

‘THE MATERIALS FOR THE BUILDING’: REUNITING FRANCIS BACON’S *SYLVA SYLVARUM* AND *NEW ATLANTIS*

David Colclough

I

Not long after Francis Bacon’s death on 19 April 1626, a substantial folio volume appeared on the booksellers’ stalls: *Sylua syluarum: or A naturall historie In ten centuries. VVritten by the Right Honourable Francis Lo. Verulam Viscount St. Alban* (London: J.H. for William Lee, 1627) (STC 1168).¹ The book was entered in the Stationers’ Register to the bookseller William Lee on 9 April and was published later that year or early in 1627 (two variant letterpress title pages exist, one with the date 1626 and the other 1627).² Neither the elaborate engraved title page nor the letterpress title page that follows it made mention of the fact that the volume in fact contained two works by Bacon: following *Sylva Sylvarum* is his celebrated quasi-utopian fable *New Atlantis*. The volume thus contained the first two of several works by Bacon to be prepared posthumously for the press by his former chaplain, William Rawley, who also wrote a dedicatory epistle to Charles I and an address to the reader (sigs ¶^{r-v}; A^r–A3^r).³ One of the works – *Sylva* – went through more editions in seventeenth-century England than any other of Bacon’s natural philosophical writings, yet has subsequently been almost wholly neglected; the other – *New Atlantis* – gained relatively little attention at the time, but has come to be one of the most popular,

This essay is dedicated to the memory of Graham Rees (1944–2009).

¹ All further references to *Sylva Sylvarum* and *New Atlantis* are to this edition and will be supplied parenthetically in the text as signatures. Note that the two works are separately signed, and that signatures in uppercase refer to *Sylva* (e.g. ‘sig. A4^r’), while those in lowercase refer to *New Atlantis* (e.g. ‘sig. a3^r’).

² E. Arber, *A Transcript of the Register of the Company of Stationers of London, 1554–1640*, 5 vols (London, 1875–94), vol. 4, 124.

³ On Rawley (c.1588–1667) see A. Stewart, ‘Rawley, William (c.1588–1667)’, in *Oxford Dictionary of National Biography* (Oxford: Oxford University Press, 2004), online edition: <http://0-www.oxforddnb.com.catalogue.ulrls.lon.ac.uk:80/view/article/23184>, accessed 24 July 2008; F. Bacon, *Philosophical Studies c.1611–c.1619*, edited by G. Rees (Oxford: Clarendon Press, 1996), lxx–lxxxv; Bacon, *The Instauration magna: Last Writings*, edited by G. Rees (Oxford: Clarendon Press, 2000), lxxiii–lxxxiii.

frequently published, and commented on, in the whole of his oeuvre.⁴ As Graham Rees observed in 1981, *Sylva* ‘has been woefully neglected by modern scholars’.⁵ Perhaps the most curious thing to note, however, is that despite the fact that they appeared together, the two texts have rarely been treated together – even though, as I shall argue, *Sylva* is a necessary port of call on the way to *New Atlantis*.⁶

At first glance, *Sylva* and *New Atlantis* seem worlds apart, and this may in part account for their effective separation by scholars. *Sylva* consists of a list of 1,000 experiments, observations and speculations on matters as diverse as acoustics, botany, brewing, and fire, divided into ten ‘centuries’, and takes up 284 pages of the folio as opposed to *New Atlantis*’s 50.⁷ It is written in impersonal declarative prose, often pared down to the bare minimum required for clarity, and it is firmly grounded in the here and now. Testimony derived from ancient and contemporary books sits alongside Bacon’s own trials of various phenomena and his reflections on the possible causes of these phenomena. *New Atlantis*, by contrast, is Bacon’s only work of prose fiction: a first-person narrative of the providential discovery by a group of mariners of a mysterious island unknown to the outside world and dominated by an advanced research institute called Salomon’s House. Although we are never made privy to the narrator’s identity or even nationality, he is clearly not a persona of Bacon, but rather a naive observer of the kind familiar from other travel narratives of this and later periods. The story he tells, and the island he describes, are at once rooted in the contemporary experience of ‘discovery’ (both geographical and intellectual) and the thoroughly fantastic: the people, the state, the flora and the natural philosophical life of the imaginary land of Bensalem are all somewhat like, but at the same time better and stranger than those of contemporary Europe or even the New World. The opening sentence of each work signals its overall tone and highlights the disparity between them. *Sylva* begins baldly with an instruction: ‘Digg a Pitt vpon the Sea shore, somewhat about the High-water Marke, and sincke it as deepe as the Low-Water marke; And as the Tide commeth in, it will fill with Water, Fresh and Potable’ (sig. A4^r). *New Atlantis* plunges the reader into a tale of exploration set at the limits of knowledge,

⁴ Gibson lists thirteen editions of *Sylva* printed in England in the seventeenth century; even taking into account that he treats the issues with 1626 and 1627 on their letterpress title pages as distinct editions, this outstrips all of Bacon’s natural philosophical works (compare the nine editions of *De augmentis scientiarum*, five of *Novum organum*, or three of *The advancement of learning*). See R.W. Gibson, *Francis Bacon: A bibliography of his works and Baconiana to the year 1750* (Oxford: Scrivener Press, 1950). There has been no edition of *Sylva* since Spedding, Ellis and Heath’s monumental edition of Bacon’s works in the late nineteenth century (*The works of Francis Bacon*, 7 vols, edited by J. Spedding, R.L. Ellis and D.D. Heath (London, 1859–64), hereafter *SEH*); *New Atlantis* has been frequently published – see, e.g., *New Atlantis*, edited by A.B. Gough, second edition (Oxford: Clarendon Press, 1924); *The Great Instauration and New Atlantis*, edited by J. Weinberger (Arlington Heights, IL: AHM Publishing Corporation, 1980); Francis Bacon, *La Nouvelle Atlantide*, translated by M. Le Dœuff and M. Llasera (Paris: GF Flammarion, 1995); *Francis Bacon: A Critical Edition of the Major Works*, edited by B. Vickers (Oxford: Oxford University Press, 1996); *Three Early Modern Utopias*, edited by S. Bruce (Oxford: Oxford University Press, 2000). The forthcoming *Oxford Francis Bacon* edition will reunite them.

⁵ G. Rees, ‘An Unpublished Manuscript by Francis Bacon: *Sylva Sylvarum* Drafts and Other Working Notes’, *Annals of Science*, 38 (1981), 377–412 (386); see, however, I. Maclean, ‘White Crows, Graying Hair, and Eyelashes: Problems for Natural Historians in the Reception of Aristotelian Logic and Biology from Pomponazzi to Bacon’, in *Historia: Empiricism and Erudition in Early Modern Europe*, edited by G. Pomata and N.G. Siraisi (Cambridge, MA: MIT Press, 2005), 147–79.

⁶ One honourable exception is A.P. Langman, ‘“Beyond, both the old world, and the new”: authority and knowledge in the works of Francis Bacon, with special reference to the *New Atlantis*’, University of London, Ph.D. thesis, 2006; see also R. Serjeantson, ‘Natural knowledge in the *New Atlantis*’, in *Francis Bacon’s New Atlantis: New Interdisciplinary Essays*, edited by B. Price (Manchester: Manchester University Press, 2002), 82–105.

⁷ This includes the preliminaries to both texts and the table of experiments following *Sylva*, but not the *Magnalia naturæ*, a list of thirty-three grand aims for natural philosophy (from ‘*The Prolongation of Life*’ to ‘*Artificiall Minerals and Cements*’) which follows *New Atlantis* (sigs g3^r–v). Bacon uses the term ‘experiment’ in *OED* sense 3, ‘an action or operation undertaken in order to discover something unknown, to test a hypothesis, or establish or illustrate some known truth’, the earliest instance of which is from 1362.

where West meets East, and emphasizes the contingencies of weather on which such voyages depended for their success or failure:

Wee sayled from *Peru*, (wher wee had continued by the space of one whole yeare,) for *China* and *Iapan*, by the South Sea; taking with vs Victuals for twelue Moneths; And had good Windes from the East, though soft and weake, for fiue Moneths space, and more. (sig. a3^r)

Even at this stage, where their differences seem most stark, a link can be discerned (how grateful would the mariners have been for some potable water when they found themselves 'in the Midst of the greatest Wildernesse of Waters in the World, without Victuall'? (sig. a3^r)), but a reader might be forgiven for taking this as a mere coincidence. As I shall show, however, the associations between the texts are far more profound and thoroughgoing than this.

It is, after all, as a pair that their original seventeenth-century readers would have encountered these two texts; and one of the insights provided by work in the history of the book has been that it is important to consider the material form, as well as the intellectual milieu, in which ideas are promulgated. This does not just mean attending to likely readership, bibliographical format or *mise-en-page*; it also requires us to read books *as* books: to think about the ways in which the meaning of a text is inflected by its immediate context. D.F. McKenzie has spoken of the importance of attending to 'the book as an expressive form', and urged us to consider the ways in which 'forms effect meaning'.⁸ One of the consequences of his argument is that when considering early modern print we need to be attuned to a multiplicity of intentions; those of the author, the editor (if any), the printer, the bookseller and the reader.

I will address the ways in which this inflects our understanding of *Sylva* and *New Atlantis* in the light of Rawley's involvement in their publication shortly. The immediate lesson that I want to draw from McKenzie's thesis, however, is that the conjoining of two or more texts in a single volume needs to be taken seriously in our interpretation of those texts. This lesson might be applied to any number of early modern publications, from Spenser's *Complaints* (1591) to Thomas Browne's *Hydriotaphia* and *Garden of Cyrus* (1658), Milton's *Paradise Regain'd* and *Samson Agonistes* (1671) or Marvell's *Mr. Smirke* and *A Short Historical Essay* (1676).⁹ What it means for my current purpose is that, as well as reading *Sylva* in the light of Bacon's other natural histories and comparable contemporary works, and *New Atlantis* alongside travel narratives and utopias, we should read them as informing one another. In the rest of this article I will first address some of the objections that have been raised to linking the two texts, and then offer some preliminary suggestions as to what we can gain by doing so. Reading *Sylva* and *New Atlantis* together, I will argue, sheds considerable light on Bacon's ideas about the proper organization of knowledge, and on what he was trying to achieve in his last years. The picture that emerges shows Bacon wrestling even in his less rigorously methodical works with the questions that dominated his natural philosophy and should revise our current ideas about his relationship with the anticipated readers of that philosophy.

⁸ D.F. McKenzie, *Bibliography and the Sociology of Texts* (Cambridge: Cambridge University Press, 1999), 9, 13, 18–53. See further, D.F. McKenzie, *Making Meaning: 'Printers of the Mind' and Other Essays*, edited by P.D. Macdonald and M.F. Suarez, SJ (Amherst, MA: University of Massachusetts Press, 2002).

⁹ On Milton, see *The Complete Works of John Milton. Volume II The 1671 Poems: Paradise Regain'd and Samson Agonistes*, edited by L.L. Knoppers (Oxford: Oxford University Press, 2008), xix–lxxiv; on Marvell, see *The Prose Works of Andrew Marvell*, edited by A. Patterson, M. Dezelzainis, N. von Maltzahn and N.H. Keeble, 2 vols (New Haven, CT: Yale University Press, 2003), vol. 2, 3–29.

II

How compelling, then, is the evidence for treating the two texts together as a planned pairing, given that, as I have explained, Bacon was unable to see the book in which they appeared through the press? Given the generic dissimilarity I have mentioned, it is tempting to imagine that Rawley was merely attempting to rush out, in the wake of his employer's death, two works that had occupied his last years.¹⁰ In order to refute this hypothesis, we need to establish first, whether *New Atlantis* was simply a last-minute addition to the *Sylva* volume; second, what Rawley says about their association and how he effects it; and third, whether the two works have other concerns in common that would have led Bacon himself to consider them as companion-pieces.

First, then, the textual evidence. The letterpress title page of the *Sylva* volume announces that the book was 'Printed by *J.H.* for *William Lee* at the *Turks Head* in *Fleet-street*, next to the *Miter*'.¹¹ '*J.H.*' is John Haviland, a London printer from 1613–38 who printed a number of works by Bacon in the years following Bacon's fall from office and dissociation from the King's Printing House.¹² As the *Short-Title Catalogue* points out in its note on the book, however, Haviland was not the sole printer of the volume: importantly for my purposes, the whole of *New Atlantis*, as well as quires A–B of *Sylva*, were farmed out to Augustine Mathewes. This claim is supported by a number of important pieces of evidence. First among these is the printer's device on the title page of *New Atlantis*, depicting Time (as Saturn or Cronos, with wings, a scythe and a long forelock) revealing hidden Truth (a naked woman, emerging from a cave), encircled by the motto *Tempore patet occulta Veritas* (time reveals hidden truth) and bearing the initials 'R.S.' (Figure 1). The idea of truth as the daughter of time is one of Bacon's favourite notions, appearing *inter alia* in *Cogitata et Visa*; *Novum Organum*; the *Promus of Formularies and Elegancies*; the

¹⁰ On the dating of *Sylva Sylvarum*, see Rees, 'An Unpublished Manuscript', 379; *SEH*, vol. 1, 10. The dating of *New Atlantis* is notoriously uncertain; see J.C. Davis, *Utopia and the Ideal Society: A study of English utopian writing 1516–1700* (Cambridge: Cambridge University Press, 1981), 121–2. Internal and external evidence suggests a *terminus a quo* of 1617 and a *terminus ad quem* of 1624–5; see the forthcoming *Oxford Francis Bacon* edition of the text.

¹¹ William Lee was a bookseller in London from 1626–65. See H.R. Plomer, *A Dictionary of the Booksellers and Printers who were at work in England, Scotland and Ireland from 1641 to 1667* (London: The Bibliographical Society, 1907), 115.

¹² See *A Short-Title Catalogue of Books printed in England, Scotland, & Ireland and of English Books printed abroad 1475–1640*, edited by A.W. Pollard and G.R. Redgrave, 2 vols, second edition revised and enlarged by W.A. Jackson, F.S. Ferguson and K.F. Pantzer (London: Bibliographical Society, 1976–86), vol. 3, *A Printers' and Publishers' Index, Other Indexes & Appendices, Cumulative Addenda and Corrigenda*, compiled by K. Pantzer and P.R. Ridler (London: Bibliographical Society, 1991), 79–80; *A Dictionary of Printers and Booksellers in England, Scotland and Ireland, and of Foreign Printers of English Books 1557–1640*, edited by R.B. McKerrow (London: The Bibliographical Society, 1910), 131–2. Haviland printed *Francisci Baronis de Verulamio, Vice-Comitis Sancti Albani, Historia naturalis et experimentalis ad condendam philosophiam siue, phaenomena vniuersi: quae est Instaurationis magna pars tertia* (London, 1622), STC 1155; *Opera Francisci Baronis de Verulamio vice-comitis Sancti Albani, tomus primus: qui continet De dignitate & augmentis scientiarum libros IX* (London, 1623), STC 1108; *Francisci Baronis de Verulamio, Vice-Comitis Sancti Albani, Historia vitae et mortis* (London, 1623), STC 1156; *Historie naturall and experimentall, of life and death. Or of the prolongation of life* (London, 1638), STC 1158; *The Translation of Certaine Psalmes into English Verse: By the Right Honourable, Francis Lo. Verulam, Viscount St. Alban* (London, 1625), STC 1174; two editions of *Apophthegmes New and Old. Collected by the Right Honourable, Francis Lo. Verulam, Viscount St. Alban* (London, 1625), STC 1115 and STC 1116; *The Essayes or Counsels, Ciuill and Morall, of Francis Lo. Verulam, Viscount St. Alban* (London, 1625), STC 1148, and the edition of 1635, STC 1150; *The History of the Reigne of King Henry the Seuenth* (London, 1628), STC 1160.5; *Certaine Miscellany VVorks of the Right Honourable Francis Lo. Verulam, Viscount S. Alban* (London, 1629), STC 1124; two editions of *Operum ... tomus* (London, 1638), STC 1109, and STC 1110, and the 1629, 1635 and 1639 editions of *Sylva Sylvarum* (STC 1170; STC 1172; STC 1173). On Haviland's printing of the natural histories, see Bacon, *The Instauration magna: Last Writings*, xxx–xxxii; on the passage of the 1625 *Essayes* through his printing house, see F. Bacon, *The Essayes or Counsels, Ciuill and Morall*, edited by M. Kiernan (Oxford: Clarendon Press, 1985), xcvi–cviii.

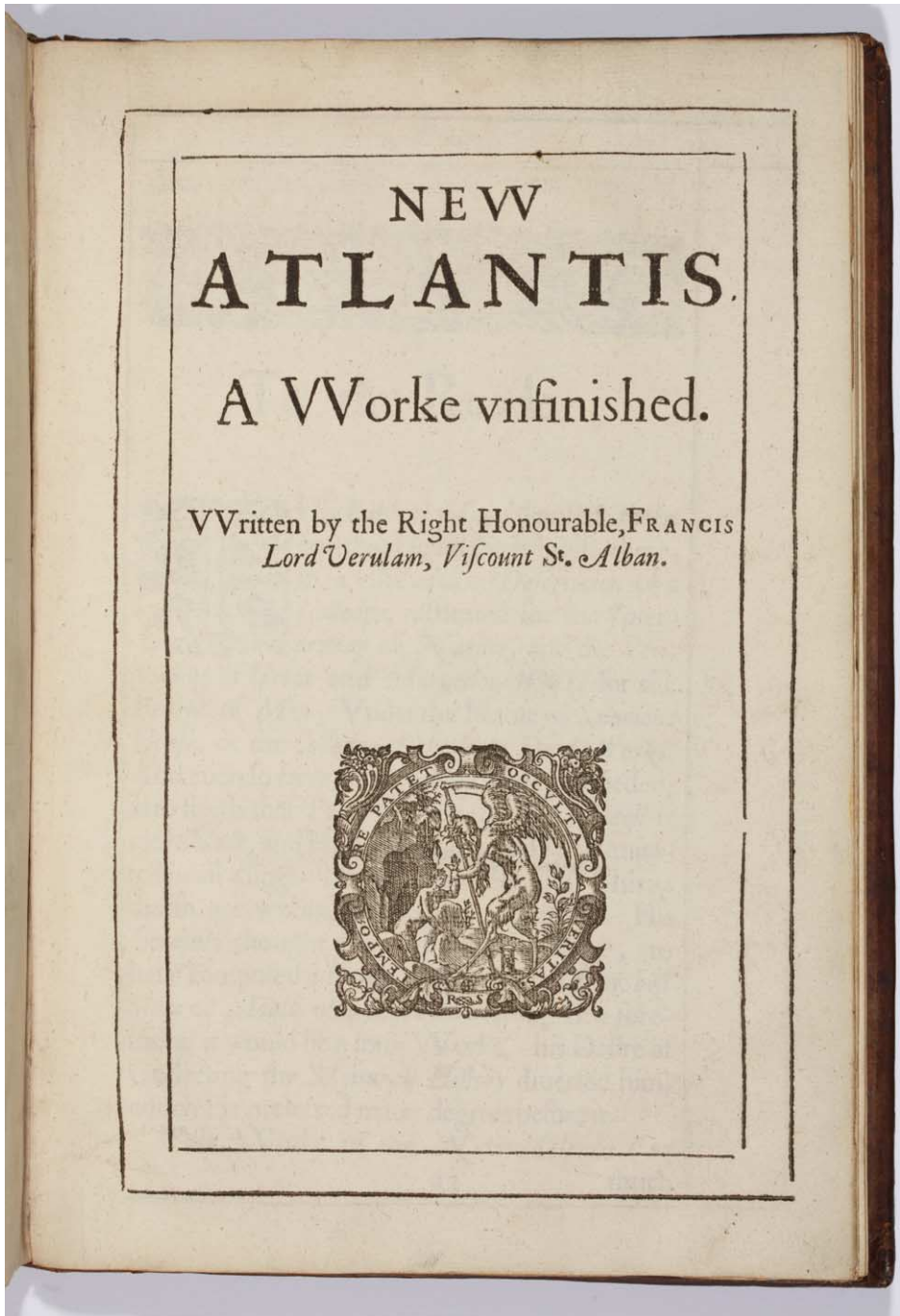


Figure 1. Title page of *New Atlantis*, from *Sylva sylvarum: or A naturall historie In ten centuries*. Written by the Right Honourable Francis Lo. Verulam Viscount St. Alban (London: J.H. for William Lee, 1627) STC 1168. Cambridge University Library, Keynes Q.5.12. Reproduced by kind permission of the Syndics of Cambridge University Library.

Advancement of Learning and ‘Of Tribute: Or, Giving That Which is Due’.¹³ The initials are those of Richard Smith, bookseller 1567–95, by whom it was first used. It probably passed to William Wood c. 1598 and then, at an unknown date before 1624, to Mathewes. Mathewes uses it in two texts, published in 1624 and 1633.¹⁴ The woodcut then passed, along with the rest of Mathewes’s stock, to Marmaduke Parsons.¹⁵ It was not used in any of Haviland’s publications.

The next pieces of evidence for Mathewes as the printer of *New Atlantis* are typographical. I have not found the distinctive large italic face used in the epistle to the reader (sig. a2^{r-v}) and in the relation of the Father of Salomon’s House (sigs. e2^r–g3^f) and *Magnalia Naturæ* (sig. g3^{r-v}) in any works printed by Haviland, but it appears in some of Mathewes’s.¹⁶ The decorated initial ‘T’ (sigs. a2^r, g3^f) is found in four of Mathewes’s texts,¹⁷ while the decorated initial ‘W’ (sig. a3^f) is found in two.¹⁸ The ‘winged figure’ fleuron (sig. a3^f) is found in five,¹⁹ while the ‘vase and cornucopia’ fleuron (sig. a2^r) is found in one,²⁰ and both fleurons are found in another.²¹ It appears likely that paper stock was shared by Haviland and Mathewes for the printing of the folio, as a single watermark appears throughout the book.²²

The evidence presented thus far demonstrates that *Sylva* and *New Atlantis* were intended from the start by Rawley to appear together in the same volume. He, or, more likely, Haviland, parcelled out the work to a second printer, Mathewes, and since the latter was responsible for the opening quires of *Sylva* as well as for *New Atlantis*, they must have worked fairly closely together. But why was Rawley determined that the two texts should be published alongside one another? He gives an unequivocal reason in his epistle to the reader before *New Atlantis*, stating that ‘This Worke of the *New Atlantis* (as much as concerneth the *English Edition*) his Lordship designed for this Place; In regard it hath so neare Affinity (in one Part of it) with the Preceding *Naturall History*’

¹³ *Cogitata et Visa*, in B. Farrington, *The Philosophy of Francis Bacon: An Essay on its Development from 1603 to 1609 with New Translations of Fundamental Texts* (Liverpool: Liverpool University Press, 1964), 94; F. Bacon, *The Instauration magna: Part II, Novum organum*, edited by G. Rees (Oxford: Clarendon Press, 2004), 132–3; the *Promus of Formularies and Elegancies* (SEH, vol. 7, 192); F. Bacon, *The Advancement of Learning*, edited by M. Kiernan (Oxford: Clarendon Press, 2000), 28 and ‘Of Tribute: Or, Giving That Which is Due’, in *Francis Bacon: A Critical Edition of the Major Works*, 22–51 (36).

¹⁴ [R. Turner], *Yovth know thy selfe* (London, 1624), STC 24347, title page, and [R. Martin], *Catalogvs librorym quos (in Ornamentum Reipublicæ Literariæ) non sine magnis Sumptibus & Labore, ex Italia selegit Robertvs Martine* (London, 1633), STC 17512, title page.

¹⁵ Mathewes took up his freedom as a printer on 9 May 1615, and began working in 1619; in 1637 he was deprived of his press (apparently for reprinting Cole’s *Holy Table*), and his printing material was passed to Marmaduke Parsons, with whom he may have continued to work – he certainly was active at least as a journeyman printer as late as 1653. See STC, vol. 3, 116; McKerrow, *A Dictionary of Printers and Booksellers*, 188. For evidence of Mathewes’ continuing activity as a printer, consider the publication dates of some works cited below.

¹⁶ These include T. Adams, *Workes* (London, 1630), STC 104, sig. ¶2^{r-v}, and M. Drayton, *The Second part, or a continuance of Poly-Olbion from the eighteenth song* (London, 1622), STC 7230, sig. A1^f. Mathewes printed another of Drayton’s works for William Lee: *The Battaile of Agincovrt* (London, 1627), STC 7190.

¹⁷ T. Adams, *Five Sermons Preached Vpon Sundry Especiall Occasions* (London, 1626), STC 1151626, sigs B1^f, E3^f; Drayton, *The Battaile of Agincovrt*, sig. A2^f; J. Roberts, *Compendium belli* (London, 1626), STC 21091, sig. C1^f; G. Abbot, *A Briefe Description of the Whole World* (London, 1624), STC 30, sig. A3^f.

¹⁸ A. Darcie, *Honors True Arbor; Or, The Princely Nobilitie of the Hovvards* (London, 1625), STC 6270, sig. a2^r and J. Donne, *The First Sermon Preached to King Charles* (London, 1625), STC 7040, sig. A3^f.

¹⁹ H. Burton, *The Baiting of the Popes Bull* (London, 1627), STC 4137.3, sig. *1^f; Drayton, *The Second Part, or a Continuance of Poly-Olbion*, sigs. B1^f, C2^f, etc. (without the border ornaments supplied in *New Atlantis*); [H. Reynolds], *Torquato Tassos Aminta Englisht* (London, 1628), STC 23696, sig. A2^f (without border ornaments); S. Bircckbek, *The Protestants Evidence Taken Out of Good Records* (London, 1635), STC 3083, sigs. B4^f, [2]A1^f; J. Cowell, *The Interpreter* (London, 1637), STC 5901, sig. *2^f.

²⁰ E. Bolton, *Nero Caesar, or Monarchie Depraved* (London, 1627), STC 3222, sig. A2^f.

²¹ T. Morton, *Of the Institution of the Sacrament of the Blessed Bodie and Blood of Christ* (London, 1635), STC 18190 (‘winged figure’: sigs. N1^v; 2R2^v; 3T2^f; 4C1^f; ‘vase and cornucopia’: sigs. *3^f; A3^f).

²² A banded pot, which resembles W.A. Churchill, *Watermarks in Paper in Holland, England, France, etc., in the XVII and XVIII Centuries and their Interconnection* (Amsterdam: Menno Hertzberger & Co., 1935), no. 471 and C.M. Briquet, *Les filigranes: dictionnaire historique des marques du papier*, 4 vols, repr. (New York: Hacker, 1985), no. 12804.

(sig. a2^{r-v}).²³ However, when they have not simply ignored Rawley's call for the texts to be read together, critics have treated it with scepticism. Langman, for instance, argues that

the publication of *New Atlantis* alongside *Sylva sylvarum* in 1626/7 was more the result of William Rawley's need to assert his own authority as the protector and disseminator of Bacon's textual legacy than an appreciation of the work's own qualities.²⁴

He contends that because the 'affinity' only inheres in 'one Part' – namely, the description of the research institute Salomon's House – which in turn 'takes up only 23 per cent of the text of *New Atlantis*' (sigs c2^r–g2^r), 'Rawley, or Bacon, has apparently ignored 77 per cent of it'.²⁵

This, though, is contestable on a number of counts. First, the crossover between the two texts is greater than Langman allows. Sources used in *Sylva* are also drawn on in portions of *New Atlantis* not devoted to Salomon's House, notably George Sandys's *A Relation of a Journey begun An: Dom: 1610* and Pliny's *Natural History*.²⁶ Similar concerns are present in both texts, again not restricted to the description of Salomon's House: among the most important are the finding out of causes, the distinction between true and false miracles and the power of a reformed natural magic.²⁷ Second, to reduce Salomon's House to a fraction of the text seems peculiar in the light of its description in the text as 'the very Eye of this Kingdome' and 'the Lanthorne of this Kingdome' (sigs. b3^v, c4^f). It is towards the long description of Salomon's House in a private interview between the narrator and the 'Father' of the institution that the whole of *New Atlantis* is driven, from the first mention of the House (sig. b3^v) and the more extended explanation of its aims and of its travelling secret agents, the 'Merchants of Light' (sig. c4^{f-v}). The narrative as a whole is constructed around a process of increasing access on the part of the mariners as a whole, and the narrator in particular, to the significant parts of Bensalemite society; an opening out of their understanding and their liberty of movement in preparation for their return home. They are first kept in quarantine in a 'Strangers House' (sig. b1^r), whose Governor visits them and answers their questions about the island and its history (sigs b2^r–d1^r); from this restraint they are then allowed to explore the city and its environs, within certain limits. Next, one of their company is invited to a highly ritualized 'Feast of the Family,' which celebrates continuity of lineage (sigs d1^r–d3^f), and finally the narrator is allowed 'priuate Accessee' (sig. e1^v) to the Father of Salomon's House. The Father's relation is packed with descriptions of experiments that closely echo many of those in *Sylva*; indeed, virtually every experiment described in *New Atlantis* has its equivalent in *Sylva*, to an extent that has hitherto not been remarked upon. Salomon's House, then, which has such close affinity with *Sylva*, is undeniably the centre of the *New Atlantis*.

Rawley's quite accurate (rather than mendacious or strained) linking of the two texts in his address to the reader before *New Atlantis* is also apparent, though less explicit, in the prefatory material to *Sylva*. The engraved title page may make no mention of *New Atlantis*, but its iconography carefully highlights several of the concerns it shares with its companion text and hints at the nature of their relationship (Figure 2).²⁸ The image deliberately echoes the famous engraved

²³ A Latin translation of *New Atlantis* (possibly by Bacon) was published in the composite volume *Francisci Baconi Baronis Verulamio, Vice-Comitis sancti Albani, Operum Moralium et Civilium Tomus* (London, 1638), STC 1109. It contains numerous variants from the English text, some of which are noted in *SEH*.

²⁴ Langman, 'Beyond, Both the Old World, and the New', 3.

²⁵ Langman, 'Beyond, Both the Old World, and the New', 69. Langman devotes his first chapter to the question of the relations between *Sylva* and *New Atlantis*, and between both and Bacon's *Instauratio magna*.

²⁶ Compare, for example, *New Atlantis*, sig. a4^v (the mariners' arrival at Bensalem) with G. Sandys, *A Relation of a Journey begun An: Dom: 1610* (London, 1615), STC 21726, sig. B3^{r-v}; *New Atlantis*, sig. c1^v (the description of ancient navigation) with Pliny, *The Historie of the World, Commonly Called the Naturall Historie of C. Plinius Secvndvs*, translated by Philemon Holland, 2 vols (London, 1601), STC 20029 and 20029.5, 1.67 (vol. 1, sigs. Div^v–Dv^v); 5.12 (vol. 1, sig. Kii^{r-v}).

²⁷ See Serjeantson, 'Natural knowledge in the *New Atlantis*'.

²⁸ On the engraved title page of *Sylva*, see the analysis in M. Corbett and R.W. Lightbown, *The Comely Frontispiece: The Emblematic Title-page in England 1550–1660* (London: Routledge & Kegan Paul, 1979), 184–9.



Figure 2. Engraved title page of *Sylva Sylvarum*, from *Sylva sylvarum: or A naturall historie In ten centuries*. Written by the Right Honourable Francis Lo. Verulam Viscount St. Alban (London: J.H. for William Lee, 1627) STC 1168. Cambridge University Library, Keynes Q.5.12. Reproduced by kind permission of the Syndics of Cambridge University Library.

title page of Bacon's *Novum organum* (1620), which depicts two ships, one in the foreground and one in the background, sailing back (not, as some commentators have suggested, out) through a pair of pillars taken to represent the Pillars of Hercules, or the limits of the known world. The plain Doric columns of the *Novum organum* are here replaced by more elaborate Corinthian ones, but they are similarly set before a seascape. Instead of the ships, between the pillars and on the sea itself rests a globe inscribed with the legend 'Mundus Intellectualis'; the upper part of the globe is illuminated by a ray of light emanating from a glory, in the centre of which is the Tetragrammaton and either side of which are two cherubim, one looking down towards the globe and the other across to the sacred name. Below the glory, split across its descending ray, is inscribed a text from Genesis 1.4: 'Et vidit Deus lucem | quod esset bona' (And God saw the light, that it was good). The imagery of voyaging and discovery is plain, and brings together the *New Atlantis*, *Sylva*, and the aims of Bacon's grand overall project, the *Instauratio magna*, or *Great Instauration*: by travelling beyond the limits set by the ancients, Bacon and his followers will be able to map the world of understanding (*mundus intellectualis*) and provide a guide for those who come after them, a project outlined by his own unfinished *Descriptio Globi Intellectualis*, or *Description of the Intellectual Globe* (1612).²⁹ In that work he discusses the distinctions in human doctrine between history, poetry and philosophy, arguing that 'History answers to memory, Poetry to imagination, and Philosophy to reason'; *Sylva* is an example of Natural History, *New Atlantis* of poetry, by Bacon's definition ('by Poetry I mean here nothing other than make-believe history').³⁰ Each of them contributes to the survey of the intellectual world, in different ways: *Sylva* supplies a lack by collecting data drawn from various sources, while *New Atlantis* suggests what might be attained when human knowledge is reformed and such data properly collated and interpreted.

Most significant, though, is the religious iconography of the title page. Rawley was a clergyman, of course, and so we might expect him to emphasize this aspect of Bacon's thought. But in his choice of imagery here, and in his comments in his address to the reader before *Sylva*, he does not wilfully distort Bacon to his own ends; rather, he picks up acutely on his patron's statements in the two texts he is presenting, as well as elsewhere in his writings. The illumination of the intellectual world, which is depicted as the end of Bacon's philosophy, is dependent upon the direct influence of God, with the cherubim assisting; those portions of the globe outside of the reach of the divine ray are in shadow.³¹ At the beginning of the final century of *Sylva* – the section that immediately precedes *New Atlantis* – Bacon announces the direct association between faith in God and the proper understanding of nature:

wee, that hold firme to the *Works of God*; And to the *Sense*, which is *Gods Lampe*; (*Lucerna Dei Spiraculum Hominis*;) will enquire, with all Sobrietie, and Seueritie, whether there be to be found, in the Foot-steps of *Nature*, any such *Transmission* and *Influx* of *Immateriate Vertues*. (sig. 2H4^v)

²⁹ Cf. Bacon, *The Essayes or Counsels, Civill and Morall*, 192: 'Thus I haue made as it were a small Globe of the Intellectual world, as truly and faithfully as I coule discouer, with a note and description of those parts which seeme to mee, not constantly occupate, or not well conuerted by the labour of Man.' On Bacon's uses of the imagery of voyaging for the extension of knowledge see B. Vickers, *Francis Bacon and Renaissance Prose* (Cambridge: Cambridge University Press, 1968), 174–5.

³⁰ Bacon, *Philosophical Studies c.1611–c.1619*, 97. See also Corbett and Lightbown, *The Comely Frontispiece*, 188–9.

³¹ Cf. Corbett and Lightbown, *The Comely Frontispiece*, 189: 'Where divine knowledge illumines the mind, the contours are defined clearly; where the divine light ceases the world is in shadow thickening to obscurity, the mind in a state of ignorance.'

Rawley, in his address to the reader before *Sylva* (which was written before Bacon's death),³² draws out a further and important connotation of the imagery of light:

his Lordship hath often in his Mouth, the two kinde of *Experiments; Experimenta Fructifera*, and *Experimenta Lucifera: Experiments of Vse*, and *Experiments of Light*; And he reporteth himself, whether he were not a strange Man, that should thinke that Light hath no Vse, because it hath no Matter. (sig. A2^f)

This takes up Bacon's own statement in *Sylva* that 'Ovr *Experiments* we take care to be, (as we haue often said,) either *Experimenta Fructifera*, or *Lucifera*; Either of *Vse*, or of *Discouery*' (sig. S1^f);³³ in experiment 968 he states that 'Light may be taken from the *Experiment* of the *Horse-Tooth-Ring*, and the *Garland of Periwinkle*'³⁴ (sig. 2L1^f). The notion of knowledge as 'light' is a significant part of *New Atlantis*, with the Governor of the Strangers' House explaining that the secret voyages organized by Salomon's House to the rest of the world are Bensalem's main trading economy (although a rather one-sided one):

wee maintaine a Trade, not for Gold, Siluer, or Iewels; Nor for Silkes; Nor for Spices; Nor any other Commodity of Matter; But onely for Gods first Creature, which was Light: To haue Light (I say) of the Growth of all Parts of the World. (sig. c4^v)

(hence, the agents' description as 'Merchants of Light' (sig. f4^v)). When revelation comes to Bensalem, in the form of an 'Arke' containing the Scriptures, it is signalled by the presence of a miraculous 'Pillar of Light' at sea (sig. b3^v). And as I have already mentioned, Salomon's House is described as the 'the *Lanthorne of this Kingdome*': it is at once the recipient and the source of illumination in Bensalem.³⁵

The cherubim placed either side of the glory provide the final iconographic link between *Sylva*'s title page and *New Atlantis* that I want to highlight. When the mariners are greeted by a Bensalemite official he hands them 'a little Scroule of Parchment [...] Signed with a Stampe of *Cherubins Wings*' (sig. a3^v); the chariot in which the Father of Salomon's House is carried through the city is adorned with 'a small *Cherub* of Gold, with Wings displayed' (sig. e1^f). In both cases the cherubim represent proximity to the knowledge of God and of light, and the entry into a new life: precisely the ends to which *Sylva*, *New Atlantis* and the *Instauratio magna* were directed.³⁶

The engraved title page of *Sylva* emphasizes the links that William Rawley quite accurately identified between that text and *New Atlantis*. The latter text is shot through with references to the religious foundations and aspirations of Bensalem's – and Bacon's – natural philosophy, which is also a concern (although one less explicitly stated) of *Sylva*.³⁷ Salomon's House is also known as the 'Colledge of the sixe Daies Workes' (sig. c4^f; cf. sig. a2^f), and Bacon's

³² Rawley writes of Bacon in the present tense in his address to the reader, and concludes it with a note that 'This Epistle is the same, that should haue been prefixed to this Booke, if his Lordship had liued' (sig. A3^f).

³³ For further statements on this distinction, see Bacon, *The Instauratio magna: Part II, Novum organum*, 17, 195–6.

³⁴ For further uses of 'light' in this sense in *Sylva*, see sigs. A4^f, D3^v, E3^f, F2^f, G4^f, K4^v, M4^v, S1^f, T2^v, X4^v, 2B1^f, 2I1^v.

³⁵ On light imagery, see further, W.R. Davis, 'The Imagery of Bacon's Late Work', *Modern Language Quarterly*, 27:2 (1966), 162–73.

³⁶ On the cherubim, see Corbett and Lightbown, *The Comely Frontispiece*, 188; E. McCutcheon, 'Bacon and the Cherubim: An Iconographical Reading of the *New Atlantis*', *English Literary Renaissance*, 2:3 (1972), 334–55; J.M. Rodríguez García, 'Patterns of Conversion in Francis Bacon's *New Atlantis*', *Literature Interpretation Theory*, 17 (2006), 179–211 (189).

³⁷ See, especially, S.A. McKnight, *The Religious Foundations of Francis Bacon's Thought* (Columbia, MO: University of Missouri Press, 2006), ch. 1.

Instauratio magna was divided into six parts, indicating that Salomon's House is dedicated to the study of God's creation, which was effected in six days (Genesis 1–2:3) and articulating Bacon's belief (expressed through the Governor) that natural philosophy should proceed with faith in that creation.³⁸ A clearer picture is thus beginning to emerge of the close association of the two texts in the 1626/7 folio: *Sylva* is devoted to the compiling of natural-historical data which will provide 'light', while *New Atlantis* describes this as one stage in the process of discovery and of the advancement of learning. As Reid Barbour has noted acutely, *Sylva* concludes with a century of experiments related to the operation of the imagination, belief and persuasion (as well as the operation of spirits), themes that are both overtly treated in *New Atlantis* (how the reasoning and imaginative faculties might best be exercised and reformed; whether '*Immateriate Vertues*' can be transmitted through nature rather than by '*Superstitious, and Magicall Arts*', in the words of *Sylva* (sig. 2H4^v)) and that underlie its aims as a '*Fable*' (sig. a2^f) designed to further the imaginations and aspirations of its readers.³⁹ *Sylva* can thus be seen as a necessary preparative to the achievements described in *New Atlantis*: each text is a gloss on the other, and Rawley's claim that they belong together looks increasingly persuasive.

III

One of the most important ways in which this is so emerges from the two texts' shared concern with the organization of knowledge and the management and transmission of data: in pursuing this concern they both illuminate and question each other. *New Atlantis* returns again and again to questions of textual transmission and of the organization and preservation of knowledge more generally. As I have argued elsewhere, the whole text can be read as an allegory of learning as reformed according to Bacon's ideals, with the island of Bensalem representing the proper relationship of the present to the past and the mariners standing for the possibilities of the future.⁴⁰ Moreover, the book contains, at the very end, a fantasy of its own transmission and dissemination, as the Father of Salomon's House gives the narrator leave to publish his story: 'GOD *blesse this Relation, which I haue made. I giue thee leaue to Publish it, for the Good of other Nations; For wee here are in GODS Bosome, a Land vnknowne*' (sig. g2^f). The sanctioned publication of the '*Relation*' is a fitting conclusion to a text that shows the proper keeping of authentic records and the associated reliance on a continuous, uninterrupted and uncorrupted history to be central to both the island and to Salomon's House. The Governor of the Strangers' House compares the cultural memory of Bensalem favourably to that of the known world and twice appeals to the 'records' relating to Salomon's House (sig. c4^f; sigs. f4^r–g1^r), which itself has a series of researchers devoted to managing and recording experiments and their results, as well as consultations about which should be published (sigs. f4^v–g1^f).⁴¹ As Jacob Soll has noted, this foreshadows the project of a 'Secret Sphere' of information initiated in seventeenth-century France by Jean-Baptiste Colbert (1619–1683).⁴² Bacon is, then, convinced that data need to be carefully preserved and transmitted, be they historical or natural-philosophical; he is also aware

³⁸ For the hexameral organization of the *Instauratio magna*, see Bacon, *The Instauratio magna: Part II, Novum organum*, 26–47; on religion in Bacon's philosophy, see also Bacon, *The Essayes or Counsels, Civill and Morall*, 37; 182–8; R. Barbour, *Literature and Religious Culture in Seventeenth-century England* (Cambridge: Cambridge University Press, 2002), 177–81.

³⁹ Barbour, *Literature and Religious Culture*, 179–80.

⁴⁰ See D. Colclough, 'Ethics and Politics in the *New Atlantis*', in *Francis Bacon's New Atlantis*, 60–81.

⁴¹ See also Langman, 'Beyond, both the old world, and the new', 82–111; 263.

⁴² J. Soll, *The Information Master: Jean-Baptiste Colbert's Secret State Intelligence System* (Ann Arbor, MI: University of Michigan Press, 2009).

of the risks to which they are subject in the process of transmission. This is something that he addresses in any number of his works, and it is also reflected in the structure of the *Instauratio magna*, which as a whole was intended to provide a solid textual foundation for the new philosophy and parts I and III of which were to identify deficiencies in knowledge and supply a new set of natural histories – *Sylva*, according to Rawley, was ‘Designed and set downe for a third part of the *Instauratio*’ (sig. A1^r).⁴³ One of the main problems acknowledged by Bacon was that identified by Ann Blair as a particular nuisance to early modern thinkers: what she has called ‘information overload’ – both from books (which Bacon regarded as both sacred objects and annoying lumber) and from nature itself.⁴⁴

It can be tempting to regard Bacon as part of the problem of rather than the solution to the threat of information overload and fragmentation. The most famous thing about the *Instauratio magna* is, of course, that it was never completed – never, perhaps, completable – and Bacon’s oeuvre consists as much of fragments as of finished works, one of those fragments being the *New Atlantis*, ‘A Worke,’ as the title page announces, ‘vnfinished’.⁴⁵ Bacon was all too aware of this himself, admitting in the preliminaries to *Novum Organum* that the completion of the *Instauratio* was ‘not confided entirely to a single age but to a succession of them’.⁴⁶ He knew that his role was that of a *buccinator*,⁴⁷ or bugler, calling other natural philosophers to arms; a ‘Work-man and a Labourer’ rather than an architect (sig. A2^r).

Sylva and *New Atlantis* fit into this picture in particularly interesting ways. *Sylva* has long been dismissed as a mere olio of information stolen shamelessly from Bacon’s reading.⁴⁸ The title itself, which could be roughly translated as ‘collection of collections’, seems to invite such an interpretation, and it bears comparison with medieval and early modern encyclopaedic works.⁴⁹ But Rawley defended it from the anticipated accusation that it was an ‘Indigested Heap of Particulars’, and Graham Rees has proved that he was right to do so, showing that it is carefully

⁴³ See Bacon, ‘Distributio operis’, in Bacon, *The Instauratio magna: Part II, Novum organum*, 27–47; see also Rees’s introduction, especially xix–xxii. Rees does not include *Sylva* or *New Atlantis* in his table outlining the completed parts of the *Instauratio* (xx–xxi); aside from the placing of *Sylva* in part III, I agree with his conclusions.

⁴⁴ For books as sacred (and libraries as shrines), see Bacon, *The Advancement of Learning*, 56. On information overload, see A. Blair, ‘Reading Strategies for Coping with Information Overload ca. 1550–1700’, *Journal of the History of Ideas*, 64:1 (2003), 11–28; D. Werle, *Copia librorum. Problemgeschichte imaginierter Bibliotheken 1580–1630* (Tübingen: Max Niemeyer, 2007). For another of Bacon’s attempts to meet its challenges, see R. Lewis, ‘“A Kind of Sagacity”: Francis Bacon, the *Ars Memoriae* and the Pursuit of Natural Knowledge’, *Intellectual History Review*, 19:2 (2009), 155–75 (171–5).

⁴⁵ On the incomplete nature of *New Atlantis*, see especially Bacon, *The Great Instauration and New Atlantis*, edited by Weinberger, xii–xiii and J. Weinberger, ‘Science and Rule in Bacon’s Utopia: An Introduction to the Reading of the *New Atlantis*’, *The American Political Science Review*, 70:3 (1976), 865–85; he regards the incompletion of *New Atlantis* as a philosophical ploy. See also R.K. Faulkner, *Francis Bacon and the Project of Progress* (Lanham, MD: Rowman & Littlefield, 1993), 233–5, who states that ‘there is some reason to doubt that the writing is seriously incomplete’ and that ‘the ending, while abrupt, certainly seems to fit’ (233). Contrast, however, Rawley’s epistle to the reader in the Latin edition, where he explains that Bacon chose not to finish *New Atlantis* because he had other, more important tasks to complete first (Bacon, *Operum Moralium et Civilium Tomus*, sig. A3^v).

⁴⁶ Bacon, *The Instauratio magna: Part II, Novum organum*, 25. On Bacon’s compulsion not to finish works, see xcvi–xcvii.

⁴⁷ Bacon, *De dignitate et augmentis scientiarum*, in *SEH*, vol. 1, 579: ‘Ego enim buccinator tantum, pugnam non in eo’ (‘for I am but a trumpeter, not a combatant’; translated in *SEH*, vol. 4, 372).

⁴⁸ On this accusation, supported by Ellis’s annotations in *SEH*, see Rees, ‘An Unpublished Manuscript’, 387–8.

⁴⁹ *OED*, sense 2. On encyclopedias see H. Zedelmaier, *Bibliotheca universalis und Bibliotheca selecta: Das Problem der Ordnung des gelehrten Wissens in der frühen Neuzeit* (Cologne: Böhlau Verlag, 1992); *Enzyklopädien der Frühen Neuzeit. Beiträge zu ihrer Erforschung*, edited by F.M. Eybl, W. Harms, H.-H. Krummacher and W. Welzig (Tübingen: Niemeyer, 1995); A. Blair, *The Theater of Nature: Jean Bodin and Renaissance Science* (Princeton, NJ: Princeton University Press, 1997); *Die Enzyklopädie im Wandel vom Hochmittelalter bis zur Frühen Neuzeit*, edited by C. Meier-Staubach (Munich: Wilhelm Fink, 2002); *Schooling and Society: The Ordering and Reordering of Knowledge in the Western Middle Ages*, edited by A. A. MacDonald and M. W. Twomey (Leuven: Peeters, 2004).

assembled from both reading *and* experience.⁵⁰ Bacon's intention in writing it was to provide a mass of data, but also to assess those data and to speculate on the causes of the phenomena he described. He distilled information derived from the ancients (especially Aristotle, pseudo-Aristotle and Pliny), from his contemporaries (especially Scaliger, Ficino, Telesio, Galileo, della Porta, Sandys and Cardano), and from experiments that he had executed or supervised.⁵¹ However, these sources are rarely acknowledged: Bacon deliberately eradicated from *Sylva* virtually any taint of testimony.⁵² Rees has shown how in the passage from working papers to the finished, publishable text, Bacon frequently moved from using formulae such as 'Aristotle reporteth' to 'It is reported'.⁵³ The book is provided with generous margins, but these are only used to indicate the number and the nature of the experiment described, rather than to indicate sources, as was, of course, commonplace.⁵⁴

Bacon was notoriously sceptical towards testimony and, indeed, towards much that he associated with the textual transmission of knowledge – a range of practices that he lumped together under the hold-all category of the 'philological'.⁵⁵ In his dedicatory epistle to *Novum organum*, addressed to James VI and I, he called on the king to assist in the 'collecting and perfecting of a true and rigorous natural and experimental history [...] (stripped of philological matters) [*missis Philologicis*]',⁵⁶ while in the *Parasceve* he declared: 'no more of antiquities, citations and differing opinions of authorities, or of squabbles and controversies, and, in short, everything philological. [...] No author should be cited save in matters of doubt [...].'⁵⁷ To achieve this end, in *Novum organum* and a number of other works (especially *Temporis Partus Masculus* and *Redargutio philosophiarum*) he vituperatively assaulted a whole array of his philosophical forebears.⁵⁸ But in *Sylva*, Bacon is not simply following his own strictures in the *Parasceve*, where he called for citations only to be supplied 'in matters of doubt'. As the formula 'it is reported' suggests, *Sylva* is full of matters of doubt, rarely accompanied by the slightest reference to another author. Sometimes these matters of doubt are resolved, sometimes not. For example, experiment 76 states that:

It is reported by some of the *Ancients*, that *Sailers* haue vsed, euery Night, to hang *Fleeces of wooll* on the sides of their *Ships*, the *Wooll* towards the water; And that they haue crushed fresh Water out of them, in the Morning, for their vse. And thus much we haue tried, that a *Quantitie* of *Wooll* tied loose together, being let downe into a deepe *Well*; And hanging in the *Middle*, some three Fathome

⁵⁰ Bacon, *Sylva Sylvarum*, A1^f; Rees, 'An Unpublished Manuscript', 386–93.

⁵¹ For a detailed account of Bacon's sources, see Rees, 'An Unpublished Manuscript', 389–90. The pseudo-Aristotelian *Problemata* are a significant analogue for *Sylva*'s relatively informal structure, but Bacon does not use the *quaestio* form.

⁵² See Rees, 'An Unpublished Manuscript', 389. Among the ancients, Aristotle is named at sigs. A4^v, C4^f, C4^v, E1^f and 2K3^v; Plutarch at sig. 2C3^v; Parmenides at sig. D3^f, Galen at sig. R3^v, Hippocrates at sigs. C4^f, D2^f and N2^v. Among the moderns, Paracelsus is named at sigs. E4^f, N3^f and Hh4^v; Scaliger at sig. Z2^f, Comines at sig. Ll2^v; Telesio at sig. D3^f; Galileo at sig. 2D1^v and Croll at sig. 2L4^f.

⁵³ Rees, 'An Unpublished Manuscript', 388–9.

⁵⁴ It is worth considering, however, that these wide margins could invite readers to annotate the book as they tested Bacon's assertions and experiments, in the library or in the laboratory.

⁵⁵ Contrast, however, Bacon's acknowledgement in *The Advancement of Learning* of the need for 'Newe Editions of Authors, with more correct impressions, more faithfull translations, more profitable glosses, more diligent annotations, and the like' (Bacon, *The Advancement of Learning*, 57).

⁵⁶ Bacon, *The Instauration magna: Part II, Novum organum*, 9.

⁵⁷ Bacon, *Parasceve*, in Bacon, *The Instauration magna: Part II, Novum organum*, 457: 'Primò igitur facessant Antiquitates, & Citationes, aut Suffragia Authorum; etiam Lites, & Controuersia, & Opiniones discrepantes; Omnia denique Philologica. Neque enim citetur Author, nisi in re dubia fidei [...].' On testimony, see R. Serjeantson, 'Testimony, Authority and Proof in Seventeenth-century England', University of Cambridge Ph.D, 1998; R. Serjeantson, 'Testimony and Proof in Early-modern England', *Studies in History and Philosophy of Science*, 30 (1999), 195–236; R. Serjeantson, 'Proof and Persuasion', in *The Cambridge History of Science, vol. III: Early Modern Science*, edited by K. Park and L. Daston (Cambridge: Cambridge University Press, 2006), 132–75.

⁵⁸ See *Temporis Partus Masculus* and *Redargutio philosophiarum*, in Farrington, *The Philosophy of Francis Bacon*.

from the water, for a night, in the Winter time; increased in weight, (as I now remember) to a fifth Part. (sig. D3^v).

Here the phenomenon has been noted from ‘some of the *Ancients*’ (Bacon’s direct source is Pliny’s *Natural History*),⁵⁹ and subsequently verified (‘thus much we haue tried’). Clearly Bacon and his assistants have attempted to replicate through experience something noted from a text, or a number of texts; yet even here the exactness of the data is somewhat undermined by his parenthetical ‘as I now remember’. The precise increase in volume is not recorded, which would lead any serious reader of the text to wish to repeat the experiment once more in order to arrive at a final and verifiable result.

While Bacon often shows that an experiment has been thus imitated or replicated, and regularly bases his observations solely upon experiments that he has personally conducted or observed, this is by no means always the case. To take a single example, in experiment 361 he notes that

It is reported by one of the *Ancients*, that in Part of *Media*, there are *Eruptions* of *Flames* out of *Plaines*; And that those *Flames* are cleare, and cast not forth such Smoake, and Ashes, and Pummice, as *Mountaine Flames* doe. (sig. N4^r)

This simply cannot be verified by Bacon, or replicated; it must remain a matter of doubt whether such eruptions take – or took – place in *Media*. Therefore, the best he can do is to speculate as to the cause for this unconfirmed occurrence and offer the suggestion that ‘The Reason (no doubt) is, because the *Flame* is not pent, as it is in *Mountaines*, and *Earth-quakes* which cast *Flame*’; the inference is that it is the violence of the eruption in the latter instances which gives rise to the phenomena of smoke and ashes. Here again a parenthesis serves only to set the reader on guard: the confident ‘no doubt’ in fact draws attention to the possibility of doubt, and the absence of any citation for the source of the original observation leaves the reader unable to assess its reliability.⁶⁰ Similarly, in experiment 569 Bacon announces that

The *Ancients* haue noted, that there are some *Herbs*, that grow out of *Snow*, laid vp close together, and *Putrified*; And that they are all *Bitter*; And they name one specially, *Flomus*, which wee call *Moth-Mullein*. It is certaine, that *Wormes* are found in *Snow* commonly, like *Earth-Wormes*; And therefore it is not vnlike, that it may likewise put forth *Plants*. (sig. T3^v).

Once again, Bacon relies solely upon the testimony of ‘the *Ancients*’ (in this case pseudo-Aristotle, *De plantis*, 825a) for the existence of herbs that grow out of snow. This has not been verified or repeated (Bacon has neither seen such herbs, nor grown them himself), and so in order to assess its plausibility, Bacon turns to an analogous phenomenon, namely the supposed generation of worms from snow (mentioned by pseudo-Aristotle in the same passage). Yet Bacon cannot even prove that these worms are generated by (rather than simply ‘found in’) snow, so his – this time relatively hesitant – conclusion that ‘it is not vnlike’, or implausible, that plants might grown in the same way lacks force.

By assessing and testing information derived from book-learning, but eradicating traces of its origins, Bacon hoped not to supplement, but to supplant the works he and others had relied upon; to provide a fresh start. Relieved of the need (or deprived of the means) to trace Bacon’s summaries

⁵⁹ Pliny, *The Historie of the World*, 31:6 (vol. I, sig. 2N3^{r-v}).

⁶⁰ *Pace SEH*, Bacon does not draw on Pliny, *The Historie of the World*, 2.110, but on Pseudo-Aristotle, *De mirabilibus auscultationibus*, 35; see Aristotle, *Minor Works*, edited by W.S. Hett (London: Heinemann, 1936), 251. The remainder of experiment 361 is taken from the following section of this work.

or assertions to their sources, his readers could begin afresh with *Sylva* and put to one side the texts on which it drew – or so, I would argue, was Bacon's hope.

In this way, although it is very different in almost every way from *Novum organum*, *Sylva* shares some common ground with that text. Just as in *Novum organum*, Bacon attempted to lay the ground for his new philosophy by reducing to a series of aphorisms the epistemology, the cosmology and the physics that he believed should underpin it, so in *Sylva* he reduced what he regarded as the most useful data he had collected (and in some cases tested) from the texts of the past and from his own or others' observations to a series of experiments on which his readers could build. In both cases, the fragmentary nature of the material provided by Bacon was intended to induce further thought or action. Aphorisms, he famously stated in *The Advancement of Learning*, 'representing a knowledge broken, doe inuite men to enquire further; whereas *Methodes* carrying the shewe of a Totall, doe secure men; as if they were at furthest'.⁶¹ Rawley, similarly, records Bacon's reason for not casting *Sylva* into a more methodical form:

I haue heard his Lordship say also, that one great Reason, why he would not put these Particulars into any exact *Method*, (though he that looketh attentiuely into them, shall finde that they haue a secret Order) was, because hee conceiued that other men would now thinke, that they could doe the like; And so goe on with a further Collection: which if the *Method* had been Exact, many would haue despaired to attaine by Imitation. (sig. A2^v)⁶²

Instead of having an exact method, *Sylva* is arranged, as the title page announces, in 'centuries': ten sets of a hundred experiments each. As Langman has shown, centuriate organization in the period was most usually employed by miscellaneous works – collections of epigrams, aphorisms and maxims – or occasionally in religious texts.⁶³ It announced a certain degree of editorial control, but it equally acknowledged a certain lack of logical structure: the primary organizing form is simply the unit of one hundred. Within this, in *Sylva*, experiments – on acoustics, fluids and pneumatics, soils and so on – are grouped together, but they do not (and cannot) have any greater logical cohesion.⁶⁴ Turning to the apparatus (by this, I mean the rudimentary index, or 'table' as it more properly calls itself, which follows the text), as Ann Blair has shown, by the mid-sixteenth century authors, readers and printers were aware of the possibilities and the advantages of alphabetical indices to large works. By 1626, such tools were well established and widely deployed – for instance, in Philemon Holland's translation of one of Bacon's main sources, Pliny's *Natural History*. *Sylva* provides the old-fashioned kind of index that might well have infuriated early modern readers: the experiments are listed in the order in which they appear in the book, with no attempt at either further rationalization or alphabetization; but a properly compiled index is of most use when navigating a methodological text, which *Sylva* is determinedly not.⁶⁵

⁶¹ Bacon, *The Essayes or Counsels, Civill and Morall*, 124. On Bacon's aphorisms, see S. Clucas, "'A Knowledge Broken": Francis Bacon's Aphoristic Style and the Crisis of Scholastic and Humanist Knowledge-Systems', in *Renaissance Prose: New Essays in Criticism*, edited by N. Rhodes (Binghampton: Mediaeval & Renaissance Texts Society, 1995), 147–72.

⁶² See further, Rees, 'An Unpublished Manuscript', 386. For Bacon's Latin natural histories, with which Rawley associates *Sylva* at sig. ¶1^r, see F. Bacon, *The Instauratio magna, Part III: Historia Naturalis and Historia Vite*, edited by G. Rees (Oxford: Clarendon Press, 2007).

⁶³ Langman, 'Beyond, Both the Old World, and the New', 48.

⁶⁴ Although Rawley tantalizingly suggests of the 'Particulars' collected in *Sylva Sylvarum* that 'he that looketh attentiuely into them, shall finde that they haue a secret Order' (sig. A2^v).

⁶⁵ Of course we do not know whether the index was prepared by Bacon himself or by Rawley; it is, though, worth noting that none of the works whose publication Bacon oversaw contain any developed textual apparatus.

By now it should be clear that to criticize *Sylva* for its eradication of testimony or its lack of methodical structure would be to judge the text by generic criteria that are alien to its form and its aims. To retain some kind of consistency, Bacon's rejection of intellectual servility means that he must dispense with textual tools and strategies that might have increased his own authority; but establishing authority was not his intention in composing the work, just as it was not Rawley's in publishing it. Towards the end of *Sylva*, Bacon considers, as I have already mentioned, the power of the imagination, and enumerates 'Three *Meanes*: to fortifie *Beleeefe*: The First is *Experience*: The Second is *Reason*: And the Third is *Authoritie*'; 'that of these', he goes on to argue, 'which is farre the most *Potent*, is *Authoritie*: For *Beleeefe* vpon *Reason*, or *Experience*, will *Stagger*' (sig. 2K2^v). In order fully to appreciate the mordant ambiguity of this assertion, we need carefully to consider its immediate context, as well as to remember Bacon's statements on authority elsewhere. Both show authority to be something that Bacon distrusted at the same time as he required it, wishing to persuade his readers without resorting to the intellectual bullying that he deplored in his fellow natural philosophers. Much of the final century of *Sylva* is taken up by the attempt to distinguish between, on the one hand, the deceptions of so-called 'magic' and the pitfalls of superstition, and, on the other, the real and natural causes of apparently mysterious operations of the imagination or of 'spirits' working at a distance.⁶⁶ His thought on these questions is helpfully summarized in experiment 902:

Men are to be Admonished, on the other side, that they doe not easily giue Place and Credit to these *Operations*, because they *Succeed many times*; For the *Cause* of this *Successe*, is (oft) to be truly ascribed, vnto the *Force* of *Affection* and *Imagination*, vpon the *Body Agent*; And then by a *Secondary Meanes*, it may worke vpon a *Diuers Body*: As for Example; If a *Man* carry a *Planets Seale*, or a *Ring*, or some *Part* of a *Beast*, beleeuing strongly, that it will helpe him to obtaine his *Loue*; Or to keepe him from danger of hurt in *Fight*; Or to preuaile in a *Suit*; &c. it may make him more *Actiue*, and *Industrious*; And againe, more *Confident*, and *Persisting*, than otherwise he would be. Now the great *Effects* that may come of *Industrie*, and *Perseuerance*, (especially in *Ciuill Businesse*,) who knoweth not? For wee see *Audacitie* doth almost binde and mate the *weaker Sort* of *Minds*; And the *State* of *Humane Actions* is so variable, that to trie Things oft, and neuer to giue ouer, doth Wonders: Therefore, it were a Meere *Fallacie* and *Mistaking*, to ascribe that to the *Force* of *Imagination*, vpon another *Body*, which is but the *Force* of *Imagination* vpon the Proper *Body*: For there is no doubt, but that *Imagination*, and *Vehement Affection*, worke greatly vpon the *Body* of the *Imaginant*. (sig. 2I1^r; cf. sig. 2K1^v)

If you believe in the power of a 'magical' object, your own perseverance may well be heightened, and so it may appear to have an effect. This is, Bacon acknowledges, an operation of the imagination; but it is not of the kind that is often described in these terms, because it should be ascribed to the imagination of the believer and wearer (the '*Imaginant*'), not to the thing worn or to the imagination of another. The power of spirits operating at a distance must therefore be carefully distinguished from this kind of faith, and Bacon goes on to consider scents, gasses, sound and sight as possible *loci* for such operations, speculating on their extent and power. He also treats (with some seriousness) the so-called 'weapon-salve', or notion that that 'the *Anointing* of the *Weapon*, that maketh the *Wound*, will heale the *Wound* it selfe' (sigs. 2L3^v–2L4^r, at sig. 2L3^v). But when he comes to discuss the power of the imagination of one person on another, he explains that it is a matter of credulity, probability and authority – not of any kind of special power. This is, then, a question of mastering men, and of persuasion, not of '*Superstitious*, and *Magicall Arts*'; as such, it is far from the aim of *Sylva*, or of Bacon's natural philosophy more generally. His desire in *Sylva* is

⁶⁶ See S. Clark, *Thinking with Demons: The Experience of Witchcraft in Early Modern Europe* (Oxford: Oxford University Press, 1999), 223–4.

that Men should learne and perceiue, how seuer a Thing the true *Inquisition of Nature* is; And should accustome themselues, by the light of Particulars, to enlarge their Mindes, to the Amplitude of the World; And not reduce the World to the Narrownesse of their Mindes. (sig. K4^v)

In a range of other texts – most notably *The Advancement of Learning* and *Novum organum* – Bacon has harsh words for those who only wish to impose their authority on others, and this was, of course, his main complaint about the ancients.⁶⁷ In their different ways, both *Sylva* and *New Atlantis* are intended to provoke further thought and action; in Rawley's words, 'to vnloose Mens mindes, being bound; and (as it were) Maleficiate, by the Charmes of deceiuing Notions, and Theories; and therby made Impotent for Generation of Workes'. (sig. A1^{r-v})⁶⁸

IV

Bacon's aims become even clearer when *Sylva* is read alongside *New Atlantis*. That work provides, as has been recognized, a fantasy of the proper organization of knowledge in and by the state, and in and by the individual subject too.⁶⁹ In the fictional island of Bensalem, where *New Atlantis* is set, *Sylva* would only be the starting point for further work and further refinement (as Bacon clearly, yet vainly, hoped it would be in his England, also). Bensalem is a society free from the problems that were widely acknowledged to beset the organization and dissemination of knowledge, especially those that were of particular concern to Bacon. Revelation there is direct as well as textual: as I have stated, the 'great Pillar of Light' marks the delivery of

a Booke, and a Letter; Both written in fine Parchment, and wrapped in Sindons of Linnen. The Booke contined all the Canonically Bookes of the Old and New Testament, according as you haue them; (For we know well what the Churches with you receiue;) And the Apocalypse it selfe; And some other Bookes of the New Testament, which were not at that time written. (sig. b4^r)⁷⁰

The letter was written by the Apostle Bartholomew, and explains that a divine vision caused him to commit an ark, or chest, containing these texts to the sea. The ark, and the holy texts, are collected by a member of Salomon's House, and his prayer (which allows him access to the ark) shows that even before this event the people of Bensalem were blessed with an awareness of God and His works of the kind ascribed by contemporary theologians to 'natural men': 'Lord God of Heauen and Earth; thou hast vouchsafed of thy Grace, to those of our Order, to know thy Workes of Creation, and the Secretts of them' (sig. b3^v). Moreover, in this version of revelation all the problems attendant upon biblical transmission and translation are overcome:

There was also in both these writings, as well the Booke, as the Letter, wrought a great Miracle, Conforme to that of the Apostles, in the Originall Gift of Tongues. For there being at that time, in this Land, Hebrewes, Persians, and Indians, besides the Natiues, euery one redd vpon the Booke, and Letter, as if they had been written in his owne Language. (sig. b4^v)

⁶⁷ See, e.g., Bacon, *The Essayes or Counsels, Civill and Morall*, 31, 125; Bacon, *The Instauration magna: Part II, Novum organum*, 17, 195.

⁶⁸ Cf. Rawley's comment that 'I haue heard his Lordship often say; that if hee should haue serued the glory of his owne Name, he had been better not to haue published this *Naturall History*' (*Sylva Sylvarum*, sig. A1^r).

⁶⁹ See, especially, Le Dœuff, 'Introduction', in Bacon, *La Nouvelle Atlantide*, 7–71.

⁷⁰ A 'sindon' is a section of fine thin linen; the term is used to refer to the shroud in which the body of Christ was wrapped (*OED*).

Divine and human authority are married here, with the miraculous sign (sent directly from God) and texts (dictated by the Holy Spirit) being verified by the Brother of Salomon's House, who is himself singled out as a worthy recipient.⁷¹ Bacon fashions an image of a – for once – reliable and traceable chain of testimony, erasing the problems that are highlighted in *Sylva*.⁷²

Similarly, as the Governor's mention of the island's 'records' makes clear, in Bensalem knowledge of the past and of the natural world is transmitted reliably and maintained carefully, so there is no need continually to reassess the claims of past authors.⁷³ Unlike Europe, the Americas, or indeed its namesake Atlantis, Bensalem has remained immune from civilization-wrecking natural disaster, the descent into medieval barbarism or scholastic confusion, and even from the otherwise universal principle of the vicissitude of things (see especially sig. c2^v and sig. c3^r).⁷⁴ The 'Merchants of Light' clearly speak the target languages (they are able to blend in undetected: sig. c4^{f-v}); the state is powerful enough to resist any military intervention, but such conflict anyway lies in the past and the ruler (whoever that is – it is left unclear) is not distracted by the desire for glory (sig. c2^{f-v}); confessional and political boundaries are irrelevant, and the people hold learning in high esteem.⁷⁵ The Father of Salomon's House even seems to assume that scepticism towards the kind of traveller's tale the narrator will tell is almost unimaginable (despite the Governor's previous acknowledgement that '*What those few that returned may haue reported abroad I know not. But you must thinke, Whatsoever they haue said, could bee taken where they came, but for a Dreame*' (sig. c3^v)).

All of this underlines Bacon's aim in *New Atlantis* of fashioning a society that is free from the dangers, frustrations and confusions associated with the proliferation of books and the consequent generation of competing authorities. *New Atlantis* is short on prescription (even compared with its sceptical, playful model, Thomas More's *Utopia*)⁷⁶ because Bacon was presenting an image of possibility and a model of inspiration, not a technical blueprint. The actions required for the realization of his aims were, as he put it, '*Opera Basilica*', works for a king, and had to be the fruit of generations of labor.⁷⁷ *New Atlantis* gives a clear indication of the status of *Sylva* in Bacon's project when the Father of Salomon's House lists the '*seuerall Employments and Offices of our Fellowes*' (sig. f4^f). No fewer than fifteen of these fellows are employed to carry out the work undertaken for *Sylva* by Bacon and his servants, who had (much to Bacon's dismay) no external funding:

Wee haue Three that Collect the Experiments which are in all Bookes. These wee call Depredatours.

⁷¹ 'When he had made his Prayer, hee presently found the Boate he was in, moueable and vnbound; whereas all the rest remained still fast' (sig. b4^f).

⁷² For sceptical readings of the 'miracle' described here, see Weinberger, 'Science and Rule in Bacon's Utopia', 111 ff; D. Renaker, 'A Miracle of Engineering: The Conversion of Bensalem in Francis Bacon's *New Atlantis*', *Studies in Philology*, 87:2 (1990), 181–93; D. Spitz, 'Bacon's "New Atlantis": A Reinterpretation', *Midwest Journal of Political Science*, 4:1 (1960), 52–61 (54). For a more convincing link between this event and the aspiration of early modern natural philosophy to distinguish between true and false miracles, see Serjeantson, 'Natural Knowledge in the *New Atlantis*', 88–9 and references at fn. 23. See further, Davis, *Utopia and the Ideal Society*, 109–10. On Roman Catholic attitudes to Bacon's presumed critique of miracles, see M. Fattori, 'Sir Francis Bacon and the Holy Office', *British Journal for the History of Philosophy*, 13:1 (2005), 21–49.

⁷³ See above, 191.

⁷⁴ See Bacon, 'Of Vicissitude of Things', in *The Essayes or Counsels, Civill and Morall*, 172–6; the essay is echoed closely in *New Atlantis*, sig. c2^v.

⁷⁵ Consider their celebration of the arrival of the Father of Salomon's House, sig. e1^v.

⁷⁶ On *New Atlantis* and *Utopia*, see D. Albanese, 'The *New Atlantis* and the Uses of Utopia', *English Literary History*, 57 (1990), 503–28.

⁷⁷ For Bacon's description of his plans as '*Opera Basilica*', see Bacon, *The Advancement of Learning*, 61. On collaboration and future generations, see R. Sargent, 'Bacon as an advocate for cooperative scientific research', in *The Cambridge Companion to Bacon*, edited by M. Peltonen (Cambridge: Cambridge University Press, 1996), 146–71.

Wee haue Three that Collect the Experiments of all Mechanicall Arts; And also of Liberall Sciences; And also of Practises which are not Brought into Arts. These we call Mystery-Men.

Wee haue Three that try New Experiments, such as themselues thinke good. These wee call Pioners or Miners.

Wee haue Three that Drawe the Experiments of the Former Foure into Titles, and Tables, to giue the better light, for the drawing of Obseruations and Axiomes out of them. These wee call Compilers.

Wee haue Three that bend themselues, Looking into the Experiments of their Fellowes, and cast about how to draw out of them Things of Vse, and Practise for Mans life, and Knowledge, as well for VVorkes, as for Plaine Demonstration of Causes, Meanes of Naturall Diuinations, and the easie and cleare Discouery, of the Vertues and Parts of Bodies. These wee call Dowry-men or Benefactors. (sig. f4^v)

On these terms it is hardly surprising that Bacon left so much to be completed; it is, rather, astonishing how much he achieved, albeit quite frequently in fragmentary states. The 1626/7 folio is a challenge to its readers to take the task to its next level: its opening text provides data and cogitates on the causes of phenomena, giving the reader tools with which to work, while its companion piece offers a vision of what might be achieved if those tools were wielded properly.

In a manner not dissimilar to the two books of *The Advancement of Learning*, which together intended to provide a defence of the dignity of learning and then a combined identification of faults and inducement to action, *Sylva* and *New Atlantis* show what is possible and necessary now, and what will and must be possible and necessary in Bacon's imagined future – a future in which the research institute of which he had dreamed since at least the *Gesta Grayorum* of 1594–5 would be the centre of society.⁷⁸ In the *Sylva* volume Bacon provides part of the corrective histories of nature's 'IRREGVLARS',⁷⁹ and of 'NATURE WROVGHT, or MECHANICALL',⁸⁰ that he had called for in the *Advancement*, while also delineating his image of the 'third period of time', which 'will farre surpasse that of the *Græcian* and *Romane* Learning: Onely if men will know their own strength, and their owne weaknesse both: and take one from the other, light of inuention, and not fire of contradiction'.⁸¹ If, however, as Michael Kiernan has argued, 'the publication date of [*The Advancement of Learning*] turned out to be the worst of times' for Bacon's programme of royal support, coinciding with the discovery of Gunpowder Plot and the renewed outbreak of religious hostility and controversy,⁸² the publication date of the *Sylva* volume was no more propitious. Bacon's death was certainly an obstacle to his achieving the aims he set out, but so too was the presence of a new king on the throne; one who was of a decidedly less scholarly bent than his father. By the time that *Sylva* and *New Atlantis* were being written, Bacon was speaking from the sidelines, barred from the verge of the court since his fall from power in 1621. It is a mark of Bacon's bravery that he is convinced of the impossibility of preserving the trappings of scholarship as it is currently practised while trying to establish new forms of knowledge and of knowing. His call to arms, and his '*Modell*' of a natural-philosophical

⁷⁸ See *Gesta Grayorum; or, The History of the High and Mighty Prince Henry, Prince of Purpoole, Anno Domini 1594*, edited by D. Bland (Liverpool: Liverpool University Press, 1968).

⁷⁹ Bacon, *The Advancement of Learning*, 63.

⁸⁰ Bacon, *The Advancement of Learning*, 65.

⁸¹ Bacon, *The Advancement of Learning*, 181.

⁸² Bacon, *The Advancement of Learning*, xliiii–xlvi.