissance: The Ambivalence of *Otium*', *Renaissance Studies* 4.2 (1990), 144.

⁷⁵ Cowley, *Works*, p. 143.

The essays' emphasis is on a modest life, a curtailment of ambition, and of using one's time productively. In particular, they are an inducement to useful enterprise, and a record of Cowley's discovery of what, for him, constitutes the *most* useful enterprise. The argument that he wrote to justify his retirement is based on his inherent inclination to separate himself from others, but if we take his understanding of what the purpose of a poet is (the appreciation and communication of truth) then we may reasonably conclude that this had a hand in his writing essays as well. The theme of liberty extends, then, not just to the court, but from all corrupting, unthinking, traditional institutions, and the 'true Freeman', the 'true Gentleman' is, for Cowley, 'Not he who blindly follows all his pleasures (the very name of Follower is servile) but he who rationally guides them'.⁷⁶

If you ask me in what condition of life I think the most allowed, I should pitch upon that sort of people whom King James was wont to call the happiest of our nation, the men placed in the country by their fortune above an high constable, and yet beneath the trouble of a justice of the peace, in a moderate plenty, without any just argument for the desire of increasing it by the care of many relations, and with so much knowledge and love of piety and philosophy (that is, of the study of God's laws and of his creatures) as may afford him matter enough never to be idle though without business, and never to be melancholy though without sin or vanity.⁷⁷

'Of Agriculture' is a study of useful enterprise at a distance from public life which advocates for those who cannot practice philosophy to apply themselves to husbandry, 'The nearest Neighbour, or rather next in Kindred to Philosophy' since 'the Principles of it are the same which *Ennius* made to be the Principles of all Nature: Earth, Water, Air, and the Sun'.⁷⁸ Its treatment of country life is no placid Georgic but is filled with the contemporary language of agricultural business: 'tenants-at-will', 'quit-rent', 'stiles' and 'lanes'; Cowley encourages men to engage tutors in agriculture for their sons rather than tutors of dancing, and calls for a college devoted to husbandry to be set up at each university.⁷⁹ Indeed, Cowley stresses that the professors at his agricultural colleges should not simply 'read Pompous and Superficial Lectures out of *Virgils Georgickes, Pliny, Varro, or Columella*' but 'instruct their Pupils in the whole Method'; these professors 'should be men not chosen for the

⁷⁶ *Ibid.*, p. 85.

⁷⁷ *Ibid.*, pp. 85-6.

⁷⁸ *Ibid.*, p. 98.

⁷⁹ *Ibid.*, pp. 100-1. Cowley names Samuel Hartlib as the perfect example of such a man, 'so industrious and publick-spirited as I conceive Mr. *Hartlib* to be', although queries 'if the Gentleman be yet alive' (Hartlib had died in 1662).

Ostentation of Critical Literature, but for solid and experimental Knowledge of the things they teach'.⁸⁰ Just as *A Proposition for the Advancement of Experimental Philosophy* took the success of the new science for granted and concerned itself largely with setting out plans for an educational college of experimental philosophy, the benefits of husbandry are said in 'Of Agriculture' to be 'evident enough'.⁸¹ Cowley's main concern in his essay was, rather, to elevate the trade to that status of philosophy itself.

It does certainly comprehend more parts of philosophy than any one profession, art, or science in the world besides; and, therefore, Cicero says, the pleasures of a husbandman, *Mihi ad sapientis vitam proxime videntur accedere*, come very nigh to those of a philosopher. There is no other sort of life that affords so many branches of praise to a panegyrist: The utility of it to a man's self; the usefulness, or, rather, necessity of it to all the rest of mankind; the innocence, the pleasure, the antiquity, the dignity.⁸²

The supplementary verse 'The Country Life' is translated from the opening of Book IV of Cowley's *Plantarum Librum Sex* (1668), and the reference is provided in-text (although we cannot be sure if this was Cowley's doing or Sprat's editorial addition). The context of the extract in the wider *Plantarum*, a work of didactic botanical medicine and political optimism, is important. Cowley mostly uses Pliny and Fernelius as sources for his notes concerning the uses of plants, and explains why in the preface to Sprat's 1668 edition of his Latin poetry: Pliny 'is an Author of indubitable Latinity', while Fernelius is 'among our recent authors, the best at understanding and as a result not a bad Master of language too'.⁸³ The plants of the poem speak *in propria persona*: neither the poet nor the cited historical sources explain their uses but the plants themselves do, in an ekphrastic literalisation of the educational advantages of observing (in this case, listening to) the natural world. We should also note how frequently Cowley employs botanic language to describe himself in 'Of Myself': he is the plant which bends from others, was 'torn' from Oxford by the Civil War, that 'violent Publick storm' which 'rooted up every Plant, even from the Princely Cedars to Me, the Hyssop', and his first reading of ancient poets 'were like letters cut into the bark of a young tree, which with the tree still grow

⁸⁰ Ibid.

⁸¹ Ibid., p. 99.

⁸² Ibid., p. 401.

⁸³ Abraham Cowley, *Poemata Latina* ed. Thomas Sprat (London, 1668), b3v.

proportionably'.⁸⁴ In his essays Cowley claims, like the herbs and vegetables of the *Plantarum*, to speak for himself, and the same rhetorical practice follows, and enhances, the natural philosophical methods. The essay form as adopted by Bacon and Boyle encouraged the description and digestion of a lived life, not just books read: it was the very absence of formal convention in the liberatory genre of essay which caused Cowley to use it for an interrogation of his own liberty, a narrative of what he had tried and observed in his own life, a re-enactment of a process of enquiry which has already been completed prior to the setting of pen to page.

The Moon Dogs of Somerset

Joseph Glanvill is well understood as one of the most enthusiastic supporters of and apologists for the early Royal Society.⁸⁵ He had attacked the contemporary Aristotelians in his *Vanity of Dogmatizing* (1661) and *Scepsis Scientifica* (1665), the latter of which was coupled with a length address to the Society which earned him membership, before publishing his major work of propaganda in defence of the new science, *Plus Ultra* (1668). Glanvill's most significant work was collected in his *Essays upon Several Important Subjects in Philosophy and Religion* (1676), dedicated to his patron, the marquess of Worcester. Only the last of the seven essays included was entirely original: the others were reworkings of *Scepsis Scientifica*, *Plus Ultra*, *Philosophia Pia*, and Glanvill's previously published theological works. The seventh essay, 'Anti-fanatical religion and free philosophy', was an intellectual history and encomium of the Cambridge Platonists and latitudinarians, in the form of a continuation of Francis Bacon's *New Atlantis*. The question of why Glanvill chose to publish a collection of essays has not been addressed, and the change makes little sense if Glanvill's role as author of propagandist treatises is viewed as entirely successful. However, an appreciation of the full scope and purpose of *Plus Ultra* and its consequent reception by the Royal Society illuminates

⁸⁴ Cowley, *Works*, p. 143, 144. Gillian Wright has astutely noted that 'the close identification between the Stuarts and trees', particularly in the case of Royalist authors, was 'especially potent in the 1660s', and has linked this to the studies of trees carried out by Royal Society members and its georgic committee led by John Evelyn. Gillian Wright, *The Restoration Transposed*, p. 143.

⁸⁵ Jackson I. Cope, 'Joseph Glanvill, Anglican Apologist: Old Ideas and New Style in the Restoration' *PMLA* 69.1 (1954), 238-9; Stephen Gaukroger, *The Emergence of a Scientific Culture* (Oxford: Clarendon Press, 2006), pp. 222-4; Claire Preston, *Poetics*, p. 29, 136.

Glanvill's change of generic label, particularly when the content of his *Essays* was so little removed from the works in which it originated.

As indicated earlier in this chapter, *Plus Ultra* was not simply a defence of the new science but also an outspoken attack on one of its most prominent critics. Shortly after coming to Bath as rector in 1666 Glanvill encountered fellow clergyman, Robert Crosse, and the two clashed over Glanvill's rejection of Aristotle. That 'grave man', Glanvill recalled, 'gave me occasion enough of displeasure and complaint by the dreadful and most injurious censure of atheism, charged upon me for saying no more than that Scripture is not writ after the way of our methods and that God in those Holy Oracles did apply himself much to the imagination of the prophets'.⁸⁶ The charge of atheism struck Glanvill 'like the bolt of one that throws hard words in haste, and without aim or judgement', and would eventually prompt him to write in his own defence.⁸⁷ Glanvill, the new science, and the Royal Society were under attack in Somerset by late Spring 1667, and the existence of such open hostility led to the problem of how to appropriately respond. John Beale, rector of Yeovil and Fellow of the Royal Society, expressed his reservations about Glanvill's plans in a letter to John Evelyn, concerned that 'Mr. Glanvill threatens voluminous replies, by soft and frequent lines and wild rubbish'.⁸⁸ Fearing the consequences of a rash response Beale attempted to divert 'Mr. Glanvill to a better argument', advising him 'to bear his Crosse and to despise the smart of the reproach', convinced that Glanvill would accomplish more if he ignored Crosse and turned instead to more constructive endeavours such as discussing the importance of new discoveries and 'the divinity of blessed inventions'. By the late summer of 1667, however, Glanvill found himself threatened by the large numbers of Somerset nonconformists, as Beale reported to Evelyn in September 1667, and Glanvill set about turning his treatise about the new science into a work of self-vindication.⁸⁹

⁸⁶ Joseph Glanvill, *Plus Ultra, or, The Progress and Advancement of Knowledge since the Days of Aristotle* (London, 1668), sig. A6r-v.

⁸⁷ *Ibid.*, sig. A7r.

⁸⁸ John Beale to John Evelyn, undated, transcribed by and quoted in Nicholas H. Steneck, "The Ballad of Robert Crosse and Joseph Glanvill" and the Background to "Plus Ultra" *BJHS* 14.1 (1981), 61-2.

⁸⁹ *Ibid.*, 62.

The contrived flow of *Plus Ultra* (I account these personal matters a kind of digression from the main thing I intended'), combined with Glanvill's introductory comments, indicates that the attack on Crosse was an afterthought, but one which came to dominate the final published work.⁹⁰ He pointedly dedicated the work to the persons who would have been most concerned with the charge of atheism, the Bishop and clergy of Bath and Wells, and explained to them his reasons for publicly criticising a fellow member of the clergy. A specific question about Crosse was written into the introduction in order to provide himself with the opportunity to begin the work with his version of the dispute. Thereafter, Crosse's reverence for antiquity was frequently mentioned in the discussion of the advancement of learning, for the obvious purpose of discounting his epistemological conservatism.⁹¹ Finally, several long digressions were added, which raised Crosse's attacks and provided specific rebuttals to them.⁹² Glanvill had therefore transformed propaganda for the new science into propaganda for himself.

When the full scope of *Plus Ultra* became known among other members of the Royal Society, their enthusiasm for Glanvill's championing of their cause began to wane. Beale reported to Oldenburg in April 1668 'that he utterly dis-owns to have any power with Mr. Glanvill in his last writings since he wrote against dogmatizing'.⁹³ Henry Stubbe entered the fray by publishing his animadversions on *Plus Ultra* in May 1670: the provocatively titled '*Plus ultra*' *Reduced to a Non-plus* flamed the local dispute between Glanvill and Crosse into a pamphlet war which lasted for over a year, to the chagrin of many supporters of the Royal Society. *Plus Ultra* was reviewed favourably in the issue of the *Philosophical Transactions* published that December (albeit in phrasing lifted almost unchanged from the book's prefaces) but at no point was its author acknowledged as being a Society

⁹⁰ Glanvill, *Plus Ultra*, p. 71.

⁹¹ Glanvill, *Plus Ultra*, p. 9, pp. 19- 21, p. 76.

⁹² *Ibid.*, pp. 65-71, 110-115, 118-121, and 128-149.

⁹³ Henry Oldenburg to Robert Boyle, 7th April 1668, *The Correspondence of Robert Boyle Volume IV: 1668-77* eds. Michael Hunter, Antonio Clericuzio, and Lawrence M. Principe (London: Pickering & Chatto, 2001), p. 64.

Fellow.⁹⁴ John Evelyn received a copy via Oldenburg and wrote to Glanvill to praise his ‘most obliging nature’ and ‘this worthy vindication both of yourself and all useful learning’, while politely urging him to let the matter lie for the sake of the Society.

I do not conceive why the Royal Society should any more concern themselves for the empty and malicious cavils of those delators, after what you have said: but let the moon-dogs bark on, till their throats are dry: the Society every day emerges, and her good genius will raise up one or other to judge and defend her.⁹⁵

Glanvill, meanwhile, had attempted to organize a local scientific society in Somerset (the Royal Society responded, perhaps in anticipation of such a society being geographically and formally removed from their own, ‘that they could not but with all kindness accept...and should endeavour to countenance the undertaking’) and in November 1669 had published his *Propositions for Carrying on a Philosophical Correspondence*.⁹⁶ When Glanvill sent these *Propositions* by ‘his messengers and agents all about this county in the name and pretending the authority of the Royal Society’, John Beale passed to Evelyn the following

private whisper, which must pass through your ear to Vulcan: Now, since I have seen the ‘Propositions’ and do well know the air and dirt of the country, I do solemnly protest that I never heard of a more ridiculous foppery. For, to lay the plain truth, no man is more odious at Wells and all over this county than Mr. G. No man more suspected for moralities, and yet one proposition rejects all that are not recommended for good morals. To be short, and to ease your trouble of more scribble, I pray you trust my advice and judgement so far as to put in a caveat to obstruct such [an] order, if it be not passed already, or ‘till the business be better prepared to carry afar our luster and reputation.’⁹⁷

The process of confrontation had caused alternative definitions of the new science to emerge in the public sphere, definitions which characterised it variously as atheistic, atomistic, aggressive, or a combination of all three, despite the best attempts of the *virtuosi* to delineate their project. Glanvill’s enthusiasm arguably created as many critics of the Royal Society as much as it elevated it; when he

⁹⁴ Henry Oldenburg, ‘An Account of Two Books’, *PT* 3.36 (1668), 715-716.

⁹⁵ John Evelyn to Joseph Glanvill, 24th June 1668, *The Letterbooks of John Evelyn I*, p. 457.

⁹⁶ RS EL/G1/15; Joseph Glanvill to Henry Oldenburg, 19th July 1669, *CHO VI*, pp. 137-9. This letter was read out to the Royal Society by Oldenburg on 22nd July 1669 (Thomas Birch, *The History of the Royal Society of London, for Improving Natural Knowledge Volume II* (London: Millar, 1756), pp. 394-5).

⁹⁷ John Beale to John Evelyn, 26th November 1669, transcribed by and quoted in Steneck, ‘“The Ballad of Robert Crosse and Joseph Glanvill”’, 65-6.

next returned to the theme in his published work, he did so in a collection which he termed *Essays*, a genre which implicitly rejects institutional affiliation.

Glanvill asked in the preface of *Essays upon Several Important Subjects in Philosophy and Religion* (1676) to be excused for having not kept up with Boyle's publications: 'whereas I mention several Discourses of Mr. Boyl's, as intended for the Publick, 'tis likely that some of them by this may be extant, though my privacy and retirement hath not afforded me the notice of their publication'.⁹⁸ The retirement to which Glanvill refers here appears to be fictitious: he was still rector of Bath at the point of writing, and would become prebendary of Worcester two years later. The impression given is of withdrawal, both from public dispute and the Royal Society itself. The title page of Glanvill's essays does, however, declare their author to be 'Chaplain in Ordinary to His Majesty, and Fellow of the R. S.', aligning Glanvill with his theological and philosophical enterprises yet falling short of claiming institutional endorsement. Charles Taylor has argued that early modern literary examinations of selfhood must be read as being 'oriented in moral space', in which no single context can determine interpretation. Reading spatially, early modern selfhood was a complex and continual interplay of the spiritual on the secular and vice versa, in which the individual apprehended themselves as part of a larger schema, in both society and religion. Selfhood could be established through reciprocal social offices, such as parent, lawyer, or philosopher; adoption of these offices expressed 'a faith in ethical and social continuity' and required the adoption of a persona appropriate to the office being fulfilled. This was complicated during an era of cultural and scientific paradigm shift, when the credentials of the virtuoso and the new scientist were not fully established; claims to be a natural philosopher or virtuoso were, instead, based on a hope for ethical and social continuity. In foregrounding his professional and philosophical lives on the title page of the *Essays*, Glanvill asserted that he wrote not as a mouthpiece for one organisation or another but as an individual.

⁹⁸ Joseph Glanvill, *Essays upon Several Important Subjects in Philosophy and Religion* (London, 1676), sig. a3r.

Glanvill turned to the essay, a more personal form of writing, after his feuds threatened to negatively affect the reputation of the society; at first glance, however, there is little which characterises the seven essays as essayistic in the same vein as the works of Cowley, Browne, or Bacon. Each piece is of a considerable length, boldly assertive, chronicling improvements in natural knowledge and arguing for the existence of witches with equal bombast. The final and only original essay is no essay at all, but a work of utopian fiction. The dedication of this ‘Collection of some Essays upon subjects of importance’ to the marquess of Worcester reveals why this is the case.

The design of them is to lay a foundation for a good habit of thoughts, both in Philosophy, and Theology. They were some of them written several years ago, and had trial of the World in divers Editions: Now they come abroad together (with some things that are new) reduced to such an Order, as is most agreeable to my present judgment. I could have added much upon such fertile, and useful Arguments; but I am willing to believe, I have said enough for the capable and ingenious, and I doubt too much for others.⁹⁹

Very little was edited in the preparation of Glanvill’s previous works for this publication. The silent removal of any reference to Crosse in the extracted sections of *Plus Ultra* which make up the second essay is the most significant alteration, and it is this which allows Glanvill to yoke the term of essays to his collection, presenting them simply as ‘fertile, and useful’ productions written over the course of a life. If the content and structure of Glanvill’s essays marks them as an abbreviated collection of hits rather than the speculative, seemingly unfinished trials of the cogitating author, their organisation and the final, original piece demonstrate that Glanvill understood the mechanics and purpose of an essay collection in recommending its author to a reading public. In short, the same principles of comparison and discovery inform Glanvill’s production of his *Essays*.

Glanvill’s six essays are not organised chronologically but thematically, split into the philosophical and the theological, and equally weighted in accordance with the title which uses the conjunction ‘and’. What is significant is not the reordering of these essays in and of itself but the fact that Glanvill did so and called attention to this in the dedication. Glanvill the man stands between three essays on philosophy, three on theology, and comparison is predicated on the co-ordinating

⁹⁹ Ibid., sig. av-a2r.

conjunction. Appended to these six essays is Glanvill's continuation of Bacon's *New Atlantis*, and the way in which the narrative is situated reflects the earlier work. Bacon's chaplain William Rawley had overseen the 1627 publication of *Sylva Sylvarum: or, A Natural History in Ten Centuries*, a scientific miscellany split into a thousand paragraphs. After the main work concludes a new title page announces *New Atlantis, A Work Unfinished*, followed by a note from Rawley which explains the placement of the *New Atlantis* alongside *Sylva Sylvarum*.

This work of the *New Atlantis* (as much as concerneth the English edition) his Lordship designed for this place; in regard it hath so near affinity (in one part of it) with the preceding Natural History.¹⁰⁰

The two works together form an intersecting genre which readers were encouraged to view as inseparable, and *Sylva Sylvarum* was published together with the *New Atlantis* in all seventeenth-century editions. The intersection of natural history and utopia can be viewed as particularly productive combination of genres as the two form an implied commentary on each other, suggesting coherence and the possibility of explicating one in light of the other, and it this structure which Glanvill borrows and expands upon for his collection.

In his *Scepsis Scientifica* Glanvill had emphasised the delight of performing experiments, declaring it to be 'a pleasant spectacle to behold the shifts, windings, and unexpected Caprichios of distressed Nature, when pursued by a close and well managed Experiment'.¹⁰¹ Although his essays would relate no such 'pleasant spectacle', Glanvill was not immune to the sense of discovery which animated both the experimental report and the essay genre. All early modern utopias have this same sense of discovery in common. Outside of the obvious parallels with travelogues, utopias function not only as simple tests of an ideal society (and critique of contemporary society), but also as experiments which test new models of thought, in which usage of these modes of thought or practice are tested by characters' responses to them in the text. Changing paradigms of knowledge are assessed by applying them to worlds which, although fictional, exist in a parallel contemporary space to our own.

¹⁰⁰ Francis Bacon, *The Works of Francis Bacon III: Philosophical Works 3* eds. James Spedding and others (Cambridge: Cambridge University Press 1857), p. 127.

¹⁰¹ Joseph Glanvill, *Scepsis Scientifica*, sig. b2v.

Bacon's relation of the origin of Bensalem had conjoined the spiritual and the empirical: the heavenly light on the water and apostolic letter are worshipped by a man of Salomon's House, who gives thanks for the ability to 'discern...between divine miracles, works of nature, works of art, and impostures and illusions of all sorts'.¹⁰² Its purpose was widely taken by contemporary readers as providing a blueprint for a modern scientific institution, and for Glanvill the institution which Bacon could only establish in 'a *Romantick Model*' had been realised in the formation of the Royal Society.¹⁰³ The literary nature of the original work had been made explicit by Rawley, who referred to it as a 'fable' in his prefacing note. A fable is a fictional tale designed to teach some sort of lesson, and Bacon's choice to write a fictional account of his ideal scientific society takes on the mode of persuasion (rather than simple description) as a result. Bacon's *New Atlantis* falls short of persuading a reader of the merits of Salomon's House by failing to relate exactly what these merits are, but the explicit refusal to satisfy curiosity on these and other matters awakens the reader to the necessity of obtaining such knowledge for themselves. This subtlety is not replicated by Glanvill, whose visitor to Bensalem spends the majority of his stay listening to a thinly-disguised account of the restoration of a Utopian state, after an interlude of New Models and religious fanaticism, as a submission to legitimate authority 'upon the belief of its being the most *Primitive, Catholick, Prudent, Legal Government* in the world'.¹⁰⁴ Yet the heuristic power of combining a utopian vision of an ideal state with instructions on how this might be achieved was not lost on Glanvill, and his essays represent an attempt to harness some of his Lord Velarum's status as an individual heralded as the instigator of the restorative project of the Royal Society.

It is doubtful that Glanvill's *Essays* proved effective in rehabilitating his reputation within the Society. No mention of the volume was made either in the *Philosophical Transactions* in the years following its publication, nor in the correspondence of those fellows who had taken greatest issue with

¹⁰² Francis Bacon, *The Works of Francis Bacon V: Translation of the Philosophical Works* 2 eds. James Spedding and others (Cambridge: Cambridge University Press 1857), p. 369.

¹⁰³ Glanvill, *Plus Ultra*, p. 88.

¹⁰⁴ Glanvill, *Essays*, p. 41.

his earlier polemics. By 1678, however, Glanvill felt able to follow up a visit to Boyle with a request for ‘further assistance in my designe, viz, the proof of witches, & Apparitions’ with an assurance that all data so far gathered formed ‘a collection very considerable, for plainness & strength of evidence’.¹⁰⁵ Glanvill also took the opportunity to ask if it were really true that Boyle had lately disowned the story of the devil at Mascon, declaring that the same had been falsely reported of himself. Boyle wrote back in an obliging if distant manner a month later to supply the requested document, characteristically begging pardon for the time it took for him to lay his hands upon it due to building work at Lady Ranelagh’s. His happiness to supply this material was, however, explicitly predicated on Glanvill’s new sensitivity to the establishment of credibility.

This you give me a strong Invitation to put into your hands by assuring me that in the Collection where you intend it <shall have> a place, you are very carefull to deliver none but well attested narratives The want of which Cautiousnes’s has justly discredited many Relations of Witches & Sorceries & made most the rest suspected since in such stories.¹⁰⁶

Compound Interest

If Glanvill’s reputation among the *virtuosi* never truly recovered, that of the economist William Petty never publicly diminished within his lifetime. His literary output was relatively slight, and it is therefore of some significance that Petty was the third and final Royal Society fellow to publish works under the title of ‘essays’ in the thirty years following Boyle’s first use of the term. The three published essay works, dating from the latter years of Petty’s life, may at first appear superficially bereft of autobiographical impulse. An examination of Petty’s wider autobiographical practices and his habits of manuscript circulation will illuminate these slim texts and provide justification for his selection of the title of essay as opposed to any other, and the relationship of Petty’s essay writing with his experimental pursuits shall then be considered.

¹⁰⁵ Joseph Glanvill to Robert Boyle, 25th January 1678, *The Correspondence of Robert Boyle Volume V: 1678-83* eds. Hunter, Antonio Clericuzio, and Lawrence M. Principe (London: Pickering & Chatto, 2001), p. 15.

¹⁰⁶ Robert Boyle to Joseph Glanvill, 10th February 1678, *CRB V*, p. 20.

Stimulated by his work on the Life of Thomas Hobbes, in February 1680 John Aubrey resolved to write ‘my honoured friend Sir William Petty’s life, which will be a fine thing, and which he shall peruse himself, and then it shall be left for Posterity hereafter, to be read’.¹⁰⁷ His notes would be enlarged, firstly into the three lives ‘of the worthy and ingenious Knight Sir William Petty from his cradle; Sir Christopher Wren the like, as also Mr Robert Hooke’, and this cluster would form the basis for the collection now known as Aubrey’s *Brief Lives*.¹⁰⁸ Petty’s life is the first in Volume I of *Brief Lives*, positioned thusly not simply out of gratitude to a ‘singular good friend’ but as an expression of Aubrey’s commitment to Baconian historiography. As discussed in Chapter One, the Royal Society’s advocacy for reliance on empirical evidence was absorbed by antiquary and Society Fellow Aubrey, and his preface to his *Life of Hobbes* sets out his intentions to (and therefore the importance to him of) collecting minute details, because a biography is a factual, ‘a short Historie: and there minutenes of a famous person is gratefull’, concluding that ‘the Offices of a Panegyrist, & Historian, are much different’.¹⁰⁹ There is, throughout both biographies, a sense that Petty achieved nothing accidentally.

Indeed, from an early age Petty had taken great steps to shape his own representation. When he commissioned his portrait in 1649, the same year in which he took his doctorate of physic at Oxford, he employed Isaac Fuller, an artist with especial interest in anatomy. The portrait shows a young Petty holding a skull with his finger resting on Andreas Vesalius’s *De Humani Corporis Fabrica* (1543), centring his education and medical skills in his self-presentation. In 1686 Petty sent three letters to Robert Southwell, his closest correspondent, intended biographer, and cousin by marriage, asking him to ‘pick [me] an Epitaph out of these 3 letters’.¹¹⁰ The first of these referred to a paper applying Petty’s innovations in political arithmetic to the his own self-narrative, charting the exponential growth of Petty’s financial fortunes from 1s. at Christmas 1636 to £13060 after finishing

¹⁰⁷ Bodl. MS Ballard 14, fol. 127 (this and the following references to this manuscript are drawn from Jackson Williams, *The Antiquary*, pp. 99-100).

¹⁰⁸ Ibid., fol. 126.

¹⁰⁹ Ibid., fol. 135, fol. 131r.

¹¹⁰ BL Add MS 72953, fol. 101v.

the Down Survey, and concluding that ‘Perhaps The Like hath not been se[en]’.¹¹¹ Perhaps due to insecurities regarding the inheritance of his acres in Ireland, awarded during the Interregnum, Petty prefaced his will of 1685 with a brief autobiography ‘justifying in behalfe of my children the manner and meanes of getting and acquiring the estate which I hereby bequeath unto them’, intending that his wealth be taken as proof of his exceptional virtue as opposed to the grubby gains of a social climber.¹¹² This highly unusual move signals Petty’s public acceptance of the *faber fortunae* narrative which had grown to be closely associated with the Royal Society in exchange for continuing professional and personal impunity.

Bearing this information in mind, the published essays themselves should now be surveyed. In 1683 Petty published *Another Essay in Political Arithmetick, Concerning the Growth of the City of London with the Measures, Periods, Causes, and Consequences Thereof. 1682*, the title drawing attention to the essay having been written at a specific point in the past.¹¹³ The essay largely consists of a consideration of which direction of population growth, expansion or reduction, would result in the best society, and ‘[i]n which of these two Imaginary states, would be the most convenient, commodious, and comfortable Livings?’.¹¹⁴ Twelve particulars are outlined which must be taken into consideration in answering this question, of which the tenth is ‘For the Advancement and Propagation of Useful Learning’, tying the essay into Petty’s general interests in educational reform. The question is ultimately unanswered owing to the fact that ‘a more exact Account of the People, and a better Rule for the Measure of its Growth is Necessary, than what we have here given, or are yet able to lay down’, pointing to the conditional nature of the knowledge relayed.¹¹⁵ An interesting postscript is added: a projection of the figures of the essay into a consideration of the numbers of the dead to be resurrected at the time of judgement. This discussion was excised from the main essay as being ‘not

¹¹¹ BL Add MS 72853, fols. 92r-v.

¹¹² PROB 11/390/121, p. 1ff.

¹¹³ The title indicates an earlier published ‘Essay in Political Arithmetick’, but no record survives of any such work.

¹¹⁴ William Petty, *Another Essay in Political Arithmetick, Concerning the Growth of the City of London with the Measures, Periods, Causes, and Consequences Thereof. 1682* (London, 1683), pp. 30-46.

¹¹⁵ *Ibid.*, p. 43.

very pertinent' but appended 'since some Friends liking the said digressions and Impertinencies (perhaps as sauce to a dry Discourse)'.¹¹⁶ Ted McCormick has observed that '[m]any of Petty's later papers—particularly those dealing with the 'multiplication of mankind'—would place new emphasis on confuting 'Scripture Scoffers', linking modern demographic data to scriptural testimony about population', and suggests that Petty was attempting to publicly assert his religiosity after his materialist physics had led Thomas Barlow, future Bishop of Lincoln, to denounce his work as 'impious, if not plainly Atheistical'.¹¹⁷ In the main text, meanwhile, a departure from the main topic which ruminates on the use of the difference between ten and twelve hundred years for the doubling of populations is also referred to as a digression; a digression inserted by Petty despite (or, as shall be seen below, perhaps because of) his intention to work on the matter 'upon some more proper Occasion'.¹¹⁸ Many formal features of the early modern essay – brevity, discursiveness, temporal anchorage, and the self-conscious projection of values – can already be seen at work here.

1687 saw the publication of both the second and third of Petty's works to use the title of essay: *Two Essays in Political Arithmetick Concerning the People, Housing, Hospitals, &c. of London and Paris* and *Five Essays in Political Arithmetic*. *Two Essays* comprised two short lists designed to demonstrate to the King through data, 'not flattery', that London is of a greater size than Paris (or any other European city). The syntax is simple, the evidence largely numerical, and the numbered lists propel the argument via the implication of logical consequence. The idea of discovery is present here, but the road is straight, narrow, and signposted.

A few months later *Five Essays* expanded on *Two Essays*, and it is this collection which fuses the formal features of the provisional essay with the animating spirit of witnessed cogitation. A dedication to the king states that the previous *Two Essays*, which had been 'graciously accepted' by

¹¹⁶ Ibid., p. 44.

¹¹⁷ Ted McCormick, *William Petty and the Ambitions of Political Arithmetic* (Oxford: Oxford University Press, 2009), pp. 224-6.

¹¹⁸ Petty, *Another Essay in Political Arithmetic*, pp. 19-24.

his majesty, were expected all along to have invited numerous objections from readers, a retroactive implication that the first essays were unfinished, brief sketches. This is a (useful) fiction easily disproved by the contemporaneous correspondence with Southwell, in which Petty uses Southwell's criticisms to strengthen the essays ahead of publication.

I do (after six Months waiting for what may be said against my several Doctrines, by the able men of Europe) humbly present Your Majesty with a few other Papers upon the same Subject, to strengthen, explain, and enlarge the former; hoping by such real arguments, better to praise and magnifie Your Majesty.¹¹⁹

In the first essay Petty chooses to address one of his critics in two columns, one commentating on their work and calculations, the other keeping a running tally of his own population calculations. He states that he had 'made Remarques upon every paragraph' of a critical letter from the French astronomer Adrien Auzout, 'but supressing it (because it lookt like a War against a worthy Person with whom I intended none)...I have chosen the shorter and softer way of answering', assuring a general reader that he responds not out of malice but a concern for truth.¹²⁰ The second essay enlarges on the examples of London's greatness, from its variety of drinks to the beauty of its cathedral. The third essay explains his proofs and ways of knowing, and also makes his sources clearer (London mapmakers of 1682 and the fifth edition of John Graunt's *Natural and Political Observations* are two which are identified). In enlarging upon his own sources, and relaying his use of them in prose narrative, Petty guides the reader at a slower pace through his own processes of discovery and calculation while handing them the tools to travel alone, should they so wish. The fourth essay sets out once again the distinctions between London and European cities other than Paris, 'All of which we heartily submit to the correction of the Curious and Candid', acknowledging with a greater modesty than in *Two Essays* that his data on Rouen is imperfect.¹²¹ Petty concludes by again anticipating correction, stating that 'When these Assertions have past the Examen of the Critiques, we shall make another Essay, shewing how to apply those Truths to the Honour and Profit of the King and Kingdom of England', a promise which

¹¹⁹ William Petty, *Five Essays in Political Arithmetick* (London, 1687), sig. A4r-v.

¹²⁰ *Ibid.*, pp. 4-5.

¹²¹ *Ibid.*, pp. 36-7.

was never fulfilled due to Petty's death in December of the same year.¹²² The fifth and final essay is a more detailed consideration of the population of all Holland compared to that of London. For Petty, a man so in control of his public image, the immediate criticism of *Two Essays* must have stung: these *Five Essays* followed swiftly as a more consciously humble salve.

What had happened to Petty's fortunes between 1683 and 1687 which could have caused him to release two such different works – the hesitant *Another Essay* of 1682, and the more strongly authoritative *Two Essays* of 1687 – under the title of essay? Petty always had one eye turned to advancement, and two events had occurred during the interim to buoy his confidence: his election as the first president of the Dublin Philosophical Society in 1684, and the accession of James II to the throne in 1685.

Petty never held high office after the Restoration, and his political schemes (including Irish Settlement) were too ambitious for the Royal Society to be institutionally supportive, although its membership did furnish Petty with a coterie to disseminate his manuscripts: a coterie which counted Southwell, John Aubrey, and the Oxford mathematician Robert Wood among its informal members, all of whom were Royal Society Fellows. By and large, Petty was reluctant to publish; by 1671 Petty had composed a work he referred to as *Political Arithmetic*, but this was never published within his lifetime. A letter to Robert Southwell of 1678 urged Southwell to assist him in keeping it unpublished, as 'You know I have no Luck with my politicks. Slight court tricks have advanced many men, but the solid study of other men's peace and plenty ruins me'.¹²³ Petty's 1676 appointment as judge and registrar of the Dublin admiralty court, in addition to his many experiments in ship-building, had brought him into frequent relations with the new King James during the time that the latter was Lord High Admiral, and it seemed that James had learned to place confidence in him. In July 1686 Petty wrote to Southwell to give an account of an interview he had recently managed to obtain with the

¹²² *Ibid.*, p. 41.

¹²³ William Petty to Robert Southwell, 5th October 1678, *PSC*, p. 61.

king. 'As to the Great Man you mention,' he says, 'I had indeed strange access and acceptance. I spake unto him as one having authority, and not as the Scribes and Pharisees; I said several soure things, which he took as juice of orange, squeezed into his mince meat, and not as vitrioll'.¹²⁴ Petty began to inundate the curious new monarch with proposals which he refers to as essays, and these orally delivered essays contributed greatly to his advancement in the king's favour. He wrote to Southwell in July of 1686 that 'I am just now going to Winsor . . . to get an Essay read to the King, that London hath more people and Howses than Paris and Rouen put together'.¹²⁵ By September of the same year the two were engaging in 'private and ample Conference', the king 'expressly and voluntarily' discussing rule in Ireland and the Declaration of Indulgence.¹²⁶

Petty's concern was not with print publication but with ensuring that his manuscripts reached the correct audience, one that would recognise his talents and afford him some sort of privilege for them. It is a letter from Robert Wood 1671 which shows clearly how this manuscript circulation was intended to bring attention to Petty:

I come just now from the Castle where I had opportunity of presenting your Duty to my Lord Lieutenant alone in his Closet, who asking how you did, I began to tell him what you were doing viz what you had written, what kind of Arguments you had used, & how you had designed to have concerned his Lordship in shewing the Treatise you had made to the King &c . . . That no body had yet seen it, but that I had permission to shew the Heads thereof (which was all I had) to his Lordship if he pleased to see them: He Answered, most gladly, & so I pulld out a copie I had taken of them, supposing he would desire to keepe it, which he read over with much greediness, crying out severall times Excellent things! rare! &c. and then fell to commend you, & asked what you would have him to do, whether to write to the King about it, or to send those Heads, or expect the Booke it selfe, (which he hoped you would let him see) or to send you a letter to give the King with the Booke? any thing he would do to promote that which he though tended so much to the public good. I replied, I knew nothing more of it then what I had imparted to your Lordship from your letter, nor whether things were yet ripe for publication. He then desired me to remember him unto you, & asked shall we see him in Ireland againe? & when?¹²⁷

Frances Harris has drawn attention to this circulation of material only in 'heads' rather in the form of full treatises.

¹²⁴ William Petty to Robert Southwell, 13th July 1686, *PSC*, p. 214.

¹²⁵ William Petty to Robert Southwell, 14th August 1686, *PSC*, p. 231.

¹²⁶ William Petty to Robert Southwell, 30th September 1686, *PSC*, p. 234.

¹²⁷ Robert Wood to William Petty, 5th December 1671, BL Add. MS 72850, fols.192–193v, quoted in McCormick, *William Petty and the Ambitions of Political Arithmetic*, p. 269.

[O]nce [Petty] had put down the broad outlines of an idea in manuscript they had the same weight in his mind (and in those of his admirers) as a completed and published work. He claimed for example that a Dutch book on naval matters which was 'infinitely cry'd up at Court' (probably Nicolaas Witsen's *Book of Building Ships* of 1671) did not contain a fraction of what was in his own 'Treatise of Naval Philosophy', although the latter . . . existed only in a few pages of synopsis passed around in manuscript amongst his friends, who hoped that one day he might be persuaded to expand it.¹²⁸

Petty himself would complain strongly whenever his work failed to reach what he considered a suitable audience:

I do not reckon all my right and reasoning to be worth a straw, till I can get some powerfull person to consider it. I compose curious peeces in Music and play them accurately; but all this while my hearers are as deaf as haddocks, nor will their eares (I feare) ever be opened with just applications, till Wee run a Spit into them made of some convenient Metall.¹²⁹

Petty's circulated manuscripts were designed to be read aloud and digested there and then once they had arrived at the correct ear, and they can be viewed as so many essays or trials going abroad until they managed to achieve patronage. The primary function of these papers, Petty's essays, was to impress upon an audience a sense of Petty's abilities within minutes. Although they contain few directly autobiographical elements, the ultimate message to be circulated was a sense of Petty's intellect, and the very manner of their circulation demonstrates determination, even in the latter years of his life, to advance his fortunes. For Petty, the power of the essay lay both in its association with the true character of the author and its snapshot of knowledge at a particular moment. The truth of the essay was both personal and provisional, a useful way for Petty to attract patronage with the promise of more yet to come. The concept of reciprocal characterisation applies again here: whatever the object, the act of observation elicits an aspect of the subject which might be termed good or honest character in order that the observation be taken to be true. With Petty, as with Glanvill, as with Cowley, it is that demonstration of honest character which lies behind their selection of the essay genre.

¹²⁸ Frances Harris, 'Ireland as a Laboratory' in *Archives of the Scientific Revolution* ed. Michael Hunter (Woodbridge: Boydell Press, 1998), p. 87.

¹²⁹ William Petty to Robert Southwell, 2nd August 1681, *PSC*, p. 91.

The autobiographical letter to Southwell above demonstrates Petty's application of his mathematical enterprises to the narration of his own self, and his published essays, too, are entirely concerned with political arithmetic. These could, generously, be subsumed under the general heading of 'experimentalist essays' which are supposed to have followed Boyle's innovative examples. But what of Petty's scientific interests? Did they ever find expression in the essay form? According to Petty, his papers 'rumaged and Methodized' amounted to 'so many monuments of my Labours and misfortunes'.¹³⁰ Within his archive is a paper headed 'Catalogue of Essayes' dated 1685 which contains fifty entries, only two of which refer to works published within Petty's lifetime: one list of suggested experiments in constructing faster carriages and another responding to Adrien Auzout's criticism of his projected growth of the population of London, both of which were published in the *Philosophical Transactions*.¹³¹ The first paper suggests experiments but communicates no results, while the second would be reprinted almost verbatim in Petty's *Five Essays*; neither can be said to be 'experimentalist essays'. Some of the remaining titles can, with some certainty, be matched with manuscripts published as part of Petty's *Some Unpublished Papers* ed. the Marquis of Landsdowne (1923) based on heading, subject matter, and date of composition (i.e. pre-1685). They are as follows: 'Of Bankrupts and Stewards'; 'War Chariots'; 'The many ways of worshipping God'; 'A history of trades' (in the form of a list, presumably a projected synopsis of an intended history); 'Of a Common Council'; 'Real dictionary'; 'A mold of wooll, with fortifications and attaques by the same'.¹³² Finally, 'Valuation of Peoples, Lands and Goods' refers to Petty's directions to Aubrey on collecting

¹³⁰ William Petty to Robert Southwell, 13th April 1685, *PSC*, p.138. Petty had written his final will nine days earlier and had now apparently begun to arrange his personal papers and reflect on how his life may be read in them.

¹³¹ BL Add MS 72898 fols.133-4; William Petty, 'Experiments to be made relating to land-carriage, proposed by the learned Sr. William Petty Kt', *PT* 14.161 (1684), 666-7; William Petty, 'A further assertion of the proportions concerning the magnitude, &c. of London' *PT* 16.185 (1686), 237-40.

¹³² William Petty, *The Petty Papers: Some Unpublished Writings Volume I* ed. the Marquis of Landsdowne (London: Constable, 1923), pp. 248-50; William Petty, *The Petty Papers: Some Unpublished Writings Volume II* ed. the Marquis of Landsdowne (London: Constable, 1923), pp.71-6; Petty, *The Petty Papers I*, pp. 130-4; pp. 205-7; pp. 11-4 ('Of a Common Council' presents the idea of Dominion Representation and of two advisory councils, one for England only and one general one with additional representation for Ireland, Scotland, and the colonies - presumably dating from c.1660 before two such councils were actually instituted by Charles II, this essay is therefore hypothetical and, arguably, written to persuade the monarch himself); pp. 150-162; Petty, *The Petty Papers II*, pp. 80-7.

statistics, written in Aubrey's hand in a manuscript collected together various schemes for the improvement of personal fortune.¹³³ What these all have in common is their brevity, organisation into numbered lists or groups of headings, and lack of autobiographical material. This is approaching the sort of 'experimentalist essay' which Gotti and Black presume to have been produced by natural philosophers post-Boyle, with the obvious caveats that few of these essays take natural philosophical matters as their subject.

True to his belief in the empirical method, learned on the continent early in the 1640s, Petty aimed to end idle speculation by expressing all in 'number, weight and measure', although his published essays deal as much with fanciful, utopian projections as much as statistical precision. Also within his archive is 'A list of subjects' to be written on, an undated paper but which may be said to have been composed during the 1670s-80s based on the autograph hand.¹³⁴ There are 84 subjects listed, 24 of which do not contain 'of' (or 'de' in the case of Latin titles). Those that do not are either designated a history or have one-word titles such as geometry, arithmetic, astronomy. Some of the subjects listed are subjects which are covered elsewhere in Petty's works but not systematically: this list is either an expression of a passion for list making, or a guide set down for others to follow. It is this list which showcases the broadest spectrum of natural philosophical interests, from colours, to cold, to chemistry.

An idea may be formed of how Petty's experimentalist essays may have taken shape, had he ever written them, from his fragmentary scheme for writing medical reports, in which he gives the subjects about which he will write and then lays down the guidelines which he will follow in writing about them¹³⁵. The paper indicates that medical essays should solve all phenomena, all points must agree, and nothing must go unanswered, explicating Petty's method of deduction or ratiocination which he would apply, as seen, to his published essays in political arithmetic, and also to unpublished

¹³³ Bodl. MS Aubrey 26 *Faber Fortunae* as 'Register Generall of People, Plantations, & Trade of England'.

¹³⁴ BL Add MS 72897, fols. 155-156.

¹³⁵ Petty, *The Petty Papers*, pp. 167-8.

essays discussed above. It is not unreasonable to assume, therefore, that this same writing process would have been applied to all the experimental subjects Petty concerned himself with, had he completed these essays before his death at the end of 1687, the year in which his essays in political arithmetic had been published. Of course, it remains impossible to say that these experimental essays would also have been written for self-advancement as they do not exist and their circulation cannot be traced; if they had been written, however, they would have been the closest in style and purpose (and sole example of) the form of experimentalist essay genre which Gotti and Black propose originated with Boyle and was imitated thereafter by Royal Society members and adherents. It remains one of the strongest claims to originality of this thesis that it does, at least, dispense with this falsehood.

Chapter 4| More Easily Induced to Discover Themselves: Henry

Oldenburg, Robert Hooke, and Secretarial Correspondence

Honor ys a certeine testemonie of virtue shining of yt self, geven of some man by the judgement of good men: For when any one is of such and so apparent virtue that he turneth others into admiracion and love of him...then he ys called honorable.¹

So wrote the translator and founder of the Middle Temple library, Robert Ashley, in a manuscript written between 1596 and 1603 which set out a series of principles for the Elizabethan gentleman wishing to attain honour within Christian precepts. Ashley's treatise, in which honour is bestowed as a corollary of the judgement of 'good men', was addressed to Sir Thomas Egerton, the then Lord Keeper of England, and would languish without commentary among the Egerton papers until 1947.² At the same time of writing, Francis Bacon's essay 'Of Honour and Reputation' was published in the 1597 edition of his *Essayes*, and opened by describing honour as 'the Revealing of a Mans Vertue and Worth, without Disadvantage'.³ Both texts highlight the bestowal of honour as being predicated on the social encounter: virtue must be revealed, must testify, must be made publicly known. Bacon continues by introducing the notion of intersocial comparison, arguing that 'Honour, that is gained and broken upon Another, hath the quickest Reflection; Like Diamonds cut with Fascets. And therefore, let a Man contend, to excell any Competitors of his in Honour, in Out-shooting them, if he can, in their owne Bowe'. Ashley and Bacon may have been aiming for different targets, but both were aware of the ascriptive quality of honour.

As demonstrated by Patricia Brewerton, collections of Bacon's correspondence were circulated in manuscript form before the first quarto edition, *The Remaines of the Right Honorable Francis Lord Verulam*, was printed in 1648 by Parliamentarians seeking to adopt Bacon for their cause

¹ Robert Ashley, *Of Honour* ed. Virgil B. Heltzel (San Marino, California: Huntington Library, 1947), p. 34.

² The Egerton Family papers, otherwise known as the Ellesmere Collection, were purchased by the Huntington Library in 1917 from John Francis Granville Scrope Egerton, 4th Earl of Ellesmere.

³ Bacon, *WFB XV*, p. 163.

by pairing the letters with an essay (of doubtful provenance) on the nature of kingship.⁴ One of the printers of *The Remaines*, Laurence Chapman, would reissue the unsold copies in 1656 as *The Mirrour of State and Eloquence represented in the Incomparable Letters of the Famous Sr Francis Bacon, Lord Verulam*, the title now foregrounding the letters and presenting them as exemplary. An engraving of Bacon with pen in hand faces the title page, accompanied by two dedicatory couplets:

Grace, Honour, vertue, Learning, witt,
Are all within this Porture knit;
And left to time that it may tell,
What worth within this Peere did dwell.

The engraving and the letters serve as a double portrait, the correspondence as much a mirror of the man and his honour as of the state, and the recontextualization of Bacon's correspondence within this collection transitions them into both biography and educational example. Letters of statesmen began to be published from the early seventeenth century for insight into politics: Francis Walsingham's state letters as ambassador to the French court were printed in 1655, with a title proclaiming him the 'complete ambassador' and an epistle declaring that there be 'no kind of Writing, that men do generally with more greediness look into, then LETTERS; especially if they be Letters of State, from Great and Wise Persons, and in a Wise Time, as these are'. The letters (and actions within) are framed as being paradigmatic, a model for 'Gentlemen that shall be bred up to serve Princes hereafter'. Both Michael de Montaigne and Gabriel Harvey read Cicero's Letters to Atticus both for political and historical detail and for the literary self-presentation of the author.⁵ In this example, the history is managed and communicated by the letter writer for the purposes of civil conduct and the skill of civil conduct is enacted as part of the letter; it was taken for granted that reading such letters as exempla could assist in the imitation of this skill, and the titling of Bacon's letters as *Remaines* points to how such correspondence could be considered evidence for one's life even after death.

⁴ Patricia Brewerton, 'The Editing of Francis Bacon as a Man for all Parties' *Centre for Editing Lives and Letters* BAC/2003/03/001 <http://www.livesandletters.ac.uk/Papers/BAC_2003_03_001.pdf> [accessed 28 December 2022], p.7.

⁵ Michel de Montaigne, *Les Essais* ed. Pierre Villey (Paris: University Press of France, 2004), pp. 414-5, quoted in Lisa Jardine and William Sherman 'Pragmatic Readers: Knowledge Transactions and Scholarly Services in Late Elizabethan England' in *Religion, Culture and Society in Early Modern Britain: Essays in Honour of Patrick Collinson* eds. Anthony Fletcher and Peter Roberts (Cambridge, 1994), p. 123.

This chapter will examine the role of correspondence in shaping the reputation of the Royal Society, with an emphasis on the vocational utility of the letter. The chapter will be shaped around a comparison of Oldenburg and Hooke's styles of epistolary communication, with the argument being that Oldenburg and Hooke both fashioned their careers and roles within the Royal Society and, by extension, the Society itself during their tenures as secretary. The differences in style will be demonstrated through an assessment of Hooke's conduct before and after he was made secretary following Oldenburg's death in 1677. The first example concerns the epistolary interactions between Robert Hooke and Adrien Auzout in 1665, a dispute which morphed into one about the principles of letter publication. The second concerns the introduction of a new foreign correspondent, the Dutch microscopist Antonie van Leeuwenhoek, to Hooke in 1673; as shall be seen, Hooke's reticence to engage in communication with a supposed outsider (both in terms of society membership and nationality) would severely impede Hooke's ability to carry out his duties as secretary in later years. The final relationship to be assessed is Hooke's with Isaac Newton, a relationship which, already poor prior to Oldenburg's death, would turn increasingly sour when Hooke as secretary attempted to imitate Oldenburg in cajoling Newton to return to his philosophical studies. In all three cases, it is clear that it is Hooke's epistolary conduct which marked him out as an ungentlemanly successor to Oldenburg, with the consequence being that the reputation of the Society was at stake.

The second point of comparison will be each man's management of the Society's journal, known as *Philosophical Transactions* under Oldenburg and *Philosophical Collections* under Hooke. These were personal enterprises, but ones which ensured the Society's reputation of vitality even when membership and activity was in decline. The *Philosophical Transactions* collapsed after Oldenburg's death, having been kept limping along for couple of years populated by space fillers. Hooke's *Philosophical Collections* never really took off, running for only three years until he gave it up in 1682, the same year he was relieved of his secretarial duties. In comparison, Oldenburg's tenure was a successful symbiosis of the personal and the institutional, as was his career as secretary; indeed, so successful was Oldenburg's identification of himself with the Society that he remains a somewhat

shadowy figure outside of the remit of his work for the Society despite the efforts of the Halls to provide biographical information in their edition of his correspondence.

Renaissance epistolographies (the most prominent being Angel Day's *The English Secreterie*, first published 1586) provided clear instructions for the protocols and conventions (material as well as rhetorical) that related to each category— although it is uncertain how neatly such rules and templates scripted letter writing in practice, beyond formal modes of correspondence and opening and closing forms. In terms of function this is what Alan Stewart would describe as a grammar of the letter, in other words, 'a vocabulary and set of images that originate in the material practices of letter-writing culture of early modern England'.⁶ To take an example of this, it might be broadly stated that presupposition creates continuity and therefore acknowledges a relationship. Phatic statements which refer to receipt and expectation of letters demonstrates a sensitivity to the practicalities of the medium. Letters are in this sense a highly self-reflexive form in which are found not only textual instances of self-construction but awareness of the cultures and practices of letter writing and a conscious creativity in the manipulation of these.

During the sixteenth and seventeenth centuries the familiar letter was adapted to fit the changing forms of community in England, and the prevalence of collections of printed letters attest to its role in both representing and shaping social relations. The classical rhetorical art of letter writing was both popularised and refashioned from the medieval *ars dictaminis* by the printed collections and manuals written by early modern humanist scholars, initiated by Petrarch's *Epistolae familiares*. It is important to recognise that early modern epistolarity extended beyond dyadic, or paired, interaction outside of print as well; Harold Love's concept of the scribal community, in which the handwritten text was used to bond 'groups of like-minded individuals into a community, sect or political faction,

⁶ Alan Stewart, *Shakespeare's Letters* (Oxford: Oxford University Press, 2008), p. 5.

with the exchange of texts in manuscripts serving to nourish a shared set of values and to enrich personal allegiances' serves as useful model here.⁷

The Bremen-born Henry Oldenburg was responsible for the systemisation of the sporadic epistolary contact between Fellows of the Royal Society and their foreign correspondents as a man dedicated to communication of natural philosophy. He had travelled on the continent as tutor to his patron Boyle's nephew and had provided information about informal French scientific groups and developments in natural philosophy to both Boyle and Hartlib between 1657 and 1660.⁸ He would put his skills in transactional epistolary communication, and a correspondence network which formed a social map of his travels to use when elected secretary of the Society. On 18th of February 1663 Oldenburg wrote to the leading astronomer Johannes Hevelius in order to open relations but also to set out his intentions regarding his role as communicator.

I was urged by the illustrious Fellows to make their goodwill towards you known to you in a letter. For it is now our business...to attract to the same purposes men from all parts of the world who are famous for their learning, and to exhort those already engaged upon them to unwearied efforts...This our Fellows are striving for with all their might and for that reason they are developing a wider correspondence with those who philosophise truly, that is (in my opinion) with those who read the Book of the World.⁹

This letter states that Oldenburg wrote at the Society's urging, but he had in fact drafted a similar letter of introduction on his own initiative early in January of the same year.¹⁰ He requested that Hevelius enter into correspondence with him, report his own work, to help compile a natural history with the Society, and to receive news of the Society's activities and those it had learned of in return. The introduction was successful; Oldenburg maintained a steady correspondence with Hevelius for the rest of his life, weathering controversies with other *virtuosi* without ever losing his friendship. As the Society's reputation grew in conjunction with (and owing to) Oldenburg's activities, scientists

⁷ Love, *Scribal Publication in Seventeenth Century*, p. 177.

⁸ This period is covered in Henry Oldenburg, *The Correspondence of Henry Oldenburg Volume I: 1642-1662*, ed. and trans. A. Rupert Hall and Marie Boas Hall (Madison and Milwaukee: University of Wisconsin Press, 1965).

⁹ Oldenburg, *CRO II*, pp. 6-7, p. 27, p. 64.

¹⁰ Marie Boas Hall, 'The Royal Society's Role in the Diffusion of Information in the Seventeenth Century' *N&R* 29.2 (1975), 180.

and natural philosophers (Leibniz, Malpighi, Cassini) would seek to have their work received by the Society by first approaching Oldenburg. The asking and granting of favours formed a part of polite society as a whole and were one indicator of gentlemanly status within the seventeenth-century republic of letters while also characterising early modern epistolary conduct as a whole.¹¹ Prospective correspondents could use their own work to begin this relationship of reciprocity and indenture, seeking clarification or approval of the Society – those unknown in England, such as Leibniz at his first point of contact in 1670, would lavish praise on both the Society and Oldenburg as its interlocutor to establish both deference and endearment.¹²

Two main models for the Royal Society existed at the time of its inception: informal intellectual clubs of Paris and Oxford which met to discuss natural philosophy in an infrequent and casual manner, and the co-operative Salomon's House in Francis Bacon's *New Atlantis*. Each model focused on the accumulation of information; neither engaged in its dissemination. The influence of one French academy on the enterprises of the Royal Society was significant in that it led to the creation of the initial Letter Book. Sir Samuel Tuke had returned from a visit to the Académie Montmor in May 1661, reporting that the secretary Samuel Sorbière had been urged to 'establish a commerce between them and this honourable society'.¹³ Sir Robert Moray accordingly wrote to Montmor on 22nd July 1661, and inaugurated the first Letter Book when a reply from Sorbière was received on 4th September, a Letter Book in which all letters read to the Society and the replies sent in return were to be copied. Thus, from its inception, the official record of the Society's correspondence had the notion of exchange as its principal quality.

Scientific knowledge had its own epistolary networks in the first half of the seventeenth century, notably the circles of the intelligencers Marin Mersenne and Samuel Hartlib. Printed books

¹¹ Anne Goldgar, *Impolite Learning: Conduct and Community in the Republic of Letters 1680-1750* (New Haven; London: Yale University Press, 1995), p. 23.

¹² Gottfried Wilhelm Leibniz to Henry Oldenburg, 13th July 1670, Henry Oldenburg, *The Correspondence of Henry Oldenburg Volume VII: 1670-1671*, ed. and trans. A. Rupert Hall and Marie Boas Hall (Madison, Milwaukee, and London: University of Wisconsin Press, 1970), p. 64.

¹³ Birch, *History I*, p. 299.

only recorded completed results and, since they were invariably intended to espouse theory, took time to appear. Private correspondence, haphazard as it was, did not necessarily translate into knowledge being shared across institutions however, and in 1605 Bacon highlighted this tendency for knowledge to be received but not communicated as a general deficit to learning itself.

For as the proficiencie of learning consisteth much in the orders and institutions of Universities, in the same States & kingdoms: So it would bee yet more advanced, if there were more Intelligence Mutual betweene the Universities of *Europe*, then now there is. We see, there be many Orders and Foundations, which though they be devided under severall sovereignties, & territories, yet they take themselves to have a kind of contract, fraternitie, & correspondence... there hath not been, or very rarely been, any Publique Designation of Writers or Enquirers, concerning such parts of knowledge, as may appeare not to have bin already sufficiently laboured or undertaken, unto which point it is an Inducement; to enter into a view and examination, what parts of learning have bin prosecuted, and what omitted.¹⁴

The key words here are ‘fraternitie’, ‘publique’ and ‘inducement’. It is the argument of this chapter that Henry Oldenburg’s cultivation of a network which relied upon the notion of fraternity, of favours asked and returned, of deference and resolution, which was critical to the endurance of the early Royal Society.

‘Rich material, social, and intellectual links made up a scientific correspondence [and n]aturalists identified a correspondence as the sum of these links’ and Henry Oldenburg believed conversation and correspondence encompassed a moral dimension in the forging of such links.¹⁵ In a brief manuscript tract titled ‘Admonitions and directions of a good parent to his Child, especially a Son’ Henry Oldenburg presented scientific and philosophical conversation as a moral and spiritual duty: the child was charged to seek out the company of ‘those, with whom you may converse profitably in acquiring knowledge of the works and creatures of God, I mean, of Natural good things, as Physick and Natural philosophy; or in Artificial good things and Mechanical Ingenuities’.¹⁶ Here and elsewhere in this letter, Oldenburg highlighted the conditions under which he believed natural philosophical conversation to be ‘profitable’: it must always be focused on knowing God through his

¹⁴ Bacon, *OFB IV*, p. 60.

¹⁵ Elizabeth Yale, *Sociable Knowledge: Natural History and the Nation in Early Modern Britain* (Philadelphia: University of Pennsylvania Press, 2016), p. 58.

¹⁶ BL Add. MS 4458, fol. 115v.

works, and the individual must not approach it (or anything else in life) without first engaging in serious examination of his soul and his relationship with God. Every day was to begin and end in prayer, characterised by Oldenburg as ‘converse’ with the Lord. Oldenburg further ranked good conversation in ‘Physick and Natural philosophy’ as third on the list of things one should seek in one’s company; above all, they should be ‘Lovers of God’ and those ‘with whom you may converse in Moral good things’.¹⁷

According to Sprat’s *History of the Royal Society*, it was decided that two secretaries be appointed to replace the initial post of register in order for duties of recording notes of meetings to be expanded to include those of correspondence and publishing. These two secretaries were to be elected on an annual basis on St. Andrew’s Day, with the Fellows of the Society being required to ‘nominate and choose honest and discreet Men’ to carry out their duties, which are summarised by Sprat below.¹⁸

The Secretaries are to take Notes of the Orders, and material passages of the Meetings; to take care of the Books, Papers, and Writings of the Society; to order, and direct the Clerks in making Entries of all matters in the Register, and Journal-Books of the Society, or Council; to draw up such Letters as shall be written in their Name, which shall be approv'd at one of their Meetings; to give notice of the Candidates propounded in order to Election.¹⁹

Intriguingly, Sprat assures his reader that his own *History* was published under the remit of John Wilkins and Henry Oldenburg, the first elected secretaries; that in writing, ‘it is onely my hand that goes, the substance and direction came from one of them’.²⁰ Only the secretaries and Treasurer are required to be elected according to their ‘honest and discreet’ character, with no such stipulation (or, indeed, any requisites at all) being recorded by Sprat for the offices of President, Council member, Clerk, Curator of Experiments, or Sergeant at Mace. It is possible that what we hear in Sprat’s lines is the voice of a secretary themselves (Wilkins had assumed responsibility for urging Sprat to complete the *History* since 1665); it is certainly significant that the roles of Treasurer and Secretary are linked

¹⁷ *Ibid.*, fol. 109r, fol. 115r.

¹⁸ Sprat, *History*, p. 96, p. 140.

¹⁹ *Ibid.*, p. 146.

²⁰ *Ibid.*, p. 94.

by qualities of honesty and discretion required to extract and secure currency both physical and social.²¹

We can compare Sprat's overview with Oldenburg's own account in an undated manuscript titled 'The business of the Secretary of ye R. Soc.', which runs as follows:

He attends constantly the Meetings both of ye Society and Councill; noteth the Observables, Said and done there; digesteth ym in private; takes care to have ym entred in the Journal- and Register-books; reads over and corrects all entries; sollicitates the performances of taskes recommended and undertaken; writes all Letters abroad and answers the returns made to ym entertaining a corresp. wth at least 50. persons; employes a great deal of time, and takes much pains in inquiring after and satisfying forrain demands about philosophicall matters, disperseth farr and near store of directions and inquiries for the society's purpose, and sees them well recommended etc.²²

This is a Secretary of rather more duties than those outlined by Sprat, a Secretary who takes a much more active intellectual role, as evidenced by the verbs Oldenburg uses. He 'digesteth' and 'sollicitates', 'disperseth' and 'corrects', 'writes all Letters', 'employes a great deal of time', and maintains a vast correspondence. The manuscript appears to have been written shortly before Oldenburg was finally afforded a wage by the Royal Society in 1669 – perhaps it was Oldenburg's rehearsal of his case. At any rate, six years after taking on the role, Oldenburg joined Hooke as the only other paid employee of the Society, and his industrious efforts toward its sustainment had not escaped the attention of other people. Joseph Glanvill singled him out for praise in *Plus Ultra* as 'a great Benefactor to Mankind' for his 'affectionate care, and indefatigable diligence and endeavours, in the maintaining Philosophical Intelligence, and promoting Philosophy'; long-time correspondent and eventual member of the Royal Society, the biologist Martin Lister asked Oldenburg how he managed to maintain such a large correspondence and summarised the reply he received as follows:

[Oldenburg] held Correspondence with seventy odd persons in all parts of the World, and those be sure with others; I ask'd him what Method he used to answer so great a variety of subjects, and such a quantity of Letters as he must receive weekly; for I know he never failed, because I had the honour of his Correspondence for Ten or Twelve Years. He told me he made one Letter answer another, and that to be always

²¹ For a discussion of Wilkin's involvement with the *History* see P.B. Wood 'Methodology and Apologetics: Thomas Sprat's "History of the Royal Society"' *BJHS* 13.1 (1980), 2-4.

²² British Library Add. MS. 441, fol. 27v. Based on the number of correspondents, Marie Boas Hall posits a date for this manuscript of 1668-9 ('Oldenburg and the Art of Scientific Communication', *BJHS* 2.4 (1965), 290.

fresh, he never read a Letter before he had Pen, Ink and Paper ready to answer it forthwith; so that the multitude of his Letters cloy'd him not, or ever lay upon his hands.²³

We should now examine these qualities of Oldenburg's epistolary style – his rate of reply and habit of using one letter to respond to another – in more detail.

Make One Letter Answer Another: Henry Oldenburg's Epistolary Style

Unique to Oldenburg's style of correspondence was the application of conventional modes of politeness, exchange, and reciprocation specifically to the sharing and *production* of scientific knowledge, and missing letters from Oldenburg should not derail an attempt to understand his role in exchanges where responses are extant. As Daybell and Gordon note in their material approach to early modern networks of correspondence, letters were 'often the deliberate product of cultivation by the correspondent' — as Bacon has it 'when a man would draw an answer by letter backe againe' — arguing that a definition of personal corpus must therefore be pluralistic.²⁴

There are three key elements to Oldenburg's rhetorical style in the managing of disputes involving members of the Royal Society: appeals to perspicuity, the elicitation of response, and the positioning of himself as intermediary for the Royal Society, itself characterised by Oldenburg as an institution which occupies the role of adjudicator as part of its attempt to form a habitus. Although commended in the Renaissance, perspicuity had primarily been associated with the forensic; Angel Day's *The English Secretorie* (1586 and subsequent editions) highlighted brevity of content as one of the key elements which distinguishes the epistle from the oration, going on to emphasise that complexities of speech must be shorn in order to adhere to this principle:

Necessarie speeches I doe accomp, twwhatsoever is set downe for the playne and open deliverie of every occasion, to thintent the minde of the writer, and what hee pursueth may aptly, and in good and ready sorte be playnly conceived... avoyde all superfluitie of wordes, frivolous and

²³ Glanvill, *Plus Ultra*, p. 103; quoted in *CHO I*, pp. xvii-xviii.

²⁴ James Daybell and Andrew Gordon eds., *Cultures of Correspondence in Early Modern Britain* (Oxford: Oxford University Press, 2016), p. 9; Bacon, *OFB XV*, pp. 145-6.

vayne repetitions, wherein one and the selfe same thing is iterated, still spoken of, and continuallie inforced...alwayes suppose that in delivering of anye matter, the best observation is, in playnest sorte that may be, to laye downe th' effects.²⁵

It is these same principles, to 'Reject all amplifications, digressions, and swellings of style' which Sprat would say in 1667 that the Royal Society had set as its objective, both at the level of the individual word and as a stylistic maxim.²⁶ By explicitly espousing and implicitly demonstrating these principles of perspicuity, with its aims of intelligibility and transparency, in letters concerned with the promotion and furthering of natural philosophy, Oldenburg united these two functions of rhetorical plainness.

A letter sent to Samuel Hartlib in March 1659 sheds light on Oldenburg's motives when he discusses his correspondence with the German J.J. Becher. 'In the interim,' wrote Oldenburg, 'such kind of men [like Becher] should be some long time conversed with, and some expenses hazarded by liberal entertainments, to get their familiarity and affection; after which they will more easily be induced to discover themselves and the depth of their knowledge'.²⁷ 'Discover' points to the revelation of the self and one's practices; we may also read it reflexively, as one may discover (or even create) a public 'self' through correspondence. Stephen C. Levinson distinguishes person, spatial, and temporal deixis from discourse and social deixis to distinguish between deixis as a system that grammaticalizes aspects of the physical world and deixis as a system that grammaticalizes the social identities and relationships of participants in the social world.²⁸ Social deixis involves the use of indexical expressions to differentiate between the relative social status and power, or interpersonal intimacy or distance between speakers in different public and private settings. With regard to epistolary communication, if the addressee is imagined in the image of the author this drives rhetorical self-presentation, and the letter is a reflexive text which presents as a dialogic one. There is an interpretative gap here: the author writes to their addressee as they imagine them to be in their own

²⁵ Angel Day, *The English Secretorie* (London, 1586), pp. 9-10.

²⁶ Sprat, *History*, p. 113.

²⁷ Henry Oldenburg to Samuel Hartlib, undated March 1659, *CHO I*, p. 211.

²⁸ Stephen C. Levinson, *Pragmatics* (Cambridge: Cambridge University Press, 1983), pp. 54-96.

mind. We can perhaps use this as an author's reading of themselves, but more importantly as evidence for the addressee's self-presentation. Such interpersonal stances must be incorporated in order for social distinctions to be acknowledged and adhered to in the absence of face-to-face contact; early modern letters therefore demonstrate as well as shape these social relationships. Put simply, a correspondent who signs themselves as being their addressee's 'obliging servant' signals their awareness of epistolary conventions and makes particular a general social hierarchy, while also indicating that the letter writer is or has been engaged in performing beneficial acts of service for their addressee. In this manner, such a performative utterance may be seen to have both expressive and directive force should the addressee subsequently feel themselves under obligation in turn.

It is important to remember that Oldenburg was a foreigner, one who had arrived in England in 1653 as envoy from the free city of Bremen in order to negotiate English recognition of its neutrality following the First Anglo-Dutch War. In considering the particular attributes and styles Oldenburg displayed in his role as secretary for the Royal Society, an institution which had encompassed nationalism since its foundation in the same year as the Restoration of monarchy, it is useful to again turn to Sprat and his championing of purportedly English characteristics which he argued contributed to the primacy of the Royal Society's achievements.

And here, there is one thing, not to be pass'd by; which will render this establish'd custom of the *Society*, well nigh everlasting: and that is, the general constitution of the minds of the *English*. I have already often insisted on some of the prerogatives of *England*; whereby it may justly lay claim, to be the Head of a *Philosophical league*, above all other Countries in *Europe*...they have commonly an unaffected sincerity; that they love to deliver their minds with a sound simplicity; that they have the middle qualities, between the reserv'd subtle southern, and the rough unhewn Northern people: that they are not extreamly prone to speak: that they are more concern'd, what others will think of the strength, than of the fineness of what they say: and that an universal modesty possesses them. These Qualities are so conspicuous, and proper to our Soil; that we often hear them objected to us, by some of our neighbour Satyrists, in more disgraceful expressions...[the English] ought rather to be commended for an honourable integrity; for a neglect of circumstances, and flourishes; for regarding things of *greater* moment, more than *less*; for a scorn to deceive as well as to be deceiv'd: which are all the best indowments, that can enter into a *Philosophical Mind*.²⁹

²⁹ Sprat, *History*, pp. 113-4.

It is these same qualities – sincerity, clarity, modesty, and honesty – which Oldenburg sought to display in his correspondence, and by taking on these supposedly English attributes Oldenburg aligned himself with the professed aims of the Royal Society, as opposed to the ‘easie vaniety of fine speaking’.³⁰ By understanding Oldenburg’s private priority as being the promotion and survival of the Society by generating interest, engagement, and (occasionally) dispute, we can appreciate how the qualities praised by Sprat were used to create an epistolary presence as a flatterer of those who showed natural philosophical promise and his deliberate positioning of himself as impartial adjudicator and modest messenger.

Oldenburg was ever keen to grow his network, and it was rare that any letter passed him unanswered. Every correspondent might prove an experimentalist whose discoveries could contribute to the Society’s enterprises directly through membership or indirectly by spurring Fellows to respond; contacts not engaged in natural philosophical work might yet serve as intermediaries for those who did, or at least provide a useful source of political information. A somewhat tedious correspondence with the French scholar Henri Justel was maintained by Oldenburg throughout his life, not for its inherent usefulness but for Justel’s connections within European intellectual circles which allowed him to serve as a form of forwarding house during periods of armed conflict with Holland and France. Having met Baruch de Spinoza in Leiden in 1661, Oldenburg expressed joy at the continuation of their acquaintance by letter in 1663, and took the opportunity to assure the Dutch philosopher, unbidden, that ‘Our Royal Society is diligently pursuing its business, confining itself to experiments and observations and avoiding the intricacies of disputation’.³¹ An offer by Spinoza to forward the forthcoming first two volumes of his *Principia Philosophiae Cartesianae* (1663) was responded to with delight by Oldenburg, who sent with his reply a copy of Boyle’s *A Defence of the Doctrine Touching the Spring and Weight of the Air* (1662) ‘which has probably not yet reached your booksellers’; Oldenburg then closed his letter by ‘urging on you again and again’ to publish the

³⁰ Ibid., p. 112.

³¹ Henry Oldenburg to Spinoza, 31st July 1663, *CHO II* p.99. As will be shown later in this chapter, Oldenburg began to exploit the ‘intricacies of disputation’ in order to generate material for his *Philosophical Transactions*.

commentary on Descartes, and promising that ‘if you were only willing to disclose to me certain chapters of their contents, oh! How I should love you, and how closely bound to you I should consider myself’.³² It was a letter which deftly sought to draw Spinoza into a relationship characterised by reciprocity and the pleasure of favours obtained from a friend; Oldenburg would later capitalise on this relationship by requesting that Spinoza prevent ‘your’ printers in Holland from preparing Latin translations of Boyle’s work, on the grounds that ‘it has already been prepared in Latin here’ and will be sent to him as soon as a carrier might be found, neglecting to mention that Oldenburg had himself served as Boyle’s translator since 1660, a source of income which he was understandably reluctant to curtail.³³

It was the Royal Society itself, however, which Oldenburg was so keen to promote, particularly as excitement began to give way to reticence even on the part of its own Fellows from the mid-1660s. A flowery letter from the German physician Philipp Jakob Sachs in January 1665 praised ‘dear’ Oldenburg as ‘the star in the Illustrious Experimental Society’s serene firmament’, accompanied by a description of the antecedent *Academia Naturae Curiosorum* (a largely epistolary network of German physicians) and a request that ‘your truth drawn from experiments’ illuminate certain questions regarding shellfish.³⁴ Why do crabs become red when cooked? asked Sachs; has ‘the illustrious [Sir Kenelm] Digby’ been able to prove the his claims of revivification of crabs by experiment? and are scorpions in fact generated from dead hermit crabs?³⁵ Oldenburg’s reply largely comprised a supercilious defence of the Royal Society’s ambitions to ‘reconstruct philosophy, not as it pertains to medicine alone, but as it concerns all that pertains to the usefulness and convenience of human life’ before tersely referring Sachs to Digby himself for the answers to his questions, the Society having being engaged in ‘generalities for the gratification of the learned world’ rather than making observations of crabs (Sachs was welcome, however, to impart anything ‘worthy of note’

³² Ibid., p. 100.

³³ Henry Oldenburg to Baruch Spinoza, 28th April 1665, *CHO II*, pp. 381-2.

³⁴ Philip Jacob Sachs to Henry Oldenburg, 12th January 1665, *CHO II*, pp. 345-6.

³⁵ Sir Kenelm Digby, *A Discourse Concerning the Vegetation of Plants* (London, 1661), pp. 83-4. Sachs errs in his query; Digby claimed to have achieved the palingenesis of crayfish, rather than crabs.

which he had his correspondents might discover).³⁶ It would seem that, aside from being placed in the awkward position of defending the marvellous claim of one of the Society's founding members, Oldenburg saw little use in continuing a correspondence with one seemingly keen to gather experimental information for the illumination of his own learned society as opposed to communicating it to Oldenburg it; at any rate, Sachs would not write to Oldenburg again for another five years.

Oldenburg was also quick to publicly ascribe his own achievements to the Society itself, affecting both modesty and a purportedly disinterested position. A 1667 letter to Sir George Oxenden, then President of the East India Company, solicited his 'Ingenious Contributions' to a Society endowed by Charles II with the privilege of 'the liberty of entertaining Correspondence in forrin parts, whereby the observables, Ingenueties, Inventions, & productions...may by Inquisitive & intellegent men be noted collected & transmitted' – the network of correspondence utilised by the Society was, of course, Oldenburg's own, although he signed off this letter by describing himself as 'the least' of the Society's members.³⁷

In February of the previous year Oldenburg had written to Boyle, then based just outside of Oxford, pleased at his patron's imminent return to London. According to Oldenburg, the Society was at this time suffering from a lack of both engagement and funds, and it was hoped that Boyle's return would prompt a revival in its fortunes.

Such persons, as you, Sir, we highly need to assert and promote ye dessein and interest of ye Society, and to suggest ye proper ways of carrying on their work. There are so few of such, yt, unlesse either they redouble their zeale, or their number increase; yt Noble Institution will come far short of its End. We are now undertaking several good things, as ye Collecting a Repository, ye setting up a Chymicall Laboratory, a Mechanicall operatory, an Astronomicall Observatory, and an Optick Chamber; but ye paucity of ye Undertakers is such, yt it must needs stick, unlesse more come in, and putt their shoulders to the work...The Arrears of ye Society amount to above 600 lb; how to get ym paid, is the Question.³⁸

³⁶ Henry Oldenburg to Philip Jacob Sachs, 30th May 1665, *CHO II*, p. 401.

³⁷ Henry Oldenburg to Sir George Oxenden, 6th April 1667, Henry Oldenburg, *The Correspondence of Henry Oldenburg Volume III: 1666-1667*, ed. and trans. A. Rupert Hall and Marie Boas Hall (Madison, Milwaukee, and London: University of Wisconsin Press, 1966), pp. 384-5.

³⁸ Henry Oldenburg to Robert Boyle, 24th February 1666, *CHO III*, p. 45.

Just over a month later, however, Oldenburg was happily reporting to Hevelius that the Society's membership was surging with 'so many men distinguished by birth, learning, and experience, they will beyond doubt prove their worth in time', that 'The *History* of our Society is now in press', and that 'Mr Boyle's *Hydrostatical Paradoxes* and *Origin and Forms* have already been published in English and will as soon as possible be issued in Latin for the benefit of foreigners'.³⁹ Determined as he was to shore up the reputation of the Royal Society against its detractors, it would take a new approach to ensure both it and Oldenburg's survival if its own members couldn't be persuaded to pay their dues. Oldenburg had already tried to solve these problems a year earlier by launching his periodical, the *Philosophical Transactions*, the publication of which had been interrupted by the 1665 outbreak of plague in London; he ensured, however, that his correspondents were none the wiser as to the current state of the Society.

Oldenburg's *Philosophical Transactions*

The Society minutes for the 1st of March 1665 authorised 'the Philosophical Transactions, to be composed by Mr Oldenburg, be printed the first Monday of every month, if he have sufficient matter for it, and that that tract be licensed by the Council of this Society, being first revised by some Members of the same; and that the president be desired now to license the first papers thereof...to be printed by...[the] printers to the society'.⁴⁰ There is nothing to suggest that this was instigated by anyone other than Oldenburg himself; certainly, he took great pains thereafter to emphasise that the conception and production were his alone. The first issue was published five days later, a remarkable turnaround had its production only been begun following the Society meeting. Its purpose can be indicated by its subtitle 'Giving some Accompt of the present Undertakings, Studies, and Labours of the Ingenious in many considerable parts of the World', and Oldenburg's methods were fairly well set from the first issue onwards: extracts from foreign journals and printed books were included, as was information from letters received (initially summarised by Oldenburg, later quoted in full aside from

³⁹ Henry Oldenburg to Johannes Hevelius, 30th March 1666, *CHO II*, p. 76.

⁴⁰ RS CMO/1/77.

obvious epistolary stylings), and book reviews (or summaries) written by Oldenburg himself.

Oldenburg's correspondents soon adapted to Oldenburg's process, and letters from John Beale, John Wallis, and Robert Boyle which contained information about their horticultural, mathematical, and experimental findings were soon thinly disguised reports intended to be read out at a Society meeting or published in the *Transactions*.

The success of the *Transactions* was immediate, both among Society members who were unable to regularly attend meetings and scientists abroad. In May 1666 Oldenburg placed an advertisement at the end of the issue insisting that he 'upon his *Private* account (as a Well-wisher to the advancement of usefull knowledge, and a Furtherer thereof by such Communications, as he is capable to furnish by that Philosophical Correspondency, which he entertains, and hopes to enlarge) hath begun and continues both the composure and publication thereof'.⁴¹ Oldenburg casts himself in the role of patron of philosophy whose chief desire is to enhance its dissemination; regardless, it was natural that Oldenburg would derive much of his material from members of the Society, whether through private correspondence or when undertaking his secretarial duties, and the Royal Society benefited greatly from this promotion, to the extent that Oldenburg's advertisement was not enough to prevent its readers from conflating the two. Francesco Nazari founded the *Gionale de'Letterati* in 1668, an Italian imitation of the *Philosophical Transactions*, and the following year wrote to Oldenburg to praise him for his journal in terms which make this conflation clear.

When I undertook to put together a learned journal, straightway my thoughts took wing for London...For, famous Sir, so obvious is the fame of that noble Royal Society as transmitted to us, that its Fellows need not envy the Stoa of Zeno, the Lyceum of Aristotle, or the Academy of Plato; it is more fortunate than all others in having His August Majesty and its head...And how much it has given to the republic of learning is more than sufficiently evinced by those little books you call the *Philosophical Transactions*, filled with so many and such important observations and experiments, that they may at length suffice for the establishment of a true philosophy.⁴²

Adrian Johns demonstrates that the *Transactions* emerged against a background of ephemeral periodicals of the 1640s and 1650s, unfamiliar and transitory publications which had failed to equip

⁴¹ Henry Oldenburg, 'Advertisement' *PT* 1.12 (1666), 213-4.

⁴² Francesco Nazari to Henry Oldenburg, 5th October 1669, *CHO VI*, pp. 213-4.

their readers with the exegetical tools required to sort fact from fancy during a period of lapsed press regulation.⁴³ The treatise was still the accepted mode of print scholarship at the time, and Johns proposes three reasons for the attraction of periodicals to stationers and authors during the mid-seventeenth century: cost, priority, and authorial reputation. 'The staple work of most printing houses was short-term', and periodical publication meant that printers did not have to lay out large sums of money ahead of large works which might not recoup the investment, nor reach as wide an audience as cheaper publications issued more frequently.⁴⁴ Periodicity also helped to mitigate the effects of unauthorised publication, which was becoming a greater issue by this point, especially when the relative costs of printing for London Stationers' was compared with those in the Low Countries, where reprint of English books could turn a sizeable profit. Piracy also brought the matter of priority and plagiarism into question: of two editions, which might be the unauthorised, the unauthored? By printing smaller volumes more frequently, profits lost through piracy could be mitigated and rival reprints rapidly denounced (either by printed notices in succeeding editions or by direct correspondence with regular purchasers). Finally, by issuing papers and letters a gentleman could publish original material without appearing overly ambitious; in particular, too enthralled by the notion of single authorship 'systems'. 'All of these considerations made periodicals seem promising ventures for both gentlemen and booksellers' in general, and for natural philosophers in particular.⁴⁵

The Society had a need to promote itself and its enterprises, but the books intended to do so were costly and slow to produce (the publication of Francis Willoughby's *De Historia Piscium* in 1686 would nearly bankrupt them); Oldenburg being unpaid, had a particularly economic motive for his enterprise.⁴⁶ The transactions were also intended to advertise not only the achievements of the Society's fellows but the civility of their conduct, as a public version of the register book kept by Oldenburg by Society decree - emblem and embodiment.

⁴³ Adrian Johns, 'Miscellaneous Methods: Authors, Societies and Journals in Early Modern England' *BJHS* 33.2 (2000), 161.

⁴⁴ *Ibid.*, 162.

⁴⁵ *Ibid.*, 165.

⁴⁶ R. K. Bluhm, 'Remarks on the Royal Society's Finances, 1660-1768', *N&R* 13.2 (1958), 98-100

Oldenburg would bemoan the printer of the *Transactions* during the plague, the Oxford-based Richard Davis, for not being ‘a man of an active and large correspondence’ which resulted in poor sales.⁴⁷ In the absence of Oldenburg himself, issues of pride and priority also came to the fore: during the summer of 1667 Oldenburg was briefly imprisoned in the Tower of London accused of ‘dangerous desseins and practices’ (itself an unintended consequence of having a large correspondence), and the Society’s stationer Martyn took it upon himself to publish a letter by French physician Jean-Baptiste Denys, in which Denys announced his successful xenotransfusion of twelve ounces of sheep’s blood into a young boy, in the June issue of the *Philosophical Transactions*.⁴⁸ By publishing Denys’ letter Martyn allowed this to be claimed as a French achievement, undermining both the English claim of priority and the *Transactions*’ role in making that claim public. Oldenburg was released on 26th August 1667; fearing that his ‘late misfortune’ might ‘derive a suspicion upon me’ and prejudice strangers against him, he quickly put together a new edition of the transactions to cover the months of July, August, and September, dated 23rd September.⁴⁹ This issue was prefaced by an advertisement in which Oldenburg divests himself of any responsibility for the edition of the *Transactions* printed by Martyn during his imprisonment.

The Author of these Papers, returning now to his former Exercises, which by an extraordinary Accident he was necessitated to interrupt for some months last past...he must inform the Reader, that if himself had published that Letter, which came abroad in July last...he should then have taken notice, as he doth now, of what is affirmed in that Letter about the time and place of the Conception of that Transfusing design; and intimated to the Curios, that how long soever that Experiment may have been conceived in other parts (which is needless to contest) it is notorious, that it had its birth first of all in England, some Ingenious persons of the Royal Society having first started it there, several years ago, (as appears by their Journal)...several happy Trials of the skilful hand of Doctor Edmund King, and others, encouraged thereunto by the said Society; which being notified to the world Numb.19 and 20. Of these Transactions, Printed Novem. 19. and Decemb. 17. 1666.⁵⁰

⁴⁷ Henry Oldenburg to Robert Boyle, 19th December 1665, *CHO II*, p. 646.

⁴⁸ Henry Oldenburg to Seth Ward, 15th July 1667, *CHO III*, p. 448; Jean-Baptiste Denys, ‘Extract of a letter, written from Paris, containing an account of some effects of the transfusion of blood; and of two monstrous births, &c’ *PT 2.26* (1667), 479-80.

⁴⁹ Henry Oldenburg to Robert Boyle, 3rd September 1667, *CHO III*, p. 471.

⁵⁰ Henry Oldenburg, ‘An Advertisement Concerning the Invention of the Transfusion of Blood’ *PT 2.27* (1667), 489-90.

Oldenburg draws attention to internal and external records of the Society's activities, tying them together, and intimates that such accuracy was intended to engender credibility; Oldenburg also asserts more strongly than before his role as 'author' of the *Philosophical Transactions* as a whole. The next letter from Denys appeared in 1668 and was introduced by a paragraph from Oldenburg which reminded a reader of his, the publisher's, role in determining fact and truth.

Monsieur Denis was pleased to oblige the Publisher by giving him the Information as it was printed at Paris with privilege; which was thought fit to here be inserted in English, the better to satisfy the Inquisitive of these parts about the said matter of Fact, and candidly to declare the truth of that whole affair.⁵¹

When it came time to assemble the March volume of the *Transactions* Oldenburg generally prefaced each new year's issue with a short piece describing the contents of the previous year's editions and expressing hope for those to come. Following the publication of Sprat's *History* in 1668 Oldenburg's preface to the fifth year of the transactions in March 1669 synthesised past and future enterprise more explicitly, expressing his intentions most clearly while reminding European imitators of their debt to his example. Oldenburg summarised what he considered to be the finest innovations and discoveries which he had communicated in previous volumes, proceeding chronologically, each year's 'gradual degrees' heaped on the one before. These are the hits according to Oldenburg, accreting and accelerating, an advertisement to new readers and a reminder to the old that 'we have got more ground in our second Volume than in the first, and more yet in the third than either of the former, whence we take the liberty to ominate well for the future'.⁵² Much as he might profess hope that learned journals may in the future become 'so many mutual Ayds to each other', Oldenburg praises the French and Italian *Journal des Sçavans* and *Giornale de' Letterati* largely for having 'drawn the same Yoke with us...[and]...followed our Example'.⁵³ It is a quieter note of shared purpose following a laudatory list of original discoveries and established priorities by which the example has been set. '[M]y main business', Oldenburg continues, 'is, to excite and animate the Industry and free

⁵¹ Jean-Baptiste Denys, 'An Extract of a Printed Letter, Addressed to the Publisher, by M. Jean Denis, D. of Physick, and Prof. of the Mathematicks at Paris, Touching the Differences Risen About the Transfusion of Bloud' *PT* 3.36 (1668), 710.

⁵² Henry Oldenburg, 'A Preface to This Fifth Year of These Transactions' *PT* 4.45 (1669), 898.

⁵³ *Ibid.*, 898.

Communications of others', an aim shared (in principle) with the Royal Society as an institution. The personal pronoun, however, refers us back to the *Transactions* being Oldenburg's personal endeavour; indicating a practical hope that many such 'free communications' might be directed to Oldenburg himself and distributed on for modest profit.

The relative success of the *Transactions* meant that letters which had ostensibly been written only to Oldenburg, all the while aware of their likely transmission before a meeting of the Royal Society, now had an eye on the likelihood of journal publication as well. The fiction of privacy is always maintained: the friendly greeting, the acknowledgement of previous missives, the promise of continuing service. Marie Boas Hall expressed uncertainty as to why such letters preserved the appearance, if not the style, of letters expected to be kept private, but it appears that style *was* kept to, a style which acknowledged such communications as a reactive social dynamic, in which each letter was also a *reply*. There are no summations or introductions, only fresh rejoinders, data, and observations. The authors knew that when these letters were published these factors would mark them as being regular, and therefore valuable, correspondents of the Society's Secretary; the benefit for Oldenburg, in turn, was that a reader of the *Transactions* would be able to pick up a discussion *in media res* and feel themselves to be clutching the very freshest news.

Oldenburg, Hooke, and Dispute

Lessons from Adrien Auzout

Oldenburg's pursuit of his vision of the Society as a collecting and transmitting house of information, and his recruitment policies, changed its nature. The Society became less energetic and less productive, and its annual recruitment fell as correspondence increased. This trend was reversed by Hooke, whose period of office marked a return to systematic scientific endeavour: established and productive natural philosophers were encouraged, non-attenders and dilettantish correspondents were

shrugged off.⁵⁴ In *The Royal Society and its Fellows, 1660-1700: The Morphology of an Early Scientific Institution* Michael Hunter has disputed an argument previously put forward by Lotte Mulligan and Glenn Mulligan which concluded that the membership makeup of the Royal Society was consciously shaped by its secretaries' recruitment policies; Hunter instead claims that the falling internal membership may be due to general lack of courtly contacts and the Society's changing reputation but not to 'unproven secretarial influence'.⁵⁵ This may be true, but when the role of the secretaries in shaping the Society's *external* reputation through management of its correspondence is considered we shall see that the secretaries were undoubtedly influential: indeed, that the secretarial management of correspondence was a key factor in managing this external reputation.

Oldenburg was as much concerned with the collection and propagation of scientific information as with the performing of experiments and to this end he sent out questionnaires on exotic places, manufacturing processes, and horticultural techniques. In a postscript to *Lampas, or, Descriptions of Some Mechanical Improvements of Lamps & Waterpoises* (1677) Hooke disparaged Oldenburg, referred to as 'The Publisher of Transactions', as one '[w]hom I have not acquainted with my Inventions, since I looked on him as one that made a trade of Intelligence'.⁵⁶ Hooke intended rudeness, but the description of Oldenburg as a trader in intelligence seems apt. Continuing his criticism, Hooke hits on another aspect of Oldenburg's communication style which contributed to his success in eliciting information and membership, by demanding that '[w]hereas he makes use of We and Us ambiguously, it is desired he would explain whether he means the Royal Society, or the Pluralities of himself'.⁵⁷ Rather, it was the shift between the two positions, and the ambiguity of his authority which enabled his success. Oldenburg's role as editor of the *Philosophical Transactions* has

⁵⁴ See Lotte Mulligan and Glenn Mulligan, 'Reconstructing Restoration Scholarship: Styles of Leadership and Social Composition of the Early Royal Society' *Social Studies of Science* 11.3 (1981), 327-364, for an analysis of how membership figures changed during the secretarial tenures of Oldenburg and Hooke.

⁵⁵ Michael Hunter, *The Royal Society and its Fellows, 1660-1700: The Morphology of an Early Scientific Institution* (Chalfont St. Giles: British Society for the History of Science, 1982), p. 61, p. 53, p. 57.

⁵⁶ Robert Hooke, *Lampas, or, Descriptions of Some Mechanical Improvements of Lamps & Waterpoises* (London, 1677), p. 53.

⁵⁷ *Ibid.*, p. 54.

been examined; we now turn to his management of intellectual disputes as both Secretary and journal editor.

Hooke's hatred of Oldenburg was, in part, generated by his suspicions of the secretary being a 'trafficker' in intelligence – one motivated by material gain. Unlike Oldenburg, Hooke would not rely on his journal as a source of income; he was, however, occupied by a multitude of enterprises during the 1670s and 1680s, activities upon which he depended for both monetary and reputational credit. It has frequently been noted that Hooke lacked Oldenburg's network and liberty, and that these were the major factors which led to the collapse of his haphazard journal *Philosophical Collections*. It is true that a correspondence based on personal relationships cannot easily be inherited. It is also true that Hooke's other duties which he was specifically charged with undertaking as an employee of the Society would have likely overwhelmed production of a journal which was still, officially, a separate enterprise. There are two matters, however, which must be considered when assessing the effects of correspondence on the Society's reputation. Firstly, while Oldenburg had cultivated a vast network of learned correspondents as a result of his continental origin and travels, this was a network which grew during his tenure as secretary, after which point he never again left England. Secondly, and independently of the failure of his *Philosophical Collections*, Hooke was relieved of the Secretaryship of the Society in 1682. The determining factor in both cases is the manner in which both men engaged in epistolary communication, an activity which relied so heavily on literary self-projection.

In November 1664 an intensely bright comet appeared over Europe, following a curved, heliocentric orbit and visible to the naked eye until February the following year. Its appearance, and that of a second comet in March 1665, inspired a flurry of activity across the continent; dozens of pamphlets and tracts were published in German-speaking countries claiming the comet as a portent for everything from plague to landslides, while natural philosophers in England, France, Poland, and Italy

would come to pool their observational data.⁵⁸ The question to be resolved was one of parallax, of the observed position of an object when viewed from different locations, and in 1664 the French astronomer Adrien Auzout would write to the Royal Society from Paris requesting their observations to support his prediction of the ephemerides of the comets based on a hypothesis of elliptical orbits.

Auzout's first communication to the Royal Society was in the form of 'a packet, containing some copies of a printed paper entitled, the ephemerides of the comet made by the same person, that sent, called Monsieur, a French gentleman of no ordinary merit and learning' sent to Oldenburg, copies which he requested be passed to the Society, its president, Prince Rupert, and other people knowledgeable in scientific matters.⁵⁹ The original letter has not been found, and we are therefore as reliant on Oldenburg's reading as was the original reader of the *Transactions*. The language is ekphrastic, the reader's eyes following Oldenburg's as the letter is transposed to the printed page, with Oldenburg's occasional interpolation heightening a reader's sense of both narrative and of speech reported.

He finds, that this Star moveth *just enough* in the Plan of a Great Circle...He saith just enough, because he thinks, there may perhaps be some *parallaxe*, which he wisheth could be determined. Hence, (*so he goes on*) every one who pleaseth, may see, in tracing the *Comet* upon the *Globe*, through, or by which Stars it hath passed and shall pass...⁶⁰

There are two elements at work here. The first is that Oldenburg appears to be relating the contents of Auzout's paper in such a manner as it would be read out loud before a meeting of the Royal Society, a form of 'virtual witnessing' now extended to the reader of the *Transactions*.⁶¹ Papers read at the Royal Society were tangible in a way that Oldenburg's printed report was not, in that the council and fellows were able to see the physical letter as it was being read. The reader of the first volume of the *Transactions* had to rely on Oldenburg's editorial testimony alone, and his interjections serve not only

⁵⁸ Anon. or J.B., *The Blazing Star, or, A Discourse of Comets, their Natures and Effects* (London, 1665), p. 47 disparages the notion of the comet as a portent, advising that we should 'be sure our fortune, under God, is in our own hands, since Virtue and Vice, our Duties and our Sins, are the only Configurations that portend Woe or Weal to the World'.

⁵⁹ Adrien Auzout, 'The Motion of the Late Comet Prædicted' *PT* 1.1 (1665), 3.

⁶⁰ *Ibid.*, 5.

⁶¹ See above, Introduction p. 5n20 and Steven Shapin, 'Pump and Circumstance: Robert Boyle's Literary Technology' *Social Studies in Science* 14.4 (1984), 491 for discussion of virtual witnessing.

to remind a reader that what he was reading was a ventriloquised version of an unseen document but also to bolster confidence that what was being reported of that document was accurate. It is important to note that Oldenburg does not purport to describe what Auzout had written, but what he had *said*, implicitly closing the geographical distance assumed of correspondence and intimating a conversational element to Oldenburg's relationship with those authors whose work he relates. In choosing the lexicon of speech, Oldenburg collapses the degrees of experiential separation between himself and Auzout's observations of the comet in Paris some six months previously.

Oldenburg concluded his summary of Auzout's observations by writing that his account 'is here inserted at large, that the intelligent and curious in England may compare their Observations therewith, either to verifie these Prædictions, or to shew wherein they differ'.⁶² Auzout's requests that his observations be passed to figures such as Prince Rupert indicates that he was not simply seeking notice from the Royal Society as a whole, but distinguished persons associated with it; Oldenburg's final paragraph makes public the request for further data, and adds a nationalistic flavour. Christopher Wren had previously volunteered Hooke, his old friend from the Wilkins philosophical circle in Oxford and the then full-time curator for the Royal Society, to make observations of the constellation Taurus together in April 1663, and the two would collaborate again in December 1664 to produce joint observations of the comet.⁶³

The second issue of the *Philosophical Transactions*, printed 3rd April 1665, included extracts from another letter from Auzout to Oldenburg from early March 1665, this time accompanied by three documents: a letter from Cassini to (unknown) describing his cometary hypothesis aligning with Auzout but differing on the proportion of the diurnal motion of the comet relative to distance from Earth, another document about the theory, and a letter from Auzout to an unknown correspondent thanking them for sending Cassini's letter to him. Oldenburg prints Auzout's comments on his 'no

⁶² Auzout, 'The Motion of the Late Comet Prædicted', 5.

⁶³ J.A. Bennett, *The Mathematical Science of Christopher Wren* (Cambridge: Cambridge University Press, 1982), p. 51.

small joy...to find my thoughts consonant with those of so excellent an astronomer' as Cassini, and his acknowledgement of the error in ratio raised by the latter which he attributes to 'the haste I was in to make this prediction, whose only significance was in its novelty and promptness'.⁶⁴ Removed for publication, however, were some of Auzout's spikier slights about most observations of a similarly bright comet in 1652 as being 'deficient in accuracy, as are many observations of the present comet' and the query as to whether or not Cassini had observed the comet on the same days in February and March 'which so far as I know no one has done here but myself, for everyone else lost it on the sixth or the tenth of February, unless they have found it again because I told them its position and exhorted them to observe it'.⁶⁵ By removing these comments Oldenburg softened the suggestion of intellectual priority, instead emphasising and encouraging the reciprocal exchange of information.

Hooke, meanwhile, was feeling the pressure of competing demands on his time from his employer and patron Boyle, his curatorial duties at the Society's weekly meetings, the publication of *Micrographia* in January 1665, his appointment to the Gresham professorship of Geometry in March of the same year, as well as providing technical and experimental support for any and all ideas dreamed up by Society members. It is unsurprising, therefore, that Hooke would write to Wren in April to admit that '[t]hose observations of my own making I have not yet had time to adjust so well as I desired'; Wren, responding, would acknowledge that Hooke was 'full of employment for the Society which you almost wholly preserve together by your own constant paines'.⁶⁶ It would appear that Oldenburg did not share Wren's appreciation of Hooke's efforts however, as he would spend the next few months attempting to play the curator and the astronomer off against each other in order to generate further content for the burgeoning *Philosophical Transactions*.

Hooke had proposed a lens grinding machine capable of creating spherical lenses of any focal length by means of two mandrels in the preface to *Micrographia*, accompanied by several detailed

⁶⁴ Adrien Auzout, 'Extract of a Letter, Written from Paris, Containing Some Reflections on Part of the Precedent Roman Letter' *PT* 1.2 (1665), 19; Auzout to -, 3rd March 1665, Oldenburg, *CRO* II, p. 376.

⁶⁵ *Ibid.*

⁶⁶ Lisa Jardine, *On a Grand Scale: The Outstanding Life and Tumultuous Times of Sir Christopher Wren* (London: HarperCollins, 2002), pp. 269-74.

engravings by Hooke of labelled parts and instructions for operation. Auzout took issue with Hooke's proposal in a pamphlet of May 1665 discussing instrument maker Guiseppe Campini's *Ragguaglio di Nuove Osservazioni* (1664) because of the difficulty of production, the dubiousness of his claims of achieving focal lengths of 1,000 or 10,000 feet, and the fact that Hooke had not actually made it. Auzout, having imagined that such a machine was fully realised and functioning 'as coming from a Society that professeth, they publish nothing but what hath been maturely examin'd... was much surprized when he saw the *Micrographia* of Mr. Hook, and found there, that his Engine was published upon a meer Theory, without having made any Experiment', and went on to propose some imaginary difficulties for the non-existent machine to put to trial. This commentary was extracted from the main pamphlet and summarised by Oldenburg in English for Hooke, who did not speak French, and printed in the June volume of the *Philosophical Transactions* as 'Considerations of Monsieur Auzout upon Mr. Hook's New Instrument for Grinding of Optick-Glasses' directly before a reply from Hooke.⁶⁷ Auzout's May letter had been shown to Hooke, whose prompt response to Oldenburg was printed alongside it. Auzout's response would have to wait for publication in the next volume of the *Transactions*, and this set up a pattern of comment and rejoinder, with Oldenburg allowing Hooke to have the last word. In bringing the personal reputation of Hooke as well as that of the Royal Society into question (*Micrographia* having been printed under their imprimatur), Auzout had provided Oldenburg with an opportunity to reframe the discussion as justification for the Royal Society itself. Hooke would play his part in his reply, criticising Auzout for engaging in speculation instead of experiment, questioning his grasp of English, and declaring that Royal Society had begun publishing books in order to inspire readers to improve on the experiments pioneered within: to do, in fact, just what Auzout had done.

[The Royal Society], in giving want to, or encouraging such publications [as *Micrographia*], aim chiefly at this, that ingenious conceptions, and important philosophical matter of Fact may

⁶⁷ Adrien Auzout, 'Considerations of Monsieur Auzout upon Mr. Hook's New Instrument for Grinding of Optick-Glasses' *PT* 1.4 (1665), 56.

be communicated to the learned and enquiring World, thereby to excite the minds of men to the examination and improvement thereof.⁶⁸

It would appear that Oldenburg knew perfectly well how provocative publishing such a reply before the recipient would have had any real chance of receiving the original might be. At this point in time the main English point of contact for Christiaan Huygens was Sir Robert Moray, who in July 1665 requested that Oldenburg send Huygens a copy of Hooke's letter. This was the first time that Oldenburg had personally written to the young Dutch polymath (recently made a fellow of the Society) since 1661, and he takes the opportunity to reintroduce himself in the language of the obliging and pious servant:

As Sir Robert Moray wished me to send you Mr. Hooke's reply to Mr. Auzout about the machine for turning lenses, I was desirous not to fail him, assuring you at the same time that you will find few persons more devoted to your service than I am...I am making arrangements to stay permanently in town, at my house in Pall Mall (as it is called), where your commands will reach me so long as it pleases God to grant me health and life. I strive to banish both fear and overconfidence, leading a regular life and avoiding infected places as much as I can, leaving the rest to God, *summum nec metuens diem nec optans* [neither fearing nor wishing for my final day]. I hope for a good accommodation between our two nations and am without ceremony, Sir, Your very humble Servant, H. Oldenburg.⁶⁹

Quoting from Martial, the impression is of a man living a life of balance and modesty, pleasant but not indulgent, welcoming of further cross-continental correspondence and collaboration.⁷⁰ A postscript states that Oldenburg was 'obliged to truncate' the enclosed copy of the journal, '[b]eing fearful of swelling the packet too much'; Hooke's reply began, conveniently, on the recto page, and could therefore be quite easily truncated from the combative editorial juxtaposition with Auzout's original letter.

Over the next four months, three letters from Auzout to Oldenburg relating to the dispute regarding Hooke's proposed machine afford insight not only into Oldenburg's editorial processes, but also how these processes were viewed by a geographically and socially removed correspondent.

⁶⁸ Robert Hooke, 'Mr. Hook's Answer to Monsieur Auzout's Considerations, in a Letter to the Publisher of These Transactions' *PT* 1.4 (1665), 64.

⁶⁹ Henry Oldenburg to Christiaan Huygens, 27th July 1665, *CHO II*, pp. 448-9.

⁷⁰ Martial, *Epigrams II* LCL 95 trans. D.R. Shackleton-Bailey (Cambridge, Massachusetts: Harvard University Press, 1993) X.47 l.13, p. 360.

Auzout replied to Hooke's May letter on the 22nd of June and opened by demonstrating his awareness of being repeatedly published by Oldenburg, declaring himself to be 'much obliged to all your illustrious Royal Society and to you in particular for having thought so much of my little works as to have taken the trouble of turning them into English'.⁷¹ The letter continues by rebuking Hooke at length for putting the onus of proof onto Auzout, and Oldenburg and the Royal Society come in for their share of criticism for publishing the schematics for a machine which had not yet been demonstrated to work. For Hooke, who had been producing and improving laboratory equipment for Robert Boyle since the 1650s and who had drawn the images to explicate the construction of his elaborate air pump for *The Spring of the Air* (1661), Auzout's reproach would have been keenly felt as a threat to the technology of virtual witnessing which had brought Boyle fame as well as a slight on his own engineering skills. Auzout's repeated emphasis on sight and doubting what one has not seen for themselves directs his reader's attention back to the motto of their own society and brings us back to the main principles of proof at stake when the correspondents are separated by geography and time: for something to have been demonstrated as functioning it must be witnessed and corroborated, and the character of both inventor and corroborator were suspect as a result. The valid point is also raised that, if trust is engendered by assuring a reader of the reproducibility of an experiment, the expense and shame of commissioning a non-functional piece of equipment is sure to have the opposite effect.

I was no less surprised than I was the first time when I saw by his reply that he had not made his machine work... the only thing to do to silence those who raise doubts is to show them how it can be made to work, and any other reply is in danger of being useless... I did not think that I had given occasion by my words to suppose that I wished to ascribe any fault to your Society, as Mr. Hooke accuses me of doing. It is true that the words which I cited and which you had sent me in a letter at the time when I sent off my first *ephemeris* were the reason for my conviction that it [i.e. the Royal Society] would allow nothing to be published on scientific matters or concerning machines unless the former were based upon observations and the latter upon practice...at least one ought to give a warning to that effect to prevent workmen from losing time and money and also to stop them from making fun of theorists when they perceive that their machines do not work.⁷²

⁷¹ Adrien Auzout to Henry Oldenburg, 22nd June 1665, *CHO II*, p. 419.

⁷² *Ibid.*, pp .419-22.

To write in terms which echoed the design and precepts of the young Royal Society indicate how successful Oldenburg and others had been in projecting this image to an international audience, as well as how this nascent reputation could be damaged by one individual who had previously used this reputation to their advantage. Needless to say, the letter was never printed.

Auzout's next letter, dated 12th August, exists now only as a holograph manuscript of Oldenburg's translation, made evidently for Hooke's usage.⁷³ The letter discusses what may be eventually observed on the moon with increased telescopic power (changing seasons, icebergs in the seas, towns and castles), declaring its author's intention 'to explain as clearly as we can our thoughts; and when we are obliged to combat with those of others, to do it without any offensive expressions'.⁷⁴ These sentiments stand in remarkable juxtaposition with Oldenburg's annotations which pepper the manuscript. With journalistic panache, Oldenburg attempts to goad Hooke into responding: against one point he writes 'Non sequitur. You must rally with him again', against another 'Me thinks, here you may tosse railleries with him' and 'A handsom sting again will be necessary'.⁷⁵ The rhetoric is combative, exhortative, and occasionally triumphant; when a specific mechanical claim of Hooke's is disputed, '*Hic Rhodus!*' is Oldenburg's remark.⁷⁶ Beyond the social contract of epistolary niceties, Oldenburg welcomed and valued controversy as an inducement to further experimental activity. He also, somewhat grudgingly, regretted the manner in which he candidly advised Auzout to encourage Hooke to part with some of his secrets by sharing some of his own ('If I had imagined, he would be so nimble to print, I should have used another expression'). The line in question was removed when Oldenburg edited this letter for inclusion in the seventh issue of the *Philosophical Transactions*, but was allowed to be passed to Hooke in a translation made for his use;

⁷³ The letter is bound (binding British Museum, 1961) at the end of 'Response de Monsieur Hook aux Considerations de Auzout Contenué dans une Lettre Ecrite a l'Auteur des Philosophical Transactions', part of the Sloane Printed Books collection now in the British Library C.125.d.17, Sloane Number G 518.

⁷⁴ Adrien Auzout to Henry Oldenburg, 12th August 1665, *CHO II*, p. 468.

⁷⁵ BL C.125.d.17.

⁷⁶ I.e., *hic Rhodus, hic salta*, prove what you can do here and now (the Halls miss the reference in their edition of the *Correspondence*, translating the comment as 'Here is a Rhodian'). C.f. Desiderius Erasmus, *Collected Works of Erasmus Volume 34* ed. & trans. R.A.B. Mynors (Toronto, London: University of Toronto Press, 1992), III.iii.28.

Oldenburg might censor himself and his colleagues for the public press, but he would not do so within the social boundaries of the Society itself.

Whether because of the previous slight to his engineering skills, the omnipresent pressures of his multifarious duties, or a combination of the two, Hooke could not be prevailed upon to reply. In the meantime, Auzout had duplicated Oldenburg's previous correspondence for distribution among virtuosi he was acquainted with, a practice which Oldenburg wrote to express his displeasure of. Oldenburg's original is lost, but a sense of his objection may be gleaned from Auzout's September reply.

I am very sorry that you are displeased at my having printed (at the request of my friends) the letter you kindly wrote to me setting forth the opinions of Mr. Hooke. I did not regard this letter as being altogether your own work so much as the reply of Mr. Hooke and since both of us had already begun by printing this material I saw no inconvenience in printing the rest if our friends wished to see the sequel of the dispute. For I see little difference between printing scientific matters contained in letters and showing these same letters to those learned in these matters who can copy them out when they have them on loan, and everyone knows perfectly well that when one exchanges ideas by letter...one writes well aware of the fact that it will be shown to many learned men...I think you will be persuaded that my intentions were honest and sincere...as most people know that it is you who edits the *Philosophical Transactions* I thought it unlikely that this was not known.

This, then, is a reminder that Oldenburg had characterised himself as translator and go-between, and therefore cannot claim ownership of the words he mediates. The apology is, as before, that Auzout considered behaviour acceptable when it had been previously modelled by Oldenburg, the argument that everyone knew writing to Oldenburg indicated an acknowledgement of that letter being edited and printed, that writing to Oldenburg is itself a form of publication. Auzout also reminds Oldenburg that it is known that it is his decision, his enterprise, his *Philosophical Transactions*; acting as representative of the entire Royal Society was a useful role for Oldenburg to inhabit but this is not the entire truth of the matter, and Auzout makes sure that Oldenburg knows that he knows this.

The Exercise of Right Judgement

On the 8th of August 1673 the Dutch diplomat Sir Constantijn Huygens had attempted to introduce microscopist Antoni van Leeuwenhoek to Hooke by a letter which he accompanied with copies of papers prepared by Leeuwenhoek on his observations through a single lens microscope. As

Jardine points out, Huygens senior was himself no stranger to microscopy nor Hooke himself; he had read and studied Hooke's *Micrographia* and had met its author at the Royal Society in 1663.⁷⁷ Sir Constantijn introduced Leeuwenhoek and praised his character in addition to his technical capabilities before acknowledging Hooke's influence on the work of both men concerning microscopes and requesting that Hooke be so gracious as to assist both with their equipment in the future.

I make no question, Sir but that since the <first> publishing of your excellent physiological Micrographie, you have stored up a great many of new observations...but <howsoever>, I trust you will not be displeas'd with the confirmation of so diligent a searcher as this man is, though always modestly submitting his experiences and conceits about them to the <censure and correction of the> learned. Amongst whom he hath reason enough to esteem your self beyond all in this kind of philosophic, and many other besides.⁷⁸

It was a courteous letter which deftly bridged the social divide between the two men, and one which sought to emphasise the collegiality of the international learned community at the height of the Third Anglo-Dutch War. Sir Constantijn also took the opportunity to raise the subject of his son Christiaan's *Horologium Oscillatorium* which had been sent to the Royal Society some months earlier and which had not yet received a response, implicitly inviting written comment from Hooke alongside the requested judgement of President Lord Brouncker and Robert Boyle. For whatever reason – the political situation, pressure of work, longstanding dislike of the son Christiaan – Hooke failed to respond. Sir Constantijn would eventually write to Oldenburg in his capacity as official secretary to communicate his hurt at Hooke's silence; Oldenburg's efforts to rectify the slight would see Leeuwenhoek become a dedicated correspondent of the Society for several decades, but never with Hooke.

A copy of a letter written by Hooke to Leeuwenhoek on 1st February 1677/8, when Hooke was newly appointed to the role of Secretary, thanks the microscopist for papers which had been sent to Lord Brouncker as President. Hooke strives to hit the correct notes here; he emphasises the attendance of the entire Society at the reading, as well as work done by members to corroborate Leeuwenhoek's

⁷⁷ Lisa Jardine, *The Curious Life of Robert Hooke: The Man Who Measured London* (London: Harper Perennial, 2003), pp. 177-83.

⁷⁸ The Hague KA 48 fol.7, quoted in Jardine, *Curious Life*, p. 180.

observations, indicating that these observations were communicated in such a manner as to make them worthy of emulation. The effect is, however, spoiled rather by Hooke's describing the impetus to continue the correspondence as a Council-directed 'order'.

The papers you directed to the Lord Brouncker were read at a full meeting of the Royal Society and very kindly accepted...and they have orderd me to returne you ^both^ their thanks for soe freely communicating your observations, and ^also^ [crossed through] an account of what hath been here done in order to verify your observation concerning the small animals you have first Discovered in Pepperwater.⁷⁹

Leeuwenhoek never answered this letter; a draft by Hooke in hasty, much-corrected hand dated 18th April 1678 expresses his concern, without preamble, that 'Having not heard from you since I returned you ^mine^ together with thanks of the Royall Society for your excellent communications makes me suspect the miscarriage thereof. And this the more because by a letter of yours which past through my hands to Dr. [Nehemiah] Grew I found no mention thereof'.⁸⁰ It was, of course, not unusual for letters to go astray, and for letters to open by expressing hope for their own safe arrival. A second letter to Leeuwenhoek from Hooke, this time in neat italic script, indicates otherwise. Dated 10th March 1682, it begins by confirming that letters from Leeuwenhoek in March and the preceding November to have been conveyed 'safe to my hands', but once again Hooke states his concern 'that you had not Received my answer to it [i.e. the November letter] when you wrote this last'.⁸¹ It would seem that Leeuwenhoek was happy to correspond with the Society's President and Fellows, but not its Secretary.

Hooke's indifference towards the activities of continental natural philosophers was not out of character, and Oldenburg knew this. On 2nd February 1675 Oldenburg had sent Christiaan Huygens two books which he had requested, by Boyle and Petty, as well as the latest copy of the *Transactions*

⁷⁹ RS EL/H3/54.

⁸⁰ RS EL/H3/57.

⁸¹ RS EL/H3/69. The differences in hand may also point to Hooke's deepening appreciation of his role as being a social one; a scrawling, untidy hand might be viewed as 'a mark of aristocratic reserve' or 'a sign of intellectual disdain', with poor penmanship identifying its author as being uncomfortable with or ill-suited to their purpose. James Daybell, *The Material Letter in Early Modern England: Manuscript Letters and the Culture and Practices of Letter-Writing, 1512–1635* (Basingstoke: Palgrave Macmillan, 2012), p. 89.

(seemingly unbidden, but pushed by Oldenburg ‘since you are so good as not to despise them’).⁸² Huygens had also requested Hooke’s *Animadversions* which was currently in print, but Oldenburg declined to forward as Hooke had made comments of his intention to expand it. Oldenburg takes the opportunity, however, to address comments made by Hooke in *Animadversions* which accuse Huygens of having given a description of the circular pendulum in his *Horologium Oscillatorium* (1673) ‘without naming me at all, as concern’d therein, though I invented it’.⁸³ ‘I shall only add a word on what Mr Hooke has said’, writes Oldenburg in closing, ‘to beg you not to be offended at some words which touch you’.⁸⁴ Finally, Oldenburg assuages Huygens by drawing attention to their shared status as gentlemanly travellers, learned in the standards of international correspondence as *les honestes gens*.

There are people who, not having seen much of the world, do not know how to observe that decorum which is necessary among honest folk. This is between you and me, who am, Sir,
Your very humble, obedient servant

Oldenburg.⁸⁵

Hooke’s bluntness in asserting priority is reduced by Oldenburg to a form of parochialism, the rudeness being a result of insufficient experience of – and in – the world and society, rather than an inescapable fault of birth. Oldenburg invites Huygens into his confidence in voicing this; in stating his expectation of privacy Oldenburg reinforces the bond between the two men and demonstrates the decorum in which Hooke was supposedly lacking. It also demonstrates that Oldenburg has learned a lesson about the expectation of privacy from his correspondence with Auzout ten years previously.

When Sir Constantijn received no reply from Hooke in 1673 he decided to write to Oldenburg, who replied promptly. Neither letter is extant, but a follow up letter from Sir Constantijn dated 2nd March 1674 thanks Oldenburg for ‘having been so kind as to dissociate yourself from the laziness of

⁸² Henry Oldenburg to Christiaan Huygens, 2nd February 1675, Henry Oldenburg, *The Correspondence of Henry Oldenburg Volume XI: May 1674-September 1675*, ed. A. R. Hall and M. B. Hall (London: Mansell, 1977), p. 177.

⁸³ Robert Hooke, *Animadversions on the First Part of the Machina Coelestis of the Honourable, Learned, and Deservedly Famous Astronomer Johannes Hevelius* (London: 1674), pp. 105-6.

⁸⁴ Henry Oldenburg to Christiaan Huygens, 2nd February 1675, *CRO XI*, pp. 177-8.

⁸⁵ *Ibid.*

the good Mr Hooke' while also asking that he 'assure [Robert Boyle] warmly of my very humble respects, and of the perfect veneration which I have for his prodigious merit'.⁸⁶ The letter emphasises the slight and Oldenburg's better courtesy in having replied, as well as greatly praising Hooke's employer. It appears that Oldenburg successfully pressed Hooke into replying at last, according to an entry in Hooke's diary which records that he 'Sent letter to Constantijn Huygens by Pits'.⁸⁷ By the following spring, however, the nascent correspondence had petered out, and Sir Constantijn would once again write to Oldenburg in the hope that he could cajole Hooke into responding, defending his son against Hooke's public declarations of having been the first to invent the circular pendulum mechanism and expressing surprise on Christiaan's part that no response had come from the Royal Society concerning the matter.⁸⁸

Conscious of the eminent Huygens' having been slighted, Oldenburg published Christiaan's designs for the balance spring watch in the March edition of the *Transactions* to mollify the pair, with the consequence that it appeared as though the Royal Society itself had accorded priority to Huygens for the invention. Hooke never forgave him, calling him a foreign spy and railing against both Oldenburg and Huygens younger in an addendum referring to 'some unhandsome proceedings' inserted at the end of his *Helioscopes* (1676). Hooke maintained that his claim of priority for the invention could be supported by his having been 'in treaty with several Persons of Honour...undeniable Witnesses yet living', by recollection of the Cutlerian Lectures he had given at Gresham College in 1664 'at which were present, besides a great number of the *Royal Society*, many Strangers unknown to me', and records of experimental particulars which 'at several other times, at the Publick meetings of the Royal Society, discoursed, experimented, and several Models produced'.⁸⁹

⁸⁶ Sir Constantijn Huygens to Henry Oldenburg, 2nd February 1674, Henry Oldenburg, *The Correspondence of Henry Oldenburg Volume X: June 1673-April 1674*, ed. A. R. Hall and M. B. Hall (London: Mansel, 1975), pp. 458-9.

⁸⁷ Hooke, *Diary*, p. 93 (26th March 1674).

⁸⁸ Sir Constantijn Huygens to Henry Oldenburg, 19th March 1675, *CRO XI*, pp. 233-4.

⁸⁹ Robert Hooke, *A Description of Helioscopes, and some other Instruments* (London, 1676), pp. 26-9.

Of all of these evidences, growled Hooke, ‘the Publisher of the *Transactions* was not ignorant’.⁹⁰ Oldenburg took the bait, and in the *Transactions* of October 1675 published what was ostensibly a review of *Helioscopes*, a piece which in fact reiterated the position of the Society (that Hooke had failed to publish and patent his invention, nor managed to make it function successfully in the intervening years) and upbraided Hooke for his language towards both Huygens ‘who is also a Member of the *Royal Society*’ and Oldenburg himself, who appealed to the decorum of his readers in ‘not doubting, but that all Candid Readers [of the *Transactions*] will blame him for the expression he uses’.⁹¹ Incensed by ‘the Lying Dog Oldenburg’s *Transactions*’, Hooke would not let the matter lie; another postscript, appended this time to *Lampas: Or, a Description of Some Mechanical Improvements of Lamps* (1677, although first printed in 1676 by the Society’s publisher), chastised Oldenburg as ‘one that made a trade of intelligence’, who ‘prevaricates’, and ‘indeavours to cover former injuries done me by accumulating new ones, and this with so much passion as with integrity to lay by discretion’.⁹² Hooke’s indignation over the whole affair now threatened to reveal Oldenburg’s epistolary methods and permanently damage his carefully curated reputation.

Oldenburg, meanwhile, had taken care to defend himself in private correspondence to Huygens while urging him to ‘pay attention both to my innocence and my peace, by making no mention, either in public or in private, of what I have told you about the retraction which this man has been obliged to make of the calumnies he has sown against me’.⁹³ Oldenburg attaches a curious postscript to this letter, saying that ‘not a word must be said of all this; it is only to forestall blame which, without it, you might throw on our President, and the printer. Burn this paper, I beg’. Huygens, evidently, did not burn the letter, nor is it likely that Oldenburg seriously expected him to while embroiled in a dispute in which supposedly private correspondence had been used as evidence for

⁹⁰ *Ibid.*, p. 29.

⁹¹ Henry Oldenburg, ‘A description of Helioscopes and some other instruments, made by Robert Hook, Fellow of the R. Society’, *PT* 10.188 (1675), 440-42.

⁹² Hooke, *Diary*, p. 102 (8th November 1675); Hooke, *Lampas*, pp. 53-4.

⁹³ Henry Oldenburg to Christiaan Huygens, 15th October 1675, Henry Oldenburg, *The Correspondence of Henry Oldenburg Volume XII: 1675-1676*, eds. A. R. Hall and M. B. Hall (London: Taylor and Francis, 1986), p. 17.

intellectual priority.⁹⁴ Oldenburg succeeds, however, in reiterating his alignment with the Society and its official outposts (president, printer), and the dispute would be formally resolved in a similar manner when the boundary between Oldenburg and the Society would be intentionally publicly blurred. Oldenburg published a rejoinder in the *Transactions* for August and September 1676, in which he states his intention to mount a defence against Hooke's 'immoral Postscript', advising his readers once again that it is their judgement which will decide the outcome.

The publisher of this tract intends to take another opportunity of justifying himself against the aspersions and calumnies of an immoral Postscript, put to a book, called *Lampas*, published by Robert Hooke. Till which time 'tis hoped, the candid reader will suspend his judgment.

The next issue carried with it 'A Declaration of the Council of the Royal Society, passed November 20, 1676, relating to some passages in a late book of Mr. Hooke, entitled *Lampas*, etc.' which amounted to a public rejection of Hooke's grievances.

Whereas the publisher of the Philosophical Transactions hath made complaint to the council of the royal society of some passages in a late book of Mr. Hooke, entitled *Lampas*, etc. and printed by the printer of the said society, reflecting on the integrity and faithfulness of the said publisher, in his management of the intelligence of the said society: This council hath thought fit to declare in the behalf of the publisher aforesaid, that they knew nothing of the publication of the said book ; and further, that the said publisher hath carried himself faithfully and honestly in the management of the intelligence of the royal society, and given no just cause of such reflections.⁹⁵

The council may have approved of this statement, but it was Oldenburg who wrote and published it, and therefore Oldenburg who ultimately decided that the matter was not one of intellectual priority or scientific proof but of character and conduct. Despite the lapse in time, Oldenburg's concern was the same as with the dispute with Leeuwenhoek - to defend the Royal Society, while cognisant of Hooke's position as the Society's only paid employee.

⁹⁴ Rob Iliffe's 'In the Warehouse': Privacy, Property and Priority in the Early Royal Society' *History of Science* 30.1 (1992) gives an extremely detailed treatment of the balance-spring priority dispute between Huygens and Hooke.

⁹⁵ Henry Oldenburg, 'A Declaration of the Council of the Royal Society, passed November 20, 1676, relating to some passages in a late book of Mr. Hooke, entitled *Lampas*, etc.' *PT* 11.29 (1676), 749-50.

Isaac Newton Wounded and Robert Hooke Supplanted

Despite Oldenburg's previous attempts to defend Hooke, the matter of the balance-spring watch permanently soured their relationship. Oldenburg had proved himself loyal to the institution of the Royal Society itself rather than the truth in matters of priority; Hooke had been induced to discover himself publicly as a man who could not let go of a grudge. Hooke had been unhappy at the direction the Royal Society had been taking for some time, and his diary records his efforts to set up a new 'Philosophical Club' with his friend and colleague, Sir Christopher Wren. On the 8th December 1675 Hooke had 'Resolved to quit all employments and to seek my health'; on the following New Year's Day he met with Wren, Oliver Hill, and an unidentified Mr. Wild at Wren's home, writing in his diary that 'now began our New Philosophicall Clubb...[we] Resolv'd upon Ingaging ourselves not to speak of any thing that was then reveal'd *sub sigillo* to any one nor to declare that we had such a meeting at all'.⁹⁶ Hooke diligently 'Began new Journall of Club' the following day, and indeed the diary entry in which he lays out their discussions at Wren's is one of the longest of all. It would appear that Hooke's attempts to create a new club, away from the influence of Oldenburg, came to naught, and by October of the same year he was once again 'Resolved to leave Royal Society'.⁹⁷

Oldenburg continued to be a perceived thorn in Hooke's side. At council elections on St Andrews Day in 1676 Hooke failed to tally enough votes, and believed that 'Much fowl play used in this choice...I had 15 votes to be one of the Councill, though Oldenburg reckoned but 13. Resolved to Reforme these abuses'.⁹⁸ At the end of the year, busier than ever, Hooke noted himself to be owed £30 from the Royal Society as he made up his accounts for the preceding twelve months.⁹⁹ In the autumn of 1677 however, Oldenburg died suddenly of what appears to have been a stroke, 'being stricken speechless and sensless'.¹⁰⁰ A week later Hooke's young lodger, his second cousin Tom Giles, also died, and his diary records that the following day he 'Putt things order for funerall' before heading to

⁹⁶ Hooke *Diary*, p. 192 (8th November 1675), pp. 205-6 (1st January 1676).

⁹⁷ *Ibid.*, p. 208 (2nd January 1676), p. 253 (12th October 1676).

⁹⁸ *Ibid.*, p. 260 (30th November 1676).

⁹⁹ *Ibid.*, p. 265 (31st December 1676).

¹⁰⁰ *Ibid.*, p. 310 (6th September 1677).

Gresham College, where he was informed that he had been nominated ‘for Secretary *pro tempore* to write the Journalls without reward’. Tom Giles was buried after supper that same evening; Hooke ‘Slept ill’ and ‘Dremt disturbd Dreams’.¹⁰¹

Two months later the botanist and physiologist Nehemiah Grew was appointed to serve as secretary alongside Hooke, and at the turn of the year the new president of the Society, Joseph Williamson, ‘very kindly calld me into his chamber’ and ‘admonisht me to be diligent for this year to study things of use’.¹⁰² It is easy to imagine the pressure which Hooke found himself under serving as both curator and secretary for the Society, chided for the lack of utility of his investigations while clearly smarting from the balance-spring affair, delivering the Cutlerian lectures at Gresham without being in receipt of the promised annuity, and assisting Wren as Chief Surveyor of London, all while taking increasingly debilitating amounts of physic. His co-secretary Grew had in the meantime been preparing to take over publication of the *Philosophical Transactions* (‘To Mr. Boyles about trunk, Grew had been there solliciting for *Transactions*’), and it is possible that Hooke saw a potential opportunity for remuneration slipping through his fingers, particularly as a fellow member of his short-lived Philosophical Club Oliver Hill had recently spoken against Hooke being paid at all.¹⁰³ On the next opportunity, he ‘moved against *Transactions*’ and ‘brought them to be of my opinion’, but Grew’s first edition of the transactions was licensed on July 25th 1678, and the first issue (purportedly covering the first two months of 1678) contains both new and old material without any change in editorial policy being announced.¹⁰⁴ In December 1678 Hooke finally managed to secure permanent responsibility for the Society’s correspondence, as well authority over the publication of a journal associated with, if not the direct remit of, the Society; Hooke intended that his *Philosophical Collections* fulfil a different function to Oldenburg’s *Transactions*, and the Council approved his plan that it ‘shall not be sent or sold to any person but members of the Society, and to such as correspond

¹⁰¹ Ibid., p. 312 (13th September 1677).

¹⁰² Ibid., p. 337 (31st December 1677).

¹⁰³ Ibid., p. 336 (24th December 1677), p. 338 (4th January 1678).

¹⁰⁴ Ibid., p. 338 (4th January 1678), p. 368 (25th July 1678). Being published less frequently meant, helpfully, that less content was needed overall.

with Mr Hooke by the Society's directions, and make considerable returns to him for the Society's use' – that it be restricted, in other words, to Society Fellows alone, plus a few select correspondents who had proved themselves capable of participating in a reciprocal exchange of substantially useful knowledge.¹⁰⁵

Evidently, however, Hooke's record keeping began to fall short of the Council's standards. Apparently struggling, the following July Hooke was permitted to accept the services of an amanuensis, the French engineer Denis Papin (a fellow protégé of Boyle's), who was tasked with 'writing of all such letters, as shall be ordered, to the correspondents of the Society'.¹⁰⁶ All letters were to be transcribed into the society's Letter Book by the secretary, and all drafted replies were required to 'be shewn to such person of the Society, as the council shall appoint from time to time for viewing of them before they be sent to the correspondents'. Hooke was also explicitly advised not to mine the archives of Society meeting notes for journal material as Grew had done before him, nor to slacken in the pace which Oldenburg had managed to set as a consequence of his wide correspondence.

[It was decided] That Mr. HOOKE be desired to publish (as he hath now declared he is ready to do) a sheet or two every fortnight of such philosophical matters, as he shall meet with from his correspondents; not making use of any thing contained in the Register-books of the Society without the leave of the council and author.¹⁰⁷

The directive is the first indication that the Royal Society council felt itself to be responsible for acknowledging the epistemic priority of individuals, a far cry from the optimism of the 1660s which had supposed all men to be only too willing to pool their efforts for the betterment of the communal lot.

Eventually matters came to a head. Only a few months later, in December 1679, it was decided at a Society meeting 'That a committee be appointed to view the former Letter-book, to see how perfect the entries are; and to take an account of all loose letters recovered from the administratrix

¹⁰⁵ Thomas Birch, *The History of the Royal Society of London, for Improving Natural Knowledge Volume III* (London: Millar, 1756), pp. 450-1 (26th December 1678).

¹⁰⁶ *Ibid.*, p. 491 (3rd July 1679).

¹⁰⁷ *Ibid.*

of Mr. OLDENBURG, and of those, that have come to the secretaries since; and to take care, that those, that are not yet entered, be entered forthwith, and that the originals be with all care got together, in order to their being preserved in such way as the Society shall direct'.¹⁰⁸ Hooke was not named to this committee, but Oliver Hill, Dr Gale, Dr Croune, and Sir John Hoskyns were, and were also requested to meet the following Monday at Hooke's lodgings to view the letters in his possession; Gale was also instructed to 'undertake all foreign correspondence' and, embarrassingly, 'apologize to the correspondents for the defect of returns; which should have been made from hence'. Hooke already considered Hill 'an asse' and Hoskyns 'not really my friend'; his anger and shame can be felt in the diary entry which records the severance of any friendly feeling towards the other two members of the committee: 'A councill at Sir J. Williamson. Croon and Gale Enemys. I stayd not to supper'.¹⁰⁹

How had things managed to go so wrong for Hooke in such a short period of time? Another consequence of Hooke's appointment as secretary was the renewal of correspondence with many people he had previously crossed paths with, including Adrien Auzout, Christiaan Huygens, and Isaac Newton. The Cambridge professor of mathematics Newton had, in 1669, succeeded in constructing the first reflecting telescope; a letter from Newton to Oldenburg, which outlined Newton's theories of colours and the discoveries which had led to the telescope's construction, was published in the *Philosophical Transactions* in 1672, and the Royal Society responded by electing him a Fellow.¹¹⁰ Hooke, however, would eventually claim publicly at a Society meeting that the bulk of Newton's discoveries 'was contained in his [i.e. Hooke's] *Micrographia*, which Mr. Newton had only carried farther in some particulars'; Newton, in turn, replied to assure the Society at large that 'I need not be much concerned in the liberty that he takes in that kind', Hooke having, in his opinion, 'borrowed from Des CARTES' in the first place.¹¹¹ The two men never forgave each other, although Hooke (perhaps under pressure from the Council) wrote to Newton the following month to blame the affair on

¹⁰⁸ Ibid., p. 518 (17th December 1679).

¹⁰⁹ Hooke *Diary*, p. 337 (27th December 1677), p. 336 (26th December 1677), p. 433 (17th December 1679).

¹¹⁰ Isaac Newton, 'A letter of Mr. Isaac Newton, Professor of the Mathematicks in the University of Cambridge; containing his new theory about light and colors' *PT* 6.80 (1672), 3075-87.

¹¹¹ Birch, *History III*, p. 269 (16th December 1675), p. 279 (20th January 1676).

Oldenburg. In the obsequious and meek language of the cajoled, Hooke sought to assure Newton that ‘I doe noe ways approve of contention, or feuding or proving in print’ and that he was ‘extremely well pleased to see those notions promoted and improved which I long since, began, but had not time to compleat’, before confessing a suspicion ‘that you might have been some way or other misinformed concerning me; and this suspicion was the more prevalent with me, when I called to mind the experience I have formerly had of the like sinister practice’ – such sinister practice being implied to have been met with at the hands of Oldenburg.¹¹² Hooke closes his letter by suggesting that if Newton should henceforth ‘correspond about such matters by private letter I shall very gladly embrace it’, and Newton in turn replied to ‘gladly embrace your proposal of a private correspondence’.¹¹³

Sequestered at Trinity College, Newton’s engagement with the Royal Society during its early years was almost entirely through letters and the *Philosophical Transactions* – in other words, mediated entirely by Oldenburg. In 1676 Newton wrote to Oldenburg to thank him for publishing his last in the *Transactions* and to propose an experiment on the orientation of the colours refracted through a prism to be tried before the Royal Society, assuring him that he ‘shall esteem it a great favour if you please get it done’.¹¹⁴ This letter also discusses Boyle’s experiment ‘Of the Incalescence of *Quicksilver* with *Gold*’ which had been published in the same issue; although Newton was sceptical of there being any positive medical or chemical value of the amalgamation of gold, Newton offered up his opinion ‘because the Author seems desirous of ye sense of others in this point’ but explicitly requests (perhaps because of Hooke’s letter, above) that Oldenburg ‘pray keep this letter private to your self’.¹¹⁵ This letter demonstrates a shrewd understanding both of Oldenburg’s influence within the Society (the suggestion of experiments not ordinarily falling under the remit of the secretary) and of his epistolary practices. Newton understood that there could be no expectation of privacy assumed

¹¹² Robert Hooke to Isaac Newton, 20th January 1676, Isaac Newton, *The Correspondence of Isaac Newton Volume I: 1661-1675* ed. H. W. Turnbull (Cambridge: Cambridge University Press, 1959), p. 412.

¹¹³ *Ibid.*, p. 413; Isaac Newton to Robert Hooke, 5th February 1676, *CIN I*, p. 416.

¹¹⁴ Isaac Newton to Henry Oldenburg, 26th April 1676, Isaac Newton, *The Correspondence of Isaac Newton Volume II: 1676-1687* ed. H. W. Turnbull (Cambridge: Cambridge University Press, 1960), p. 1.

¹¹⁵ *Ibid.*, p. 2.

when communicating with Oldenburg, who had so entirely fused himself as recipient with the Royal Society as a whole; we can also hear implicit criticism of Hooke in this letter, who had offered up a public accusation of plagiarism in response to Newton's previous communications. The experiment was tried accordingly at the Royal Society the following day but Oldenburg, perhaps sensing it would do more harm than good, did not read the letter out loud in full.¹¹⁶

Three years later Hooke would reach out to Newton to reintroduce himself as now Secretary, having purportedly found 'by our Registers that you were pleased to correspond with Mr Oldenburg and having also had the happiness of Receiving some Letters from you my self'.¹¹⁷ This letter is dated 24th November 1679, only a month before Hooke would be relieved of his secretarial duties, and possibly represents desperation on Hooke's part as he sought to generate content for both the Society's meetings and his *Collections*, offering up his own work as sacrifice in requesting that Newton 'communicate by Letter your objections against any hypothesis or opinion of mine', including one regarding the falling motion of celestial bodies.¹¹⁸ This was a clear attempt at instigating an Oldenburgian pattern of reciprocal exchange spurred by dissent, with the obvious difference being that Hooke was determined to represent himself as both Secretary and experimentalist, with consequently little basis to claim Oldenburg's lack of bias.¹¹⁹ In attempting to entice Newton to return to the affairs of the Society by cajoling him into dispute with the work of another, Hooke was explicitly inviting Newton to resume disputation with *himself*; little wonder then, that Newton, having only returned to Cambridge that month from settling his late mother's estate, was disinclined to be so lured.

Newton's reply was polite but terse, informing Hooke that he 'had some years past been endeavouring to bend my self from Philosophy to other studies...which makes me almost wholly unacquainted with what Philosophers at London or abroad have of late been employed about', making the point quite firmly that he is 'so unhappy as to be unacquainted with your hypothesis above

¹¹⁶ Birch, *History III*, pp. 313-4 (27th April 1676).

¹¹⁷ Robert Hooke to Isaac Newton, 24th November 1679. *CIN II*, p. 297.

¹¹⁸ *Ibid.*

¹¹⁹ It is important to note that there is no record in the Society minutes of Hooke writing to Newton at anyone's bidding other than his own.

mentioned' and that, having been previously burned by Oldenburg, he had resolved to 'decline as much as Mr Oldenburg's importunity & ways to engage me in disputes would permit'.¹²⁰ Newton was careful to appear cordial, and suggested an experiment 'to prove the motion of the earth' by observing the trajectory of a falling heavy item ('to sweeten my Answer' as he later would confide to Edmund Halley).¹²¹ Hooke failed to heed Newton's warning, and eagerly proposed the experiment to the Royal Society at the next meeting and pre-emptively prepared a reply to Newton which 'shewed, that it [the descent of a falling body] would not be a spiral line, as Mr. Newton seemed to suppose, but an excentrical elliptoid', reading it before the Society at the first opportunity.¹²² Once again, Hooke went beyond the role of secretary in preparing to respond to Newton as a philosopher himself, any such communications therefore bearing the weight of both their personal history and Newton's with Oldenburg; Newton chose to recuse himself by ignoring Hooke thereafter, later informing Halley that he 'Could scarce persuade myself to answer his second letter; did not answer his third' (20th June 1686)¹²³

We can understand Hooke's reluctance to believe that Newton had in fact quitted philosophy as he so claimed, particularly as he closed his letter by inexplicably informing Hooke that he had lately ordered metal to build a new reflecting telescope from Christopher Cock, the London instrument maker who made Hooke's own microscopes.¹²⁴ Newton would later confirm to Halley 'That in my answer to his first letter I refused his correspondence, told him I had laid Philosophy aside', and this is, it would seem, the truth of the matter: Newton may have claimed to have resigned from philosophy, but in reality it was Hooke's correspondence – not that of the Royal Society but Hooke's alone – which he was rejecting.¹²⁵ Hooke's response, in turn, demonstrates his highest priority to be the

¹²⁰ Isaac Newton to Robert Hooke, 28th November 1679, *CIN II*, p. 300.

¹²¹ *Ibid.*, p.301; Isaac Newton to Edmund Halley, 20th June 1686, *CIN II*, p. 436.

¹²² Birch, *History III*, p. 516, (11th December 1679).

¹²³ Birch, *History III*, p. 512 (4th December 1679); Isaac Newton to Edmund Halley, 20th June 1686, *CIN II*, p. 436.

¹²⁴ Isaac Newton to Robert Hooke, 28th November 1679, *CIN II*, p. 303.

¹²⁵ Isaac Newton to Edmund Halley, 20th June 1686, *CIN II* p.436

promotion and administration of experiments, to the point that he was prepared to imitate the tactics of his old enemy Oldenburg if they would persuade Newton to engage with the Society again.

We might wonder at his blunder here, but an unpublished paper of Hooke's supports a reading of his activities as being those of one who had the pursuit of scientific knowledge as his main priority. As noted above, discussions about the Society's floundering membership, low meeting attendance, and financial difficulties had been intensifying during the 1670s. Several Society members created proposals for how they believed the Society should proceed (William Petty 'was desired to draw up a new module of Royal Society' on 29th September 1674), and a series of papers in Hooke's hand entitled 'Proposalls for the Good of the Royal Society' appear to date from this period, pointing to it being written when Hooke's curatorial duties were at a high point, his patron Boyle had begun to withdraw from the Society, and, perhaps, at a time when Hooke believed he could exert a greater influence after the death of Oldenburg.¹²⁶ The first folio sheet was folded horizontally three times and vertically once, and the verso side is blank aside from the title 'Proposals, about the R Society', which would appear on the outside once the page was completely folded, and the recto consists of prompts which are elaborated on in the following pages. Evidently, Hooke had his own ideas about the direction that the Society should take, although there is no record of whether or not he ever unfolded and used his prompt sheet at a meeting or otherwise as he clearly intended. Hooke proposed that the duties of each member should be split: as knowledge was to be found 'in Bookes, in Men, In things...books must be searched, Men conversed & corresponded with And things Examined by Experiments', these duties being performed by 'every one according to his opportunities and abilities'.¹²⁷ There should be two secretaries and two curators ('at least' is inserted above the line), although later Hooke optimistically proposes that the number of curators would rise to '8. 10. 12. 20 or more' as the number of experiments to be made increased; those unable to take on any additional

¹²⁶ Royal Society CLP/20/50. I posit the date based on comparison of the hand with letters written by Hooke during the same period (largely contained in Royal Society EL/H3).

¹²⁷ RS CLP/20/50 fol. 12r.

duties, meanwhile, would be required to pay twice the annual fee.¹²⁸ Most revealingly, of those engaged in experimental practice ‘any person that hath found out any new & usefull invention which upon his discovery thereof to the Society shall be approved of as such, [shall] hath Receiut from the Society a publique attestation thereof...and be further Gratifyd by a medal picture or some mark of honor & respect suitable to his invention’.¹²⁹

After Hooke was ousted two new secretaries were appointed, Robert Plot and Francis Aston, and the journal was revived under its original name of *Transactions*, with numbering pointedly resuming from Grew’s last issue. The Royal Society agreed to support the journal financially for the first time by promising to purchase sixty copies of every issue, which would eventually lead the Society council exerting more financial and editorial control over its publication as it accepted that its own public reputation was now tied to the success of the journal.¹³⁰ It had been Oldenburg who had made successful management of a wide and varied correspondence an integral means of securing the Royal Society’s reputation based on careful curation of his own. Hooke’s lack of independent means, legal wrangling with Cutler, enormous workload, and feelings of credit having been insufficiently awarded, all contributed to the ruin of both his health and his public character, and by occupying both curatorial and secretarial roles he waived any claim to impartiality in the eyes of those he had criticised. Oldenburg’s purpose as Secretary had been the continuation of the Royal Society itself; Hooke’s tenure suffered due to his persistent belief that he was owed public recognition, honour, and perhaps a medal, for the experimental work with which he had been engaged for so many years.

¹²⁸ Ibid., fol. 85r, fol. 92r.

¹²⁹ Ibid., fol. 2r.

¹³⁰ Aileen Fyfe, Noah Moxham, Julie McDougall-Waters, and Camilla Mørk Røstvik, *A History of Scientific Journals: Publishing at the Royal Society, 1665-2015* (London, UCL Press, 2022), p.69ff.

Chapter 5| The Sun is Seene Best at his Rising and his Setting:

Robert Boyle's Experiments in Autobiography

There was no man whose Conversation was more Universally sought after <Courted> & Cultivated, by persons of the highest rank & quality: Princes, Ambassadors, Forrainers, Scholars, Travellers & Virtuosi than Mr B. so as one who had not seene Mr Boyle, was look'd-on as missing one of the most valuable Objects of our Nation: It was in his Philosophical Apartment, Tapissred & furnishd with Instruments for Trials & natural Experiments, perfectly becoming his Genius & Recherches & Learned diversions; that he often Entertain'd those who came to visite him, <Ever> with something rare or new.¹

This was how John Evelyn, in a draft of a letter to be sent to William Wotton, dated 27th January 1702, described his late friend Robert Boyle's reputation and reception of visitors. Robert Boyle had made the Pall Mall home of his beloved sister Katherine, Lady Ranelagh, his permanent London address in 1668, and as the most prominent natural philosopher of the seventeenth century he received a steady stream of visitors to his suite of rooms and on-site laboratory. Among his most frequent callers were friends including John Evelyn, Sir William Petty, and Sir Peter Pett, those to whom he had extended patronage such as Robert Hooke and Henry Oldenburg, intellectuals and philosophers from the wider country and continent, travellers from Africa and the Americas, and his long-term spiritual advisors Edward Stillingfleet and Gilbert Burnet. The production and dissemination of natural philosophical knowledge and practical experiment was at the heart of these social-spacial engagements: Hooke 'walked with him in the garden' and discussed 'about printing his Discourse of the phosphoros, about the leather impenetrable by water or air'; a flask of water was frozen with the assistance of Dr John Wallis in order '[t]o convince some strangers' of the consequential compression of the air inside, until 'the glasse flew with noise about my ears being broken into many pieces'; a stone taken from the kidney of a cow in Jamaica was brought by Sir Charles Lyttelton to be weighed and compared with an 'Oriental Bezoar' already in Boyle's possession.² At some point in the 1680s, however, a rather different sort of exchange took place. Boyle had known Gilbert Burnet, made Bishop of Salisbury at

¹ BL Add. MS 78312, quoted in *RBHF*, p. xlii.

² Hooke, *Diary*, p.316 (1st October 1677); RS RB/1/27/3, p. 13 (Work-diary 21 entry 232); RS RB/1/21/9, p. 263 (Work-diary 36 entry 17).

the Glorious Revolution, since 1663, and had come to value the Scottish divine for both his friendship and his casuistical advice. Boyle had relied on amanuenses since growing fearful for his eyesight in the late 1650s, but towards the end of his life he invited Burnet to take down dictated memoirs of Boyle's own life. Burnet had become known for biography for a series of lives which he had published during the 1670s and early 1680s (including that of John Wilmott, Earl of Rochester), and it appears that Boyle saw him as his own putative biographer. On this occasion, the knowledge to be shared and disseminated was not that of the author's laboratorial activities, but of the author himself.

Far from being the singular impulse of a historically infirm man following a 'paralytical distemper' which had temporarily robbed him of the use of his hands in 1670, it is the argument of this chapter that, for Robert Boyle, autobiographical practice had always been an essential tool of self-promotion and promotion of the new natural philosophy. Boyle adopted and adapted available autobiographical forms for three purposes: to demonstrate his trustworthiness, accumulate material chronologically, and encourage the reader's congruent action. Having the largest published output of any early member of the Royal Society Boyle became a figurehead due to presenting experimental evidence for claims regarding the physical attributes of the air, the perception of colour, and the effects of cold and heat, yet his most fundamental contribution to the establishment of the inductive method in seventeenth-century England was in his formation and presentation of a model for its ideal practitioner, to the extent that the publisher of his *Specifick Medicines* (1685) would laud him as being known 'both at home and abroad . . . [as] the English Philosopher'.³ It is the argument of this chapter that his lifelong experiments with autobiographical practice both informed his natural philosophy, promoted it and himself as the model experimental philosopher, and provided a validatory legitimacy for that presentation.

The Baconian man of science was architect of his own social self; as has been seen, the men of the Royal Society used life writing as a means of promoting themselves as an ideal but also a

³ Robert Boyle, *The Works of Robert Boyle Volume V: The Origin of Forms and Qualities and Other Publications of 1665-7* ed. Michael Hunter and Edward B. Davis (London: Pickering and Chatto, 2000), p. 76.

demonstration (be it conscious or unconscious) of the experimentalist methods and culture of fact accumulation which the Society was intended to promote. Robert Boyle's father, the first (and 'Great') Earl of Cork, was described as 'faber fortunae' by John Evelyn considering his modest beginnings, having landed in Ireland to seek fortune amidst revolutionary turmoil at the age of twenty two with few possessions besides 'two clokes, a bracelett of golde, A diamond Ringe, my Rapier and dagger and [£27 3s.] in my purse' before rising by dint of considerable colonialist endeavour to his later titles.⁴ When considering the cultural ascendancy of his youngest surviving son, Robert Boyle, we must appreciate that he 'did not *take on* the identity of the experimental philosopher, [but] was a major force in *making* that identity', and with it the identity of the self-made man of science.⁵

Boyle began his literary career by composing theological and moralistic works, leading Brian Vickers to distinguish between Boyle's 'philosophical' and 'rhetorical' writings; *New Experiments Physico-Mechanical* (1669) in the latter category as it was written as a letter.⁶ Such labels, however, ignore Boyle's lifelong fluidity of mode and form as he sought to find the correct medium with which to persuade his readership of the validity of his activities (to say nothing of the role of correspondence in both promoting and consolidating the Royal Society's reputation, as discussed in chapter [chapter number]). For Claire Preston, 'Boyle's early commitment to moral philosophy and the struggle to find apt styles for it prompted his lifelong attentiveness to the rhetoric of science and generated the diversity of these writings'.⁷ Taking this further, it will be seen that another discipline which Boyle carried forward from his early moralist endeavours was the study and documentation of oneself and one's conscience as works in progress. Boyle's mature output, his methods of working, and his final acts of dictated self-documentation will be considered in light of these early pieces, most notably 'The

⁴ Richard Boyle, *The Lismore Papers viz. Selections from the Private and Public (or State) Correspondence of Sir Richard Boyle, First and 'Great' Earl of Cork* ed. Rev. Alexander B. Grosart (privately printed, 1886), p. 106.

⁵ John Evelyn to William Wotton, 29th January 1696, quoted in *RBHF*, p. 87; Shapin, *A Social History of Truth*, p. 127.

⁶ Brian Vickers, *English Science, Bacon to Newton* (Cambridge: Cambridge University Press, 1987), p. 46.

⁷ Preston, *Poetics*, p. 85.

Dayly Reflection' which has hitherto been granted little credit in shaping the mature Boyle's practices. Previous chapters in this thesis have assessed the use of autobiographically inflected genres in promoting the activities of members of the early Royal Society, as well as exploring the philosophical impact of empiricism on the study of the self, concluding that such practices were as integral as they were unvoiced to the establishment and mythologisation of the Society. Boyle was as subject to self-editorialization as any other figure encountered thus far, and this chapter will take a chronological overview of his development and utilisation of autobiographical modes from youth to death (and beyond) in both achieving and utilising a public identity of the Christian gentleman philosopher.

Furnaces, Stones, Clocks: Boyle's Stalbridge Period

After returning from the Grand Tour in 1644 and working to reclaim lands in Ireland colonised by Cork and lost during the rebellion of 1641, the young Boyle settled on his inherited estate in Stalbridge for a period of eight years. During this time, and cognisant of moral tensions engendered by a life of leisured retreat, Boyle commenced a period of composition which focused on the right use of time, following the general pattern of late Tudor and Stuart moralistic thought in making a case for discipline, diligence, and vocation to secure against idleness. It was the question which was to so vex Abraham Cowley twenty years later upon his retirement to Chertsey in Surrey, as discussed in Chapter Three of this thesis, but approached from the limited vantage point of aristocratic youth the question was not one of justification but construction.

Shapin points out both that Boyle had many examples of Christian gentility to draw on (from the Sidney circle, to Richard Brathwaite's *The English Gentleman* (1630), to the courtesy works of people such as Henry Peacham, Richard Allestree, and Sir George Mackenzie) and also that 'the systematic embrace of a reflectively religious life was relatively rare for someone of Boyle's condition and degree...[which] made him a great prize for the party of virtue, and a greater prize for the community of authors concerned to inscribe the inducements to virtue in the formal record of literature

culture'.⁸ An examination of these early manuscripts by Boyle makes clear the religious and intellectual origins of Boyle's techniques of expression, habits of mind, and thematic patterns which persisted into and enhanced his later work. The early concentration on the self did not disappear, nor develop alongside and independently of Boyle's work in natural philosophy, but developed further as a result of it, and was also influenced by the notion of public identity developed in conjunction with Boyle's association with the Royal Society.

Settled at Stalbridge, and eschewing military, matrimonial, and academic paths, the young Boyle was understandably highly concerned with idleness and its effects. John T. Harwood suggests four reasons for Boyle beginning a program of ethical authorship: to assist in clarifying his own moral foundations, to test various rhetorical strategies for the promotion of these, to establish a vocational role for himself in the Hartlib circle, and to create a habitude of writing about virtue in which would, in time, become an operation of virtue itself.⁹ Some of these early 1640s experiments with genre include a series of moral epistles chastising the fictional Corsica for her manner of dress and speech, in which the doctrine of correspondence is given sylleptic expression through the warning that ink on the face shall stain the reputation.¹⁰ *The Gentleman* argues that the 'true seat of nobility' is in the mind rather than the blood, noble birth being a traditional requisite in kind if not degree, and *A Mere Fine Gentleman* is a character study intended as a caricature of one whose noble birth is set against defects of character and action.¹¹

Too many of our moralists write, as if they thought virtue could be taught as easily, and much in the same way, as grammar...they spend more time in asserting their method, than the prerogatives of virtue above vice; they seem more solicitous, how to order their chapters than their readers actions; and are more industrious to impress their doctrine on our memories than our affections, and teach us better to dispute of our passions than with them.¹²

⁸ Shapin, *A Social History of Truth*, p. 157.

⁹ Boyle, *Early Essays and Ethics*, pp. xliii-xliv.

¹⁰ Robert Boyle, *The Works of Robert Boyle Volume XIII: Unpublished Writings, 1645-c.1670* ed. Michael Hunter and Edward B. Davis (London: Pickering and Chatto, 1999-2000), p. 51.

¹¹ *Ibid.*, p. 135.

¹² Boyle, *WRB II*, p. 436.

For Boyle, the problem being worked out in these early essays was less one of doctrine than of effective communication, of rhetoric taking precedence over effecting real change. It is possible, therefore, to view in his work his answer to this question, that the best way to affect a reader was the way in which he, Boyle himself, was most affected. Boyle would later write that metaphors are to the mind as microscopes to the eye, both of which ‘illustrat[e] Things scarce discernible, so as to represent them by Things much more familiar and easy to be apprehended’, and his burgeoning interest in natural philosophy proved fertile ground from which to reap a harvest of metaphors and figurative language for clarifying empirical philosophy in the imagination of his readers.¹³ By 1649 Boyle had managed to have a furnace successfully installed at Stalbridge (an attempt in 1647 had seen the ‘great earthen furnace...brought to my hands crumbled into as many pieces, as we into sects’), and his delight in having a working means of distilling, combusting, and sublimating saw him recontextualise the figurative furnace from the ‘strong and persistent tradition of alchemical satire’ of charlatans and the gullible to a metaphor for discovering religious truth.¹⁴ In *Of Piety* (c.1646-9) Boyle discussed piety as not only a Christian virtue but also a humanistic one which found expression in Plato, Socrates, Seneca, and the Stoics, and that knowledge of God is innate, learned through divine revelation, and acquired ‘by improving their Natural Reason, out of the Contemplation of the Creatures and their own Consciences’. The latter is ‘cheefly eminent in Filofofers’, from whom three ‘furnaces’ have been inherited to improve knowledge of God: negation, causality, and eminency.¹⁵ The awkward metaphor is alloyed with the book of Malachi in *Seraphic Love*; God himself is represented in scripture as a refiner, and by engaging in the process of refining metals ourselves we may come to an analogous understanding of providence.

[O]bserve that, though in afflictions, especially Nationall or Publick Calamities, God oftentimes seems to make no distinction betwixt the objects of his compassion and those of his fury, indiscriminately involving them in the same destiny; yet his prescience and intentions

¹³ Robert Boyle, *The Works of Robert Boyle Volume XI: The Christian Virtuoso and other Publications of 1687-91* ed. Michael Hunter and Edward B. Davis (London: Pickering and Chatto, 2000), pp. 287-8.

¹⁴ Boyle to Lady Ranelagh, 6th March 1647, *CRB I*, p. 50; Stanton J. Linden, ‘Francis Bacon and Alchemy: The Reformation of Vulcan’ *Journal of the History of Ideas* 36.4 (1974), 548.

¹⁵ Boyle, *Early Essays*, p. 171.

make a vast Difference, where his inflictions seem not to make any: As, when on the same Test, and with the self-same Fire, we urge (as well) the Gold as the blended Lead or Antimony; but with foreknowing and designing such a disparity in the events, as to consume the Ignobler Mineralls or blow them off into drosse or fumes, and make the Gold more pure and full of Lustre.¹⁶

The lodestone, naturally magnetised and seemingly invisible in its effects, held great interest for both the collector of curios and the early Fellows of the Royal Society. The anti-Aristotelian Willian Gilbert, president of the Royal College of Physicians and personal physician of Elizabeth I, had published *De Magnete* in 1600 which relayed an experimental program of induction based on Gilbert's own *terrella*, a spherical lodestone created to demonstrate the magnetism of the Earth itself.¹⁷ Straddling the distinction between natural philosophy and mathematics, the study of terrestrial magnetism had obvious practical benefits for an island nation and the Royal Society undertook several measures to institutionalise the practice of making magnetic observations. The April 1667 edition of the *Philosophical Transactions* consisted of a survey requesting observations of compass variation to be completed by those taking sea voyages ('a good Number of such printed Copies' were to be collected from, and returned to, Trinity House for perusal by Society members); a committee was formed in 1670 to oversee the creation of precise meridians for observation of needle delineation in the cities of England; in 1674 Hooke made magnetic field lines visible as ovals meeting at the axis for the first time by drawing iron filings across a sheet of parchment using a *terrella* from below, possibly one of the *terrellas* which had been presented to the Society by Charles II in 1661.¹⁸

Observable in its effects but not its force of attraction or repulsion, the lodestone held a powerful literary attraction for Boyle. It is not difficult to imagine Boyle at Stalbridge, stroking a needle across the surface of a stone held in the palm of his hand, demonstrable yet ineffable, and it

¹⁶ Robert Boyle, *The Works of Robert Boyle Volume I: Publications to 1660* ed. Michael Hunter and Edward B. Davis (London: Pickering and Chatto, 1999), p.79; cf. Malachi 3.3.

¹⁷ 'Little Earth'. William Poole draws attention to Gilbert's use of 'imperative grammar' and the command *fac tibi*, make for yourself, in *The World Makers: Scientists of the Restoration and the Search for the Origins of the Earth* (Oxford: Peter Lang, 2010), p. 144.

¹⁸ Henry Oldenburg, 'Directions for Observations and Experiments to be Made by Masters of Ships, Pilots, and Other Fit Persons in their Sea-Voyages' *PT* 2.24 (1667), 434-5; editorial comment appended to Adrien Auzout, 'An Observation of M. Adrian Auzout, a French philosopher, Made in Rome (where he now is) About the Beginning of this Year 1670' *PT* 5.58 (1670), 1187; Birch *History III*, p. 128; RS MOB/014.

was these experiential qualities which would see Boyle employ it as both a philosophical and theological simile. Boyle was very much aware of the utility of simile in investigative literature, later writing that ‘I make frequent use of Similitudes, or Comparisons: And therefore I think myself here obliged to acknowledge, once for all, that I did it purposely’, arguing that to do so was a process analogous to use of the microscope, ‘so a skilfully chosen, and well-applied, Comparison much helps the Imagination, by illustrating Things scarce discernible, so as to represent them by Things much more familiar and easy to be apprehended’.¹⁹ In this early period of theological composition Boyle would use the lodestone as an example of something marvellous but observable, indicating the conceptual operation of relational reading by the adverbial cues of ‘as’ and ‘so’: thus, ‘we may observe, That as the Load-stone, doth attract most powerfully the brightest Needles, made of the purest Steel...so Angells, who of all Created Beings enjoy the uncloudedst light & the most clear knowledge of their Maker, do love him with a Constancy so fix’t’, and daily conversation with God ‘insensibly models the Soule into a Conformity with him’ in a process ‘highly resembling that of the Needle with the Loadstone (by which the [Minerall] Stone acquires no new quality /vertu/ but all the Advantages do accrue unto the [illeg.] Steele)’.²⁰

Exposure to natural philosophy meant exposure to new vocabulary, and the mechanical philosophy was itself highly dependent on figurative language when attempting to communicate. In encountering new knowledge, Francis Bacon wrote that we fail to understand until some visual or verbal representation allows ‘our mind [to] accepteth of them by a kind of relation, as the lawyers speak, as if we had known them before’, such representation deconstructing the unfamiliar into an experiential map to bridge the gap of *différance*.²¹ The associative process of relational learning, akin to the construction of early modern identity through social bracketing, becomes problematic however when one explicates the unfamiliar in terms of the unknown. As Locke would later write in his preface

¹⁹ Boyle, *WRB XI*, pp. 287-8.

²⁰ Robert Boyle, *The Works of Robert Boyle I: Publications to 1660* ed. Michael Hunter and Edward B. Davis (London: Pickering and Chatto, 2000), pp. 88-9; Boyle, *Early Essays*, p. 207.

²¹ Bacon, *OFB IV*, p. 29.

to his translation of the Pauline epistles, ‘if he has a distinct meaning when he uses those Words and Phrases, and knows himself what he intends by them, it is always according to the Sense of his own System, and the Articles or Interpretations of the Society he is engaged in’.²² What, then, of the reader who had not had the opportunity to see needles cling to rocks in an apparent suspension of natural order?

In his preface to *Some Considerations about the Reconcilableness of Reason and Religion* (1675), characteristically concerned that his work shall ‘come abroad unpolish'd and unfinished’, Boyle once again utilised the metaphor of the lodestone, stating that ‘Truth will have its operation upon sincere Lovers of it, notwithstanding the want of regularity in the method: As a good Loadstone will not, by being rough and rudely shap'd, be hinder'd from exercising its Attractive and Directive powers upon Steel and Iron.’²³ Moving forward to his larger theme of scripture functioning as a testimony of God, Boyle accepts that reason alone might make one reject reports of aspects of the lodestone, allowing that ‘These Phænomena, (to mention now no more,) are so repugnant to the common sentiments of Naturalists, and the ordinary course of things, that, if antecedently to any Testimony of experience those Magnetical Properties had been propos'd to Aristotle himself, he would probably have judg'd them fictitious / things’.²⁴ Yet even some Peripatetic philosophers, he noted, had become convinced of the truth of the compass needle ‘upon the Testimony of those Navigators that have sail'd to the East and West-Indies’ and many more contemporary philosophers, ‘believe more than this, upon the Testimony of Gilbert, Cabæus, Kircherus, and other Learned Magnetical Writers, who have affirmed these things; most of which I can also averr to you upon my own knowledge’ because ‘they look upon those Relators as honest Men, and judicious enough not to be impos'd upon as

²² John Locke, *The Clarendon Edition of the Works of John Locke: A Paraphrase and Notes on the Epistles of St Paul to the Galatians, 1 and 2 Corinthians, Romans, Ephesians I* ed. Arthur W. Wainwright (Oxford: Oxford University Press, 1987), p. 107.

²³ Robert Boyle, *The Works of Robert Boyle Volume VIII: Publications of 1674-6* ed. Michael Hunter and Edward B. Davis (London: Pickering and Chatto, 1999-2000), pp. 239-40.

²⁴ Boyle, *WRB VIII*, pp. 276-7.

to the matter of Fact'.²⁵ As one should trust scripture to contain the true testimony of God, so one should trust Gilbert and Boyle himself (which, to a certain extent, is implied through the acquisition of his book) as corollary of them being honest and learned men. Boyle's linkage of the literal and the figurative, of natural philosophy and spiritual states, and his oscillation between these, indicates the power which he felt similitudes had in impressing themselves upon the memory and effecting change in a reader.

Boyle's concern with the practical inducement to virtue in a reader saw expression in two pieces of 1646-9, 'The Doctrine of Thinking' and 'The Dayly Reflection'.²⁶ Both pieces may be read as models for the right ordering of one's thoughts and time (indeed, Boyle's first-person exemplification encourages this reading); not in order to be perceived as honest, but to actually become so. Both documents also point to the public good of modelling such behaviour, reflecting the Interregnum Boyle's interest in the more social dimensions of religious virtue – casuistry, ethics, and effective communication – as opposed to systematic theology. These documents also evidence some of Boyle's most persistent habits in manuscript composition: of revision, interlineation, and frequent insertion of alternative words without deleting others. Examination of these manuscripts, in Boyle's own hand rather than those of the amanuenses who he would rely on from 1654 onwards, provides information about Boyle's editorial process and his great concern for matters of style, and an equivocal and anxious sensitivity to the reception of a reader.

'The Doctrine of Thinking' is concerned with inspection of the motions of the mind and devising a program for training its attention. In a rare reference to an invisible or philosophical college associated with the Hartlib Circle, Boyle refers to 'experiments' in directing one's own thoughts made by 'those I have the Happiness to be acquainted with of the Filosoficall colledge' who ascribe their success in novel notions to diligence of thought.²⁷ 'Experiment' here is used in a loose manner to

²⁵ Ibid., p. 279.

²⁶ I rely on Harwood for the dating of both tracts, first published in Boyle, *Early Essays and Ethics*.

²⁷ Boyle, *Early Essays*, p.186. In fact, the other three references to an invisible college are all by Boyle.

suggest Boyle's experience of the group rather than a definite program of experimentation; this is in fact the sole reference to experiment in conjunction with the college itself. Tempting though it may be to attempt to read Boyle-the-scientist in these early works, to do so would only result in a fantastical teleology. Boyle's use of the term does, however, point to his conception of this as being an innovative enterprise, the training of the mind leading to new and useful activities. The treatise is, in general, typical of works on conscience, but three points should be taken notice of. The first is Boyle's warning against both sinful and vain (i.e. unprofitable) thoughts, fancying oneself to have done something without having actually done it; this is 'raving', a play or romance acted in the brain, a source of anxiety for the young Boyle. The second is Boyle's recommendations for profitable activities wherein one may engage one's thoughts, either 'the composure of som Occasionall Meditation' or 'by obliging them to an Attention inconsistent with the least of distractions, such as are Geometricall Speculations'.²⁸ Third, and perhaps most important of these notes, is the collapse of a Cartesian ontological division of internal and external activity, 'Thoughts being but Internall Actions and Actions but External <actuated> Thoughts', where to think of a past sin with pleasure is to commit the same sin anew.

'The Dayly Reflection' is a guide to private meditation, addressed to Boyle's sister, Lady Ranelagh, and dispenses with a preface in the hope that it may prove 'lesse Tedious then Useful.'²⁹ The nineteen folio pages are organised into three sections: the first discusses the benefits of daily meditation, the second on when to perform it, and the third explaining how. The making of a daily reflection on the actions of the soul, writes Boyle, cultivates integrity, sincerity, humility, charity, and knowledge and wisdom, both human and spiritual.³⁰ There is a focus on sight and witnessing: nightly reflection using 'the Ey of Conscience' makes one used to guarding against that 'Temptation of Privacy in Sin' which cannot be concealed from God, and 'prove a powerful Dissuasive from all unholynesses <that may Displease a Holy Deity> to represent her Selfe [i.e. the soul] to be ey'd by

²⁸ Ibid., pp. 195-5.

²⁹ Ibid., p. 202.

³⁰ Ibid., pp. 202-8.

him...upon the same score that Soldiers and Lovers act more handsomly when their Princes and their Mistrisses looke on; the Consideration of God's being Witnesse of our whole Departments, ought to inspire us with Desseins, worthy so Divine /glorious/a Spectator'.³¹

How then, was such a meditation to be performed? Willingly, for its own sake, attentively, and constantly. One should catechise oneself as frequently as possible regarding one's opinions and actions, and to do so 'render[s] us, both lesse Peremptory in asserting our owne Opinions, and more Charitable in our Censures of those of others, by proportioning <first> our Confidence to our Evidence, and then our Zeale <Fiercenesse> to that Confidence'.³² Fairness and generosity in conduct with others, even in disputation, will be one result; 'many of those rash quarrels and those deadly Fewds which <now adays> Distances and Dissents in matters of Religion' springing from adversaries being held to higher standards of argument and evidence than oneself. One should consider what good things one has done that day in order to embarrass oneself at the paucity or to reap the reward of a good conscience; if short on time, focus on sins and what 'thing considerable' has been learned (stories, songs, jests, sonnets, 'and such like empty trifles' do not count).³³ Boyle writes that he has 'ever approv'd and often practised their Custom, that after any considerable Portion of time spent either in Study or in Conversation...to [ruminate and] recollect what their Bookes or their Company have afforded or suggested...as most observable', comparing this process to digestion and the taking of physick, which both benefit from regularity. Most significantly for this thesis, Boyle advises that for the reflection to constitute a means of improvement its successes and lessons should be recorded for future use.

[R]ecall orderly to mind, Whatever new observables in <any kind of> Knowledge, either your Study or Conversation has afforded or your owne Thoughts suggested yow, the foregoing day...Those that deserve a permanent station and a more setled Residence in your memory; ought by a frequenter Repetition to be more secur'd from Oblivion. To this End it were highly conducible to keepe a kind of written Diary, to preserve Choicer observations and Collections from Vanishing. Of which (Dear Sister) your Comands may exact of me a Draught /Modell/

³¹ Ibid., p. 204.

³² Ibid., p. 228.

³³ Ibid., p. 227, p. 232.

which I remember I once invented, and, for a time, made use of; [in] <by> which, [w] (if I mistake not} without any tedious nicety of subdivisions, particulars may be so contriv'd, <marshall'd> as to avoid the Inconvenience of Bulke without incurring that of Confusednesse.³⁴

Here Boyle points explicitly to the incremental, diurnal structure of the diary as being suitable for recording a daily reflection, a benefit which is integral to that genre. The term diary, derived from *diarium* to mean daily allowance, had been in common circulation from 1580 as a descriptive title for first-person prose accounts of daily actions, prayers, and God's role in day-to-day events. Examples from the late Elizabethan period include the Puritan diaries of Lady Margaret Hoby (kept from 1599-1605) and minister Samuel Ward (surviving pages run from 1595 to 1632), and Adam Smyth has drawn attention to how early modern diaries 'were frequently public, or semi-public records, written in part to aid the spiritual and modern edification of family and community' and thus forming records of exemplary conduct.³⁵ In 1605 Francis Bacon advocated that one should 'keepe Dyaries of that which passeth continually' when engaged in 'enterprises memorable, as expeditions of Warre, Navigations, and the like', such a document forming 'the Historie of Persons, and chiefly of actions'; by 1606 Ben Jonson's Sir Politic Would-Be flourished onstage his 'Diary, Wherein I note my actions of the day' to be met with ridicule for superstitious and monotonous entries about beans thrown over thresholds and sprats purchased for a keen price, a joke reliant on an audience's understanding of both the genre and the perceived myopia of those who engaged with it.³⁶ By the 1640s, then, knowledge of the format and purpose of a personal diary was commonplace, and in 'The Dayly Reflection' it is significant for an understanding of Boyle's lifelong engagement with autobiographical practice that he claimed to have made a model of the most useful formulation of a diary for his purposes, and to have made use of it himself. No such diary is extant, unfortunately, yet here is evidence for Boyle condoning and engaging in a quotidian practice of reviewing the forgone day, extracting what lessons he could, and writing it

³⁴ *Ibid.*, p. 202.

³⁵ Adam Smyth, 'Diaries', in *The Oxford Handbook of English Prose 1500-1640* ed. Andrew Hadfield (Oxford: Oxford University Press, 2013), p. 440.

³⁶ Bacon, *OFB IV*, p. 70; Ben Jonson, *Volpone, or the Fox* ed. Richard Dutton, in *The Cambridge Edition of the Works of Ben Jonson: Volume III [1606-1611]* eds. David Bevington, Martin Butler and Ian Donaldson (Cambridge: Cambridge University Press, 2012), IV.ii.133-4.

down in orderly and useful fashion. It was a habit which was, in some form or another, to remain with him for the rest of his life.

As was standard in casuistical works, Boyle also used his treatise to anticipate and answer objections to it. One of these was time: aside from being a good use of it, Boyle advises that daily reflection need only take a quarter of an hour, half at most. The twenty-first century reader may be inclined to view this as an act of bargaining, which indeed it partly was. The contemporaneous reader, however, may have been put more in mind of the mechanical clocks which accumulated the movements of a regulator rather than dividing longer periods into smaller parts, indicating time through fusion not fission. These fifteen minutes accumulate on the page to make up a life; as the clock is read, so is the diary. This may indicate an audible chiming of the quarter hour at the nearby St Mary's church (approximately half a mile from the site of Stalbridge Manor), but also to the increasing proliferation of household clocks in the first half of the seventeenth century upon which time could be actively read as opposed to passively heard. Boyle would later use the metaphor of the clock as machine to explicate the theological aspect of his mechanical philosophy in the second part of his *Excellence of Theology Compared with Natural Philosophy* (1674), comparing the world to 'a great piece of clock-work [in which] the naturalist, as such, is but a mechanician' and macroscopic phenomena are explicated by microscopic corpuscles.³⁷ Instead of an Aristotelian distinction between living and non-living things, Boyle would also argue that life was a special case of mechanical motion arising from a preordained organisation of corpuscles according to God's design of nature.³⁸ Nor did the comparison originate with Boyle; when emphasising the primacy of observation and rejection of the Idols as impediments to objective reasoning, Bacon had used the simile of clockwork for well-trained, properly functioning cognition.

My plan is as easy to describe as it is difficult to effect. For it is to establish degrees of certainty, take care of the sense by a kind of reduction, but to reject for the most part the work of the mind that follows upon sense; in fact I mean to open up and lay down a new and certain

³⁷ Boyle, *WRB VIII*, p. 75.

³⁸ Boyle, *WRB III*, p.127–8.

pathway from the perceptions of the senses themselves to the mind...But this remedy comes too late to a cause already lost once the mind has been invaded by the habits, hearsay and depraved doctrines of daily life, and beset by the emptiest of Idols...There remains but one way to health and sanity: to do the whole work of the mind all over again, and from the very outset to stop the mind being left to itself but to keep it under control, and make the matter run like clockwork.³⁹

The exhortation to dispense with inherited conclusions and develop new habits of generating axioms from observations can also be read in 'The Dayly Reflection' and its focus on the intellectual productivity of treating oneself as one's subject, in which one becomes 'the Teacher, the Scholler and the Booke of his owne selfe'. 'The true Conduct of our selves is to be gathered out of the study of our Selves', and 'Experience consists, not in the multitude of years, but in that of Observations'.⁴⁰ There is no passivity to this process: one must 'observe attentively the considerable Passages/ transactions <he is conversant in /with/>', not store them inertly in the memory but 'drawe' them out and 'deduce', 'mint', and 'coyne' them into whatever 'Axioms they are capable of affording'. In the period before milled coinage the implication is of a laborious, individuated process, each day a promissory note for social credit.

'The Dayly Reflection' closes by advising than one should observe one's own actions as if performed by others in order to avoid the 'Treachery of Selfe-love' and learn from the misfortune of others. It is 'doutlesse', writes Boyle, that 'his Destiny is much to be preferr'd, whom [by] other men's [Misery] Follys have made Wise and Carefull; and whom their Misfortunes have instructed to shunne those Errors that have producc't them', and therefore 'by the consideration of Events' we may 'make those Rockes against <on> which others have been cast away, serve us for Sea-markes to steere our Course by'.⁴¹ The actions and successes of others must be considered not only on their own but as having a hand of God in them, and being swayed or biased by providence, which so 'exclude[s] Fortune from so much as sharing in the Government <management> of things // that they must be

³⁹ Bacon, *OFB XI*, p. 55.

⁴⁰ Boyle, *Early Essays*, p. 208, and for the quotations in the next sentence.

⁴¹ *Ibid.*, p. 229.

blind as that false Deity is say'd to be, that dare ascribe Events to her'.⁴² This is not abstracted fortune but the blind goddess Fortuna, to whom nothing should be ascribed, misfortunes arising instead through one's own errors and failure to steer the course of one's life along providential lines. The goddess Fortuna had by this point become a Christianised topos of the vicissitudes of earthly existence, representing less a disruptive force than a failure to accommodate contingency. Rather, it is to providence and its effects one should turn to.

[E]ndeavour through all the fleeting Variety and perpetuall Vicissitudes of Sublunary Events, to discerne the Workings <Character> of that adorable Providence...which may in them as easily be discern'd, inspite of the /Differences // of the Persons and Actions that reflect it; as in a cloudlesse Day gazing upon a River, we can long behold the selfe same unchang'd Image of the Bright Planet that disperses light /creates the Day/ tho the Drops that do reflect /repz/ it, being in [too] perpetuall Motion, and still successively alter'd and renew'd, can not be for 2 moments the selfe-same, those swiftly gliding Streames incessantly chasing <pursuing> and flying from each other.⁴³

This Heraclitan expression of flux, in which the persons and actions of the world may be defined only by reference to the workings of providence which they reflect, indicates Boyle's appreciation of identity as less a matter of individuation than of a diachronic process. God may be the architect, but by examination of daily events we can still peep at the plans; experience – and experiment – were, to Boyle, means to a greater understanding of God's manifested power.

The Provident Philaretus: Boyle's First Autobiography

In the decades before the Civil War providentialism had become dangerously politicised, a catalyst for criticism and weapon for righteousness wielded by all parties post-Reformation, and a conceptual framework for understanding the cataclysmic events of conflict which defied expectation. A deeply internalised brand of personal providentialism propelled figures such as Oliver Cromwell and Richard Boyle, first Earl of Cork, to see themselves as singularities most blessed within an inexorable system of Boethian divine judgement and justice which had become embedded in English religious culture. Interpretation of events as manifestations of divine order was, of course, not unique

⁴² Ibid., p. 230.

⁴³ Ibid., p. 232.

to this period or location, yet the expression of Puritan providentialism of the first half of the seventeenth century distinguished itself by both frequency and intensity. Calvin had said that ‘nothing cometh by chance, but whatsoever cometh to pass in the world, cometh by the secret providence of God’; Cromwell urged his son Richard to read Sir Walter’s Raleigh’s *History of the World* in which all the events of history could be read as the workings of God’s will, believing that ‘he must be a very atheist’ who saw ‘all those marvellous dispensations which God hath wrought’ in the civil wars as ‘bare events’⁴⁴; the MP and regicide Edmund Ludlow subtitled his autobiography ‘A Voyce from the Watch Tower’ as ‘Severall Passages of Providence relating to Publiq and Privat Concernes’.⁴⁵ The collection of providences into some form of diary became common: John Beadle advised in 1656 that it was the spiritual duty of the thankful Christian that not only ‘mercies and signall works of gracious providence, but judgements, great changes, overturnings, and the sins of the age are to be registred in this Christian Journall’ adding that ‘we must also consider, wherein they and others have exceeded against God in their transgressions’, observing God’s judgements as well as his mercies, and Lucy Hutchinson committed to recording the minutiae of her husband’s life in her biography ‘since even these little things were linkes in the chaine of providences which measured out his life’.⁴⁶

In 1649 the newly appointed Warden of Wadham College John Wilkins delivered a sermon in which he expressed the belief that ‘We may infer, how all that confusion and disorder, which seems to be in the affairs of these times, is not so much in things themselves, as in our mistake of them’⁴⁷.

Wilkins would publish the sermon in the same year, subtitling providence itself as a thing ‘Very seasonable to quiet and support the heart in these times of publick confusion’, distinguishing between

⁴⁴ Oliver Cromwell, *Writings and Speeches of Oliver Cromwell I: 1599-1649* ed. Wilbur Cortez Abbott, with Madeleine R. Gleason and Catherine d. Crane (Cambridge, Massachusetts: Harvard University Press, 1937), p. 377; Oliver Cromwell, *Writings and Speeches of Oliver Cromwell II: The Commonwealth 1649-1653* ed. Wilbur Cortez Abbott, with Madeleine R. Gleason and Catherine d. Crane (Cambridge, Massachusetts: Harvard University Press, 1939), p. 339.

⁴⁵ Quoted in C. A. Patrides, *Milton and the Christian Tradition* (Oxford, 1966), p. 56; Cromwell, *Writings and Speeches II*, p. 236.

⁴⁶ Beadle, *Journal or Diary of a Thankful Christian* b3v; Lucy Hutchinson, *Memoirs of the Life of Colonel Hutchinson* (Cambridge: Cambridge University Press, 2010) p. 137.

⁴⁷ John Wilkins, *A Discourse Concerning the Beauty of Providence* (London, 1649), p.65.

general and special or ‘particular’ providence, the latter applying most particularly to individuals and their actions.⁴⁸ Boyle would be introduced to Wilkins in the autumn of 1653 and immediately invited to join his Oxford circle of guided learning and experiment; at the same time as Wilkins was publishing his treatise on providence, Boyle had been at work on his own.⁴⁹

Between 1648 and 1649 Boyle composed ‘An Account of Philaretus During His Minority’, a third-person autobiography of his early years and intellectual development. Boyle recounts his birth on 25th January 1627, his time at Eton College from 1635 to 1638, and his private instruction while travelling on the continent, and the narrative breaks off abruptly during Boyle’s relation of his time in France, indicating neglected completion rather than misplaced conclusion.⁵⁰ Boyle’s familiarity with science at this point was casual at best, but ‘An Account of Philaretus’ can be interpreted as a conscious and deliberate act of self-legitimation which presents the author as a bright and curious young man of independent means and a lover of virtue, whose priority was the pursuit of knowledge. The document is consciously structured, not merely adhering to the synchronicity of a life but divided into stages separated by the literary conceit of physical crossings of the ocean and Alps and organised around the pursuit and perceived benefits of felicity or fortune, underlined throughout by the same theme of Christianised Stoicism which informed his earlier works. When this theme is understood, Boyle’s focus on his education and the accidents of childhood may, therefore, be seen to have its origin not only in the author’s young age but also in the revealing notion that ‘as the Sun is seene best at his Rising & his Setting, so men's <native> Dispositions are clearyest perceiv'd, whilst they are Children & when they are Dying’.⁵¹ This chapter will now discuss Boyle’s ‘An Account of Philaretus’ as the conclusion to an assessment of his early writings.

⁴⁸ Ibid., p. 2. This was by no means the only understanding of the distinction between general and special providence, as Blair Worden explains in *God's Instruments: Political Conduct in the England of Oliver Cromwell* (Oxford: Oxford University Press, 2012) pp. 35-6.

⁴⁹ John Wilkins to Robert Boyle, 6th September 1653, *CRB I*, p. 145.

⁵⁰ RS RB/1/37/39 fol. 184.

⁵¹ *RBHF*, p. 5.

At the date of composing ‘An Account of Philaretus’ Boyle’s thought exemplified humanist values which had merged with Protestant ideals since the Renaissance. The philosophy of the Stoics was particularly aspirational, with its emphasis on moral balance, self-control, and piety – all firmly grounded in scripture. None of this was unique to Boyle (expressed in the utopian ideals of the Hartlib circle in their approach to learning reform), as Margo Todd demonstrates:

An overriding biblicism may be regarded...as a defining characteristic of Christian humanists. It was their regard for the Scriptures which guided their extra-biblical pursuits: their perception of a biblical concern for individual morality attracted them to the Roman Stoics; the need to understand the Bible contextually drew them to the study of ancient history; the need for a purified text of the Scriptures impelled them to pursue knowledge of Greek and Hebrew and of classical grammar and rhetoric.⁵²

Boyle begins ‘An Account of Philaretus’ by acknowledging his father’s rise from ‘very inconsiderable Beginnings [to]...so plentiful & so eminent a Fortune, that his prosperity has found many Admirers, but few Parallels’, acknowledging that he was consequently ‘borne in a Condition, that neither was high enuf to prove a Temptation to Laziness; nor low enuf to discourage him from aspiring’.⁵³ The fourteenth of fifteen children, Boyle considered himself free from the ‘Glittering kind of Slavery’ of the heir, whose ‘Happinesse...is built upon the <incertain> Possession of such <fleeting Goods>’, and the ‘Inconveniencies of a meane Discent’ which would restrict his ability to engage with large segments of society without fear of seeming impudent. ‘As soone as his Age made him capable of (admitting) Instruction,’ Boyle was taught to ‘write in a Faire hand, & to speake French and Latin; in which (especially the first) he prou’d no ill proficient; adding to a reasonable Forwardnesse in Study, a more then usuall Inclination to it’.⁵⁴ His father, ‘ambitious to improve’ this ‘early Studiousnesse’, was compelled to send Boyle to be ‘bred up at Eaton Colledge’ in the ‘especiall Care” of Provost Sir Henry Wotton, ‘not only a fine Gentleman himselfe, but very well skill’d in th’Art of making others so’.⁵⁵ This establishes a connection between social and intellectual education predicated

⁵² Margo Todd, *Christian Humanism and the Puritan Social Order* (Cambridge: Cambridge University Press, 1987) p. 23.

⁵³ *RBHF*, pp. 2-3.

⁵⁴ *Ibid.*, p. 5.

⁵⁵ *Ibid.*, p. 6, p. 7.

on the principle that a gentleman is not born but produced, which would become essential to the experimentalist identity Boyle would later promote. The young Boyle quickly caught the attention of John Harrison, Rector of Eton, and a passage describing Harrison's influence on his education demonstrates the burgeoning assiduity, autonomy, gentleness, and love of learning which would become the key precepts of the self when advanced as a singularity.

[H]e was carefull to instruct him in such an affable, kind, & gentle way, that he easily prevail'd with him to consider /affect/ Study not so much as a Duty of Obedience to his Superiors /Parents/ but as the Way to <purchase for himselfe> a most delightsome & invaluable Good. In Effect, he soone created in Philaretus so strong a Passion to acquire Knowledge, that what time he could spare from a Schollar's taskes (which his retentive Memory made him not find uneasy;) he would usually employ so greedily in Reading; that his Master would be sometimes necessitated to force him out to Play...But that which he related to be the first occasion that made him so passionate a Friend to Reading; was the accidentall Perusall of Quintus Curtius.⁵⁶

The cultural reputation of both the experimental philosopher and the *faber fortunae* was based on such qualities of character, and Boyle's autobiographical evidencing of these traits in youth functions as a rhetorical guarantee of these same values. Boyle's choice to include the exact book which fostered an early love of reading is significant: Quintus Curtius Rufus's *Histories of Alexander the Great*, a didactic biography of a young man whose ascendancy to power was coupled with the conviction that he alone might exercise any influence over fickle Fortuna.

Boyle's 'accidentall Perusall' of this book 'conjur'd up in [him] that unsatisfy'd Curiosity/Appetite of Knowledge, that is yet as greedy, as when it first was rays'd', and he considered himself as having 'deriv'd more advantage from the History of that greate Monark's conquests, then ever [Alexander] did from the Conquests themselves'.⁵⁷ The framing of this episode as a happy accident focuses attention on the content of the book itself, first translated by the soldier John Brende in 1553 and reprinted seven times over the next sixty years, in which Alexander 'prevailed mucche by his virtue, yet ought he to impute more unto his fortune, which only of al mortal men, he had in his

⁵⁶ Ibid., pp. 6-7.

⁵⁷ Ibid., p. 7.

owne power'.⁵⁸ The goddess Fortuna intercedes several times on his behalf and both Alexander and his followers come to trust in the 'felicities of his owne fortune', and only by trusting in their leader's *perpetua felicitas* could his army be persuaded to set sail for an unknown sea down an unknown river branching from the Indus, a journey which threatens the lives of all before Alexander learns to understand the flow of the violent tidal bore which assaults them.⁵⁹ Eventually, Alexander becomes directly identified with fortune, his onslaughts against the Persian Amardi described as *fortuna impetus*, the force of fortune itself.⁶⁰

Boyle's narrative in 'An Account of Philaretus' combines instances of humanist *virtu* with a series of childhood accidents and events in which he read the intervention of providence on his behalf as 'the Object of Hev'n's Care'.⁶¹ He records an episode when his coach became trapped on a bridge over a river swelling in a sudden storm until an acquaintance of his father 'accidentally espying him' carried him to safety, reflecting that (as with the similar episode in Quintus Curtius) 'he ow'd his Deliverance wholly to Providence'.⁶² Boyle survived the collapse of his bedroom wall 'curtain'd by a watchfull Providence' as well as a sheet wound around his head to filter the ensuing dust; he twice escapes injury when thrown from his horse; when recovering from illness he vomited the medicine given in error by a physician after consuming the sweetmeats brought to his sickbed by schoolfellows.⁶³ In each of these incidents Boyle perceived 'the hand of Hev'n' and into adulthood 'would professe that in the Passages of his Life he had observ'd so gracious & so peculiar a Conduct of Providence, that he should be equally blind & ungratefull, shud he not both Discerne & Acknowledge it'.

Aside from Quintus Curtius, Boyle had two main models for perceiving his life as being shaped by providence. The first is the genre of spiritual autobiography which, as discussed above in

⁵⁸ Quintus Curtius Rufus, *The Historie of Quintus Curtius, Conteyning the Actes of the Greate Alexander* trans. John Brende (London, 1553), p. 219.

⁵⁹ *Ibid.*, pp. 199-203.

⁶⁰ *Ibid.*, p. 148, p. 86.

⁶¹ *RBHF*, p. 4.

⁶² *Ibid.*, p. 4.

⁶³ *Ibid.*, pp. 7-8.

Chapter 2, chronicled the author's progress through cycles of sin and doubt toward an eventual state of grace. The second was his own father's 'True Remembrances', a form of Elizabethan *apologia*, which he had drawn together in 1632 after having circulated them among friends from the turn of the decade.⁶⁴ On being knighted at St. Mary's Abbey in Dublin in 1603 Cork had taken 'God's providence is mine inheritance' as his personal motto, and his autobiography places heavy emphasis on providence being the source of the Earl's economic and personal success.⁶⁵ Steven Shapin points out that the young Boyle was rarely in his father's company for any extended period of time, and doubts how much of an influence his father could have directly had upon him, yet a reference in Hartlib's *Ephemerides* shows that Boyle was aware of this document as early as 1648 at the very least.⁶⁶

The old Earl of Corke writ his owne Life, which is somewhere in Ireland which as soone as Mr Boyle hath gotten hee promised to polish it and make a compleate History of it.⁶⁷

Even if Boyle never found the document at this point, his father's belief in a life made prosperous through providence was so well-known that John Evelyn referred to him five decades after his death as '*Faber Fortunae*, a person of wonderfull Sagacity in Affaires, & no lesse Probity; by which he compass'd a vast Estate, & greate Honors to his Posteritie'.⁶⁸ As Nicholas Canny remarks in his biography of Cork, referring to providence for single incidents in one's life was commonplace in contemporary Protestant thought, but to see it as an entire scheme for one's life as Cork did was unusual.⁶⁹

One manner in which Cork's belief in comprehensive providence was made corporeal is in the tombs he erected to commemorate his large progeny. Clodagh Tait has carefully teased out the strategies of the Earl in legitimising his rise to prominence through the creation of these monuments, demonstrating how the first tomb at St Mary's church in Youghal was built at the same time as

⁶⁴ Cork's 'True Remembrances' would not be published until 1772 as part of Thomas Birch's *Life of Boyle*.

⁶⁵ Birch, *History I*, p. xxi.

⁶⁶ Shapin, *A Social History of Truth*, pp. 135-7.

⁶⁷ *HP* 31/22/2B (Ephemerides 1648, Part 1).

⁶⁸ *RBHF*, p. 87 (John Evelyn to William Wotton, 29th March 1696).

⁶⁹ Nicholas Canny, *The Upstart Earl: A Study of the Social and Mental World of Richard Boyle First Earl of Cork 1566-1643* (Cambridge: Cambridge University Press, 1982), p. 28.

restoring the monument to the founders of the chapel, the newly-created baron of Youghal therefore associating himself with the ancient founders and claiming a continuity with them.⁷⁰ Cork's own memorial in the same chapel was a far grander affair than the recumbent effigies commissioned for Bennet's monument; reaching the ceiling, a central recess is surrounded by small figures of the Earl's children with inscriptions detailing their and their families' genealogy, the earl himself portrayed reclining languidly, one hand supporting his head and the other laying across his stomach. Two memorials in Kent followed, one to commemorate the death of Cork's eldest son who died in Deptford in 1615, the other in tribute to his parents buried in Preston, and the motivation behind both may be seen as a balance between grieving affection and self-interested desire to proclaim his achievements in his home county.⁷¹ Following the death of his wife in February 1630 Cork paid for the construction of a vault and monument in the chancel of St. Patrick's cathedral in Dublin with the agreement that the Earl and his heirs would pay £4 for each subsequent interment, and on 9th January 1634 the coffin of his wife, along with that of her father and grandfather, were moved to the new tomb. This greatest and most elaborate monument serves in part as a visible genealogy of the Countess of Cork, which Nicholas Canny attributes to the Earl's desire to 'compensate for his lack of distinguished forebears' by memorialising his wife's, but Tait correctly observes that the St. Patrick's memorial most particularly looks to the Earl's posterity through progeny.⁷² The Earl himself is once again portrayed recumbent on one arm, looking less to the heavens than out above the head of a viewer, at the base of a gilded monument which expands to accommodate the praying effigies of his children. Resplendent in black and gold and red, the tomb enraged Thomas Wentworth, lord Deputy of Ireland, to the point of railing to archbishop Laud that 'one of the most Scandalouse pieces that ever was seene, stands just

⁷⁰ Clodagh Tait, 'Colonising Memory: Manipulations of Death, Burial and Commemoration in the Career of Richard Boyle, First Earl of Cork (1566-1643)' *Proceedings of the Royal Irish Academy: Archaeology, Culture, History, Literature* 101.4 (2001), 110-12.

⁷¹ The inscription on the Preston tomb boasts that 'Sir Richard Boyle, Knight, Lord Boyle, Baron of Youghall, Viscount of Dungarvan, Earl of Cork, and One of the Lords of his Majesty's Honourable Privie Councill in Ireland... married Catherine the only Daughter of Sir Gefraie Fenton, Knight, Secretary of State in Ireland, By whom he has a plentiful and hopeful Posterity... Who... caused this monument to be erected'. *Journal of the Society for the Preservation of the Memorials of the Dead* 6.53 (1904-6), quoted in Tait, 'Colonising Memory', 124.

⁷² Canny, *Upstart Earl*, p. 23; Tait, 'Colonising Memory', 129.

in the Altar place, The ten commandments taken downe to make roome’, objecting to its ostentatious size and decoration as much as its location and eventually causing the tomb being relocated within the cathedral.⁷³

Particularly in the account of childhood accidents survived, ‘An Account of Philaretus’ makes clear its author’s belief in his life as being shaped by providence in the same manner as his father.⁷⁴ In the Protestant concept of divine invigilation a system of discipline which shapes daily life is made publicly available, which acts as a warrant for pious sincerity and integrity of conduct. When this would later be tied by Boyle to his natural philosophical work, the same warrant acted as a familiar guarantee of the unfamiliar concepts. The Protestant reformation arguably influenced the contemporary conception of personality due to the decentralisation of a singular authority in the public mind and the subsequent multiplication of sects from which one may choose to adhere to; according to Karl Joachim Weintraub in *The Value of the Individual: Self and Circumstance in Autobiography* the emphasis on fulfilling one’s own purpose, and the relation of the individual to society, ‘forcefully drove society in the direction of individualistic differentiation’, noting that by the mid-seventeenth century works ‘clearly autobiographic in intent and form’ by English Puritans and sectarians began to appear in greater numbers in comparison to those by Catholic mystics.⁷⁵ Weintraub summarises some plausible explanations for this: a search for certainty of election on the part of the hopeful Calvinist; the doctrine of *sola scriptura* in lieu of the Catholic comforts of priest and sacrament; the emphasis on a life of ascetic action, continual self-examination, and the daily accounting of spiritual credit.⁷⁶ Boyle was an Anglican, adherent to the more accommodating doctrine of *prima scriptura*, but congruent precepts may be read in his conviction of the repeated intercessions of divine providentialism during his life and his diligent memorialisation of these.

⁷³ Wentworth to Laud, 18 March 1634 (Sheffield City Library, Strafford Papers, Letter Book 6, fols. 34-5, quoted in Canny, *Upstart Earl*, p. 13 and Tait, ‘Colonising Memory’, 130.

⁷⁴ Steven Shapin also highlights Boyle’s insistence on having retained ‘an vnblemish’t Chastity’ after paying a visit to the brothels of Florence ‘out of bare Curiosity’ as the deliberate construction of a Christian scholarly identity (Shapin, *Social History of Truth*, p. 165).

⁷⁵ Karl Joachim Weintraub, *The Value of the Individual: Self and Circumstance in Autobiography* (Chicago: University of Chicago Press, 1978), p. 229.

⁷⁶ *Ibid.*, pp. 230-2.

When considered in isolation, ‘An Account of Philaretus’, does not constitute an answer to questions of when or why Boyle developed into a natural philosopher, but it does show us Boyle experimenting with how to present himself: the narrative is historicised through use of third person, the pseudonym of Philaretus itself indicating Boyle’s desire to position himself as figure of fidelity to both classical *virtu* and Christian virtue. This experimentation is evidenced even at the typographical level: throughout the document, Boyle’s prevarication between word choices is left to a reader to resolve as he frequently records both, either by providing the two enclosed within soliduses or by adding an alternative above the line without deleting the original. Some of the choices appear to be the result of a philosophical semantic wrangling – Boyle is unable to decide between ‘to like’ and ‘to accept’, ‘confident’ and ‘certin’ – while others show Boyle hesitating to include literary conceits, as with the equivocation between ‘grey haire’ and ‘old age’.⁷⁷ In sum, these instances of unresolved circumlocution contribute to a reader’s appreciation of Boyle’s care in composition, and have their origins in his lifelong engagement with casuistry and what Michael Hunter terms ‘his unremitting concern with matters of conscience’ which ‘affected and inhibited his attitudes and behaviour in crucial ways’ in his pursuit of precision.⁷⁸ The aspects of character which would prove the foundation of the experimental philosopher before such a concept existed may therefore be read in Boyle’s earliest work. Those tempted to ahistorically read ‘An Account of Philaretus’ as the production of a proto-scientist risk misinterpretation; rather, the later work of Boyle must be read as developments and practical applications of the moral and devotional texts he wrote in his earlier years.⁷⁹ We can see, therefore, that by the start of the 1660s several elements that were to characterise the mature Boyle’s work had been established: the use of similitude, the requirement of testimony to be worthy, generic

⁷⁷ *Ibid.*, p. 16.

⁷⁸ Michael Hunter, *Robert Boyle (1627-1691): Scrupulosity and Science* (Woodbridge: Boydell & Brewer, 2000), p. 61, p. 64.

⁷⁹ ‘Psychoanalysing Robert Boyle’, a special issue of *The British Journal for the History of Science*, was a spirited misstep in this direction, in which the young Boyle’s cocooning of himself within his laboratory is explained as a response to the trauma of parental abandonment to the wetnurse. John Clay, ‘Robert Boyle: a Jungian perspective’ *BJHS* 32.3(1999), 290-2.

experimentation and flexibility, and the notion of the self as a work in progress. All of these may be understood as elements to be simmered together in the crucible of autobiographical practice.

Reconstructing the Book of Nature

The next section of this chapter will discuss Boyle's habits of notetaking as he developed his interests in natural philosophy and began to publish his works on the theme. By interpreting Boyle's note-taking and publication habits through the lens of his earlier work, we can understand how Boyle organised his working practices around a need to record diligent and virtuous character through engagement with the autobiographical structure of the utilitarian genres of the almanac, the diary, and the essay. By the 1650s Boyle's attention was primarily engaged with matters of natural philosophy. The possible reasons for this turn are numerous, and addressed in most depth by Michael Hunter in his 2015 article 'Robert Boyle's Early Intellectual Evolution: A Reappraisal'; for the purposes of this thesis, it is sufficient to confirm that such a turn did indeed take place, and that by the mid-1650s Boyle was at work on several works exploring this interest: the unpublished treatise 'Of the Study of the Booke of Nature', and the seminal post-Restoration publications *Certain Physiological Essays* and *The Usefulness of Natural Philosophy*.⁸⁰ The strongest evidence by which this change in interest may be observed occurs in the series of paperbooks or work-diaries which Boyle had kept since 1647: Boyle's habits in keeping these notebooks shall first be considered, before the effect of such habits on his published persona is assessed.

Boyle's habitual notetaking was well known. '[W]hat was remarkable in Experiment or occurrence, he note[d] down Every day when the company parted' wrote Thomas Dent to William Wotton in 1699.⁸¹ It was previously thought, thanks to the chaotic and haphazard inheritance and rebinding of the Boyle papers at the Royal Society, that no such records of his note-taking had survived. Thankfully, this is not the case. The pages which make up Boyle's notes regarding his

⁸⁰ Michael Hunter, 'Robert Boyle's Early Intellectual Evolution: A Reappraisal' *Intellectual History Review* 25.1 (2015), 5-19.

⁸¹ *RBHF*, p. 105.

experimental endeavours are scattered and bound in nearly twenty separate volumes of the Boyle papers and required reconstructing by Michael Hunter and Charles Littleton at the turn of the millennium.⁸² The reconstructed work-diaries (a term coined by Hunter and Littleton) form a surprisingly homogenous group in form and presentation, consisting of a series of self-contained entries, dated and with self-imposed margins present. The beginning of a series is often dated, and sometimes individual entries too, while entries themselves are often numbered (at the time of writing or retrospectively) in groups of a hundred entries or centuries, a system arguably derived from Bacon's *Sylva Sylvarum or, A Natural History in Ten Centuries* (1627).⁸³

The work-diaries span Boyle's career, although irritating gaps from 1657-1662 and from the mid-1670s to the mid-1680s exist. This does not, however, indicate a leaving off by Boyle of his habit of taking notes ordered by the calendar; work-diary 21, for example, demonstrates that some dated entries were recopied into later diaries.⁸⁴ Boyle himself would also publicly admit to losing many of his papers in a double-sided broadsheet printed in 1688, titled *An Advertisement of Mr Boyle, about the Loss of Many of his Writings* which the subtitle advises was intended to 'serve as a kind of Preface to most of his [i.e. Boyle's] Mutilated and Unfinish'd Writings'.⁸⁵ The *Advertisement* refers to seven or eight missing centuries 'which from time to time I had committed to Paper, as they were made and observ'd, and had been by way partly of a *Diary*, and partly of *Adversia*', and Boyle blames the loss on a series of household moves and also the unfortunate breakage of a bottle of sulphuric acid over the chest of drawers in which he kept his papers.⁸⁶

The first work-diaries of the late 1640s are literary in content, comprising lists of *obiter dicta* and extracts of French chivalric romances, much akin to a Renaissance commonplace book. The diary

⁸² Michael Hunter and Charles Littleton's 'The Work-Diaries of Robert Boyle: A Newly Discovered Source and Its Publication' *N&R* 55.3 (2001), 373-390 details the project.

⁸³ *Ibid.*, 374.

⁸⁴ RS RB/1/27/3. The relevant entries are as follows: entries 237 (2nd October 1661), 239 (June 1659), 242 (27th May 1659), 246 (28th May 1659), 265 (29th June 1660). This series of entries is dated 25th November and is in the anonymous Hand F which indicates that they were written in the late 1660s.

⁸⁵ Boyle, *WRB XI*, p. 169.

⁸⁶ *Ibid.* Work-diaries 22 (RS RB/1/8/10) and 34 (RS RB/1/25/5) show evidence of chemical damage from that 'mischievous Liquor'.

of 1649/50, work-diary 6, heralds a change in both Boyle's interests and manner of notetaking: the literary extracts disappear, being replaced by lists of medical recipes heard from named sources and tried by Boyle, as well as the processes behind them. Some papers of this diary are folded as though Boyle was in the habit of carrying them about, ready to write down any recipes encountered during the course of an interesting conversation or to take note of their effects in trial. Work-diary 6 also includes a recipe for lute, or cement, to shield his furnace from the high heat; by use of the personal pronoun this is clearly a personal memorandum, written down by Boyle (perhaps as he reflected on the crumbled state of his first furnace in 1647) should it be needed again.

The Lute I line those Furnaces with, which are to endure the highest violence of the Fire, is made of equall Parts of Common-mortar; Tobacco-pipe-Clay; (or, in lieu thereof scrap't Chalke) Rye-Flower, Horsedung made up into a very stiffe Mortar by beating extreame[ly] well beaten together, with a little Flockes or Haire as little Water, Beare, or Butter-milke, as possibly will suffice.⁸⁷

There is a gap of three years before the series is begun again in 1662, again as a record of experiments and processes but these are 'much more indulgently narrative in tone' and read similarly to Boyle's published experiments of the period (most particularly *The Spring of the Air* (1660), which shall be discussed further below), and Hunter attributes this change to Boyle's experience in writing for publication.⁸⁸ The experiments in this diary are grouped in temporal periods, forming evidence for Boyle's agenda and attitude during this period, and the diary also contains a series of extracts from travel books and earlier works of natural philosophy, and notes on interviews with aristocrats, sailors, travellers, and artisans. A separate commonplace book containing extracts from travel books, medical works, and works of natural philosophy was begun by Boyle in 1663, and its existence means that we can appreciate that Boyle's work-diaries were, from this point onward, intended as repositories for matters which he had personally experienced and that their contents reflect this; diaries after this date are sparser records of recipes and processes, often recorded in code.⁸⁹

⁸⁷ RS RB/1/28/16, p. 309 (Work-diary 6 entry 5).

⁸⁸ Hunter, 'The Work-Diaries of Robert Boyle', 377.

⁸⁹ RS RB/2/2.

The only sustained commentary on Boyle's work-diaries (aside from that of Hunter and Littleton, their compilers) is that of Lawrence Principe and William Newman in their analysis of the Colonial American alchemist George Starkey's education of Robert Boyle.⁹⁰ Principe and Newman argue that Boyle's diaries changed from collections of literary extracts into records of recipes and chemical processes after his meeting with Starkey in 1651, but gloss over the fact that the first diary of Boyle's to switch from amassed quotation to recipes was begun in in work-diary 6 of 1649/50. Principe and Newman acknowledge work-diary 6 but consider it of little importance based on the content (folk recipes not based on trials), attributing the greater change to the influence of Starkey. As identified by Principe and Newman, work-diary 7 contains evidence of Boyle copying out of and emulating George Starkey's laboratory books. Work-diary 7 has sections describing the operation of a solvent copied in Latin, but a commentary clarifying the quantities of wine and vinegar, and of the expected reduction after three distillations, is added in English; a manuscript fragment of Starkey's notebooks, annotated with questions by Boyle, indicates that the exchange of information must have happened face-to-face.⁹¹ Work-diary 7 also has an immediately subsequent entry added at a different time, however, in a larger and untidier hand of Boyle's, titled 'Doctor Boat's Receipt for the Stone verbatim as I had it from himselfe'. Boyle may have been keenly emulating Starkey's methods of quantification and computational analysis, but he kept to the pattern of entry-making established in work-diary 6, prior to meeting Starkey: of naming his sources, and of relating their words as soon as possible after the event (indicated in this case by the hand).

From the first work-diary begun in 1647 Boyle consistently wrote his notes with space left blank to form a left-hand margin for the inclusion of later commentary, and his intended habits in keeping these diaries are often indicated by the title. The first work-diary announces that it contains 'DIURNALL Observations, Thoughts, & Collections' and ends after 297 entries over 28 pages,

⁹⁰ Alchemy Tried in the Fire 215-21

⁹¹ RS RB/1/25/33, fol. 341 (work-diary 7 entry 4); William R. Newman and Lawrence M. Principe, *Alchemy Tried in the Fire: Starkey, Boyle, and the Fate of Helmontian Chymistry* (Chicago: University of Chicago Press, 2002), pp. 216-8.

enough to account for at least the rest of the year, capped by a flourish'd 'La Fin'.⁹² Work-diaries 6 (1649/50) and 8 (1651/2) were both begun on the first day of the historical or calendar new year, although both peter out within ten pages, like so many resolutions. The first work-diary to use the term diary is the twelfth, titled 'A Philosophicall Diary Begun this First of January 1654/5, And to be continu'd, by God's Assistance, during my Life'. This is the first work-diary to be dated continuously during composition: entries from January 1st to February 9th make up one total century, and the last page has the heading 'Centuria II September ye 29th 1655', which is the date the new century was intended to have begun.⁹³ Boyle had, perhaps, had a few false starts in his attempts to heed his own advice as outlined in 'The Dayly Reflection', but by the mid-1650s, and newly invigorated by his natural philosophical investigations, it appears that the habit began to stick.

Three features of Boyle's diary keeping suggest a generic link with the almanac: the intention for them to be kept on an annual basis, the focus on utilitarian information, and the typographical creation of blank space. 'Almanacs encouraged reader annotations, explicitly in title-page and prefatory instructions, and implicitly through the inclusion of empty pages for readers'; such blank pages had been included in printed almanacs since the 1560s, creating a model for the diarist's material in cleaving to and juxtaposing with predicted celestial positions.⁹⁴ Chapter 2 of this thesis discussed how the diaries of John Evelyn and Robert Hooke developed from their author's written engagement with almanacs; for Boyle, the almanac gave chronological rather than thematic (as with commonplacing) structure for his work-diaries, although with the intended longevity of a diary or commonplace book as opposed to the almanac's inherent ephemerality. Recent bibliographical research by Alison A. Chapman and Phebe Jensen has illuminated the interaction of astrology and almanacs and how the economics of the popular press drove what information was considered most

⁹² RS RB/1/44/13, fol. 107.

⁹³ RS RB/1/8/15 fol. 148v. This century is picked up in work-diary 13 'Promiscuous Observations begun the 24th of 7ber 1655', RS RB/1/25/15, p. 153.

⁹⁴ Adam Smyth, 'Almanacs, Annotators, and Life-Writing in Early Modern England' *English Literary Renaissance*, 38.2 (2008), 204; Capp, B. *Astrology and the Popular Press: English Almanacs 1500–1800*, (London: Faber and Faber, 1979), p. 30.

appropriate and useful to print.⁹⁵ Adam Smyth has brought consideration of how people annotated and actually used their almanacs to the fore, and Louise Hill Curth has examined the preventative and therapeutic medical information printed in almanacs and their role in the dissemination of Galenic practices in early modern England.⁹⁶ This thesis contributes to this vein of scholarship by suggesting a link between identity (conceived of socially and relationally) being made evident through a reader's engagement with their almanac and how such engagement was put to work in service of Baconian programs for the aggregation of empirical observations by Boyle, Hooke, and to a lesser extent Evelyn.

While ordering its reader's life by presenting the next year set out as chronological teleology, an almanac could be modified through annotation to contain information catered to the individual. This modification was encouraged to take place incrementally, daily, monthly, prompted by printed predictions for the seasons or the successful treatment of a family member's illness, being recorded on the date of its occurrence, and the essential ephemerality of the almanac could be bypassed by transference, either of notes or the printed pages themselves, to next year's almanac or a separate document.⁹⁷ There is congruent journalistic focus on demonstratively successful process in the medical notes entered into an almanac and Boyle's own records of recipes which morphed into accounts of experimental activity in his work-diaries: in both cases, both an activity and the results of that activity were written down for future reference. Boyle's notebooks preserve the disjointed pace of entry of the almanac, but shorn of pre-printed prognostications, the blank pages and margins created by the author indicate apprehension of future dialogue with one's past self. As discussed above, Boyle had received an example of logging moral accountability from his father and was alive to the potential of the diary to serve as an ethical ledger. When Boyle began a program of publication based on experiments he had

⁹⁵ Alison A. Chapman, 'Marking Time: Astrology, Almanacs, and English Protestantism' *Renaissance Quarterly* 60.4 (2007), 1257-1290; Phebe Jensen, *Astrology, Almanacs, and the Early Modern English Calendar* (London: Routledge, 2021), in particular chapters 1.1 and 1.3.

⁹⁶ Smyth, 'Almanacs, Annotators, and Life-Writing in Early Modern England'; Louise Hill Curth, *English Almanacs, Astrology and Popular Medicine, 1550-1700* (Manchester: Manchester University Press, 2007).

⁹⁷ See Smyth, 'Almanacs, Annotators, and Life-Writing in Early Modern England', 227-9 for examples of such dynamic interactions.

observed, it was this blending of chronological mensuration and personal accountability which he would employ in order to achieve public credibility.

Boyle's rejection of Aristotelian natural philosophy occurred while he was on the continent for three years from 1639, on the basis that it was unproven, too narrow to explain all the effects of nature, and unable to produce practical knowledge. Boyle turned instead to corpuscularianism, a hybrid of Baconian enquiry into particulars and Cartesian application of geometric theorems to physical problems. 'Of the Study of the Book of Nature', an undated manuscript likely composed by Boyle sometime in the early 1650s, explicitly links the study of nature and practice of natural philosophy with true piety and praise of God.⁹⁸ In this treatise Boyle wrote that man's library should be composed of three metaphorical books, the book of nature, the book of scripture, and the book of conscience, and that studying the prudence of nature, which is the active power and law of God, and applying those observations 'to the Conduct of our selves & our Transactions, both in our Private Conditions and Publicke Capacitys' would be as valuable as studying the works of Tacitus or Machiavelli for a soldier.⁹⁹ The two ends of creation, wrote Boyle, are to serve as the manifestation of God's glory and for the good of man, and creatures praise the lord 'Which they may do (to borrow a Barbarous but significant School-terme) Objectivè tho not Formaliter; I meane by Proving such Objects as prompt & invite Man to pay God that Prayse they cannot actually pay him themselves'.¹⁰⁰ It is easy to appreciate how a style of incremental, diurnal note-taking lent itself to such observations as being more 'Objectivè' than 'Formaliter', by which knowledge of the individual creature leads to praise of God and multiple experiences lead to greater knowledge of his creation.

In Boyle's first scientific publications, what is most striking is Boyle's openness about his methods, publicly confirming his published works as being composed from multiple series of

⁹⁸ The two-column structure indicates a transitional stage between earlier continuous MSS and Boyle's habit from the later 1650s of writing on recto pages only, leaving the verso for later additions.

⁹⁹ Boyle, *WRB XIII*, p. 170.

¹⁰⁰ *Ibid.*, pp. 74-79; pp. 152-3, also p. 171. There is a possible link to Descartes' third meditation; Boyle is not explicit in his allusion, and Hunter and Davis make no mention of it in their editorial commentary.

documents consisting of incidental and incremental records which were written immediately after the event.¹⁰¹ First published in 1660, Boyle's seminal work *New Experiments Physico-Mechanicall, Touching the Spring of the Air, and Its Effects* contains descriptions of forty-three experiments on the physical properties of air conducted in an improved air pump built by Robert Hooke, experiments which largely consisted of drawing the air out of the pump faster than any leaks may allow it back in in order to create a vacuum. Boyle's air pump was constructed and experiments tried within it during a gap in the extant work-diaries, but *The Spring of the Air* contains several indications that Boyle's habits of note-taking remained the same, in which the results of experiments were written down as soon as possible after the fact and pages written from these notes were sent to the printer once written, allowing no advantage of correcting the previous in the light of the later in the hasty publication of a book which Boyle states was 'design'd to purchase credit'.¹⁰² According to Boyle, experiments were repeated several times in order to engender trust through their relation, and as much detail as possible included to allow the reader to experience the experiments without the expense or trouble or building their own equipment ('the effectual pursuit of which, requires as well a Purse as a Brain'), as his primary purpose in publishing was the promotion of experimental philosophy as an endeavour.¹⁰³

Boyle claims that the relation of each experiment is an accurate historical account, having, 'made it my businesse to enoble them with the chiefe Requisites of Historicall Composures, Candor, and Truth'.¹⁰⁴ The experiments are written of as singular events at particular times, performed in or by company, indicated either by use of the plural pronoun 'we' or by glowing reports of the 'excellent and deservedly Famous...Judicious and illustrious Witnesses' (named as John Wallis, Seth Ward, and Christopher Wren) who had been coaxed to view – for once – a successful Torricellian experiment

¹⁰¹ See Richard Yeo, *Notebooks, English Virtuosi, and Early Modern Science* (Chicago: Chicago University Press, 2014), p. 160, p. 168.

¹⁰² Boyle, *WRB I*, p.145, p. 146. Further references by Boyle to the speed of composition and publication may be found on pages 181, 189, 191, 232, 257, and 299.

¹⁰³ *Ibid.*, p. 157, pp. 143-4. Detailed engravings by Hooke of the composition of the air pump with mapped components were also included, for those so inclined to build their own and in possession of both purse and brain.

¹⁰⁴ *Ibid.*, p. 300.

‘whereof the satisfactory trial was the principal Fruit I promis’d myself from our Engine’.¹⁰⁵

Experiments were repeated with different equipment acquired under different circumstances which are temporalized and localised in the narrative: some bladders ‘having been brought us ready blown from those that sold them, were grown dry before they came to our hands’ would not break in the air pump, ‘whereas when the Bladders were brought us moist from the Butchers, we could, without injuring them, tye their necks so close, that none of the Air once blown in, could get out of them, but by violently breaking them’; one experiment is postponed ‘for want both of time and of a competent quantity of Mercury (which was not to be procur’d where we then happen’d to be)’; on placing insects into the glass of the pump ‘We...shut into a great Receiver a Humming Bee, that appear’d strong and lively, though we had rather have made the tryal with a Butter-fly, if the cold Season would have permitted us to finde any.’¹⁰⁶ Occasional errors and repairs of equipment are also reported: a seemingly pointless assessment of the swing of a pendulum in the vacuum which ‘scarce afforded us any other satisfaction, then that of our not having omitted to try it’ is nonetheless reported in full, while Boyle confesses after narrating several breakages that suitable glasses are ‘more easily crack’d then procur’d’.¹⁰⁷ The inclusion of such incidents is consciously addressed by Boyle, who believed that ‘it becomes one that professes himself a faithful Relator of Experiments, not to conceal’.¹⁰⁸

Such honesty was a declared aim of the Royal Society which ‘was from its inception much preoccupied by the preparation of elaborate lists of queries, as the most effective way of organising the data-collecting that was central to its ambitions’, and in his *History* Sprat emphasised that clarity and logic in thought, speech, and writing were crucial prescripts for the purported aims of the Society as a consequence of Bacon’s explicit rejection of aureate rhetoric in natural philosophy.¹⁰⁹

¹⁰⁵ Ibid., pp. 192-201.

¹⁰⁶ Ibid., p. 176; p. 202; p. 273.

¹⁰⁷ Ibid., pp.228-9, p. 183.

¹⁰⁸ Ibid., p. 229.

¹⁰⁹ Michael Hunter, *Boyle Studies: Aspects of the Life and Thought of Robert Boyle (1627-91)* (Farnham: Ashgate, 2015), p. 66.

In the Society there was a constant Resolution, to reject all the amplifications, digressions, and swellings of style: to return back to the primitive purity, and shortness, when men deliver'd so many things, almost in an equal number of words. They have exacted from all their members, a close, naked, natural way of speaking; positive expressions; clearness; a native easiness: bringing all things as near the Mathematical plainness, as they can.¹¹⁰

In the proemial essay of *Certain Physiological Essays* (1661) Boyle explicitly set out his literary strategy for communicating the results of experimental activity. In adopting and advocating the essay format to communicate the results of experiment Boyle wrote that he wished to avoid 'none of the least impediments of the real advancement of true Natural Philosophy, that men have been so forward to write Systems of it, and have thought themselves oblig'd either to be altogether silent, or not to write less than an entire body of Physiology', being free to publish experimental findings while lacking the data to build a full explicatory system.¹¹¹ Systems, or works which treated only of general principles and inferences, are useful only if they 'bring New Experiments or Observations' to back up what is already known, or if they 'consider those that are known already after a new Manner, and thereby make us take notice of something in them unheeded before'.¹¹² This is not to say that Boyle viewed his essays as unconnected: references to his other works, completed and planned, litter each essay. Neither is the possibility of synthesis dispensed with: 'the endeavouring to discern as early as we can the Confederations, and Differences, and Tendencies of things' is to be encouraged, as long as such axiomatic knowledge is understood to be subject to constant revision in the light of new evidence.¹¹³ To this end, one primary function of Boyle's essays was to serve as inducement to further experimental industry.

Linguistic clarity was an especial concern of Boyle's: communicative clarity indicated mental clarity, and elaborate rhetoric could be dangerously refractive. Anyone could utilise the inductive method: what mattered was that the correct process was followed as explicated, resulting in useful

¹¹⁰ Sprat, *History*, p. 113. Sprat also included a list of nearly two hundred 'eminent men of all Qualities' who have 'ingag'd to bestow their labors' on the Society, referring to this list of men taxonomically as a 'Catalogue'.

¹¹¹ Boyle, *WRB II*, p. 11.

¹¹² *Ibid.*, p. 12.

¹¹³ *Ibid.*, p. 14.

knowledge. Boyle's particular obsession with clarity drove him to produce an exhausting meta-discourse within his work, complicating any narrative by prefaces, digressions, apologies, and disclaimers, usually centred on his favourite expression of self-opprobrium, his 'prolixity'. As genuinely intended as these were, they also contribute to the persona of a *virtuoso* earnest in producing effective prose, a conscious strengthening of personal credit among an audience of potential *virtuosi* 'whom thus to Gratify, is a good Step towards the Persuading of them'. This belief in the inspirational as well as didactic quality of the philosophical essay could be seen in Boyle's earlier criticism of moral writers who 'spend more time in asserting their Method, than the Prerogatives of Virtue above Vice', and his derision of work that gave the impression of authors who 'seem more solicitous, how to order their Chapters than their Readers Actions'.¹¹⁴ One should relate experimental activity accurately but not in such a dull manner as to discourage one's reader, and Boyle used the amplificatory lens of the telescope as metaphor for the text being itself an instrument of clarity.

[A]s for the style of our experimental Essays, I suppose you will readily find that I have endeavour'd to write rather in a Philosophical than a Rhetorical strain, as desiring that my expressions should be rather clear and significant, than curiously adorn'd...yet I approve not that dull and insipid way of writing which is practis'd by many Chymists, even when they digress from Physiological Subjects: for though a Philosopher need not be solicitous that his / style should delight its Reader with his Floridnesse, yet I think he may very well be allow'd to take a Care that it disgust not his Reader by its Flatness...though it were foolish to colour or enamel upon the glasses of Telescopes, yet to gild or otherwise embellish the Tubes of them, may render them more acceptable to the Users, without at all lessening the Clearness of the Object to be look'd at through them.¹¹⁵

James Paradis asserts that use of the essay form by experimentalists constituted 'a literary nullification of the self, in virtue of its objectification in the text', but in reaching this conclusion he misunderstands both the concept of the observer and the implicit meaning of objectivity in Boyle's work.¹¹⁶ This leads Paradis to claim that the Royal Society's standards of demonstration 'as expressed in its famous motto *Nullius in verba*, called for the severance of argument from personal authority',

¹¹⁴ Boyle, *WRB II*, p. 436.

¹¹⁵ *Ibid.*, p. 16.

¹¹⁶ James Paradis, 'Montaigne, Boyle, and the Essay of Experience', in *One Culture: Essays in Science and Literature* ed. by George Levine with Alan Rauch (Wisconsin: University of Wisconsin Press, 1987), pp. 60-1.

instead advocating ‘rhetorical neutrality or impersonality’.¹¹⁷ This conclusion arises from mistranslating *nullius in verba* as ‘nothing in words’ and assuming the motto to be complete, rather than an abbreviated phrase which has its origins in Horace’s *Epistles*.¹¹⁸ The full phrase expresses Horace’s refusal to pledge allegiance to any one philosophical sect, swearing fidelity to no master:

*Nullius addictus iurare in verba magistri,
quo me cumque rapit tempestas, deferor hospes*¹¹⁹

Grammatically, *in verba* makes sense when taken as the indirect object of *iurare*, and members and contemporaries of the Royal Society would have understood the motto as an abridged expression of a Horatian anti-sectarianism, and Boyle himself declared his intellectual independence from his predecessors, claiming to have not read books by Descartes, Gassendi and Bacon except for ‘transiently consulting about a few particulars’.¹²⁰ The argument for personal authority is underscored by the response of William Petty in 1663 when it was queried whether or not St. George’s day would be a suitable date for Society elections: ‘I had rather have had it been on St. Thomas’s Day, for he would not believe till he had seen and putt his fingers into the holes; according to the motto, *Nullius in Verba*’.¹²¹ To speak of dividing argument from personal authority makes little sense when the argument is based on the empirical observation of the author: the basic idea was that the data should be replicable by the reader, but if the reader was unlikely to be in a position to do so then the trustworthiness of the practitioner and his method must underscore the writing.

Boyle evidently trusted the celebrated Dutch physician Jan Baptist van Helmont enough by reputation to repeat his failed experiment on the coagulation of wine and urine in *Certain*

¹¹⁷ *Ibid.*, p. 79.

¹¹⁸ For a discussion of the ubiquity of this mistranslation, see Clive Sutton, ‘Nullius in Verba’ and ‘Nihil in Verbis’: Public Understanding of the Role of Language in Science’ *BJHS*, 27.1 (1994), 55–64.

¹¹⁹ ‘I am not bound to swear as any master dictates; wherever the storm drives me, I turn in for comfort’. Horace, *Satires, Epistles, and Ars Poetica* LCL 194 trans. H. Rushton Fairclough (Cambridge, Massachusetts: Harvard University Press, 1929) Epistle 1.1 ll.14-15, p. 252.

¹²⁰ Boyle, *WRB II*, pp. 12-3, p. 33. Boyle usually refers to singular experiences when speaking of ‘particulars’, e.g. Boyle, *WRB II*, p. 17.

¹²¹ Dorothy Stimson, *Scientists and Amateurs* (London: Sigma Books, 1949), p. 64.

Physiological Essays, but inserted a passage in the *Proemial Essay* of the second edition of to explain that references to Pliny, Aristotle, Theophrastus, Paracelsus, Wecker, and others are not included because much of their material is not ‘expressly enough deliver’d upon the Writers Personal Knowledge, or that of some other credible Witness’.¹²² This addition may point to the codification of the requisites for credibility in the years between the Royal Society’s foundation and 1669, when the second edition was published. It is likely that this was the reason why Boyle’s relation of the experiment in dissolving tin without forming a residual oxide was altered between the first and second editions: in 1661, the experiment is conducted by an unidentified collective ‘we’, but in the 1669 edition all instances of ‘we’ and ‘our’ have been amended to ‘I’ and ‘my’.¹²³ An unpublished Boyle manuscript of the 1670-80s entitled ‘Aphorisms about the use of Authority in Naturall Philosophy’ asserts that ‘Humane Testimony is of great and almost of necessary use in Natural Philosophy’, yet ‘many Testimonys are insufficient for want of moral Qualifications in him that gives them’, providing insight into how, even in the latter stages of his career, natural philosophical and moral credit were integrated in Boyle’s mind.¹²⁴ It may be the by 1669 Boyle felt that he had acquired enough credit in the public eye to dispense with the safety of (invented) numbers.

Boyle frequently struggled with arranging the material he accumulated into coherent and orderly fashion. In an effort to overcome this problem, Boyle wrote on loose papers, composed on one side of the page so that supplementary or glossing material could be added at a later point, and used loose semantic structures to accommodate the introduction of additional details. Boyle’s notebooks and work-diaries functioned as repositories for ‘those things, that, for ought I know, might hereafter be pertinent and useful... to be kept there only as a heap of differing materials, that, if they appear’d worth it, they might be afterwards review’d, and sorted, and drawn into an orderly Discourse’, ordered chronologically rather than thematically.¹²⁵ These frustrations stemmed, in part, from the dethroning of

¹²² Ibid., p. 51, p. 30.

¹²³ Ibid., p. 44.

¹²⁴ RS RB/1/9/16, fol. 70r.

¹²⁵ Boyle, *WRB VIII*, p. 239.

Aristotelian teleology, as well as the endlessly interconnected nature of all facets of creation; the language of books and reading is omnipresent in Boyle's work, pointing to the staggering complexity of the book of nature which was beyond the comprehension of individuals.

Apples and Agues: *Occasional Reflections* as Scientific Autobiography

It was exegesis of this book of nature which Boyle hoped to demonstrate in his *Occasional Reflections* (1665), an overlooked text which applied the literary techniques of his earlier work to the scientific inquiry which was becoming the main focus of his intellectual pursuits. Ostensibly a moral work, *Occasional Reflections* combines Boyle's axioms of style and rhetoric, similitudes drawn from natural philosophical practice, and autobiographical technique in a work structured according to Baconian induction in which observational data is used to support the establishment of general corroborating facts. *Occasional Reflections* is not simply the meditations of a scientist supported by autobiographical detail, but an autobiographical document structured according to the inductive method, in which Boyle's earlier precepts regarding the communication of experimental data and the 'composure of som Occasionall Meditation' in order to record the moral self in development are combined.¹²⁶

Boyle claimed to not have been influenced by Joseph Hall's *Arte of Divine Meditation* (1606) despite having been mixing in the same circles since the early 1650s under the tutelage of John Wilkins, and the organic structure of the manuscripts from which *Occasional Reflections* was drawn appears to support Boyle's maintained originality.¹²⁷ The texts which comprise the original from which emerged Boyle's later *Occasional Reflections* are two overlapping versions of this text, Royal Society RB/1/7/8 and RB/1/14/1 (Boyle refers to a work entitled 'Occasionall Reflections' in the list of his writings which he compiled on 25th January 1650 and may refer to either). The earlier, RB/1/14/1 (14 fols.), has the title 'Scripture Observations' and begins with ten undated meditations, followed by a second group of ten, numbered I-IV and XV-XX, of which nos. I-II and XVI-XX are dated between

¹²⁶ Boyle, *Early Essays*, pp. 195-5.

¹²⁷ Boyle, *WRB V*, p. 10.

7th March and 26th May 1647. Interspersed among the latter is a series of dated 'Occasional Meditations' numbered I-V in a separate sequence from that of the 'Observations' (no. I comes between nos. II and III, no. II between nos. IV and XV and nos. III-V (replacing 'XVI' deleted) between XV and XVI) dated between March and May 1647, and which have their topics suggested by the scriptural observations which immediately precede them.

In the printed *Occasional Reflections* these meditations are stripped from their original context and reprinted with a huge amount of new material. In his preface Boyle claims that the text is largely based on work of 'sixteen or seventeen years ago', with reflections 'of a fresher date' added 'for the completing of the number' (in reality only two of these five earlier reflections are printed, and the majority of the reflections are new), and Boyle claims that he is publishing only because he feared 'divers Devout persons, that had more partiality for these writings, and less Tenderness for my Reputation, than I could have wished; having long solicited the Publication of those they had in their Hands, were at length so Resolved to effect it', claiming that that he was forced to legally halt the publication at the Stationers Hall.¹²⁸ No reference to this book or Boyle himself exist in the Court Books for the Stationers' Company for this period, however; knowing what we (seemingly) know of Boyle's gentle personality and characteristic hesitancy in publishing it is difficult to finger this as an out-and-out lie, but in the absence of corroborating records we may generously surmise that Boyle did, at least, anticipate and fear premature publication of a highly personal document *sans* authorial control, even if such a publication was not actually in process.¹²⁹

Each reflection begins with an observation, or '*Protasis*, wherein we display and consider the minute particularities of the Theme, being the Ground-work of all the rest' before building the consequent *apodosis*, 'an Application of what one was taking notice of in the Subject...[to]...some important Moral Instruction, or perhaps some Theological Mystery'.¹³⁰ Boyle uses the grammatical

¹²⁸ Ibid., p. 18.

¹²⁹ Boyle, *WRB XIII*, p. xii. For Boyle to express this fear we may reasonably also conclude that manuscript material relating to *Occasional Reflections* was already being circulated by him.

¹³⁰ Boyle, *WRB V*, p. 15.

terms for the contingent and consequential clauses in a conditional sentence, and this *protasis-apodosis* structure mimics the logical process of induction; analogical reasoning is employed to explicate the particular in general terms, the everyday in relation to the divine, and refashion the inner life through an experimentalist stance. *Occasional Reflections* thus forms a systematic but non-narrative first-person discourse, a series of epistemological labours which reveal the mode both of Boyle's individual thought and the developments in natural philosophy which informed it: in sum, a heuristic enterprise designed to discover personal religious truth and 'take out Lessons that may improve the Mind' through close observation of the book of nature.¹³¹ As discussed above, Boyle had by this point in his career come to appreciate the role of figurative language in creating the similitude required for comprehension of even the smallest aspects of the natural and spiritual world. In these cases, similes and analogies function as a microscope or telescope (to use an analogy employed by Boyle himself), aiding comprehension for the reader by increasing the semantic field of reference, enabling virtual witnessing of a primary event through a secondary written record. The employment of such techniques is necessarily orientated to a public reading of one's work, and as with his published scientific work Boyle advocates strongly for his reader to emulate his example.

For Boyle, a 'grand Advantage that may be deriv'd from the custom of making Occasional Meditations' was the 'exercise and improvement of divers of the faculties of the mind', accustoming one to 'an attentive observation of the Objects wherewith he is conversant' (or, as Bacon advised, 'to goe neerer to the object' both physically and intellectually).¹³² By paying close attention, with a focus on utility, one may employ prosopopoeia (in the manner of Cowley in his *Plantarum Libri Sex*) and 'make the World vocal, by furnishing every Creature, and almost every occurrence, with a Tongue to entertain him with, and...make the little Accidents of his Life, and the very Flowers of his Garden, read him Lectures of Ethicks or Divinity'.¹³³ Thus, safe navigation of a field of covered pits in the

¹³¹ Ibid., pp. 27-8.

¹³² Boyle, *WRB V*, p. 32; Bacon, *OFB IV*, p. 98.

¹³³ Boyle, *WRB V*, p. 22.

Mendip Hills is evidence for God's providential oversight; meat for his spaniel is 'held indeed higher than he can Leap; and yet, if he Leap not at it, I do not give it him', just as the attainment of grace is 'far above the reach of our Endeavours, and our Deserts' but if we 'strive not for it, in vain do we expect it'; wood which has been carbonised into charcoal is 'dispos'd to be far more easily Kindled, and Consum'd than before' as those 'posses't by the pernicious Flames of Lust' will find it only too easily renewed thereafter.¹³⁴

Crucially, these examples are all acknowledged to have been drawn from Boyle's day-to-day activities. The dog is no abstracted dog, but 'my Spaniel'; knowledge of the most flammable kindling has been attained through the many failures and 'fruitless Blasts' to light this 'sullen fire'; when Boyle describes paring an apple we are invited to observe 'How prettily has curious Nature painted this gawdy Fruit...the fresh and lively Vermilion...an Emulation at Rubies themselves' and wonder at a simile constructed for us without sight of the primary object, trusting in our author and his use of the demonstrative pronoun 'this' to report the colour truly.¹³⁵ We can also read Boyle's contemporary scientific interests in many of the reflections by consulting the extant work-diaries. Boyle meditates on how 'One that did not know the Medicinal Vertues of Violets, and were not acquainted with the Charitable Intentions of the skilful person, that is making a Syrup of them, would think him a very great Friend to *Epicurism*' while his work-diaries record experiments conducted during 1663 and 1664 on the effects of the syrup when mixed with ovine bile and *aqua vitae*; a reflection upon an 'unhappy' glow-worm, plucked from a hedge and 'lodg'd in a Crystalline Prison, through which it has the Honour to be gaz'd at by many Eyes' on account of its 'Luminous Liquor' reflects Boyle's enduring interest in bioluminescence, while calling to mind the unfortunate glow-worm from which Boyle 'squeeze'd out the yellow & Juicy matter' at his bedside to see if it would light his chamber until dawn.¹³⁶

¹³⁴ Ibid., p. 56, p. 54, p. 91.

¹³⁵ Ibid., p. 85, p. 60.

¹³⁶ Boyle, *WRB V*, p. 148; RS RB/1/22/1 p. 24, p. 49, p. 51 (Work-diary 19 entries 52, 109, 109 second series)]; Boyle, *WRB V*, p. 153; RS RB/1/27/3, p. 128 (Work-diary 21 entry 666). The extracted innards of the glow worm did indeed continue glowing: when Boyle awoke the following morning, he 'saw it shine'. Boyle's work-

The truths apprehended by Boyle through making such meditations are general abstractions which can be understood through experience of multiple specific referents. By describing these mental mechanics Boyle positions himself as an functioning example of effective investigation and cogitation: Boyle's mind is a laboratory, the text analogous to the theatrical space of the Royal Society's public demonstrations, and the 'Pictures drawn (with Words instead of Colours)' are the observations presented to 'produce in the mind' of his virtual witnesses 'not the Finest Ideas, but the Likest'.¹³⁷ These 'little Fragments, or Parcels of Time' are collected and synthesised into a useful whole by Boyle, the 'skilful Artificer' equipped with literary lens, and in *Occasional Reflections* his observations are 'so order'd, as to afford us both Looking-glasses, to dress our Souls by, and Perspectives to discover Heavenly wonders, and Incentives to inflame our hearts with Charity and Zeal'.¹³⁸ What is interesting is how many of the reflections are focused on *misfortunes*, in adherence with the principle of fidelity in reporting all results of an experiment, good and bad, which Boyle had expressed in *The Spring of the Air* three years earlier. During an inspection of mines Boyle's horse throws him in an episode reminiscent of those in 'An Account of Philaretus', and an extended series of reflections concerning an episode of ague is included to demonstrate that those who wish to imitate him 'need not have recourse to the suspected Artifice' but might make use of 'the several Circumstances that shall happen to occur to his Consideration' during the course of his life.¹³⁹ This ague, contracted 'whilst I was delightfully entertain'd, by an Out-landish *Virtuoso* that came to Visit me', prompts Boyle to consider the relative benefits of physic and 'what my Curiosity for Dissections

diaries for this period contain many accounts of wood and meat shining unaccountably, as well as the report of an unnamed traveller who, on encountering an ocean lit at night (presumably caused by blooming phytoplankton) described how 'his urine falling into the sea water sparkld so much as made him brag he could pisse fire' (RS RB/1/27/3, p. 111 (Work-diary 21 entry 608)). Boyle would first report results of experiments in bioluminescence in *Philosophical Transactions* in 1668 (2.31 (1668), 581-600) and wrote in 1672 that he had been able to 'with wonder and delight' read that month's edition of the *Transactions* by the light emitted by a neck of veal, obtained from the house of an amanuensis whose servant had been 'frighted' in the larder by the sight (*PT* 7.89 (1672), 5109).

¹³⁷ *Ibid.*, p. 12.

¹³⁸ *Ibid.*, p. 24.

¹³⁹ Boyle, *WRB V*, p. 11.

has shown me’, reflecting that had he ‘remembered how many Bones, and Muscles, and Veins, and Arteries, and Grisles, and Ligaments, and Nerves, and Membranes, and Juices, a humane Body is made up of’ his illness would have caught him less by surprise, reminding a reader of what had become, by this point, Boyle’s primary occupation in the public eye.¹⁴⁰

In both content and structure *Occasional Reflections* indicates that the practices of the new natural philosophy had so consumed Boyle as to become a way of life he considered worthy of emulation. Boyle was therefore surprised by the reception of a book which he would have perceived as little different to *The Spring of the Air* or *Certain Physiological Essays* in purpose and scope, a book which both promoted and demonstrated the practices of personal spiritual accountability and Baconian induction: the two practices which, as we have seen, informed so much of his written work and public life. In 1665 the Nonconformist theologian Richard Baxter had written to Boyle to praise ‘your speciall <way> of Occasionall Meditation, [which] I take to be exceeding usefull!’, and in his letter Baxter demonstrates his understanding of Boyle’s methodology as ‘the translating of the severall Creatures into a language understood; so that it will teach men when they see the words, (the things) to see withall the signification’.¹⁴¹ Baxter was also sensible of the autobiographical origins of these examples which ‘do draw on your selfe, or some other well furnished person, to write such a Commentary upon all the most ordinary occurrences of each day’ and believed that the resulting work had the potential to serve as ‘excellent helpe...to them that need such an interpreter, that they may walk in their gardens & medows as Physicians, & not as meere husbandmen, & may heare every creature praise its maker’. Baxter suggests that the readers of *Occasional Reflections* shall, by Boyle’s example, learn to be ‘As those that know not only the Materialls of an Apothecaries shop, but also the medicinall use of the simples & compositions’. Boyle replied to Baxter to express his disappointment that ‘those harmeles Papers [*Occasional Reflections*] have not escaped the Censure of three or foure

¹⁴⁰ Ibid., p. 73, p. 61.

¹⁴¹ Robert Boyle, *The Correspondence of Robert Boyle Volume II: 1662-65* eds. Michael Hunter, Antonio Clericuzio, and Lawrence M. Principe (London: Pickering & Chatto, 2001), p. 476.

Learned Men, who yet seeme not to dislike Them for their owne sakes, but for mine, pretending That Composures of that Nature might well have been spar'd by a Gentleman whom they are pleas'd also on this Occasion to looke upon as a Philosopher, & not unfit to write Bookes in that Capacity'.¹⁴² It is unknown who voiced these objections, but Boyle's surprise at being considered a 'Philosopher' who should concentrate his efforts on writing 'Bookes in that capacity' indicates that he saw *Occasional Reflections* as having similar purpose to the natural philosophical works for which he had become known, a purpose understood by Baxter: to induce and enable his readers to imitate his methods and attain knowledge that is practical, medicinable, and spiritually beneficial.

Sunset: The Expectation of Death

At the apotheosis of the ague described in *Occasional Reflections* Boyle's thoughts began to turn inescapably to death, 'this last and importantest of humane Actions'.¹⁴³ A lifetime of illness, weakened eyesight, and general infirmity had led Boyle to reflect that 'Death will sooner or later infallibly come, and never finally deceive our Expectations' and that 'The frequent Meditation of the end of our Lives, conducing so much to make us lead them well, that the expectation of Death brings not less Advantages to those that scape the Grave, than to those that descend into it'.¹⁴⁴ It is this moment of expectation that is 'high time for the Soul to put off her Disguises, when she is ready to put off the very Body it self', and Boyle's thoughts on how one might turn such a moment to one's spiritual advantage are worth quoting at length to appreciate his literary treatment of the subject in philosophical terms of change and transmutation, and his apprehension of the body's material temporality.¹⁴⁵

[N]ow I come to look on Death near at hand, and see beyond the Grave, that is just under me, that bottomless Gulf of Eternity; me-thinks it is a very hard thing to be sufficiently prepar'd for a Change, that will transmit us to the Barr of an Omniscient Judge... There is no Art of Memory like a Death-Bed's Review of ones Life; Sickness, and a nearer Prospect of Death, often makes a Man remember those Actions wherein Youth and Jollity made him forget his

¹⁴² Ibid., p. 486-7.

¹⁴³ Boyle, *WRB V*, p. 76.

¹⁴⁴ Ibid., pp. 76-7.

¹⁴⁵ Ibid., p. 77.

Duty... When the approach of Death makes the Bodily eyes grow Dim, those of the Conscience are enabled to discern... if we consider Death only as the conclusion of Life, and a Debt all Men sooner or later pay to Nature, not only a Christian, but a Man, may entertain it without Horror: But if one consider it as a change, That after having left his Body to rot in the Grave, will bring his Soul to the Tribunal of God, to answer the miscarriages of his whole past Life, and receive there an unalterable Sentence that will Doom him to endless and unconceivable Joys, or ever-lasting and inexpressible Torments; I think 'tis not inconsistent either with Piety or Courage, to look upon so great a change with something of Commotion.¹⁴⁶

There is evidence to suggest that Boyle began to conduct such a 'Death-bed's Review' towards the end of his life, anticipating that his soul would be brought to the 'Tribunal of God' before too long.¹⁴⁷ A series of undated autobiographical notes dictated by Boyle to Robert Bacon, one of the amanuenses hired by Boyle on account of his failing eyesight, may date from any time from the 1670s, when Bacon began to work for Boyle, until Boyle's death at the end of 1691.¹⁴⁸ These notes comprise two sections: one overlapping with 'An Account of Philaretus' in recounting Boyle's early life, the second on a separate sheet describing his return to London after his continental travels. Marie Boas Hall suggest that the document is 'obviously' a continuation of the narrative of 'An Account of Philaretus' based on the second sheet, but the overlap of the first section with the earlier work indicates that these notes represent a fresh attempt at autobiography by Boyle.¹⁴⁹ As in 'An Account of Philaretus' providence is invoked with gratitude, this time for having placed him in a godly rather than a courtly society on his return from France (Boyle being initially unrecognised by his siblings on his return on account of his fashionable French apparel).¹⁵⁰ Boyle prefaces his account of his Eton days as 'petty incidents', and the numbered list of these incidents begins and ends with number one.¹⁵¹ Perhaps Boyle became tired during this episode of dictation, or perhaps bored or embarrassed, but this period

¹⁴⁶ Ibid., pp. 78-9.

¹⁴⁷ Boyle's hypochondria was apparently as well-known as his habits of notetaking. As early as 1653 William Petty had gently suggested to Boyle that his many ailments might be self-induced or even imaginary, warning that the 'disease you labour under, is, your apprehension of many diseases, and a continual fear that you are always inclining or falling into one or other... I had rather put you in mind, that this distemper is incident to all that begin the study of diseases... [you] ought no more to take, every such little struggling of nature for a signe of a formidable disease, then to fear that every little cloud portends a cataract or hericane'. William Petty to Robert Boyle, 15th April 1653, *CRB I*, pp. 143-4.

¹⁴⁸ BL Add. MS 4229, fols. 66-68b.

¹⁴⁹ Marie Boas Hall, *Robert Boyle and Seventeenth-century Chemistry* (Cambridge: Cambridge University Press, 1958), p. 12n.

¹⁵⁰ BL Add. MS 4229, fol. 66r.

¹⁵¹ Ibid.

of his life was not returned to with Bacon. What is notable is that, despite what little information is presented regarding his schooling, a large section is given over to describing his first and subsequent encounters with Quintus Curtius, that ‘Eloquent Author...having first ingag’d him to love Reading’.¹⁵² Later in life, at an unspecified time, his pain after a journey to a country inn was so great that only by reading the *Histories of Alexander the Great* ‘which he had not seen of a long time, so that ‘twas almost new to him’ could he distract himself long enough for the pain to subside.¹⁵³ At least twenty years separates these notes from ‘An Account of Philaretus’; Boyle appears to have dispensed with his more sententious autobiographical persona in later life, but not his fondness for Quintus Curtius.

The Burnet Memorandum, first transcribed and published by Michael Hunter in *Robert Boyle by Himself and his Friends* (1994), is a series of notes on an interview (or interviews) with Boyle made by Gilbert Burnet, a close friend and confidante of Boyle since their meeting in 1663.¹⁵⁴ These notes must date from either before or after Burnet’s exile from 1685-8; the most recent event refers to takes place in 1677, and John Fell (d.1686) is referred to as if he were still alive, which indicates an earlier date. It is not possible to know if this document dates from before or after the notes dictated to Bacon, although we might suppose it to be a later production based on internal and external evidence. Burnet’s publication of *The Life and Death of Sir Matthew Hale* (1682) and *The Life of William Bedell* (1685) had established his reputation as a biographer and may have inspired Boyle to dictate his life to him. The occasionally mangled syntax indicates that the document was written at speed, either during the interview or during a hasty recollection; the document comprises one page of numbered, chronological events and themes which Boyle considered to be significant, and a series of longer narrative passages which cover Boyle’s scientific programme and its evolution from the 1650s through the 1660s, a lengthy relation of stories about spirits and the philosophers stone, and finally a passage

¹⁵² Ibid., fol. 66v.

¹⁵³ Ibid.

¹⁵⁴ *The Correspondence of Robert Boyle Volume VI: 1684-91* eds. Hunter, Antonio Clericuzio, and Lawrence M. Principe (London: Pickering & Chatto, 2001), p.124. Burnet was consecrated as Bishop of Salisbury in 1689 and would deliver Boyle’s funeral sermon at St Martin-in-the-Fields on the 7th of January 1692.

concerning events of the 1660s and 1670s, including his role in relation to the Council for Foreign Plantations and in subsidising publications for missionary work.

From the Burnet Memorandum we learn that Boyle ‘made no vowes not knowing how his Circumstances might change’, ‘never had any temptations to Popery’, ‘never engaged in any great mans concerns or in any faction or Intrigue but [was] Civill to all and particular with few in business’.¹⁵⁵ In language which links Boyle’s scientific and theological programmes, we can read that he ‘made Conscience of great exactnes in Experiments’, ‘was not keen in any of our debates and loved vertue and goodnes in all people’, that his series of practical investigations into cold ‘was a great prejudice to his health for the cold steams of ice and snow were too severe for so weak a body’ and that subsequently ‘His ill health brought him under very strict rules of diet which he observed like a Philosopher’.¹⁵⁶ Boyle also demonstrates an awareness of the necessity of cultivating a public image, admitting that he was ‘Never addicted to Vanity in his Apparell [but] only found it necessary to shew a litle finer [sic] among his Tennants to have his land well let’ and that he was ‘Inclined to be Cholerick but Governed it so that it never appeared except in his looks a litle when much provoked’.¹⁵⁷

The Burnet Memorandum is arguably the most significant autobiographical statement of Boyle’s life, in that he knew he was speaking to his likely biographer. This does not, however, indicate steadfast truthfulness in anticipation of the ‘Tribunal of God’ but also, to a certain degree, an anticipation of the tribunal of the public: the author who inspired his love of reading is now no longer Quintus Curtius but Walter Raleigh¹⁵⁸. Burnet recorded that Boyle had ‘A love to read History begun with Sir W Rawleigh’ (presumably Raleigh’s *History of the World*, 1614) and we should query the removal of Curtius in the context of the notes dictated to Bacon, which retain the love of Quintus Curtius from ‘An Account of Philaretus’ which Boyle had composed at least forty years beforehand. Was this a deliberate choice on Boyle’s part, to disassociate from a work so obviously concerned with

¹⁵⁵ *RBHF*, pp. 28-9.

¹⁵⁶ *Ibid.*

¹⁵⁷ *Ibid.*, p. 33, p. 28.

¹⁵⁸ *Ibid.*, p. 26.

personal ambition, or alternatively to substitute a reference to Raleigh whose lands in Ireland had been purchased by Boyle's father, the *faber fortunae* Earl of Cork, in 1602? As with the notes taken by Robert Bacon the Burnet Memorandum contains far fewer incidents of self-righteousness than 'An Account of Philaretus' (the interview describes Boyle's struggles with self-control when governing his temper or curiosity about magic, for example): we might conclude that Boyle's substitution of Raleigh for Quintus Curtius has its origin either in a desire to hide or to highlight ambitions regarding posterity, but what is most significant is that the substitution *did* occur, and that Boyle was keenly aware of how his dictated life might be read after his death.

Boyle's bones are lost as a result of St-Martin-in-the-Fields being destroyed and rebuilt in 1721 (no Corkian vulgarity commemorates his resting place); as the portraits by Johann Kerseboom and John Riley indicate, Boyle's hand extended towards editions of his works, it is to his writing we must turn as both lasting monument to and evidence of the man who once lived. A discovery within the archived Boyle papers at the Royal Society supports this reading of Boyle and his practices. In the 1680s, aware that his sun was setting, Boyle dictated a prepositional note to his long-time amanuensis Roger Bacon to serve as a form of cover or label for papers held in a cabinet. These papers, Boyle explains in a single leaf, have not been ordered as he would wish, but are preserved nonetheless in case a future executor, publisher, virtuoso, or plain reader might glean something practical from their contents.

The writings that are seal'd up in this (paper)case are not corrected nor rang'd as they ought to be, & as I intended they shold be, when I could recover some leisure. But for fear of the casualitys which a person so infirm as I, may reasonably apprehend in a sickly time, I thoght fit to hasten the securing them; notwithstanding those smal Imperfections: that the Public may not loos som things, which I hope & wish may be uyseful to it.¹⁵⁹

It has been the purpose of this thesis to bring to the fore the figure, the author, the moving hand behind each diary, essay, and letter examined. I close with this note believing that, as when it was first placed as morbid disclaimer for a cabinet stuffed with a life's work uncompleted, there is a great and critically untapped vitality in such ephemeral documents.

¹⁵⁹ RS RB/1/36/72, fol. 115r.

Conclusion| Mortobiography

Lord Chester desperately ill of the stone, stoppage of urine 6 dayes. oyster shells 4 red hot quenched in cyder a quart and drank, advisd by Glanvill. Another prescribed *flegma acidum rectificatum cum sale tatari*. Dr Godderd advisd Blisters of cantharides applyd to the neck and feet or to the vains.¹

Supt at Kings head with Society. Dr. Needham brought in account of Lord Chesters having no stoppage in his uriners nor defect in his kidneys. There was only found 2 small stones in one kidney and some little gravell in one ureter but neither big enough to stop the water. Twas believed his opiates and some other medicines killd him, there being noe visible cause of his death, he died very quickly and with little pain, lament of all.²

As John Wilkins, Bishop of Chester lay dying in the autumn of 1672, he received a series of bedside visits from his friends at the Royal Society who all sought to save him. One suggested treatment is a solution of amber in spirit of wine with salt of tartar; founding fellow Dr. Jonathan Goddard advised the application of crushed Spanish fly beetles; Joseph Glanvill recommended what amounted to a large dose of calcium, unlikely to mitigate the pain of a man suffering from kidney stones. The London physician Walter Needham had been proposed for Royal Society membership by Wilkins in April 1671, and eighteen months later would present the results of his nominee's autopsy to a group gathered at the Kings Head tavern at Chancery Lane End, concluding that the man's own physic had caused his death. Wilkins had approached death as a 'Great experiment', and in taking his body as their investigative material his friends and colleagues engaged in the epistemic practice of autopsy, a noun coined in the seventeenth century and derived from Greek and Latin to mean seeing for oneself, 'when by our observation, wee get a certaine knowledge of things'.³

It is this emphasis on personal perspectivism which this thesis has sought to bring to the fore in its examination of how life writing was used by members of the early Royal Society. The texts and manuscripts discussed in this thesis have been used as evidence for reconstructing both the history of

¹ Hooke, *Diary*, p. 13 (16th November 1672).

² *Ibid.*, p. 14 (20th November 1672).

³ Bodleian MSS Lister 34 fol.76v, quoted in Barbara Shapiro, *John Wilkins, 1614-1672; An Intellectual Biography* (Berkeley: University of California Press, 1969) p.251; James Primrose, *Popular Errours* trans. Robert Wittie (London, 1651) p.53.

the early Royal Society and seventeenth-century autobiographical practice. This thesis illuminates the scatty and accidental history of the Royal Society in its modern form and contributes to scholarship which increasingly seeks to locate autobiographical practice within broader forms of literature, writing, and mark making than has previously been appreciated. In doing so, this thesis also historicises the output of some figures, such as Joseph Glanvill, William Petty, and Henry Oldenburg as having a literary dimension which has been hitherto unappreciated, shifting focus from questions of establishing intellectual priority (which, while having resulted in exceptional scholarship, occasionally runs the risk of flattening such figures into pieces on a game board) to considering how their own literary engagement with the mutable genre of autobiography corresponded with the construction of a new system of epistemological enquiry. Such responses facilitated, in turn, an expansion of the possibilities of autobiographical practice when put to work in the promotion of a vocational collective enterprise. By appreciating autobiography as a mode – perhaps an inescapable one – this thesis has made clear the inevitability of its use by those seeking to reorganise scientific investigation and its inheritance on the basis of personal experience.

The knowledge of death haunts all autobiographical practice. In touching on deaths and textual afterlives this thesis has drawn attention to the role of wills, codicils, trusts and executorships, not only as they shape authorial reputation after death but as final, public, autobiographical acts, subject to being proved by a court and having material effect in the distribution of goods and wealth accumulated during a lifetime. Visitors to the properties of the Shakespeare Birthplace Trust in Stratford-upon-Avon have long been entranced by the supposition that his bequest to his wife Anne Hathaway of their ‘second-best bed’ meant the marital bed, and the autobiographical dimension of such end-of-life documents deserves further attention, as does their role in the antemortem curation of the posthumous reputation of the figures considered in this thesis. If we must submit to the pressure of coining a new term for a fertile field of enquiry, we might aggressively compound nouns into the term ‘mortobiography’.

Perhaps due to insecurities regarding the inheritance of his acres in Ireland, awarded during the Interregnum, William Petty prefaced his will of 1685 with a brief autobiography ‘justifying in behalfe of my children the manner and meanes of getting and acquiring the estate which I hereby bequeath unto them’.⁴ This highly unusual move signals acceptance of the *faber fortunae* narrative in exchange for continuing professional and personal impunity, for both Petty and his descendants.⁵ Sometime after 1671 John Aubrey began a record of consecutively numbered schemes to renew his depleted finances and collected them in one document titled ‘Faber Fortunae’. The colour of the dried inks suggests that these were incidental memoranda as opposed to having been written up in one sitting. Aubrey proposed mining seams of coal he had discovered in Surrey as part of a geological survey, or excavating the nitrous springs there ‘where is good Fullers earth’; he considered how William Petty’s proposed register of the people, plantations and trade of England might be monetised, and consulted an edition of the *Philosophical Transactions* ‘concerning that admirable method of Casting Statues in Mettal...which will be applicable for our Cooper worke’.⁶ By the point of creating and maintaining this document Aubrey evidently understood *faber fortunae* to be an appropriate expression to use as a positive signifier of one’s ambitions, ambitions based in innovation, industry, and collaboration, the purported aims of the Royal Society since its inception. The depth of the connection between the Royal Society and the *faber fortunae* ethos is one which deserves more attention, in particular by assessing the extent to which its intertextual heralding of independent ambition in a positive sense persisted into the eighteenth century and beyond.

Thomas Shadwell’s successful satirical comedy *The Virtuoso* was first performed at the Duke’s Theatre in 1676. Its title character, Sir Nicholas Gimcrack, is an absurd humoural type who engages in experiments intended to be ridiculous and claims he has learned to fly, transfused the

⁴ PROB 11/390/121.

⁵ Kate Bennett, ‘John Aubrey and the “Lives of our English Mathematical Writers”’ in *The Oxford Handbook of the History of Mathematics* ed. by Eleanor Robson and Jacqueline Stedall (Oxford: Oxford University Press, 2009) pp. 349-50.

⁶ Bodleian MS Aubrey 26, fols. 2, 5 4rr. The approximate date of this document is based on the receipt of Petty’s suggestion.

personalities of dogs along with their blood, and observed grief in spiders.⁷ Each of the experiments Gimcrack performs can be linked with experiments publicised in either Hooke's *Micrographia* or the *Philosophical Transactions*, and in the audience Hooke, horrified, believed himself to be Shadwell's main target ('Damned Doggs. *Vindica me Deus*. People almost pointed.').⁸ Whether or not Shadwell intended his play as satire of the Royal Society as an institution (Joseph M. Gilde argues, rather, that the Royal Society set the standards for experimental enquiry and oratorical perspicuity, and it is lack of adherence to these precepts which are attacked in the play) his dedicatory epistle claims to take aim chiefly at the 'Artificial folly of those, who are not Coxcombs by Nature, but with great Art and Industry make themselves so'.⁹ Hooke had had reports of the 'Vertuoso play' from fellow Society member Oliver Hill and the architect Francis Morgan before attending Duke's himself to see it for himself (his patron's wife, Lady Alicia Cutler would, embarrassingly, also bring it to his attention over three weeks later), and it is easy to understand that he viewed Shadwell's play as an attack on his personal character as well as the endeavours of the Society as a whole.¹⁰ Fifty years later Jonathan Swift created the floating isle of Laputa, in which inhabitants carve their meat into equilateral triangles while building their houses crooked out of the 'contempt they bear to practical geometry, which they despise as vulgar and mechanic'.¹¹ The Laputans are 'very bad reasoners, and vehemently given to opposition', and the grand academy of Lagado is populated by projectors who attempt to extract sunbeams from cucumbers, breed nude sheep, and beg for money 'as an encouragement to ingenuity'.¹² A tax on wit is proposed to alleviate the kingdom's financial struggles, but 'honour, justice, wisdom, and learning...should not be taxed at all' as 'no man will either allow them in his neighbour or value them in himself'.¹³ Both of these satires are predicated on the notion that the

⁷ Thomas Shadwell, *The Virtuoso: A Comedy, Acted at the Duke's Theatre* (London, 1676), p. 28, p. 43, p. 26.

⁸ Hooke, *Diary*, p. 235 (2nd June 1676).

⁹ Joseph M. Gilde, 'Shadwell and the Royal Society: Satire in *The Virtuoso*' *SEL* 10.3 (1970), 469-90; Shadwell, *The Virtuoso*, p. 2.

¹⁰ Hooke, *Diary*, p. 234 (25th May 1676), p. 235 (1st June 1676), p. 238 (25th June 1676).

¹¹ Jonathan Swift, *Gulliver's Travels* ed. David Womersley (Cambridge: Cambridge University Press, 2012), p. 229, p. 234.

¹² *Ibid.*, p. 234, p. 260, p. 265.

¹³ *Ibid.*, p. 279.

activities of the Royal Society were to be valued most of all for their utility and societal benefit, indicating that this was the most thoroughly absorbed and perpetuated statement by, and about, the Society. Both satires function as critiques of the type of person who engages in such supposed activities - myopic, obsessive, combative – which points to an increasingly codified identification of the Royal Society and its activities with the character of its members, and vice versa.

This thesis is necessarily synthetic as a result of its breadth, but such a synthesis also demonstrates both the ubiquity of autobiographical practice when its generic boundaries are understood to be porous, and the extent to which early members of the Royal Society relied on autobiography as a demonstration of both philosophical empiricism and their aptitude for it. The self-writing of these men crossed the divide between public and private due to the increasingly social dimension of the new scientists and their society; any assertion that ‘memoir is fashionably postmodern, since it hesitates to define the boundaries between private and public, subject and object’ breaks down when autobiographical literature of the sixteenth and seventeenth centuries, especially that of Royal Society members and associates, is considered, autobiographical writing which was often deliberately published as evidence for their philosophic identities.¹⁴ ‘Publish or perish’ may be a neologism, but it was a very real notion for the early modern natural philosopher whose reputation and identity relied on the wider acceptance and affirmation of his claims. The autobiographical practices of members of the early Royal Society saw the moral space of the confessional tract become reciprocal with the experimental and experiential spaces of the laboratory, auditorium, and coffee house in the construction of selfhood: this thesis has demonstrated several instances of men who took this conflation to heart, by which *faber fortunae* may be understood as a mantra used to promote their activities during a period of philosophical and ideological battles for cultural acceptance of the Royal Society itself.

¹⁴ Nancy K. Miller, *Bequest and Betrayal: Memoirs of a Parent's Death* (New York, Oxford: Oxford University Press, 1996), p. 43.

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Royal Society

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