

***“New Experiments in Vice:”
Places of Experiment and Disorder in
the Stuart Restoration (1660-1688)***

Paddy Holt

Faculty of Arts and Social Sciences

The University of Sydney

A thesis submitted to fulfil the requirements for the degree of Doctor of
Philosophy

September 2023

I certify that the intellectual content of this thesis is the product of my own work, and that all the assistance received in preparing this thesis and sources have been acknowledged.

This thesis has not previously been submitted for any other degree or purposes.

Paddy Holt

29/09/2023

Table of Contents

Table of Contents.....	1
Acknowledgements.....	4
Abbreviations.....	5
Introduction.....	6
Finding Space for New Experiments in Vice	6
Reconsidering Working Spaces	14
The Politics of Virtue and Vice	20
What is Good about New Experiments in Vice?	23
Part I: The Tavern	26
Chapter 1: Experiments in Confusion.....	27
Introduction.....	27
“...a Scene of Confusion...”	32
“...Beere...made Flood Enough...”	43
“...Prevented by...Incurable Intemperance”	53
Conclusion	60
Chapter 2: Experiments in Magnification.....	62
Introduction.....	62
“...a Meaner Sort of Cabarets...”	67

“...Something of their Contrivance be Mixed with Mine...”	76
“...But Botchers and Brokers...”	89
Conclusion	94
Chapter 3: Experiments in Wives and Whores	95
Introduction.....	95
“...Venus...Not of the Sea, but the Tap...”	99
“...No Other Way to Doe It...”	108
“...The Only Difficulty that Remained Was to Persuade my Wife ...”	116
Conclusion	122
Part II: The Coffeehouse	124
Chapter 4: Experiments in News	125
Introduction.....	125
“...Whispering...in an Authentick Coffee-House”	132
“...a State Concern...”	140
“...the Most Dangerous Thing in the World...”	151
Conclusion	157
Part III: The Park	158
Chapter 5: Experiments in Abundance	159
Introduction.....	159
“...Peters sheet, inhabiting this Park...”	163
“...Philosophical Supper...”	172

“...Pleasures of a Hogg...”	181
Conclusion	190
Chapter 6: Experiments in Sensuality	192
Introduction.....	192
“...Love and Fertility...”	195
“...The...Use of Standing Groves...”	207
“...Encroachments of Sence, and Delights of Sensuality...”	215
Conclusion	221
Conclusion:	223
Working Without Spaces of Virtue.....	223
How did Spaces Work against Experiment?	226
Bibliography	229

Acknowledgements

This thesis was written across Gadigal and Birpai lands. It has been shaped by many exchanges and conversations, as well as the scholarship with which it engages. I would like to thank John Gagné for taking time out of his busy schedule to read through a large number of drafts, and for many other forms of guidance and support. Kathryn Hempstead, Laura Sumrall, Arthur O'Neill, Peter Anstey, and Ofer Gal have all either read and commented on drafts of chapters, or helped me in other ways.

Libraries and their staff have been important in the course of writing this thesis. I would like to thank staff at the University of Sydney's Fisher Library for assisting me with some difficult requests. Overseas, I have been helped by staff at a number of libraries and archives: the Bodleian Library, Oxford; the British Library, London; the Royal Society Archives, London; and the National Maritime Museum, Greenwich.

I could not have written this thesis without the support of Margot Prola.

Abbreviations

<i>BL</i>	<i>Brief Lives with an Apparatus for the Lives of Our English Mathematical Writers</i> . Edited by Kate Bennett. 2 vols. Oxford: Oxford University Press, 2016.
<i>CHO</i>	<i>The Correspondence of Henry Oldenburg</i> . Edited by A. Rupert Hall and Marie Boas Hall. 17 vols. Madison: The University of Wisconsin Press, 1966.
<i>DB</i>	Petty-Fitzmaurice, Henry. <i>The Double Bottom or Twin-Hulled Ship of Sir William Petty</i> . Oxford: The Roxburghe Club, 1931.
<i>DJE</i>	<i>The Diary of John Evelyn</i> . Edited by E. S. de Beer. 6 vols. Oxford: Clarendon Press, 1955.
<i>DRH</i>	<i>The Diary of Robert Hooke M.A., M.D., F.R.S.</i> Edited by Henry W. Robinson, and Walter Adams. London: Taylor and Francis, 1935.
<i>DSP</i>	<i>The Diary of Samuel Pepys</i> . Edited by Robert and William Mathews Latham. 11 vols. London: HarperCollins, 1971.
<i>PAM</i>	<i>The Poems of Andrew Marvell</i> . Edited by Nigel Smith. London: Pearson Longman, 2003.

Introduction

Finding Space for New Experiments in Vice

In 1667, more than six years after the return of the Stuart dynasty was supposed to conclude years of disorder in the kingdoms of England, Ireland, and Scotland, the Anglican divine, Robert South, gave a sermon insisting on the hazards of vice – and experiment.¹ Referring to the Royal Society of London, first incorporated in the July of 1662, and tasked with modelling the renewal promised under the restored monarch, Charles II, South declared that:

...the Persons here reflected upon, are of such a peculiar stamp of Impiety, that they seem to be a set of fellows got together, and formed into a kind of *Diabolical* society, for finding out *new experiments* in Vice, and therefore they laugh at the dull, unexperienced, obsolete Sinners of former Times; and scorning to keep themselves within the common, beaten, *broad way to Hell*, by being vicious onely at the low rate of *Example* and *Imitation*, they are for searching out other ways and *latitudes*, and obliging Posterity with unheard of Inventions and Discoveries in Sin; resolving herein to admit of no other measure of good and evil, but the Judgement of *Sensuality*...²

The vices exercising South, along with the “*new experiments*” of the Restoration, involved excessive eating, drinking, and other forms of submission to “the palate.”³ These were not new transgressions. But the Restoration was, from its earliest days, represented in ways conferring special salience on such vices. The vulnerability of the post-interregnum state to

¹ The earliest surviving print of this sermon seems to be the one entitled “The Practice of Religion Enforced by Reason: in a Sermon Preached Upon Prov. X. 9. At Westminster Abbey, 1667” in South’s *Twelve Sermons Preached Upon Several Occasions* (London: 1694), 1-55. Decades beforehand, however, in the June of 1667, the Herefordshire virtuoso, John Beale, was referring to “a late printed Sermon” in which South had “reflected sharply upon ye R. Soc,” suggesting South’s sermon might have given in the May of 1667, and that it first appeared in print soon after. See John Beale to Henry Oldenburg, 1 June 1667, *CHO*, 3:427.

² *Ibid.*, 50. For attempts, on the part of the Royal Society, to instantiate political renewal see for example P. B. Wood, “Methodology and Apologetics: Thomas Sprat’s ‘History of the Royal Society,’” *The British Journal for the History of Science* 13, no. 1 (1980): 1-26; Steven Shapin and Simon Schaffer, *Leviathan and the Air-Pump: Hobbes, Boyle, and the Experimental Life* (Princeton: Princeton University Press, 1985), 107-8; Simon Schaffer, “Regeneration: The Body of Natural Philosophers in Restoration England,” in *Science Incarnate: Historical Embodiments of Natural Knowledge*, ed. Christopher Lawrence and Steven Shapin (Chicago: The University of Chicago Press, 1998), 82-120.

³ *Ibid.*, 28, 49, 232.

fresh upheaval was regularly associated with the appetites of its factions, courtiers, and eventually, its two consecutively ruling Stuart kings.⁴ Problems as diverse as the fragility of its formative settlements, and the humiliations inflicted on it by the Dutch navy, were considered consequences of individual and associational bodies – bodies distracted, and unable to govern even themselves.⁵ The “judgement of sensuality,” amid which South situated experiment, was thus a commonly understood source of political disorder. Submission to the vices this “judgement” encouraged was widely deemed responsible for the fragility of the body politic – and thus the parlous state of the Restoration itself.

The convulsions forming the background to South’s sermon were among those responsible for the political resonance of talk about “vice.” His admonitions against excess were written, preached, and printed throughout a year problematising, with special urgency even for the Restoration, spectacles of appetite and gratification.⁶ Coming in the wake of the Plague in 1665, the Great Fire of 1666, and the administrative deficiencies these episodes illuminated, the new year ushered in a slew of fresh crises, for which the “judgement of sensuality” seemed still more responsible.⁷ By the time copies of South’s sermon were appearing on the streets, the Dutch fleet had entered the Thames and Medway estuaries, burning English ships on their moorings, and sailing away with the ponderous *Royal Charles*.⁸ This – among other disasters of 1667 – brought into relief the fiscal straits into

⁴ Steven Zwicker, *Lines of Authority: Politics and English Literary Culture, 1649-1683* (Ithaca and London: Cornell University Press, 1993), 90-5; “Virgins and Whores: The Politics of Sexual Misconduct in the 1660s,” in Andrew Marvell, ed. Thomas Healy (London and New York, 1998); 151-69; Kevin Sharpe, “Thy Longing Country’s Darling and Desire’: Aesthetics, Sex, and Politics in the England of Charles II,” in *Politics, Transgression, and Representation and the Court of Charles II*, ed. Julia Marciari Alexander, and Catharine MacLeod (New Haven: Yale University Press, 2007), 19.

⁵ Zwicker, *Lines of Authority*, 94-100; “Politics of Sexual Misconduct,” 155-6.

⁶ For 1667 as a “year of wonders and disasters” see *Lines of Authority*, 67; “Politics of Sexual Misconduct,” 155-7; Barbara Murray, “Transgressing Nature’s Law’: Representations of Women and the Adapted Version of the *The Tempest*, 1667,” *Literature and History* 12, no. 1 (2003), 19.

⁷ For the importance of the plague to perceptions of the health of the Restoration see for example Ronald Hutton, *The Restoration: A Political and Religious History of England and Wales, 1658-1667* (1993), 223-30; Paul Slack, *The Impact of Plague in Tudor and Stuart England* (London: Routledge & Kegan Paul, 1985), 4, 295-303.

⁸ J. R. Jones, *The Anglo-Dutch Wars of the Seventeenth Century* (Oxon: Routledge, 2013), 44.

which the Stuart state itself had sailed, under a monarch more concerned, it seemed, with lavishing mistresses than provisioning men-of-war.⁹ The King was likened to Nero, dining and carousing, in an image of decadence with dire consequences for the new polity.¹⁰ Some of the best known products of that year, including John Milton's *Paradise Lost* and Richard Allestree's *Decay of Christian Piety*, dwelt on the dangers of intemperance, and its persistence, amid imminent – if not already omnipresent – dangers.¹¹ South's sermon thus sits within a corpus of works – plays, chronicles, poems, and music – in which insinuations of vice identified threats to the possibility of political renewal.

As central to doubts about the Restoration, and its viability, as vice had become, South's sermon found a place for experiment among its instantiations; experiment, far from being of use to the post-interregnum polity, was implicated in conduct tending to its destruction. To begin with, the sermon's rhetoric was stubbornly prepositional; the “diabolical fellows” of the newly formed Royal Society held their transactions “over,” “amidst,” and “in” what were, by this time, freighted forms of excess.¹² But South took steps to enhance the already politically allusive potential of such rhetoric. His warnings against the “judgement of sensuality,” amid which he situated experiment, recalled another of his sermons, given before the court two years earlier, in which he expressly warned “the Counsellor of State” against “the ministry of the senses.”¹³ (This sermon, too, was later

⁹ Steven Pincus, *Protestantism and Patriotism: Ideologies and the Making of English Foreign Policy, 1650-1668* (Cambridge: Cambridge University Press, 1996), 361-5.

¹⁰ Gilbert Burnet, *Bishop Burnet's History of his Own Time* (London, 1724), 250; Marjorie Hope Nicolson, *The Conway Letters: The Correspondence of Anne, Viscountess Conway, Henry More, and their Friends 1642-1684*, revised edition ed., ed. Sarah Hutton (Oxford: Clarendon Press, 1992), 259; Martin Dzelzainis, “Waller, Marvell, and ‘La Belle Stuart’ Reconsidered,” in *Edmund Waller (1606-1687): New Perspectives*, ed. Philip Major (Leiden: Brill, 2022), 88.

¹¹ Richard Allestree, *The Causes of the Decay of Christian Piety. Or an Impartial Survey of the Ruines of Christian Religion, Undermin'd by Unchristian Practice. Written by the Author of the Whole Duty of Man* (London, 1667); John Milton, *Paradise Lost. A Poem Written in Ten Books* (London, 1667). Milton's poem is analysed in relation to 1667 especially in Zwicker, *Lines of Authority*, 95.

¹² South, “Practice of Religion,” 48, 50.

¹³ *Ibid.*, 50. Robert South, *A Sermon Preached Before the Court at Christchurch Chappel in Oxford* (Oxford, 1665), 9-10.

printed – with a dedication to Charles’ more restrained confidante, the Earl of Clarendon, who South praised for making “labour and Vertue” his “meat and...drink.”¹⁴) The specific vices with which South associated experiment, and its practitioners, also gestured to perceived causes of upheaval; “drinking” evoked the intemperance of the state’s health-drinking cavaliers, “ranting” the prospect of unrest from less royalist quarters.¹⁵ The “*Liberties and Latitudes*” among which the Royal Society was placed recalled both excesses of the reconstituted court – its “libertines” – and of the church – its “latitudinarians.”¹⁶ Even a reference to experimental “sinners” encouraged comparison with other “sinners” mentioned in the same sermon, not least of them the “the Rebel,” a “notable, leading Sinner indeed.”¹⁷ South’s exploitation of the politically allusive nature of Restoration moral rhetoric ensured experiment was deposited among excesses inhibiting the kind of renewal the period was supposed to produce: vices of the political body.

South’s engagement with experiment in the context of the Restoration, and perceived threats to its success, makes it appropriate his sermon of 1667 is now often cited in accounts of the experiments supposed to serve this new polity.¹⁸ Popular and academic histories touching on the experiments of this period have, increasingly, come to examine denials – as well as assertions – of their utility. Histories of institutions harbouring experimental activity, including the Royal Society, frequently gesture to the urgency of apologetic initiatives, while

¹⁴ South, *Sermon Preached Before the Court*, A2v

¹⁵ South, “Practice of Religion,” 51.

¹⁶ *Ibid.*, 46.

¹⁷ *Ibid.*, 50

¹⁸ South’s sermon is cited and discussed in R. H. Syfret, “Some Early Critics of the Royal Society,” *Notes and Records of the Royal Society of London* 8, no. 1 (1950): 42-3; B. C. Southgate, “Forgotten and Lost: Some Reactions to Autonomous Science in the Seventeenth Century,” *Journal of the History of Ideas* 50, no. 2 (1989): 262; Larry Stewart, *The Rise of Public Science: Rhetoric, Technology, and Natural Philosophy in Newtonian Britain* (Cambridge: Cambridge University Press, 1992), 6; Jon Parkin, *Science, Religion and Politics in Restoration England: Richard Cumberland’s De Legibus Naturae* (Woodbridge: The Boydell Press, 1999), 125; Adrian Tinniswood, *The Royal Society & the Invention of Modern Science* (2019), 110. Other comments of South’s inform discussion in Michael Hunter, *Science and Society in Restoration England* (Cambridge: Cambridge University Press, 1981), 137; Peter Harrison, “Religion, the Royal Society and the Rise of Science,” *Theology and Science* 6, no. 3 (2008): 255-6.

hostile depictions of experiment are frequently studied across a variety of cultural domains.¹⁹

As scholars have ventured increasingly further from the reassurances of the practitioner, the Restoration has ceased to constitute an overwhelmingly friendly backdrop to experimental activity. As rhetorically impressive as South's sermon was, such criticism can no longer be considered unusual from within the Restoration – even from among its beneficiaries.

Scholarly work on instruments, procedure, personae, and narratives of experiment alike has been enriched through engagement with sources interrogating – rather than affirming the utility of – experimental work.

Curiously, however, our study of experimental *space* – the situatedness of experimental people, norms, and objects – has barely budged in directions allowing it to account for such pervasive scepticism about the worth of experiment. Instead, the phenomenon of hostility has powered scholarship devoted to spaces tending to dispose of the problem. Perhaps the greatest contribution to our knowledge of “concrete” settings, Simon Schaffer and Steven Shapin's *Leviathan and the Air-Pump* (1985) privileged sites that worked, overwhelmingly, in concert with the aims of practitioners.²⁰ Of course, the settings important to these authors – most notably Gresham College and Robert Boyle's “House of experiment” – certainly were depicted exposing experiment to the criticisms of Thomas Hobbes.²¹ But the technologies to which this ostracised figure laid siege were located, by these authors, where they exhibited the moderation and restraint so widely counselled on the eve of the first two Restoration settlements.²² Despite the attention given to Hobbes'

¹⁹ For an institutional focus see Michael Hunter, *Establishing the New Science: The Experience of the Early Royal Society* (Woodbridge: The Boydell Press, 1989), 48-60; *Science and Society in Restoration England*, 136-161. Wider surveys include Marjory Hope Nicolson, *Pepys' Diary and the New Science* (Charlottesville: University of Virginia Press, 1965); Tita Chico, *The Experimental Imagination: Literary Knowledge and Science in the British Enlightenment* (Stanford: Stanford University Press, 2018).

²⁰ Shapin and Schaffer, *Leviathan*, 298; Steven Shapin, “The House of Experiment in Seventeenth-Century England,” *Isis* 79, no. 3 (1988): 373-404.

²¹ Shapin and Schaffer, *Leviathan*, 39.

²² *Ibid.*, 21, 73, 208, 286, 299.

antagonism, then, the experiments around which this scholarship revolved were situated where they *could* model politically salient virtues, and processes of national renewal – a capability greatly buttressing claims for the utility of experimental work. Numerous studies have since explored experiment outside of Boylean, and Royal Society, settings; but with just a few exceptions, these too have remained focused on spaces conceived to have asserted – rather than vitiated – its use.²³ Sites such as coffeehouses, gardens, and the London headquarters of the East India Company, to name just a few, have accommodated – for scholars – not just experiment, but “knowledge making” or other processes associated with, or implying, their usefulness.²⁴ Spaces capable of such analysis necessarily forestalled or deflated criticism. Precisely for this reason, they do not explain the prevalence of distrust towards experiment in the Restoration – especially in forms betraying a concern for its future.

This thesis approaches experimental space differently, with a view to better understanding not just a few more instances of experimental activity, but some common forms of doubt about its utility to the post-interregnum body. In doing so, it ascribes to the sites it considers a function different to spaces that worked *for* their occupants, in conferring on experiment semblances of utility. The instances of experimental situatedness – the spaces – with which this thesis deals worked *against* practitioners; they functioned in ways

²³ Stewart, *Rise of Public Science*, 115-7, 172-4; "Other Centres of Calculation, or, Where the Royal Society Didn't Count: Commerce, Coffee-houses and Natural Philosophy in Early Modern London," *The British Journal for the History of Science* 32, no. 1 (1999): 133-53; Anna Winterbottom, "An Experimental Community: The East India Company in London, 1600-1800," *British Journal of the History of Science* 52, no. 2 (2019), 325; Pamela H. Smith, "Laboratories," in *The Cambridge History of Science. Volume 3. Early Modern Science*, ed. Katharine Park, and Lorraine Daston and Lorraine Daston (Cambridge: Cambridge University Press, 2008), 290-304; Alix Cooper, "Homes and Households," in *The Cambridge History of the Science*, ed. Katharine Park, and Lorraine Daston (Cambridge: Cambridge University Press, 2008), 224-33; Lukas Rieppel, "Museums and Botanical Gardens," in *A Companion to the History of Science*, ed. Bernard Lightman (Chichester: Wiley Blackwell, 2016), 243. For a focus on more problematic spaces see for example Anita Guerrini, "The Ghastly Kitchen," *History of Science* 54, no. 1 (2016): 71-97; "Anatomists and Entrepreneurs in Early Eighteenth-Century London," *Journal of the History of Medicine and Allied Sciences* 59, no. 2 (2004): 219-39.

²⁴ Stewart, *Rise of Public Science*, 115-7, 141, 143-6; "Centres of Calculation," 141, 143; Winterbottom, "The East India Company in London," 324, 335; Rieppel, "Museums and Botanical Gardens," 243.

explaining the prevalence of scepticism about the use of their craft. Such sites provide points around which the growing body of scholarship on antagonism can be brought into orbit. South's sermon is just one of many representations locating experiment amid the ills of the state which this study explains through recourse to spaces of vice. The objective is an appreciation of the degree to which spaces produced not just experiments, but assertions of their connection to disorder – assertions which the language of vice, precisely because it could recall settings of a kind this thesis explores, was well-equipped to convey.

Recovering this function of experimental space, in the context of the Restoration, means looking beyond venues associating experiment with conduct tending to the health of the post-interregnum polity. It involves journeying into places harbouring at least some of the vices implicated in contemporary perceptions of political decline. There were many such sites in the Restoration. A number of venues, some new, altered or even largely unchanged after the collapse of Cromwellian rule in 1658, and the Republic in 1660, lodged activities widely deemed inimical to national renewal. Not all these places accommodated experimental activity. Some that did will be the focus of this thesis. The ability of contemporary developments to anoint even familiar vices with fresh significance – to reaffirm their status as transgressions – ensured places of this kind bore on the credibility of attempts to demonstrate some connection between experiment and utility. There were sometimes important reasons why experiment came to occupy such spaces. To be seen contending against, regulating, or otherwise managing ills of state, was surely sometimes a strategic objective. But such constructively intended proximity to vice, while potentially – and perhaps, in some settings, actually – helpful from an apologetic point of view, was risky business. The spaces examined in this thesis were deliberately entered, and on occasion ambitiously enlisted; even so, they worked against the credibility of the experiments extending into them, and assertions of their utility.

This thesis finds spaces important to doubts about the worth of experiment in some fairly uncharted experimental territory, in order of appearance: the taverns, coffeehouses, and parks of the Stuart archipelago. At least one of the spaces explored here, the tavern, is unfamiliar in the sense that it has failed to generate much historical literature even outside of the history of science.²⁵ Studies of the tavern as a seventeenth-century social space are few, and those focusing on anglophone contexts – where the term “tavern” seems most appropriately used – are still fewer.²⁶ Of the three spaces discussed, the coffeehouse has probably seen the most historiographical traffic.²⁷ But even here, the roads in and out – or those along which historians of science tend to travel – have been built with the aim of recovering the role of this space in the production of ultimately authoritative practices. The present study does not look for such capacities in the settings it examines. It is concerned with showing how the spaces it interrogates formed part of the geography beneath – and giving rise to – talk of “new experiments in vice.”

The structure of this thesis foregrounds features of experimental space salient to insinuations experiment could be found not among the virtues, but the ills, of the Restoration. It is divided into three parts. All three of these parts explore one of the spaces – taverns, coffeehouses, and parks – used to illustrate how sites could work against experiment. Each does so by investigating one or more forms of disorder present in the space it examines, the entanglement of experiment with this disorder, and the degree to which this was reflected in

²⁵ Some exceptions include Beat Kümin, *Drinking Matters: Public Houses and Social Exchange in Early Modern Central Europe* (Palgrave Macmillan, 2007); “Public Houses and their Patrons in Early Modern Europe,” in *The World of the Tavern: Public Houses in Early Modern Europe*, ed. Beat Kümin, and B. Ann Tlusty (London and New York: Routledge, 2017), 44-62; Judith Hunter, “English Inns, Taverns, Alehouses and Brandy Shops: The Legislative Framework, 1495-1797,” in *ibid.*, 65-82.

²⁶ Histories concerned with anglophone contexts have shown a distinct predilection for focusing on the alehouse over the tavern, notwithstanding similarities between the venues and a degree of contemporary terminological looseness. Examples include Peter Clark, *The English Alehouse: 1200-1830* (London and New York: Longman, 1983); Mark Hailwood, *Alehouses and Good Fellowship in Early Modern England* (Woodbridge: The Boydell Press, 2014).

²⁷ For an overview of the literature on coffeehouses see the introduction to Chapter 4 of this thesis.

contemporary criticism. Chapters within these three, over-arching parts explore particular forms of disorder: states, processes, or personae accounting for the ability of a space to provoke criticism of experiment. Part I of this thesis shows how the confusion (Chapter 1), men (Chapter 2), and women (Chapter 3) for which the tavern was notorious worked against attempts to demonstrate the utility of experiment – once experiment entered this space. Part II of this thesis considers how the news (Chapter 4) of the coffeehouse likewise produced suspicions about experiment – once important components of experimental activity were brought into contact with it. Part III of this thesis considers some of the ways in which the abundance (Chapter 5) and sensuality (Chapter 6) of the park were also responsible for depictions of experiment as a politically corrosive activity – once experiment became entangled with these problems. The tripartite organisation of each chapter – its movement between site-specific forms of disorder, experiments lodged therein, and repudiations of experiment – identifies some of the components of these spaces that were important to representations of experiment as a threat to the Restoration itself.

This thesis thus does more than present a few places of experiment: it situates experiments that did not have access to the repertoire of virtues from which – in the Restoration – the most persuasive claims to utility might be constructed. Far from being concerned with access to virtues, and other sources of authority, it is concerned with spaces isolating experiment from such resources – experiments “in vice.”

Reconsidering Working Spaces

The consideration of space and its functions adopted in this thesis, as it looks at settings important to repudiated forms of experiment, runs against the current of much scholarship in the history of science. It requires putting aside the search for constructive

functions and resources, a preoccupation characterising some of the earliest, most rigorous, and influential sociological approaches to “knowledge production.”²⁸ Indeed, this study of experimental space eschews, at least in a primary sense, a concern with “knowledge production” at all. In engaging with spaces of vice in the context of the Restoration, it surveys territory working against occupants and their battle for authority. In doing so, it perhaps owes more to a growing pool of finer-grained studies on the kinds of objects, people, and conventions who were often *absent* from spaces conducive to epistemologically flavoured success. But interest in compromising materials, identities, and rituals should not just affirm apprehensions of the constructive functions of certain spaces – namely, those kept clear of them – and authoritative tropes emerging therefrom. It should also – and in this thesis does – inspire a treatment of space parallel to, and inspired by, scholarly work on these jettisoned and discarded types.

Those to whom we owe the stimulating turn to spaces of the 1980s and 1990s were largely concerned with demonstrating how the situatedness of practices with epistemological pretences – experiment foremost among them – could be put to “work,” in the most normative sense of the term.²⁹ The aims of agents taken to have propagated knowledge, or something of a kind that would later produce it, provided the point of departure. Alignment with apologetic intentions determined the spaces investigated; ability to fulfil these aims constituted their most analysed functions. Early pioneers of such geographies reckoned “the development of modern science” was “closely linked” to “special heterotopic sites.”³⁰ Equipped with this appreciation of things, Steven Shapin seized on “the house of experiment”

²⁸ Experimental spaces have accommodated the “production” or “making” of knowledge for almost as long as they have been a focus. See for early examples see Shapin and Schaffer, *Leviathan*, 13, 22; Adrian Johns, *The Nature of the Book: Print and Knowledge in the Making* (Chicago and London: The University of Chicago Press, 1998), 8.

²⁹ For constructivist usage of this term in particular see Johns, *Nature of the Book*, 36, 41.

³⁰ Ophir Adi and Steven Shapin, “The Place of Knowledge: A Methodological Survey,” *Science in Context* 4, no. 1 (1991): 13.

as a paradigmatic space.³¹ The successful laboratory supervised by Robert Boyle in Lady Ranelagh's Pall Mall house was, over the course of more than a decade, raided for the "virtues" which – it was claimed – "flourished therein."³² Behind this rapacity for evidence of temporal respect was a sensitivity to the ways in which "knowledge fashioned in such places answers the needs of the moment, addresses the questions of the time, and satisfies the standards of local culture."³³ It was thus on account of its ability to impress witnesses – proximate and distant – that "the house of experiment," with Boyle's laboratory as the definitive case study, became "arguably the most important site in England for the performance of experiments."³⁴ Scholarly partiality for exploring "the private residences of gentlemen" created an important equivalence that would long dominate scholarship on Restoration experiment: some of the most authoritative sites in the land were "by far the most significant experimental venues."³⁵

While the exemplary status attributed to spaces of gentility, and later residential environments less homogenously gendered, has undergone some healthy revision, spaces replete with epistemologically relevant virtues – civility, honesty, and so on – have remained staples for geographies of science. It hopefully is no longer the case that the "overwhelming majority of experimental trials, displays, and discussions...we know about occurred within private residences."³⁶ But it still seems historians have not strayed far from the *advantages* which such lodgings, once the dominant seventeenth-century experimental space, are taken to have afforded. Authoritative virtues ripe for mobilisation in the defence of putatively

³¹ Shapin, "The House of Experiment," 373-404.

³² Ibid., 378-81; Steven Shapin, "'The Mind Is It's Own Place': Science and Solitude in Seventeenth Century England," *Science in Context* 4, no. 1 (1990): 203; *A Social History of Truth: Civility and Science in Seventeenth-Century England* (Chicago and London: University of Chicago Press, 1994), 43, 49, 178, 367.

³³ Johns, *Nature of the Book*, 41.

³⁴ Steven Shapin, "Who was Robert Hooke?," in *Robert Hooke: New Studies*, ed. Michael Hunter and Simon Schaffer (Woodbridge: The Boydell Press, 1989), 258.

³⁵ "The House of Experiment," 378.

³⁶ Ibid.

epistemological practices have remained the focus even as attention has shifted to a much wider – and more precisely circumscribed – range of spaces. Resources have been found in anatomy theatres, libraries, gardens, and coffeehouses. They have turned up as scholars “zero in” not just on cities like London or Paris, “but on particular streets, buildings, floors, and rooms.”³⁷ “Knowledge production” has even kept at least one foot in the door of the “house of experiment,” as scholars dismantle the structure, seeing it as a collection of spaces – kitchens, servants’ rooms – some of them not particularly “gentlemanly” or “private.”³⁸ An essential ingredient of authority, virtue has survived some significant changes to the way we think about many places – including some important places of experiment.

Nor has a preoccupation with efficacious spaces suffered from the ongoing popularity of studies of individuals, equipment, or ritual less grounded in geography; rather, spatially-inspired constructivism has furnished a framework for aggregating and directing such scholarship. Geographies privileging working spaces have urged the importance of human and material qualities, through the postulation of environments demanding careful management. The prowess of the historical agent, if not also the historian, has been revealed through recovery of some highly laborious, quasi-colonial, and ultimately productive processes.³⁹ Agential acumen has appeared in a tactical distortion of surrounds. Scholarly mettel has consisted in pouncing on the expedient emphasis of certain furniture, or décor deftly pushed into “the background.”⁴⁰ Such an understanding of how sites worked to effect the rise of one or many ultimately defining features of “science” has in no way prevented appreciation of the stamina required to manage them. Far from it, studies of working spaces

³⁷ Johns, *Nature of the Book*, 42.

³⁸ Cooper, “Homes and Households,” 226, 229.

³⁹ Ibid.; Shapin and Schaffer, *Leviathan*, 13.

⁴⁰ Johns, *Nature of the Book*, 33; Adi and Shapin, “Place of Knowledge,” 13-4.

frequently insist on the degree to which authority was obtained “only through much hard work.”⁴¹

The predominance of working spaces has even stared down, and indeed partially emerged from, growing interest in the phenomenon of hostility to experiment. The authors of *Leviathan and the Air-pump* were sure the antagonism of Thomas Hobbes, to which they attached importance, emerged from a preoccupation with the spaces of experiment they studied.⁴² But as we have observed, Hobbes turned out to be a foil for exploring what were some particularly successful experimental spaces. Surely one of the bravest things about this study was its insistence on analysing scepticism about settings its authors concluded *were*, at least ultimately, efficacious.⁴³ This was not a paradoxical or misguided project. The “critic” inspiring Schaffer and Shapin’s scholarship was conceived an “outsider” – not just to the community crystallising around the experimental processes they described, but the polity to which exponents of these methodologies looked for affirmation.⁴⁴ The isolation of Hobbes was one reason this study could – and did – remain one of working sites, and knowledge production.⁴⁵ Hobbes was a long way from personifying or otherwise sanctioning the kind of social organisation so urgently condoned in the first few years of the Restoration. His philosophy did not – and was never designed to – endorse the concessions expected of the returning Stuart dynasty. And he certainly was just one voice. His criticism thus did not lead to, or require from his historians, an exploration of settings deficient in the social and experimental technologies Boylean territory accommodated.

This thesis deals with more widely shared forms of hostility, often expressed by actors more invested – than, for example, Hobbes – in the Restoration; it accordingly considers a

⁴¹ Johns, *Nature of the Book*, 41-3.

⁴² Shapin and Schaffer, *Leviathan*, 39.

⁴³ *Ibid.*, 341.

⁴⁴ *Ibid.*, 235, 253, 302, 316.

⁴⁵ *Ibid.*, 341-2.

different set of spaces, and reconsiders the functions that might be allotted to them. Far from stripping experimental spaces of their importance to authority, the sites this thesis examines strengthen our understanding of this significance. But they do so through constituting less apologetically useful spaces. These were settings which, in at least some respects, did not “work” in the normative sense of the term, the sense derived from the aims of experimental colonists. Occasionally, they proved so dangerous to claims made on behalf of experiment, and its uses, they produced unease among the craft’s exponents. Some of the first chapters of this thesis, concerned with the tavern – into which a series of shipping experiments conducted by the virtuoso, Sir William Petty, protruded from the earliest years of the Restoration – illustrate this point. Petty’s naval experiments, cast adrift from private residencies and meetings in Gresham College, were regarded with suspicion from within the Royal Society, as well as from a number of extra-experimental parties. Both kinds of critic were highly committed to the state Petty and his allies claimed to serve through experiment. Hostility to this experimental work was therefore far-reaching. Misgivings about its use were not responses to practices parked where they were otherwise more persuasive. They instead attest to the inadequacy of the tavern, the degree to which this space, notwithstanding Petty’s hopes for it, worked against his experimental program.

While historians have not strayed too far from working spaces, they have interested themselves in objects and personalities other than those integral to ultimately authoritative, epistemologically successful, conduct. The busts, columns, and Roman artefacts among which the Royal Society met at Arundel House have been deemed important to contemporary literature emphasising the “popish” – and thus nationally detrimental – nature of at least some of the Society’s interests.⁴⁶ Referencing the work of Lorraine Daston, but also addressing that

⁴⁶ Linda Peck, *Consuming Splendor: Society and Culture in Seventeenth-Century England* (Cambridge: Cambridge University Press, 2005), 334.

of Steven Shapin, Simon Schaffer and others, on the repertoires available to knowers, Koji Yamamoto has positioned his study of “the projector” obversely, as a focus on the personalities and types who “may have *negatively conditioned*” claims to knowledge and improvement.⁴⁷ Thanks to scholarship of this kind, it will not be news to any historian that there existed a range of personalities and objects from which it was necessary for actors to “distance themselves.”⁴⁸ It is now clear, too, that the methodological decision to turn such troublesome identities into the focus of scholarly narrative brings into relief powers – whether of objects, agents, or spaces home to both – barely glimpsed when attention remains on constructive processes. This thesis takes inspiration from such scholarship in exploring places of vice. In recovering spaces long obscured by a preoccupation with more scrupulous, authoritative spaces, it builds on these histories of maligned types.

The Politics of Virtue and Vice

Periods of contested rule often determine or confer special salience on vices, as political agents foreground weaknesses in adversaries, ideally with reference to historically proscribed forms of conduct. As histories of the Restoration have evolved, and the period has morphed from an absolutist diversion before the Glorious Revolution to an era of extra-courtly opinion, and even party politics, vice – a crucial allegation of error, its insinuation a powerful mode of disagreement – has become an increasingly important concept for histories engaging with this context.⁴⁹ Studies of literature, performance, and associational life after

⁴⁷ Koji Yamamoto, *Taming Capitalism before its Triumph: Public Service, Distrust, and 'Projecting' in Early Modern England* (Oxford: Oxford University Press, 2018), 22.

⁴⁸ *Ibid.*

⁴⁹ Zwicker, *Lines of Authority*, 97; “Politics of Sexual Misconduct,” 158; Tim Harris, “‘Venerating the Honesty of a Tinker’: The King’s Friends and the Battle for the Allegiance of the Common People in Restoration England,” in *The Politics of the Excluded*, ed. Tim Harris (New York: Palgrave, 2001), 195-232. For extra-courtly opinion and debate see Lawrence Klein, “Coffeehouse Civility, 1660-1714: An Aspect of Post-Courtly Culture in England,” *Huntington Library Quarterly* 59, no. 1 (1996): 30-51. For error in a Stuart context more

1660 now show how the Restoration presented a wealth of opportunities for publicly assessing progress towards the renewal with which it was tasked.⁵⁰ Scholars have thus conceived of conduct as judged, from across a significant, albeit centrally anchored, stretch of the political spectrum, according to its consistency with this objective.⁵¹ This thesis derives its treatment of virtue and vice, and its appreciation of their importance to notions of utility and service to the polity, from the degree to which these categories reflected views – many of them widespread – as to how order might truly be restored.

In a way that accounts for South's interest in everything from courtly sensuality to such sinners as "the rebel," there was often little distinction between transgressions *of* and *against* the Restoration. The early modern polity produced by the return of the Stuart dynasty had access to a range of moral traditions – not all of them western – that could be mobilised, combined, or forgotten to advance ultimately political ends.⁵² We are often reminded that the fire ravaging London in 1666 was proclaimed an instance of divine judgement; but opprobrium was also poured over the ruins it left behind, which sheltered thieves, and other communities recalcitrant to government.⁵³ The plague that followed was said to have been fanned by the lustful contact of the bawdy house – condemnation of which addressed the unhelpful phenomenon, on some accounts common, of desperate souls seeking relief among prostitutes.⁵⁴ Preoccupation with less commercial, more courtly varieties of license, served no less temporal purposes, enhancing sensitivity to expenditure amid the fiscal pressures produced by the outbreak of the Second Anglo-Dutch War in 1665.⁵⁵ Far from simply a trope

generally: Mark Knights, *Representation and Misrepresentation in Later Stuart Britain: Partisanship and Political Culture* (Oxford: Oxford University Press, 2005), 214, 255.

⁵⁰ Zwicker, *Lines of Authority*, 105; "Politics of Sexual Misconduct," 157; Klein, "Coffeehouse Civility," 42-3; Knights, *Representation and Misrepresentation*, 6, 15, 17.

⁵¹ *Representation and Misrepresentation*, 6-7. 59-60.

⁵² Matthew Jenkinson, *Culture and Politics at the Court of Charles II, 1660-1685* (Woodbridge: The Boydell Press, 2010), 2-4, 18.

⁵³ Hutton, *Restoration*, 248.

⁵⁴ *Ibid.*, 229.

⁵⁵ Zwicker, *Lines of Authority*, 97-8.

of republican satire, Whitehall's indolence exercised cavaliers and Anglicans fearful the administration might be eating into its – and thus *their* – chances of survival.⁵⁶ (South's sermon, expressive of such royalist fears, billed not just "the rebel," but "the man of luxury" as "a sinner."⁵⁷) The political functionality of pronouncements ostensibly derived from ancient texts and established devotional cultures consisted in the degree to which foci of censure were commonly perceived threats to the state and its needs.

Historians of science preoccupied with situating eventually authoritative practices and claims have recognised – or at least developed accounts compatible with – the politically inflected nature of the strictures and codes informing attitudes to practices like experiment. But a partiality for working spaces has produced a lopsided picture of the relationship between experiment and good conduct. The authors of *Leviathan and the Air-Pump* were aware that the degrees of moderation and tolerance producing the civility amid which they deposited experiment were widely urged social remedies in a post-interregnum context.⁵⁸ The now canonical status of the sites this work explored means that, with regard to the Restoration, scholarship on experimental space is well behind geographically-inspired work on the period more generally, which has just as readily dived into settings repudiated on account of the disorder they housed: settings accommodating not the virtues of this period, but its vices. Scholarship on playhouses, parks, and brothels has recovered the ability of political developments to render these spaces reservoirs of hazard.⁵⁹ The ability of the

⁵⁶ Jenkinson, *Culture and Politics*, 75, 87-93; "Preaching at the Court of Charles II: Court Sermons and the Restoration Chapel Royal," in *The Oxford Handbook of the Early Modern Sermon*, ed. Hugh Adlington (Oxford: Oxford University Press, 2011), 453.

⁵⁷ South, "Practice of Religion," 37-8.

⁵⁸ Shapin and Schaffer, *Leviathan*, 300, 303, 341; Knights, *Representation and Misrepresentation*, 59-60.

⁵⁹ Melissa M. Mowry, *The Bawdy Politic in Stuart England, 1660-1714: Political Pornography and Prostitution* (London and New York: Routledge, 2004), 1, 7; Joseph Roach, "Celebrity Erotics: Pepys, Performance, and Painted Ladies," in *Politics, Transgression, and Representation at the Court of Charles II*, ed. Catherine Macleod and Julia Alexander Marciari (New Haven and London: Yale University Press, 2007), 244-5; Will Pritchard, *Outward Appearances: The Female Exterior in Restoration London* (Lewisburg: Bucknell University Press, 2010), 82-3.

Restoration to condition the moral resonance of spaces has thus been much more symmetrically considered outside of histories of science – a deficiency this thesis aims to address.

What is Good about New Experiments in Vice?

Locating experiments in vice does not just help turn up new experimental spaces, allowing a reconsideration of the powers of space, and a more symmetrical view of experimental situatedness – one in which experiments also inhabit sites of disorder. It enhances our understanding of non-experimental actors, and in particular the degree to which antagonism on the part of such individuals might have been persuasive. It also broadens the experimental cast, to a range of groups not easily encountered in proximity to successful, authoritatively housed, experiments. These are all fruits of a study that does not revolve around activities associated with convincing claims to utility, or other measures of worth.

Placing experiment among symptoms of disorder is one step towards addressing some of the questions it seems natural to ask about hostile attitudes towards different forms of experimental activity. Suggestive as volume may be, we are not always able to assess how powerful or persuasive such antagonism was. The standing of individuals, as scholarship on Thomas Hobbes illustrates, has been felt to offer clues. However, anonymous materials, or works associated with less than prominent figures, often resist such author-inspired judgements as to potency. Moving between the rehearsal of experiments and their wider depiction, spaces and representations, aids this task. South's sermon, for example, evoked not just rituals – "drinking" – but paraphernalia – "Pots" and "Pipes" – associated with venues like the tavern in the course of situating experiments in vice.⁶⁰ Without any exploration of the

⁶⁰ South, "Practice of Religion," 48.

degree to which experiment was entangled with such features of tavern life, and some understanding of this contact, the power of such allusions is difficult to assess. Considering texts of this kind alongside spaces – or, as the substantive chapters of this thesis do, beginning our account of hostility towards experiment with them – thus puts us in a better position to understand how listeners or readers might have responded to such rhetoric. With regard to public settings, the mere discovery of experiment therein becomes highly suggestive. In such cases, the situation of experiment amid vice was – in relation to a text like South’s – corroborative, as well as explanatory. Scholarship devoted to these venues can thus consider the power of contemporary rhetoric that *did* situate new experiments in vice.

Just as places of experiment and disorder enhance our understanding of extra-experimental voices, so too do they foreground people much closer to, though hardly credited for, experimental work itself. Here again the public, porous, status of the disordered spaces with which this thesis deals is important. Such settings bring the history of experiment, even one hardly venturing beyond individuals associated with the Royal Society, into contact with some of the virtues of contemporary scholarship on people, materials, and practices outside of this elite and highly gendered institution. To an important degree, studies of working spaces have recognised the presence of certain groups – for example, women or technicians – in attendance on experiment. But whereas these studies must, in recovering successful sites, often deal with the orchestrated “invisibility” of such parties, the spaces discussed in this thesis illuminate the visibility or power they were felt to possess.⁶¹ A number of chapters in this thesis, for example, describe sailors, carpenters, wives, and children important to experiment. Their visibility fed unease. Through exploring spaces in which ideally governed individuals possessed semblances of power, this study recovers the importance of various

⁶¹ For the invisibility or strategic concealment of parties to experiment see Shapin, *Social History of Truth*, 355-407.

men and women of experiment to the perceived worth of experimental activity. Expanding our range of experimental spaces, and reconsidering the functions of space itself, shows how a much wider cast had a role not just in experiment, but its repudiation – the process through which new experiments were deposited in vice.

Part I: The Tavern

Chapter 1: Experiments in Confusion

Introduction

In the February of 1665, Sir William Petty, then immersed in a series of experiments he called “double-bodied shipping,” entertained a group of Royal Society heavyweights at the “Royal Oak Tavern,” Lombard Street, London.¹ The gathering included the Society’s first chartered president, Viscount William Brouncker; its most frequently elected president before the granting of its charter in 1662, Sir Robert Moray; and one of its future presidents, Samuel Pepys. Petty treated the men to marrow bones and a chine of beef – refreshments originally prepared as victuals for the crew of his most recent vessel, called the “Experiment.”² Like all his double-bodied endeavours, the “Experiment” attempted to replicate, on a larger scale, virtues Petty saw in smaller versions of conventional, single-hulled craft – including those that could be “carved out of one block of wood.”³ Such “single bodies” had served well enough, on a smaller scale, “whilst Men set along their Vessels with Poles or rowed them with Oars...& even...sail[ed] in smooth water before the Wind.”⁴ But the functions of modern shipping, and the needs of a maritime power like the restored polity, had not been “thought on” – Petty claimed – when humankind settled into the tradition of shipping in “one single body.”⁵ The “Experiment,” and indeed all Petty’s double-bodied craft, thus aimed to show how the state headed by Charles II was best served not through one, but two amalgamated hulls.⁶ In doing so, it also aimed, like a good many other – better studied –

¹ 18 February 1665, *DSP*, 6:38.

² *Ibid.*

³ For some of the “thoughts” behind double-bodied shipping see for example the “Epistle Dedicatory” in Bodleian MS Lyell Empt 32, ff. 1-4v; *DB*, 4-6.

⁴ *Ibid.*

⁵ *Ibid.*

⁶ *Ibid.*

forms of experiment, to show how the needs of the state might be answered through experiment itself.

Yet despite being an original member of the Royal Society, Petty often found support for his designs difficult to nourish, even within this circle. Two years before the meeting in the Royal Oak, a committee of Society personalities appointed, on Petty's begging, to examine his first publicly launched craft had been abruptly dissolved – the consequence of an order approved by one of the men now gathered in this space: Brouncker himself.⁷ Just one year beforehand, with Petty's second vessel freshly launched, another member of the party entertained on this occasion, Moray, had attempted to dissuade Petty from bringing his design to London where it could be presented "amongst ye great multitude of all sorts of Shipping."⁸ And many years afterwards, as Petty set about producing a fourth double-bodied vessel, it was Pepys' turn – as the third identifiable constituent of this gathering – to assume the role of antagonist, wagering large sums against its performance.⁹ Dissension thus formed part of the context to what – when viewed in isolation – might otherwise appear a simple episode of tavern-lodged conviviality. The conflict encroaching on this excursion shows double-bodied shipping was not just a venture immersed in problems of wind and waves, but a hostility penetrating such institutional dry docks of experiment as the Royal Society itself.

As the bouts of discord between which the Royal Oak gathering was sandwiched illuminate some of the onshore challenges double-bodied shipping faced, meetings of this kind reveal the strategies adopted to overcome them. Pepys' record of the episode informs us

⁷ Thomas Birch, *The History of the Royal Society of London for Improving of Natural Knowledge, from its First Rise. In which the Most Considerable of those Papers communicated to the Society, which have hitherto not been published, are inserted in their proper order, as a Supplement to the Philosophical Transactions*, 4 vols., vol. 1 (London, 1756), 249.

⁸ Petty to Moray, 31 July 1663, Royal Society Archives EL-P1, no. 27, f. 42; *DB*, 82; Petty to Moray 26 August, EL-P1, no. 29; *DB*, 89-90; Moray to Petty 14 September 1663, National Maritime Museum SPB 16, no. 20; *DB*, 90-1.

⁹ Petty to Sir Robert Southwell, 28 June 1684, *DB*, 129; Sir John Werden to Petty, 16 December 1684, *DB*, 138.

that the marrow bones and chine of beef thrown to this group of past and potential critics of the “Experiment” were taken from “the victuals...made for this ship.”¹⁰ To a degree justifying, but not entirely reflected in, Pepys’ use of the teleological “for,” double-bodied shipping had, even by this stage, attempted to procure the acquiescence on which it depended through investment in what its pilots called “treatment.” The business of “treatment” – a crucial part of these experiments – extended to the provision of food and drink amid experiences accommodated by the tavern.¹¹ The fear and reluctance of hired hands tasked with venturing into such unfamiliar craft had become obstacles to experimentation. Efforts to overcome these hindrances to experiment had thus come to centre on the production of agreement, to which end Petty plied his “swabbers” with alcohol, and a range of delicacies. Acquiescence was to be fed and watered into being. The tavern was to aid this process, its consumables thus conceived as experimental resources. Pepys’ observation that the “victuals” with which the Royal Oak party were entertained had been “made for” Petty’s ship, the “Experiment,” reflects the experimental significance of gratification endemic to – and in this case, created *in* – the tavern.

Building on such insights, this chapter explores the importance of the tavern to attempts to manage – in the course of experiment – conflict and dissension. In doing so, it recovers the degree to which this setting – little explored by historians of science – loomed large among the various theatres in which the architect of experiment laboured.¹² It was here, we will see, that Petty supervised attempts to manufacture acquiescence in sailors, shipwrights, financiers, and the Royal Society – all the strata on which double-bodied shipping depended. The work necessary to double-bodied shipping was, therefore,

¹⁰ 18 February 1665, *DSP*, 6:38.

¹¹ Southwell to Oldenburg, 13 October 1663, *CHO*, 2:118.

¹² One exception to this lack of interest in the importance of the tavern to experiment and investigation is Slichter, *Science in a Tavern*, especially the first chapter. For an insightful look at working class botanical learning in the nineteenth-century public house see Secord, “Science in the Pub,” 269-315.

unconfined to the wooden vessels bearing names like “Experiment,” but overflowed into the social negotiations that made them possible. Other forms of experiment proved scarcely less fluid. Blood transfusion, another activity meant to illustrate the utility of experimental practice in – and to – the Restoration, had ties to the recesses of the tavern. This chapter moves between these streams of experimental activity, following their course through the experimental space of the tavern. But in doing so, it does not simply aim to add one more place of experiment to the historiographical chart. As Petty’s experiences even within the Royal Society foreshadow, the tavern was not a setting producing unassailable experiments. This chapter is, accordingly, concerned with the degree to which hostile depictions of experiment were invigorated or otherwise aided by the reality of contact with this setting. The significance of this space to experimental objectives made it a focus for those less than convinced such objectives had been met. While its consumables and sociabilities were enlisted by practitioners, then, the tavern – or aspects of it – nourished not just components of experiment, but scepticism and unease about its worth.

The facility with which the tavern produced expressions of hostility towards experiment owed partly to a long tradition of suspicion towards the kind of conduct it accommodated; but the Restoration offered new and compelling reasons for wariness. Bodily gratification was hardly an indulgence commended in the light of much classical wisdom, including Greek political philosophy, and its related understandings of “virtue” and “vice.”¹³ Socrates, in Plato’s discussion of the “Ship of State,” no less, listed “drinking,” “strong drink,” and “feasting” among troubling signs of a vessel fallen under the – corrosive – “rule” of its hands.¹⁴ Feasting and drinking were exhibitions of excess easily accommodated in the

¹³ Kevin Sharpe, “Virtues, Passions and Politics in Early Modern England,” *History of Political Thought* 32, no. 5 (2011): 774-5.

¹⁴ I have relied on the translation provided in David Keyt, “Plato and the Ship of State,” in *The Blackwell Guide to Plato's Republic*, ed. Gerasimos Santas (Malden: Blackwell Publishing, 2006), 190.

Restoration tavern. Such conduct modelled precisely the kind of internecine chaos the return of the Stuart dynasty in the March of 1660 was supposed to have concluded. The Restoration had hardly begun when a range of behaviours resident to the tavern – rituals and gatherings held responsible for jeopardising the compromises on which the Restoration depended – urged anew the dangers of this space. With its appetites and thirsts a symptom of disruption and disunity, the tavern was easily conceived not as a source of stately reinvigoration, but disarray; political, as well as cognitive, confusion. Even as practitioners bent on demonstrating the utility of experiment embraced this setting, it lodged experiences which, far from strengthening the “ship of state,” were among the most notorious risks to its stability.

The tavern, and the forms of disorder it accommodated, will thus be the subject of this chapter, which investigates the importance of this setting – and experiments therein – to change and upheaval within the supposedly restored political body. Exploring this venue reveals some of the ways in which the tavern was, notwithstanding its ability to house disorder, harnessed in attempts to evoke the utility of experiment to the Restoration. It also accounts for the failure of experiment, on occasion, to conquer, or even appropriately distance itself from, some of the most repudiated symptoms of disorder in this period – a predicament implicit in a swarm of judgements insisting on its relationship with politically pregnant varieties of vice. The end in view is an understanding of how the tavern could generate not just experiment, but doubts about its worth – in Petty’s case, doubts anticipated within the experimental community. That is what it means to look at how the tavern *worked* – in the sense outlined in the introduction to this thesis – as a place of experiment in the Stuart Restoration.

“...a Scene of Confusion...”¹⁵

The tavern was alive with threats to the Restoration: it lodged what the political and religious settlements forming the period were supposed to avoid: confusion. Of course, conduct and consumables associated with this setting – and the space in its entirety – had long provoked censure.¹⁶ But with the return of the Stuart dynasty in 1660, the task of concluding decades of civil strife created a climate of special sensitivity to spaces of intemperance, which after decades of violence were easily considered corrosive on account of the disagreement lodged therein. A site well associated with conflict, the tavern pronounced – and none too favourably – on the stability of the Stuart state. For servants of the regime, repudiation of this space, and an emphasis on its evils, fulfilled a diagnostic function, identifying challenges to the Restoration. Many of those ultimately investing in the collapse of Stuart rule mined the site for proof the administration had failed to produce the renewal it had promised. A diversity of priorities therefore urged a repudiation of the tavern. The tavern was a space of disorder because the Restoration was to be built from civility; the upheaval it housed fuelled doubt there had been – or could be – “restoration” at all.

Before turning to some of the features of tavern life responsible for its ties to confusion, it is worth looking at how such a space was identified on the eve of the Restoration. Public houses – and public drinking – were by this stage already institutions with long histories in Europe. The *tabernae* appearing in a number of Mediterranean cities of the late Roman Republic, from which the English word “tavern” derives, were one obvious precedent.¹⁷ Such sites resembled even earlier spaces, including the *kapeleia* of classical

¹⁵ *The Character of a Tavern. With a Brief Draught of a Drawer*, (London, 1675), 6.

¹⁶ Clark, *English Alehouse*, 28.

¹⁷ Nicholas Purcell, “The City of Rome and the *Plebs Urbana* in the Late Republic,” in *The Cambridge Ancient History IX: The Last Age of the Roman Republic 146-43 B.C.*, ed. J. A. Crook, Andrew Lintott, and Elizabeth Rawson (Cambridge: Cambridge University Press, 2004), 665.

Greek cities like Athens and Byzantium.¹⁸ *Kapeleia* afforded opportunities for social drinking and eating outside of more elite spaces such as *andrōns* (rooms in private residences, built for accommodating *symposia*.)¹⁹ *Kapeleia* were not necessarily buildings at all, although the importance of proximity to springs and other resources – useful for the Greek practice of mixing wine with water – resulted in an abundance of permanent sites.²⁰ In cities such as late republican Rome, Pompey, and Herculaneum, *tabernae* were more reliably part of the built environment.²¹ In Rome, where a growing population and fierce competition for space meant these venues often occupied the bottom level of vertically extended, apartment-like buildings, *tabernae* supported – except in cases of collapse – the growth of the city itself.²² Not all *tabernae* sold alcohol, or even food.²³ The etymology of the word instead indicates a different set of essential features, visible from the street: the Latin words *tabula* and *trabs* referred to boards, planks, and lengths of timber.²⁴ The paraphernalia of public drinking had swollen into a heavy, material presence. Both drinking and its materials were now part of an emerging retail landscape.

In western Europe, by the early modern era at least, the affordances of the tavern had become more clearly – though still incompletely – distinguished from other forms of retail. Inns, taverns, and alehouses either accommodated social drinking as their main function, or provided rooms that did so. By the beginning of the seventeenth-century, these spaces were familiar sights in the cities and towns of the three kingdoms. England alone probably had at

¹⁸ James N. Davidson, *Courtesans & Fishcakes: The Consuming Passions of Classical Athens* (London: HarperCollins, 1997), 57; Purcell, "City of Rome," 659.

¹⁹ Davidson, *Courtesans & Fishcakes*, 53. For a greater emphasis on the similarities between *andrōn* and *kapeleia* see John Wilkins and Shaun Hill, *Food in the Ancient World* (Malden: Blackwell Publishing, 2006), 177-9.

²⁰ Davidson, *Courtesans & Fishcakes*, 55-6.

²¹ J. R. Ellis, *The Roman Retail Revolution: The Socio-Economic World of the Taberna* (Oxford: Oxford University Press, 2018), 14, 16; Claire Holleran, *Shopping in Ancient Rome: The Retail Trade in the Late Republic and Principate* (Oxford: Oxford University Press, 2012), 99.

²² Purcell, "Rome and the *Plebs Urbana*," 659, 662.

²³ *Ibid.*, 665; Ellis, *Roman Retail Revolution*, 9.

²⁴ Claire Holleran, "Finding Commerce: The *Taberna* and the Identification of Roman Commercial Space," *Papers of the British School at Rome* 85 (2017): 148.

least 17, 000 of them before the end of the sixteenth-century.²⁵ While the terms “inn,” “tavern,” and “alehouse” could be used interchangeably, and all – as victualling venues – gave meaning to what it meant to eat and drink, there were commonly understood differences between them. The term “tavern” at this stage most likely denoted an establishment retailing wine.²⁶ These spaces were often smaller than inns, which were usually better equipped for providing genteel patrons not just with drink, but accommodation and food.²⁷ (A “tavern,” however, could also be a drinking room within an inn.²⁸) Taverns also tended to be larger than alehouses. (Although, at this time, alehouses were growing in size and number, and selling a widening variety of liquors – developments easing once-important differences between the two sites.²⁹) By the second half of the seventeenth-century, taverns were probably most clearly distinguished from coffeehouses, which – as Part II of this thesis shows – rapidly acquired a very different identity and set of associations from all three victualling venues.

This picture of the Restoration tavern as ceding prominence, and even some functions, to new institutions like the coffeehouse, as well as to older, evolving venues, including the alehouse, was one reflected on the streets of London. There were perhaps more than 200 taverns in the capital in 1633.³⁰ At about the same time, there could have been more than 900 alehouses, producing – as Peter Clarke observes – a possible ratio of one alehouse to every sixteen dwellings.³¹ Smaller towns reflected this relative scarcity of taverns.³² The likely

²⁵ Peter Clark, *The English Alehouse: 1200-1830* (London and New York: Longman, 1983), 68. The term “public house,” however, appears to be a seventeenth-century development.

²⁶ Clark, *English Alehouse*, 5; Mark Hailwood, *Alehouses and Good Fellowship in Early Modern England* (Woodbridge: The Boydell Press, 2014), 2.

²⁷ Clark, *English Alehouse*, 7-8.

²⁸ Judith Hunter, “English Inns, Taverns, Alehouses and Brandy Shops: The Legislative Framework, 1495-1797,” in *The World of the Tavern: Public Houses in Early Modern Europe*, ed. Beat Kümin and B. Ann Tlustý (London and New York: Routledge, 2017), 70.

²⁹ Clark, *English Alehouse*, 14.

³⁰ *Ibid.*, 12.

³¹ *Ibid.*, 49.

³² Daniel Maudlin, “The Urban Inn: Gathering Space, Hierarchy and Material Culture in the Eighteenth-Century British Town,” *Urban History* 46, no. 4 (2019),

preponderance of alehouses inside and outside the capital means that these venues, in particular, almost surely influenced perceptions of the tavern, and its affordances. Sociabilities, rituals, and even some of the liquors of the tavern were almost inevitably scrutinised against the background of their more regular appearance in alehouses. But the fact that London, and probably many other towns, contained such a small number of taverns compared to other venues also meant that prejudices against tavern life could have origins in the attention paid to an even wider group of settings and people, from banquets to political figures – at least once behaviour associated with them was reproduced in the tavern. Increasingly overshadowed by other spaces, the tavern was vulnerable reductive comparisons. Attitudes formed in response to extraneously situated conduct and consumables could follow these aspects of culture into the tavern.

The “vice” of drunkenness, though present in a range of spaces, was one component of tavern life redolent of political confusion – an interregnum ill yet to be expunged from the political body. Perhaps the most frequently reprinted work on the “sin of drunkenness” in the first few years of the Restoration, John Hart’s *Dreadfull Character of a Drunkard*, was not unusual in the claims it made for the persistent effects of this “vice.”³³ Drunkenness, Hart declared, produced a state of “confusion.” It was possibly “everlasting.”³⁴ The same could be said of excesses within the political body. Gilbert Burnet, a moderate episcopalian after the King’s return, described the “effects” of civil strife in language strikingly reminiscent of Hart’s: such excesses also had consequences “so great and lasting.”³⁵ Burnet’s comments on the long reach of civil disorder were eventually published in the history he produced after the Glorious Revolution, which located the Restoration’s failure in the spirit of abandon with

³³ John Hart, *The Dreadfull Character of a Drunkard. Or, the Odious and Beastly Sin of Drunkenness Described and Condemned Shewing the Fearful Judgements that have Befallen Notorious Drunkards: with Brief Exhortations to Perswade Men from that Swinish and Abominable Sin*, 10th ed. (London, 1663), A2.

³⁴ *Ibid.*, A2v

³⁵ Burnet, *History*, 1:93.

which it had begun, and failed to address from its earliest days. This was a landscape abounding with “drunkenness.”³⁶ Cognitive and political confusion shared a resemblance deriving from more than the potential permanency of both states. Drunkenness, like other forms of capitulation to a sensual life, was often “beastly,” “beast-like,” and “swinish.”³⁷ Hart’s *Drunkard* conferred unambiguously social dimensions on this bestiality. In many editions of the work, the title page came decorated with an image of six animals in dispute at a table – its ale-sodden surface the result of an upturned tankard. Drunkenness was bestial, at least in part, because it was associated with irrational descents into violence. These and other analogies between cognitive and political disorder made the word “confusion” capable of describing the effects of drunkenness, as well as the intestine disorder in which the three kingdoms had until recently been gripped.

The confusion of the tavern also possessed a political salience because, even when obviously a consequence of drunkenness, it still illuminated problems of state. The Earl of Clarendon, a convinced royalist, and faithful servant until his impeachment in 1667, developed an account of the administration’s early years in which tavern meetings arose from a failure to justly recompense the wounds of civil war. To begin with, imprisonment and the sequestration of estates, among other forms of interregnum drama, had created much “uneasiness of fortune.”³⁸ Claiming ancestral titles, pensions, and other hitherto uncomplicated givens in this new, unpredictable world, required plotting, which gave rise to the “necessity of frequent meetings...for which taverns were the most secure places.”³⁹ Tavern gatherings thus attested to unresolved ruptures in the ship of state. The particular customs colouring meetings in this space, too, expressed the problem of ongoing division and

³⁶ Ibid.

³⁷ Hart, *Character of a Drunkard*, A2v.

³⁸ Edward Earl of Clarendon, *The Life of Edward Earl of Clarendon, in Which is Included, a Continuation of his History of the Grand Rebellion. Written by Himself. Now for the First Time Carefully Printed from the Original MS Preserved in the Bodleian Library*. (Oxford: Oxford University Press, 1857).

³⁹ Ibid., 301-5.

upheaval. Royal health-drinking assumed fresh importance as subjects pressing their cases, personal and political, adapted to the desirability of affecting enthusiasm for the monarchy.⁴⁰ Health-drinking was the consequence of a political terrain in which expressions of loyalty, more than dictates of justice, formed the bases for negotiating power.⁴¹ In a context in which competing agendas were tied to personal fortune, healths were performative, deployed in quests for favour, and thus a particularly obvious sign of the administrative challenges facing the Restoration. So desperate, and reflective of stately instability, was the royal health, it became one of the tavern rituals most evocative of political confusion.

The tavern was not just a site reflecting problems of state; behaviour so situated, including health drinking, was judged to *create* new problems. Clarendon placed inveterate health drinkers foremost among those whose expectations of “large” – and insupportable – “recompenses and reparations” pushed the King into ill-advised decisions.⁴² Insofar as rewarding a cavalier often involved taking from a parliamentarian, healths could easily appear a dimension of attempts to persuade the restored monarch into the kind of retribution he had foresworn as an exiled prince in his Declaration of Breda (1660.) It was perhaps in a bid to dampen worries of ongoing division that one of the first printed royal proclamations of the Restoration, “against Vicious, Debauch’d, and Prophane Persons,” took aim at the precisely the “sort of men” who drank royal healths most fulsomely. This was a group of whom the King had:

...heard much, and...[is]...sufficiently ashamed, who spend their time in Taverns, Tipling-Houses, and Debauches...in drinking...Health, and Inveighing, against all others, who are not of their own dissolute temper; and who, in truth, have more discredited Our Cause, by the Licence of their Manners and Lives, then they could ever advance it by their Affection and Courage.⁴³

⁴⁰ Clarendon reckoned “none had more esteem of themselves and believed preferment...more due to them,” he later wrote, “than [the] sort of men, who...most loudly began the king’s health in taverns.” *Ibid.*, 302.

⁴¹ *Ibid.*, 302.

⁴² *Ibid.*, 301.

⁴³ *A Proclamation Against Vicious, Debauch’d, and Prophane Persons* (London, 1660).

The damage caused by healths was also a subject exercising many of those who would later emerge as Whigs; Burnet insisted that the “great disorders” and “riot” lamented in his account of the Restoration were a direct consequence of “drinking the King’s health.”⁴⁴ In these instances, denunciation of the tavern, and its associational life, emphasised the political toxicity of the place. Its rituals were not situated among signs of a rejuvenated political body; they were shown poisoning it.

Healths were a powerful component of the tavern’s ability to produce political ills; but drunkenness more generally shared in the blame. Burnet ultimately produced a history in which injudicious decisions, both in parliament and court, were routinely ascribed to “drunkenness.”⁴⁵ When Clarendon came to consider the “unhappy temper and constitution” of the “royal party” – whose excesses, we have seen, were expressed in recourse to the tavern – he blamed this faction for a development that would create still greater problems: the “license” of the court, and the restored monarch himself. He actually wrote a history in which the decadence for which Stuart rule became so notorious was the product of tavern-fuelled extravagance. The senseless demands bred in this space served to:

...wonderfully displease and trouble the king; and...did so break his mind, and had that operation upon his spirits, that finding he could not...extricate himself out of those many difficulties and labyrinths in which he was involved, nor expedite those important matters...he grew more disposed to leave all things to their natural course...and by degrees unbent his mind from the knotty and ungrateful part of his business, grew more remiss in his application to it, and indulged to his youth and appetite that license and satisfaction that it desired, and for which he had opportunity enough.⁴⁶

This stunning causal assertion, though doubtless crafted with an eye to reducing the Chancellor’s responsibility for the tenor of court, shows that even sovereign indolence – a

⁴⁴ Burnet, *History*, 1:92-3.

⁴⁵ *Ibid.*, 1:118, 1:119, 1:122

⁴⁶ Clarendon, *Life*, 305.

development that itself became a focus of fierce criticism – was an alleged consequence of tavern-accommodated extravagance.⁴⁷

So powerful and political were the effects of tavernly abandon, exhibitions thereof frequently intruded into questions of knowledge and trust. John Aubrey put the death of the mathematician William Oughtred, on the eve of the King's return, down to the excitement of once again being able to offer a royal toast.⁴⁸ Evocatively, in Aubrey's sketch, reason drowned as years of suppressed loyalty boiled over into a raging thirst: "and are yee sure he is restored? then give me a glass of Sack to drink his Sacred Majesties health: his spirits were then quite upon the wing to fly away."⁴⁹ Those who had not lost their reason might have their word doubted due to immersion in such an obviously performative space. The royal proclamation against "Viscious, Debauch'd, and Prophane Persons," introduced above, singled out tavern-ensconced health-drinkers because they often provided "no other Evidence of their Affection" to the King.⁵⁰ Clarendon doubted these sodden individuals had ever run "any other hazard" for the once exiled monarch.⁵¹ A hostile "character of a Tory," penned much later, in the context of the Exclusion Crisis of 1679-81, presented this emerging, pro-Stuart identity, as a tavern-sloshed devotee of "debauchery" whose "Loyalty" extended "no further than a Drunken Health."⁵² The vice of drunkenness followed the ritual of the health in coming to indicate a hollow, untrustworthy, character. The notorious criminal James Turner's treatment of "poor and distressed Cavaliers," whom he was alleged to have conned, had its deceitful nature exposed by Turner's dissolute lifestyle – one in which "Taverns and Ordinaries are daily frequented, rich and costly garments provided, high prized Jewels daily

⁴⁷ Ibid., 301.

⁴⁸ "William Oughtred. B. D.," *BL*, 1:123.

⁴⁹ Ibid.

⁵⁰ *Proclamation Against Vicious, Debauch'd, and Prophane Persons* (London, 1660).

⁵¹ Clarendon, *Life*, 301-2.

⁵² *Character of a Torey* (London, 1681).

worn, not a dinner...made under seven or eight several dishes of meat.”⁵³ The importance of tavern-lodged excess to false exhibitions – especially suspicious loyalty – eased the degree to which the venue was judged to house deceit.

With egregious dishonesty accommodated in the tavern, contributing to the confusion for which it was known, virtuous political interventions, and actors celebrated for delivering the restored polity, were envisaged operating at a healthy distance from this site. The “prudent Counsels, wary Reserves, and politick Addresses” of General George Monck, fashionably credited with orchestrating the Restoration, were glossed as qualities of a man who “but rarely” had “remit” to any tavern – and this despite suffering years of “a long Feaver disposed to a Dropsie, which is a thirsty disease.”⁵⁴ Conversely, those with less hagiographic intentions deposited Monck among drunken “quarrels” of “such a pitch” that “every person “came to blows and tore each other’s hair.”⁵⁵ Such writing drew on models of wisdom built out of a repudiation of worldly temptations. The credibility of the ascete was still more obviously a resource for biographies of cavalier matyrs and other narratives designed, as Matthew Neufeld has observed, to turn the deprivation, or “discomfort,” of the loyal hero into “a species of authentic martyrdom.”⁵⁶ The Duke of Newcastle’s “loyalty and sufferings,” as described by his wife, the well-known critic of experimentalism, Margaret Cavendish, included assurances of a “sparing and temperate” regimen. The Duke drank, Cavendish told readers; but principally to the accompaniment of dinner, and a meagre

⁵³ *The Triumph of Truth: In An Exact and Impartial Relation of the Life and Conversation of Col. James Turner...* (London, 1663), 7.

⁵⁴ Thomas Gumble, *The Life of General Monck, Duke of Albemarle, with Remarks Upon his Actions*. (London, 1671), 469. For Monck as a “heroic figure” see Matthew Neufeld, *The Civil Wars after 1660: Public Remembering in Late Stuart England* (Woodbridge: The Boydell Press, 2013), 36.

⁵⁵ J. J. Jusserand, *A French Ambassador at the Court of Charles the Second* (London: Fisher Unwin, 1892), 96-7; Hutton, *Restoration*, 230.

⁵⁶ Neufeld, *Civil Wars*, 43.

supper.⁵⁷ There was no mention of him jangling in taverns. As modesty evinced merit, easing distinctions between personal and political restraint, withdrawal from – rather than recourse to – the tavern identified the virtuous actor.

The work of agents judged virtuous, and policy dubbed beneficial, was correspondingly depicted as frustrated and corrupted amid the din of the tavern. One pamphlet bemoaning the post-settlement plight of “indigent” officers whose loyal “sufferings” had made the Restoration possible balked at the distribution of their dues to new officers: “Lieutenants, Ensigns, Cornets and Quartermasters” created for a cut of the distribution in “a Tavern or an Alehouse.”⁵⁸ The heroes of sanctioned histories had their contributions ignored – or disputed – amid the fog of the tippling house.⁵⁹ For some, it was “Tavern-reasoning,” or the thinking of “Enemies to the Kings Restauration,” who never did “the King other service than drink Healths,” to claim that General Monck had not long intended “to bring the King in.”⁶⁰ Decades later, the Earl of Shaftesbury’s “wholesome Laws” excluding Catholics from civil, military and parliamentary office were said to be thwarted in their aim of restraining “Debauchery” and the “designs of Rome” on account of “divers consults” held in taverns – among “other places” – with “Hellish impudence.”⁶¹ From some very different points of view, then, the schemes and misapprehensions of the tavern played a role antagonistic to the Restoration. It was a place in which worthy aims were frustrated, and salutary interventions were scuppered.

⁵⁷ Margaret Cavendish, *The Life of the Thrice Noble, High and Puissant Prince William Cavendishe, Duke, Marquess and Earl of Newcastle... Written by the Thrice noble, Illustrious and Excellent Princess, Margaret, Duchess of Newcastle, his Wife* (London, 1667), 152.

⁵⁸ Charles Hammond, *Truth's Discovery; or the Cavalier's Case Clearly Stated by Conscience and Plain-Dealing. Presented to the Honorable Commissioners, and all Indigent Officers, and Souldiers*. (London, 1664), 6-7.

⁵⁹ For the category of “sanctioned” histories see Neufeld, *Civil Wars*, 38-43.

⁶⁰ Gumble, *Life of General Monck*, 120; Neufeld, *Civil Wars*, 48.

⁶¹ *Rawleigh Redivivus; Or, the Life & Death of the Right Honourable Anthony Late Earl of Shaftesbury*, (London, 1683), 30-32.

Before looking at the place of experiment amid this confusion, it is worth observing that the tavern's association with this symptom of disorder made it a setting groups and associations often jostled to distance themselves from. One "apology" for "meek and moderate, serious and sober" non-conformists defended their gatherings by casting them as domestically staged alternatives to ale-soused turbulence, asking whether it would really be better if:

...Taverns, Alehouses, and worse places, should on the lords day be filled with the number of those that absent themselves...[in order to]...hear a Sermon of Faith and Repetance, and other Duties towards God, and of Loyalty to the King, of Love and Charity one towards another, in a private house?⁶²

The Whigs and Tories of the next decade placed each other among the excesses of the tavern; protestant piety was reduced to a "Caballistical" presence in "Tavern-Clubs," while Jacobite "loyalty" was compressed into the notoriously affected "drunken health."⁶³ James Harrington's Rota Club extracted itself from the tavern by clinging to the coffeehouse. While coffeehouses posed problems of their own (as Chapter 4 will explore), the choice also had advantages. Anthony à Wood, known for his suspicion of these venues, recounted how one of Harrington's coffeehouse meetings was once interrupted by a "Gang come among them one evening very mellow from the Tavern."⁶⁴ The violent intruders "tore in pieces their Orders and Minutes."⁶⁵ So much confusion did this posse provoke, the "Soldiers who commonly were there, as Auditors and Spectators, would have kick'd them down the stairs, but

⁶² *An Humble Apology for Non-Conformists with Modest and Serious Reflections on the Friendly Debate and the Continuation Thereof. By a Lover of Truth and Peace.*, (London, 1669), A4v, 7; Roger L'Estrange, *Toleration Discuss'd, in Two Dialogues I. Betwixt a Conformist, and a Non-Conformist...II. Betwixt a Presbyterian, and an Independent...* (London, 1670), 257.

⁶³ For the location of Whiggism in tavern sociability see John Norris, *A Murnival of Knaves, or, Whiggism Plainly Display'd, and (if not Grown Shameless) Burlesqu'd out of Countenance* (London, 1683), 21. For the case against the tories see *The Character of a Torey*, (London, 1681), 1. For an excellent discussion of the tavern clubbing underpinning these charges see David Allen, "Political Clubs in Restoration London," *The Historical Journal* 19, no. 3 (1976): 571.

⁶⁴ Anthony à Wood, *Athenae Oxoniensis. An Exact History of all the Writers and Bishops who have had their Education in the most Ancient and Famous University of Oxford, from the Fifteenth Year of King Henry the Seventh, Dom. 1500, to the End of the Year 1690...* 2 vols., vol. 2 (London, 1692), 440.

⁶⁴ Ibid.

⁶⁵ Ibid.

Harrington's moderation...hindred them."⁶⁶ A contrast with tavern-bred disorder was surely one of few ways Harrington's club, known for its republican sympathies, could ever have been – at least after the Restoration – associated with “moderation.” That was how politically corrosive the excesses of the tavern were said to be.

The tavern possessed a significance to conflict that made it more than a site of merely cognitive confusion. Political intemperance – and thus danger – was expressed in its gatherings, individuals, and rituals. Midwives to the regime eschewed the venue. Policy thought capable of remedying its deficiencies was asserted to have been frustrated within it. Denunciation of this setting – no matter how moral or pious the language used – was grounded in a recognition of its ability to accommodate gatherings and gestures redolent of civil disorder. The excesses of this space were certainly often excesses of the body; but they were also political excesses – and problems of state.

“...Beere...made Flood Enough...”

As surely as the tavern was a place of confusion, it was also one of experiment. With the resolution of intemperate conflict a priority for the new regime, this venue, precisely because it was a seat of such disorder, lured practitioners invested in the portrayal of experiment as a politically therapeutic pursuit. The importance of the tavern to instability meant experiments conducted therein might visibly engage with the problem of confusion. Through contact with the tavern, management of the sociabilities and behaviours realising this strife was to be demonstrated in the course of experiment. The vices of the tavern, it was hoped, were to demonstrate the virtues of experiment.

⁶⁶ Ibid.

The potential of experimental work to model what are now classically described as “solutions to the problem of social order” owed to its ability to express political arrangements.⁶⁷ In recovering the attempts of practitioners to instantiate such solutions in the context of the Restoration, historians have tended to concentrate on their withdrawal from sites of temperamental conflict.⁶⁸ The picture has been one according to which the therapeutic capability of post-interregnum experiment, its political utility, was essentially asserted through retreat from disorder. In contrast, a disordered space like the tavern facilitates analysis of a different, ultimately riskier, strategy: the attempted conquest of such transgressive behaviour *in situ*. Scholarly neglect of this setting, then, has obscured the degree to which structures and hierarchies were deposited where they might be seen combating the problem of confusion. Historians following actors who did move outside the orchestrated restraint of the “house of experiment” have tended to pause most thoughtfully over the coffeehouse.⁶⁹ Those interested in telling institutional histories of the Royal Society have been still less disposed to engage with this setting: its “formal meetings,” they usually point out, were held at Gresham College or Arundel House.⁷⁰ But even a partial commitment to the tavern, with experiment straddling sites of confusion and order, facilitated an ambitious engagement with spaces of the former kind. Such contact ran a serious risk of working counter to the advantages derived from association with more scrupulous spaces. But meetings with minutes, presiding fellows of repute, and other methods of managing

⁶⁷ The phrase comes from Shapin and Schaffer, *Leviathan*, 15.

⁶⁸ For rhetorical efforts to distance experiment from conflict and division see Wood, “Methodology and Apologetics,” 1-26. On the level of geography: Shapin and Schaffer, *Leviathan*, 19, 283, 298.

⁶⁹ Rob Iliffe, “Material Doubts: Hooke, Artisan Culture, and the Exchange of Information in 1670s London,” *The British Journal for the History of Science* 28, no. 3 (1995); Stewart, *Rise of Public Science*, 115-7; “Centres of Calculation,” 133-53.

⁷⁰ Ian Adamson, “The Royal Society and Gresham College,” *Notes and Records of the Royal Society of London* 33, no. 1 (1978): 1-21; Hunter, *Science and Society*, 36, 40; *Establishing the New Science: The Experience of the Early Royal Society* (Woodbridge: The Boydell Press, 1989), 140. For belief in the importance of “formal meetings” to the Royal Society and its aims see for example Marie Boas Hall, *Promoting Experimental Learning: Experiment and the Royal Society 1660-1727* (Cambridge: Cambridge University Press, 1991), 23.

dissension, would ideally have produced an order so beneficial it was visibly disseminated into the most recalcitrant of venues – among them, the taverns of the town.

The body of experimental philosophers thus grappled to present their tavernly excursions as continuous with the ordered, moderate gatherings that have sustained the bulk of scholarly attention since Thomas Sprat's *History of the Royal Society* (printed, after South's sermon, in 1667.⁷¹) In 1675, the experimental devotee and ship-builder's son, Jonathan Goddard, died returning from one of London's many Crown Taverns, where he had been eating and drinking with Society chieftains.⁷² Seemingly attuned to the dangers of presenting an experimental figure defeated by such freighted excesses, Aubrey's sketch of Goddard's life, though presenting a virtuoso "most curious" about wine, insisted he "drank not to excesse."⁷³ The circumstances of his death went publicly undescribed. The naval administrator, Samuel Pepys, used tavern-lodged gatherings as a way of keeping abreast of transactions he had missed in other places, like Arundel House.⁷⁴ His diary reveals the result was not always a clear grip on developments in these lofty spaces. In the November of 1667, he left one tavern in St Clements churchyard, where he had met his health-drinking friend John Creed and "other brave men" from "Gresham College," under the (erroneous) impression that someone called "Dr. Floyd, a divine" had that day been admitted to the Royal Society.⁷⁵ Pious royalists like John Evelyn, and faithful regime servants such as Sir Joseph Williamson, were members of the experimental community harbouring deep suspicions of

⁷¹ Thomas Sprat, *The History of the Royal-Society of London, for the Improving of Natural Knowledge*. (London, 1667). John Beale hoped Sprat's *History* would ensure South's "reasons or pretences" were "examined." Beale to Oldenburg, 1 June 1667, *CHO*, 3:427.

⁷² 24 March 1675, *DRH*, 154; "Jonathan Goddard. M.D," *BL*, 1:562-3. Pepys' diary makes it clear that Bloomsbury, New Palace Yard, and the Exchange, were among areas boasting a "Crown Tavern." See for example Pepys' entries for 18 July 1663, *DSP*, 4:234; 2 April 1666, *DSP*, 7:89; 26 April 1668, *DSP*, 9:175. See also Newton E. Key, "'High Feeding and Smart Drinking': Associating Hedge-Lane Lords in Exclusion Crisis London," in *Fear, Exclusion and Revolution*, ed. Jason McElligott (London: Routledge, 2006), 170.

⁷³ "Jonathan Goddard. M.D," *BL*, 1:562-3

⁷⁴ For Pepys' reservations about taverns see Markman Ellis, *The Coffee-house: A Cultural History* (London: Weidenfeld and Nicolson, 2004), 57.

⁷⁵ Pepys, 21 November 1667, *DSP*, 8:540-1.

tavern life.⁷⁶ But when the Society succeeded in appointing Williamson, by then responsible for policing spaces of this kind, to its presidency, the development – as one that “might not prejudice &c” – was celebrated with “entertainment” in a tavern on Threadneedle Street.⁷⁷ Attempts to identify experimental sociability with moderation, order, and other antidotes to internecine strife did not prevent contact with the problem. Exponents instead struggled to present themselves propagating order even in resorts of confusion; this meant a visible reach into the vices of the tavern.

Blood transfusion, a strand of experimental activity achieving prominence in the first decade of the Restoration, involved a considerable degree of engagement with such vices. Culminating in the flow, on two separate occasions in 1667, of lamb’s blood into the veins of a “degenerate” human subject, the program spoke directly to the possibility of “regeneration” – a heavily valenced concept, Simon Schaffer has noticed, in the early years of the Restoration.⁷⁸ The animal-to-human transfusions of the Parisian savant, Jean Denis, were an inspiration. These had aimed to correct “impurities” of a kind manifested in what Denis called “debauchedness and irregularity of eating and drinking.”⁷⁹ In London, with the viability of the new polity apparently imperilled after years of plague, fire, and the outbreak of the Second-Anglo Dutch War, a “poor and debauched” minister, Arthur Coga, was paid to demonstrate the possibilities of bodily renewal. The choice of Coga – who struck witnesses as “freakish” and “extravagant,” and took his sanguinary dole with helpings of sack, wormwood wine, and tobacco – was significant. Coga embodied the political problem of tavernly intemperance. At the time of his first transfusion in 1667, the disasters of the last two

⁷⁶ 1 December 1662, *DJE*, 3:347-8; Alan Marshall, *Intelligence and Espionage in the Reign of Charles II, 1660-1685* (Cambridge: Cambridge University Press, 1994), 73.

⁷⁷ 27 December 1677, *DJE*, 4:125.

⁷⁸ 21 November 1667, *DSP*, 8:543; Schaffer, “Regeneration,” 84-5.

⁷⁹ Jean Denis, “Concerning a New Way of Curing Sundry Diseases by Transfusion of Blood,” in A. D. Farr, “The First Human Blood Transfusion,” *Medical History* 24 (1980), 159; Denis to Oldenburg, 13 December 1667, *CHO*, 4:48-9; *ibid.*, 98.

years – catastrophes of nature and war that bore directly on the viability of the restored polity – were routinely ascribed to the prevalence of such vices. They threatened to propel the state once more into confusion. The ills transfusion aimed to correct were therefore as political as they were bodily. It was through remedying these that experiment might discernibly align itself with the possibility of a restored order – or fail to do so. With excesses endemic to the tavern bearing on the health of the polity, an experimental therapy emerged: the cure of confusion itself.

The tavern not only accommodated the vices transfusion strove to master, but expressions of optimism over the therapeutic potential of this experimental procedure. Transfusion became the subject of tavernly discourse. When the Royal Society's registrar, William Croone, told a crowd at the Popes Head Tavern in 1666 that he had made a "pretty experiment" of draining one dog's blood into another, his audience immediately turned their minds to problems afflicting the supposedly restored polity – including the regulation of religious intemperance.⁸⁰ The draining had occurred earlier that day, in Gresham College. But the wider promise of this work was revealed in the Popes Head. Pepys, who caught the exchange after having – as so often – missed the earlier "meeting at Gresham College," noted Croone's announcement did give occasion to many pretty wishes, as of the blood of a Quaker to be let in an Archbishop, and such like."⁸¹ The crowd among whom he sat in the Popes Head raised the prospect of moderation, settled differences, and pan-religious assent. Its discussion contemplated the worth of transfusion as a cure for ills gripping a still – and, ultimately, never anything but – dubiously restored political body. Meanwhile, the situation of this intercourse in the tavern, like the vices practitioners aimed to expunge from their human subject, suggested the relevance of this space, and the management of its politically-

⁸⁰ 14 November 1666, *DSP*, 7:370.

⁸¹ *Ibid.*

inflected intemperance, to the experimental therapy of transfusion. The discourse expressed hopes of an end to confusion; its location in the tavern showed the experimental community engaging with this peril.

Double-bodied shipping was the largest, most public, and most enduring of experimental efforts to strengthen the state through immersion in vices germane to the tavern, and its confusion. The distribution of victuals among the courtiers and virtuosi assembled in the Royal Oak, with which this chapter began, provides one of the earliest indications of the degree to which efforts to persuade of its political utility harnessed the potential for gratification such venues accommodated.⁸² The “Experiment” so expedited – a vessel launched in 1665 – was one of at least four large-scale craft produced by Petty between 1661 and 1684. During this period, one almost co-extensive with Caroline rule, the virtuoso routinely insisted on the political improvement his experiments would produce.⁸³ His reliance on the tavern, in the course of making such representations, did not end with the dispersal of the Royal Oak’s attendees in the February of 1665. A surviving copy of a printed summons to one meeting in a “Crown Tavern” in Dublin, produced as late as the October of 1684, indicates that recourse to this space was a sustained feature of double-bodied shipping.⁸⁴ The document shows interested parties were invited to a meeting designed to put what was probably Petty’s fourth vessel “in usefull dimensions upon the sea.”⁸⁵ The summons itself described the proposed assembly as part of a program which, though benefiting “man-kind,” addressed the more proximate needs of the post-interregnum polity.⁸⁶ The experiments emerging from this site were to show how renewal was possible in the ship of state. Few in a mercantile archipelago possessed of naval myths would likely doubt the stately significance –

⁸² 18 February 1665, *DSP*, 6:38.

⁸³ “Epistle Dedicatory,” Bodleian MS Lyell Empt 32, ff. 1-4v; *DB*, 4-6; Petty to Brouncker, 4 January 1663, *DB*, 47.

⁸⁴ National Maritime Museum (Greenwich), SPB 16, no. 37.

⁸⁵ *Ibid.*

⁸⁶ *Ibid.*

for better or worse – of interventions in naval architecture. But the summons of 1684, most likely printed for display on the streets of Dublin or for distribution in taverns and coffeehouses, show Petty advertised the stately effects he expected recourse to the tavern would produce. Generating improvement from this unruly quarter would demonstrate the worth of experiment.

The production of improvement in the tavern was a process asserted by the “double-bodied” form of the shipping visibly emerging from it. The term “double-bodied,” or “double-bottomed,” reflected Petty’s insistence on the use of two hull-like bodies to support a deck, which spanned the water between them like a bridge. In distributing the bulk of the ship across a wider, vaster surface, the design promised to dispense with the need for ballast, and thus the heavy structure – the keel – built to house this cargo in conventional, single-hulled, craft. The design heralded a strengthened state in two ways. Firstly, it dangled the possibility of a less materially intensive vessel.⁸⁷ Timber scarcity was a perceived challenge to the Restoration – one conventionally portrayed as a legacy of Cromwellian disorder.⁸⁸ But the distribution of weight across two bodies promised another virtue responsive to stately needs: stability. Careening, the cleaning or repair of a vessel’s underside, was a precarious undertaking for heavy, singled-hulled craft.⁸⁹ In the October of 1666, in just one week, three fourth-rate frigates tipped during attempts to careen them, sustaining consequential damage in the process. Consternation seized the navy.⁹⁰ Double-bodied shipping explicitly addressed

⁸⁷ In a list drawn by Petty on what exactly “The Improvement of Shipping consists,” priority was given to “making the same weight of Materialls to carry more Burthen and Saile.” MS Lyell Empt 32, f. 78. For the surface of the deck see MS Lyell Empt 32, f. 44v. Petty was still promising less resource-intensive craft into the twilight years of double-bodied shipping. Petty to Werden, 29 January 1683/4, DB, 122.

⁸⁸ Mark McDayter, “Poetic Gardens and Political Myths: The Renewal of St James’s Park in the Restoration,” *The Journal of Garden History* 15, no. 3 (1995): 135-6. This was also a problem exercising other founding members of the Royal Society, most notably John Evelyn in his *Sylva, Or a Discourse of Forest-Trees, and the Propagation of Timber in his Majesties Dominions...* (London, 1664).

⁸⁹ The difficulties of careening top-heavy vessels would later inform James Cook’s predilection for North Sea Colliers in his Pacific voyages. See Richard Sorrenson, “The Ship as a Scientific Instrument in the Eighteenth Century,” *Isis* 11 (1996): 226.

⁹⁰ 20 October 1666, *The Journals of Sir Thomas Allin*, 2 vols. (Navy Records Society, 1939-40), 1:297. For Pepys, the overturning of just one of these frigates, the *Diamonds*, during careening comparable to the fatal

such exhibitions of instability, naval and political.⁹¹ It was unveiled amid suggestions that shipping in “single bodies” – as Petty bluntly described the centuries-long, cross-cultural “tradition” of using one hull – had arisen at a time when the size and functions of modern ocean-going craft could not possibly have been “thought on.”⁹² “Single bodies,” Petty asserted, had emerged while shipping was still confined to smaller dimensions, possibly before sailing itself. Contemporary naval architecture, and the quantities of ballast it insisted on, thus involved “planting a new Practice upon an old foundation.”⁹³ His design was for a ship of state unencumbered with such recent, precarious, modifications; his experimental program promised a renewal reaching to its very foundations.

While promises of renewal appeared in the architecture of double-bodied vessels emerging from the tavern, the program also tasked this space with much more directly manufacturing the stability crucial to political renewal. It was here engagement with confusion was most direct. From the earliest trials of Petty’s first vessel in 1662, double-bodied vessels were tested in “very public” conditions.⁹⁴ The vicissitudes of wind and waves were foreseeable challenges. But as hulls smashed into shoals, spars snapped, and sheets broke loose before crowds of onlookers, a new danger appeared on the shore: judgements with the potential to throw the various groups on which this program depended into disarray.⁹⁵ Just one month after launching his first vessel, Petty was already complaining of an old sea captain in Dublin attempting “to corrupt my Men & sow discord between us.”⁹⁶ By

explosion tearing the forecastle off the *Revenge*. Both were grave war-time indications that “all the King’s work is now done in.” See his entry for 28 October 1666, *DSP*, 7:345.

⁹¹ For the relative ease with which Petty claimed double-bodied shipping could be beached and careened see Bodleian MS Lyell Empt 32, f. 44v.

⁹² “Epistle Dedicatory,” Bodleian MS Lyell Empt 32, f. 4v; *DB*, 6.

⁹³ *Ibid.*

⁹⁴ Petty to Brouncker, February 1663, *DB*, 59.

⁹⁵ Ted McCormick, *William Petty and the Ambitions of Political Arithmetic* (Oxford: Oxford University Press, 2009), 152-4; Paddy Holt, “An Appetite for Experiment: Putting Early Royal Society Tastes Back on the Table,” *Notes and Records of the Royal Society of London* (2022): 10-2.

⁹⁶ Petty to Grant, 18 December 1662, Bodleian Library MS Lyell Empt., f. 64; *DB*, 39.

the Spring of 1663, allies were identifying “two great enemyes:” “the Sea and the Multitude.”⁹⁷ Hostile judgements might begin life outside of the various groups – sailors, carpenters, financiers, and courtiers – on which double-bodied shipping depended. But without appropriate management, these communities could become infected through “contagion.”⁹⁸ Petty thus portrayed himself as engineering not just vessels, but acquiescence among the cohorts integral to constructing and sailing them. Double-bodied shipping was more than “new shipping:” as Petty explained to the Royal Society’s secretary, Henry Oldenburg, “we must also make new seamen.”⁹⁹ Food and drink were his instruments. The tavern was a place of experiment because it was tasked with strengthening ties crucial to the double-bodied polity, sheathing Petty’s proposed ship of state from the corrosive action of dissension. The indispensability of some the personalities entertained to the success of the program attests to the demands he made of this space. Pepys’ record of the distribution of victuals at the Royal Oak mentions the presence of “owners.”¹⁰⁰ The summons issued to one of Dublin’s Crown Taverns addressed “subscribers.”¹⁰¹ Double-bodied shipping would turn even the confusion of the tavern into the kind of community he needed: one impervious to upheaval. This experimental program would produce order out of confusion.

Those aspects of the tavern most evocative of disorder, its vices, thus became the materials with which overseers worked to produce a reinvigorated state. The London-bound correspondence of one of Petty’s chief allies, the statesman Sir Robert Southwell, which regularly fed Londoners with “nuse” from the learned “fraternity” in Ireland, insisted on the use to which abandon endemic to the tavern was put.¹⁰² In one dispatch to the Royal

⁹⁷ Southwell to Oldenburg, 10 December 1662, *CHO*, 1:477.

⁹⁸ “Report of the Sayling of Sir William Petty’s Shipp on Twelve Day 1662,” *DB*, 57.

⁹⁹ Petty to Oldenburg, 18 November 1665, *CHO*, 2:612.

¹⁰⁰ 18 February 1665, *DSP*, 6:38.

¹⁰¹ National Maritime Museum (Greenwich), SPB 16, no. 37.

¹⁰² For Southwell’s role as bearer of philosophical news from Ireland see for example Southwell to Oldenburg, 19 September 1661, *CHO*, 1:434. For his recount of Petty’s bibulous transactions with swabbers: Southwell to Oldenburg, 13 October 1663, *CHO*, 2:118-20.

Society's secretary, Henry Oldenburg, Southwell – whose signed correspondence was sometimes written by Petty – insisted on the degree to which double-bodied shipping depended on governing confusion.¹⁰³ Prose that had for months lingered over widened hulls and lengthened sterns now redrew the boundaries of experiment more copiously still, to take in the “new seamen” Petty acknowledged were integral to these experiments, and the means through which these components of experiment were procured – and maintained. Southwell spoke of a unity preserved not merely through food and drink, but “banquet” and “flood.”¹⁰⁴ Describing the departure of Petty's second vessel to London in the Autumn of 1663, the statesman portrayed the unity of this cohort – and thus the viability of double-bodied shipping – as nourished through the “treatment” which:

....Sr Wm gave his Crew...on ye night of imbarquing, when...he provided them a banquet of burnt wine stued prunes applepyes Gingerbread white sopps and milke with apples and Nutts in abundance and all this besydes Neates tongues and other more solid food for ye men themselves and soe after much Crying and laughing hoping and fearing, he gott them all to part very quietly...¹⁰⁵

Oldenburg, whose role as the Society's secretary was to sift through accounts of “experimentall method,” was thus well informed as to how Petty secured against fissures in his new polity.¹⁰⁶ The debt of this second vessel not to abandon and intemperance, but Petty's ability to produce and harness these forces to constructive ends, was dutifully laboured: “Beere,” Southwell avowed, “made flood enough to put her under sayle.”¹⁰⁷ The utility of experiment was thus asserted alongside demonstrations of its ability to generate renewal even

¹⁰³ Southwell to Oldenburg, 13 October 1663, *CHO*, 2:118-20.

¹⁰⁴ *Ibid.*, 119-20.

¹⁰⁵ *Ibid.*

¹⁰⁶ Oldenburg to Boyle, 22 September 1664, *CHO*, 2:235.

¹⁰⁷ Southwell to Oldenburg, 13 October 1663, *CHO*, 2:119.

amid confusion of the kind endemic to the tavern. The vices of such a setting, evocative of disorder, were ripe – friends of this program suggested – for experimental management.

“...Prevented by...Incurable Intemperance”

The reach of experiment into the tavern, and the confusion it housed, was a development bound up with efforts to illustrate its utility to the Restoration itself. Far from guaranteeing appreciations of experiment as a solution to the ills of the new polity, however, the situation of this craft facilitated an unhelpful identification with them. Confusion became a symptom of disorder to which experiment apparently succumbed, rather than one it managed for the benefit of the state.

Responses to transfusion provide one good example of the ease with which, through diffusion into the tavern, experiment was accounted an inefficacious political therapy. Although, as Schaffer has emphasised, transfusion aimed to correct the degeneracy of the post-interregnum body, it was easily seen fueling the kind of riot and bestial excess the tavern so well accommodated. Indeed, given the hopes eddying around the procedure in London, it is startling to consider its aftermath: Coga, the only human known to have undergone the procedure at this point, left Arundel House, where at least one of his transfusions had occurred, to blow his payment in the town’s taverns and coffeehouses.¹⁰⁸ In this case, “improvement” had proved elusive – and Royal Society grandees knew it. Oldenburg, though valiantly claiming Coga’s “complexion” was “fresher and handsomer” than before the operation, was forced to acknowledge that more fundamental improvement had been “prevented by the incurable intemperance of which he is guilty.”¹⁰⁹ The problem was that

¹⁰⁸ Ivana Bičák, "A Guinea for a Guinea Pig: A Manuscript Satire on England's First Animal-Human Blood Transfusion," *Renaissance Studies* 34, no. 2 (2019): 177.

¹⁰⁹ Oldenburg to Jean Denis, 23 December 1667, *CHO*, 4:77.

Coga demonstrated to onlookers precisely the incapacities he had exhibited before – not to mention during – the procedure.¹¹⁰ The King’s philosophers panicked, observing with discomfort that “the effects of the transfusion are not seen,” and that Coga’s post-operation circuit of the town served to “discredit the Royal Society, and make the experiment ridiculous.”¹¹¹

The descent of transfusion into confusion was conveyed not just by its human subject, but the body of philosophers following his movements. The Royal Society and its allies sought to depict these experiments as conducted with restraint and tranquility. London’s transfusions were contrasted with those of Paris, embroiled in “hot air” and “disputes and arguments.”¹¹² Such comparisons were just one dimension of a wider, apologetic, emphasis on the civility of experimental transactions. Yet Coga’s transfusions were obviously out of concert with these representations; disagreement over London’s transfusions erupted in highly public spaces, and the tavern was one of these sites.¹¹³ Pepys entered the St Clements churchyard venue he visited with John Creed in the November of 1667 to witness a “discourse” on transfusion. He left the place in no doubt that the Society’s membership did “differ in the opinion they have of the effects of it.”¹¹⁴ The view he formed was that, while “some” appeared to believe that transfusion “may have a good effect” on the “frantic” – and apparently insatiable – Coga, a cohort of “others” flatly contradicted this group, contending instead “it will not have any effect at all.”¹¹⁵ Far from healing rupturous excesses, then,

¹¹⁰ Schaffer, “Regeneration,” 97; Bičák, “Guinea for a Guinea Pig,” 177.

¹¹¹ Philip Skippon to John Ray, January 1688, in *The Correspondence of John Ray: Consisting of Selections from the Philosophical Letters Published by Dr. Derham, and Original Letters of John Ray*, in the Collection of the British Museum., ed. Edwin Lankester (London, 1848), 23; Schaffer, “Regeneration,” 102-4; Bičák, “Guinea for a Guinea Pig,” 177.

¹¹² Martel to Oldenburg, 11 April 1669, *CHO*, 5:483.

¹¹³ Ibid. Martel offered a more complementary view of English transfusion in his letter to Oldenburg.

¹¹⁴ 21 November 1667, *DSP*, 8:543.

¹¹⁵ Ibid.

transfusion became mired in exchanges which – not least in extending to the tavern – exemplified the kind confusion it had promised to cure.

Division, along with other troubling aspects of transfusion, was particularly discernable in no small part due to the public nature of proceedings staged in the tavern. Like the coffeehouses and printshops better studied by historians of early modern science, the tavern often crimped the ability practitioners to control their experimental narratives.¹¹⁶ In such instances, the significance attached to reported developments lacked uniformity, either because it had evolved through unauthorised retellings or because there had never been any consensus in the first place. When Croone held forth at the Popes Head over his transfusion of blood between dogs, it was the crowd itself that fell to musing on the political and religious utility of the registrar's achievements.¹¹⁷ Even if Croone had engineered the significance swiftly attached to his experiments that night, he did not remain on hand to ensure the longevity of favored interpretations. At least some of his audience were kicking on after he left; Pepys, sustained by an "exceeding pretty supper," stayed until one o'clock in the morning.¹¹⁸ The division Pepys found in these gatherings, then, thus partly involved individuals outside of the Royal Society, as well as the portion of its membership that brought the discussion there. The ability of divergent opinion to form around reports, when deposited – and then sooner or later abandoned – in the tavern, was reflected in the awareness of practitioners themselves that deflationary views of transfusion were within reach of "every tapster."¹¹⁹

¹¹⁶ Adrian Johns, "The Ambivalence of Authorship in Early Modern Natural Philosophy," in *Scientific Authorship: Credit and Intellectual Property in Science*, ed. Mario Biagioli and Peter Galison (London and New York: Routledge, 2003), 77; "Coffeehouses and Print Shops," in *The Cambridge History of Science. Volume 3. Early Modern Science*, ed. Katharine Park and Lorraine Daston (Cambridge: Cambridge University Press, 2006), 325-6.

¹¹⁷ 14 November 1666, *DSP*, 7:370.

¹¹⁸ *Ibid.*

¹¹⁹ Bičák, "Guinea for a Guinea Pig," 177; Schaffer, "Regeneration," 93.

Double-bodied shipping, which – partly due to its extension to sites like the tavern – also became “the common talk and entertainment of all Companies and Tables,” was similarly prone to unsanctioned representation.¹²⁰ Just months after the gathering Petty organised in Dublin’s Crown Tavern, he could be seen contending with “a mutiny among ye partners.”¹²¹ One of the men whom surviving lists of subscribers indicate bought shares in the vessel discussed in this Dublin tavern, William Molyneux, later watched the craft performing “soe abominably” on Dublin harbour, he promptly informed the Dublin Philosophical Society that “the whole Designe is blowne up.”¹²² Far from overcoming dissent, then, the explosion of experiment to the scale at which it required the acquiescence of subscribers like Molyneux – a process the tavern had greatly accommodated – created fresh opportunities for dissension. The erstwhile investor’s verdict on double-bodied shipping – a venture “blowne up” – handsomely evokes the dangers of the scale at which Petty was operating. His experiments had grown to span a vast distance, from ship to tavern door. Like the yawning gap between the two hulls of his craft, reputedly prone to separation, such reach expressed the possibility of division.

The suspension of double-bodied shipping in confusion was also a predicament reflected in criticism outside of the community it was supposed to create. One intriguing satire, a verse of unknown authorship written after the “flood of beere” described by Southwell, focused unflinchingly on Petty’s attempts to recruit “Lusty Swabbers” through drink and abandon.¹²³ In this verse, double-bodied shipping overflowed not just into such

¹²⁰ For double-bodied shipping as “the common talk and entertainment of all Companies and Tables,” see the account, possibly written by Petty, published in *Mercurius Publicus, Comprising the Sum of all Affairs now in Agitation in England, Scotland, and Ireland* (6 to 13 August 1663), no. 32, pp. 501-2.

¹²¹ Elizabeth and William Petty to Southwell, 4 December 1684, *Double Bottom*, 136; BL Add MS 72855, ff. 78-9.

¹²² Molyneux to Ashton, 23 December 1684, *Double Bottom*, 139; Add MS 72855, f. 34. For Molyneux as an invested party see NMM SPB 16, nos. 34-, especially no. 36.

¹²³ Unknown, “In Laudem Navis Germinae E Portu Dublinij ad Regem Carolum II^{um} Missae,” in *Verse in English from Tudor and Stuart Ireland*, ed. Andrew Carpenter (Cork: Cork University Press, 2003), 396.

spaces as “the Street,” or even the “Coffie Howse,” but protracted, ale-sodden, transactions with those who “stink of Pitch and Tarr.”¹²⁴ With the risk of being “in salt Sea like Mackrell Soused” only too apparent to prospective hands, nothing less than a “whole Barrell” proved necessary – in this depiction of experimental procedure – to dissolve the problem of strife in the double-bodied polity, and thus “put an end to all their Quarrell.”¹²⁵ The poem emphasises Petty’s recourse to heavy drinking in the context of the offshore disasters into which his vessels sailed. It alludes to the way in which the prospect of disaster at sea nourished apprehension among his hands, and thus the necessity, from Petty’s point of view, of investment in the bacchanalian reassurance it describes. But it also predicts the responsibility of these experiences for catastrophe. The aqueous sociabilities Petty orchestrated foreshadow, in this poem, the watery fate of his “Experiment” in particular, which sank in the Bay of Biscay with all hands in the November of 1665.¹²⁶ As the virtuoso scrambled to construct a new ship of state out of confusion, his bid to do so was presented in ways that made failures on the ocean look like downstream consequences of an ability to govern this problem. The Rathfarnham-born jurist and politician, Dudley Loftus, associated the sunken “Experiment” with “many meetings wherein there has been much altercation.”¹²⁷ While Petty and his allies had reached into the tavern to renew the ship of state, critics mobilised this descent into confusion to illuminate its worthlessness.

The situation of experiment amid tavern-lodged confusion was also reflected in material explicitly preoccupied with the kinds of statelike upheaval in which taverns had played a notorious role. One text to give an account of London and its experiments, the notoriously ill-received *Relation* (1664) produced by Thomas Hobbes’s acolyte, Samuel

¹²⁴ Ibid., 393.

¹²⁵ Ibid., 401.

¹²⁶ Petty to Oldenburg, 18 November 1665, *CHO*, 2:612.

¹²⁷ Dudley Loftus, “A Letter to a Person Concerning the Society,” in *Papers of the Dublin Philosophical Society*, ed. K. Theodore Hoppen (Dublin: Irish Manuscripts Commission, 2008), 907, 909.

Sorbière, caused offence within the Royal Society at least partly because it described experimental endeavors *alongside* manifestations of religious and political division.¹²⁸ In Sorbière's account, double-bodied shipping, among other experimental curiosities, shared attention with the "Faction" and "Fury" it also indelicately attributed to the Stuart archipelago.¹²⁹ A riposte penned by Sprat, for the sake of which the Society's historian ceased work on his more famous *History*, shows some sensitivity to the dangers of this association.¹³⁰ It insisted Sorbière could not be relied on regarding the "Number" of "Religious Sects" destabilising the three kingdoms because the Frenchman had erroneously counted the masts on one of Petty's vessels.¹³¹ Sorbière had told readers the ship had two masts; Sprat scolded that "every sculler on the Thames knows it has but one."¹³² While the Bishop aimed, of course, to bring Sorbière's credibility into dispute, his jibe inadvertently foregrounded the ease with which observers *could* move between visions of experiment and confusion. Sprat was, ultimately, arguing that Sorbière could not have his account of conflict trusted *because* he was an unreliable witness to some of the most easily observable experiments of the Restoration. Again, then, Petty's shipping found itself enveloped in a portrait of political conflict. It would not be the last time. Years later, an anonymously written play, *Mr. Turbulent* (1682), rehearsed old tropes of the tavern as a site of religious and bodily excess, drunkenness and non-conformity, while scripting into this mix a virtuoso bent on redesigning the ship of state – from sheathing to shrouds.¹³³

¹²⁸ Samuel Sorbière, *Relation d'Un Voyage en Angleterre, où sont touchées plusieurs choses, qui regardent l'estat des Sciences, & de la Religion, & autres matieres curieuses* (Paris, 1664).

¹²⁹ Ibid., 81-2, 43-4, 64.

¹³⁰ Thomas Sprat, *A Letter Containing some Observations on Monsieur de Sorbier's Voyage into England. Written to Dr. Wren, Professor of Astronomy in Oxford. By Thomas Sprat, Fellow of the Royal Society*. (London, 1665); John Morgan, "Science, England's 'Interest' and Universal Monarchy: The Making of Thomas Sprat's History of the Royal Society," *History of Science* 47, no. 1 (2009): 8.

¹³¹ Sprat, *Observations*, 112-3.

¹³² Ibid.; Sorbière, *Relation*, 81.

¹³³ *Mr. Turbulent: or, The melancholicks. A comedy As it was Acted at the Duke's Theater.*, (London, 1682), 57.

As the Restoration gave way to the Glorious Revolution, the double-bodied shipping supposed to secure the viability of the former became still more standardly associated with confusion. Burnet's *History* was a work which, we have seen, dwelt heavily on "vice," especially "drunkenness," in its depiction of Restoration decadence. It feted the Glorious Revolution, which Burnet worked to bring about, by contrasting the rule of William and Mary with the instability of a "double-bottomed Monarchy."¹³⁴ Similarly, Jonathan Swift, whose annotations to Burnet's *History* attest to his familiarity with this text, found double-bodied shipping useful – as a metaphor for stately instability. His verses lamenting the Acts of Union between England and Scotland, first posthumously published as late as 1746, used this experimental program to evoke the precariousness of a "body" not built from agreement on fundamental principles of religion and politics:

Henceforward let no statesmen dare,
A Kingdom to a Ship Compare
Lest he should call our Commonweal,
A Vessel with a double Keel...¹³⁵

Swift's choice of metaphor perhaps had other inspirations than Burnet. His patron as a young man, the diplomat Sir William Temple, had railed against both "transfusion" and "double-bodied ships" after his retirement from politics.¹³⁶ It was Swift who, as an amanuensis residing with Temple in the old diplomat's country seat, prepared the third volume of Temple's *Miscellanea* for publication – complete with its scepticism towards experiment, insistence on "Temperance," and lively interest in determining what might be of stately "benefit."

While double-bodied shipping was singled out for its ties to confusion, experiment could be much more generically situated amid the vices realising this troublesome condition. The vigilance towards "sensuality" that led Robert South to place the Royal Society's

¹³⁴ Burnet, *History*, 2:1.

¹³⁵ Jonathan Swift, *Miscellanies*, vol. 11 (London, 1746), 242-3.

¹³⁶ William Temple, *Miscellanea. The Third Part*. (London, 1701), 281.

experiments “in vice” was one often extending to a suspicion of the tavern. The site appeared every so often in his sermons. He despaired of young men encouraged to “Dine at Mid-night in a Tavern,” with the “Noise” and necessity of conflict this entailed.¹³⁷ On another occasion, when warning against the “Vices of Old Age” – vices retained into infirmity – he appealed to the pathetic figure of the “Drunkard who loves a Tavern, though he cannot go to it.”¹³⁸ Unsurprisingly, then, part of situating the Royal Society’s experiments in vice in his sermon of 1667 involved placing its discourse “over...Pots, and Pipes.”¹³⁹ The generality with which South installed the Royal Society in the tavern, and its politically corrosive vices, was echoed decades later in Edward Ward’s *History of Clubs* (1709).¹⁴⁰ The purpose of this book, Ward told his readers, was to expose the “Promiscuous Encouragement of Vice, Faction, and Folly.”¹⁴¹ Restoration-era experiments were thus again explicitly located in the “noisie confusion” of the tavern.

Conclusion

Oldenburg made clear the problem confusion posed to the question of experiment, and its utility, when he noted that Arthur Coga’s “improvement” was “prevented” by his visible immersion in the vices of the town – “the incurable intemperance of which he is guilty.”¹⁴² Experiment was supposed to remedy disorder of this kind, or show it might be managed, in ways illustrating the worth of experiment itself. Transfusions aimed to cure pre-instances of confusion, double-bodied shipping to produce and then resolve this same

¹³⁷ Robert South, *Twelve Sermons Preached Upon Several Occasions. The Second Volume* (London, 1694), 291.

¹³⁸ South, *Twelve Sermons*, 248, 307.

¹³⁹ South, “The Practice of Religion Enforced by Reason,” in *Twelve Sermons Preached Upon Several Occasions* (London, 1694), 49-50.

¹⁴⁰ Edward Ward, *The Secret History of Clubs, particularly the Kit-Cat, Beef-Stake, Vertuosos, Quacks, Knights of the Golden-Fleece, Florists, Beaus, Etc.* (London, 1709), 1-2.

¹⁴¹ *Ibid.*

¹⁴² Oldenburg to Jean Denis, 23 December 1667, *CHO*, 4:77.

problem, modelling the ability of experiment to create a ship of state visibly impervious to this threat – in being born from it.

Confusion could thus be an experimental objective; but even when it was, it was also a discomforting sign – even among practitioners – that experiment did not produce the kind of renewal essential to the Restoration. The growth of experiment to dimensions precluding its separation from the tavern, and the varieties of confusion this space accommodated, was a development with consequences for the representation of experimental practice. Confusion did not vacate the tavern as experiment entered the door. Instead, unmanageable disagreement became part of what it meant to experiment. The entry of experiment into this space, and its connections to noise, dissension, and other forms of excess, created rather than contained unease towards this craft – inviting impressions of its dubious utility to the process of political reinvigoration.

Chapter 2: Experiments in Magnification

Introduction

As part of Petty's attempts, however self-defeating, to distinguish experiment from confusion, the parties whose agreement he most needed were treated not just to beer and wine, but such delicacies as "Neates tongues," "Nutts in abundance," "Gingerbread," and "stued prunes."¹ His "swabbers" were provided "a banquet," while their "victuals" were fed to Royal Society grandees – a moment captured, we have seen, in Pepys' note of the meeting he attended in London's Royal Oak Tavern.² Sites like the Royal Oak were thus among those accommodating processes evocative of social transformation: crew dined like courtiers, while the Society's patriarchs received fare prepared for hired hands. Petty himself, the architect of this upheaval, was the son of a cloth-maker, who had served time before the mast.³ He was now one of Ireland's largest landholders, and known to boast double-bodied shipping could improve his situation further. Witnesses like Sir Robert Southwell, soon to be Secretary of State and President of the Royal Society, were alive to the power which those on whom "ye old mariner" depended had achieved through these experiments.⁴ The statesman noted not just the proximity between the entities of "Sr Wm" and "crew," but the dexterity with which the former used this close society to advertise the enlargement awaiting these participants: those who were "crew" were promised they could one day "be a Capt."⁵

¹ 18 February 1665, *DSP*, 6:38; Southwell to Oldenburg, 13 October 1663, *CHO*, 2:118-9. For the presence of neat's tongues on elite tables see Paul Lloyd, "The Changing Status of Offal: A Fashionable Food in England Between 1545 and 1655," *Food, Culture & Society* 15, no. 1 (2012).

² 18 February 1665, *DSP*, 6:38.

³ McCormick, *William Petty*, 18.

⁴ Southwell to Oldenburg, 10 December 1662, *CHO*, 1:477; *ibid.*, 114; Kevin McKenny, "The Restoration Land Settlement in Ireland: A Statistical Interpretation," in *Restoration Ireland: Always Settling and Never Settled*, ed. Coleman Dennehy (New York: Routledge, 2016), 47-8.

⁵ Southwell to Oldenburg, 13 October 1663, *CHO*, 2:118-9.

A suite of connections between experiment and the tavern thus swirled around a variety of upheaval that will be the focus of this chapter: magnification. While the word now possesses a primarily optical significance, it is worth reflecting on the derivative nature of this usage. In the English of the late seventeenth-century, to “magnify” a person (or object) was often to commend it. This was the sense in which, in the space of one week, Pepys heard Sir William Coventry “magnify” Thomas Wriothesley, Earl of Southampton, while over a dinner at Whitehall the Duke of York “did mightily magnify his Sawce.”⁶ Commendation, of course, was important to the improvement of standing and social importance. We already recognise the commendatory sense of “magnification” as germane to experiment: Robert Hooke magnified not only common objects – needles, lice, crystals of frozen piss – but the *study* of these ignoble items to “the Gentlemen of our Nation.”⁷ Here optical magnification was pursued alongside Hooke’s commendation of “so mean and so imperfect endeavours as mine.”⁸ The concern of this chapter is with the magnification – in a sense relevant to processes of enlargement and commendation – of individuals experiment depended upon. It is concerned with how experiment could present, and apparently commend, a transformed social order. Drawing on transactions associated with the tavern, it investigates the degree to which cohorts such as the sailors feasting at Petty’s expense achieved visible measures of agency in the course of experiment. It also looks at how experiment appeared to endorse such alarming developments.

⁶ The sauce was a simple concoction of “parsley and dry toast, beat in a mortar together with vinegar, salt, and a little pepper.” The Duke ate it “with everything.” See Pepys’ entries for the 10 and 14 February 1667, *DSP*, 9:443, 9:448.

⁷ Robert Hooke, *Micrographia: Or Some Physiological Descriptions of Minute Bodies Made By Magnifying Glasses With Observations and Inquiries Thereupon*. (London, 1665), d2. Others like Sprat laboured the degree to which the Royal Society established to encourage such activities was already was mostly composed of “Gentlemen, free, and unconfin’d.” Sprat, *History*, 68, 72; Shapin, “The House of Experiment,” 396.

⁸ Hooke, *Micrographia*, d2.

The ascension of untitled, unlanded, and, for the historian at least, nameless individuals – “the mean” or “the multitude” were common generic terms – was a vivid threat before and during the Restoration.⁹ The enlarged agency of this cohort was a development ominously forecast in the gatherings, newsmongering, and local office-holding all now thought to suggest the increased “social-depth” of three kingdoms politics at this time.¹⁰ It found expression in the riots and other more violent forms of disorder that did not abate with the return of the Stuart dynasty.¹¹ (The ejected minister, John Tombes, responded to one episode of popular violence by condemning “proud self-magnifying, or factious, animosity.”¹²) And magnification was also – we will see – conveyed in craftsmanship itself: trades and artisanal techniques were among the methods through which the lower orders were often thought to swell in power. The ascension such ingenuity could orchestrate was troubling to beneficiaries of the hierarchies apparently imperilled.¹³ Dramatic rises in the world – collective or individual – were not developments the political, religious, and financial cultures of the Restoration were built to sanction. The visibility or commendation of sub-

⁹ Andy Wood, *Riot, Rebellion and Popular Politics in Early Modern England* (London: Red Globe Press, 2002), passim, especially 24-8. For Stuart perceptions of popular power see Harris, “Honesty of a Tinker,” 203-8, 215-6. For the allegedly “destructive” nature of “common” power in a Shakespearean context see Jeffrey S. Doty, *Shakespeare, Popularity and the Public Sphere* (Cambridge: Cambridge University Press, 2017), 3, 12-16.

¹⁰ For office-holding see Mark Goldie, “The Unacknowledged Republic: Officeholding in Early Modern England,” in *The Politics of the Excluded*, ed. Tim Harris (New York: Palgrave, 2001). This scholarship is considered alongside revisionist approaches to the civil war in Tim Harris, “Revisiting the Causes of the English Civil War,” *Huntington Library Quarterly* 78, no. 4 (2015).

¹¹ Office-holding and riots are considered forms of “popular participation” in Goldie, “The Unacknowledged Republic: Officeholding in Early Modern England.” Riots are also a focus in Tim Harris, “The Bawdy House Riots of 1668,” *The Historical Journal* 29, no. 3 (1986). Wood, *Riot, Rebellion and Popular Politics*, passim, but especially 24-8, 181-195.

¹² John Tombes, *Saints No Smitters, Or, Smiting Civil Powers Not the Work of Saints...* (London, 1664), 50; Brian Capp, *The Fifth Monarchy Men: A Study in Seventeenth-Century English Millenarianism* (London: Faber and Faber, 1972), 225.

¹³ For suspicion towards “the meaner sort” from among the nobility see Wood, *Riot, Rebellion and Popular Politics*, 191. The parliamentary newsbook editor, Marchmont Nedham, explained in 1652 that “the people” whose “consent” he deemed a proper basis for government did not in fact consist of what he called “the confused promiscuous body of the people.” *Mercurius Politicus*, no. 87 (29 January to 5 February 1652), 1385. Christopher Hill, *The World Turned Upside Down* (London: Temple Smith, 1972), 48.

noble personae – their magnification – was a disturbing distortion of the social order the Restoration was supposed to introduce.

The tavern was among the spaces most important to worries about the integrity of contemporary social hierarchies; it illustrated their fragility. Congregation was one problem; stuffed with craftspeople, itinerants, and folk of the land, taverns could resemble alehouses in that they were spaces in which multitudes amassed – concentration manifesting power more successfully than the genteel ideal of dispersal. On top of this, the crafts and artisanal methodologies from which such a place was built – from its consumables to the mezzotints suspended on its walls – wrought disruptions of their own. The action of alcoholic consumables was again important. Nowhere was this more apparent than in the tirelessly repeated trope of social distinction dissolving before the tap. Tracts, pamphlets, and sermons described the reduction of “noble estates” to coin in the pocket of a covetous tapster. Wits toyed with language expressive of the “state of inebriety:” the capacity of liquors to “level” evoked their nature as catalysts of political and social disorder. The tavern’s notoriety as a seat of vice thus owed much to its ability to unsteady all but the most diligently defended hierarchies.

This chapter first recovers these and other elements of the tavern’s significance to worries about sub-noble magnification in the Restoration. It then moves to explore the degree to which at least some of its experiments absorbed this troubling fluidity. It does so through looking at how individuals, sociabilities, and varieties of ingenuity important to the transformative potential of this space became visible in experiment itself. It contends the distortion of hierarchies achieved through magnification was discernible in many aspects of experimental activity, but focuses most closely on double-bodied shipping. Petty’s employees were, through experiment, given the chance not only to contemplate, but savour, a less servile life. The power possessed by carpenters, sailors, smiths, shipwrights, and other groups,

ballooned as experiment came into contact with them, pushing into theatres – the tavern among them – in which they were agile. The final section of this chapter canvases representations alive to – and exploiting – these processes. A diverse range of voices questioned the worth of experiment by implying its practitioners had submitted to the judgement of tradesmen, mechanics, and artisans. Generating and corroborating such imputations, the tavern produced experiments with dubious claims to political utility – experiments in vice.

In using a focus on the tavern to recover the importance of less genteel participants to repudiated forms of experiment, this chapter addresses scholarship dwelling on their servitude and transparency in the course of experimental work. Historians have now for some time – and for good reason – insisted on the importance of gentility, disinterestedness, and financial autonomy to early modern concepts of virtue, trustworthiness, and credibility.¹⁴ Yet the result has often been a preoccupation with the repression or strategic concealment of individuals with poor claims to such qualities. Steven Shapin’s well-known analysis of the “assistant,” “laborant,” and “domestic,” for example, privileges states of “servitude,” “dependence,” and “invisibility.”¹⁵ Chandra Mukerji’s work on the *Canal du Midi* consciously adopts a similar model, emphasising the potential of local lore and its bearers as “resources” once appropriately prepared, marshalled, and dressed.¹⁶ The successful strategies such histories explore do not offer any lively appreciation of what serious upheaval in experiment – or elsewhere – looked like, and of the kinds of settings producing it. We cannot fully comprehend the advantages of the manoeuvring they masterfully recover, or judge of

¹⁴ A few of the more influential examples include Shapin, *Social History of Truth*; Michael Wintroub, “The Looking Glass of Facts: Collecting, Rhetoric and Citing the Self in the Experimental Natural Philosophy of Robert Boyle,” *History of Science* 35, no. 2 (1997); Craig Muldrew, *The Economy of Obligation: The Culture of Credit and Social Relations in Early Modern England* (London: Palgrave, 1998).

¹⁵ Shapin, *Social History of Truth*, 362, 366-7.

¹⁶ Chandra Mukerji, *Impossible Engineering: Technology and Territoriality on the Canal Du Midi* (Princeton: Princeton University Press, 2009), 13, 36, 45, 49, 77.

their typicality, without delving into endeavours illustrating the perils of non-conformity with them. This chapter is concerned with spaces in which actors ideally governed and concealed were instead appeased and deferred to in a compromising exhibition of their magnification.

“...a Meaner Sort of Cabarets...”

The “mean” or “mechanic” were one group the Restoration, and its administration, aimed to regulate – a task often judged essential to its viability. The experience of civil war, during which nobles lost incomes and fastnesses, while popular political and religious movements promised still greater unrest, made defending even the most obvious of social distinctions a task of unusual importance. The Duke of Newcastle’s famous “Advice” to the future Charles II, written in 1659 as the Duke digested the reality of his diminished estates from abroad, begged for the rehabilitation not just of monarchy, but sumptuary law.¹⁷ The possibility of recognising, through attire, even the “meaner sorte” of *courtiers* – the “vulger Nobility” – was, Newcastle counselled, indispensable to “peace.”¹⁸ (It was at least a rational prescription for the Duke, who, as Andy Wood observes, gave “causal primacy” to “the vulgar” in his account of the recent Revolution.¹⁹) The Act of Oblivion, implemented in 1660 to assure all but regicides of a royal “disposition to mercy,” is usually deemed to have discouraged the public remembering of personal allegiances during the Civil War.²⁰ Yet the result was a focus – in licensed histories at least – on more generically described “popular importunities,” so that *social* rather than *personal* treachery explained the “years of confusion.”²¹ Just one year into the Restoration, the uprising orchestrated by Thomas Venner,

¹⁷ Newcastle’s “Advice” is transcribed in *Ideology and Politics on the Eve of the Restoration: Newcastle’s Advice to Charles II*, ed. Thomas P. Slaughter (Philadelphia: The American Philosophical Society, 1984), 46.

¹⁸ *Ibid.*

¹⁹ Wood, *Riot, Rebellion and Popular Politics*, 28.

²⁰ Neufeld, *Civil Wars*, 17.

²¹ *Ibid.*, 25-6.

a former cooper from Devon, supported these assessments as to the bases of disorder threatening the state: Venner's rioting announced itself through literature inveighing not just against the Stuarts and the clergy, but "the wicked gentry of the nation."²² Such episodes aligned the viability of the Restoration with the preservation of social distinctions the preceding years were felt to have eroded.

Magnification – the commendation or enlargement of the vulgar – was, accordingly, a concern in printed as well as spontaneous defences of the Restoration's political architecture. The Earl of Shaftesbury told Evelyn that his support for monarchy grew from the "miserie" of the "mechanic tyrannie" he had "seene & felt" during the civil wars, when noble privilege had been less assured.²³ Proven efficacy in restricting "the mean" from power was a virtue used to defend even aspects of the polity unwelcome to the Stuart dynasty. Philosophical defences of the House of Lords – among other aristocratic checks on monarchy – located the worth of this organ in its ability to exclude those in conditions of "dependence."²⁴ Steven Shapin perhaps gives the broadest summary of the attitudes reflected in such theorising, observing that good judgement stood aloof from *need*.²⁵ Endorsing the kind of cognitive geography Shapin describes had a contemporary political function: locating wisdom where Restoration hierarchies said it stood broadcast fidelity to a regime menaced by popular opinion. Non-conformists suffering from suspicions of association with popular anti-clericalism could affect a neo-platonic distrust of "the Mechanick" – identifying in "excessive

²² *A Door of Hope; Or, A Call and Declaration for the Gathering Together of the First Ripe Fruits Unto the Standard of Our Lord, King Jesus* (London, 1661), 8; Bernard Capp, "A Door of Hope Re-opened: The Fifth Monarchy, King Charles and King Jesus," *Journal of Religious History* 32, no. 1 (2008): 24.

²³ 13 July 1683, *DJE*, 4:328; Alan Marshall, "'Mechanic Tyrannie': Anthony Ashley Cooper and the English Republic," in *Anthony Ashley Cooper, First Earl of Shaftesbury 1621-1683* (New York: Routledge, 2016), 27-50.

²⁴ David McNally, "Locke, Levellers and Liberty: Property and Democracy in the Thought of the First Whigs," *History of Political Thought* 10, no. 1 (1989): 20.

²⁵ Shapin, *Social History of Truth*, 51, 60-1.

business” a “love of the world” antithetical to wisdom.²⁶ Samuel Gott, an ironmonger’s son who, though a member of the Long Parliament, never found a place in the Restoration landscape, accepted the term “Mechanike” was “commonly reputed” a “mean” one. Contemporary concepts of credit, trustworthiness, and authority, looked not to a fluid, but solidified social strata. Magnification revealed its fissures, emergence through which heightened fears of impending disorder.

The tavern possessed a salience to these worries partly grounded in its functions as a space of public consumption. “Consumption” has for some time been an interest of scholars exploring the acquisition of power.²⁷ While luxury has attracted considerable attention, the tavern shows how more popular varieties of consumption, and the rituals and sociabilities swirling around them, could just as easily constitute troubling modes of ascension.²⁸ In this setting, *congregation* was one process through which the “mean,” appeared to rally, swell, and frustrate regulation. (Unlike coffeehouses, entry to a tavern was almost always free.²⁹) It was accordingly said to abound in the “*Inferiour Rank of People*, a group often not included in talk of “the people.”³⁰ One satirical pamphlet “computed” the daily devotion of the “mechanick” to a total of four hours – “at least.”³¹ Barbed acknowledgements the tavern might be a “degree above an Ale-house” (a term capable of denoting still earthier venues, but

²⁶ *The Christians Guide: A Treatise Shewing the Grounds, Necessity, and End of Devotion. With Rules and Directions for the Leading of a Holy Life.*, (London, 1683), 39-40, 59. For distrust of the “itinerant mechanic preacher” before the Restoration see Hill, *World Turned Upside Down*, 47.

²⁷ See for example Simon Woodruff, *Consumption and the Making of Respectability, 1600-1800* (New York and London: Routledge, 2002), 1, 28-31.

²⁸ Luxury consumption and enlargement in an English context are intersecting themes in Peck, *Consuming Splendor*, 6-7. 346-7; Helen Jacobsen, “Luxury Consumption, Cultural Politics, and the Career of the Earl of Arlington, 1660-1685,” *The Historical Journal* 52, no. 2 (2009): 295-317; Alan Marshall, “‘Faisons Meieux’: Henry Bennet, Earl of Arlington and His Political Tactics,” in *Henry Bennet, Earl of Arlington, and his World: Restoration Court, Politics and Diplomacy*, ed. Robin Eagles and Coleman Dennehy (New York and London: Routledge, 2021), 103.

²⁹ Woodruff, *Consumption*, 153.

³⁰ *The Art of Good Husbandry, or, The Improvement of Time Being a Sure Way to Get and Keep Money...* 2 ed. (London, 1675), 2; Shapin, *Social History of Truth*, 46.

³¹ *Good Husbandry*, 2-3.

often used interchangeably with “tavern” anyway) were little help.³² On Christopher Hill’s analysis, efforts to enforce the licensing of ale-houses owed to the ease with which, in these spaces, “itinerant craftsmen” became “itinerant ministers.”³³ But the strains of discord were greater than the murmurings of the assemblies that interested Hill. The “cacophonous” complaint of “common” violins evinced an unruly independence.³⁴ Emily Cockayne has described how the scraping of itinerant fiddlers alarmed the elite with its “crowd-gathering potential.”³⁵ Whatever associations the instrument has now, the Restoration’s cream did not find this element of the tavern’s auditory profile a reassuring one.³⁶ The tavern accommodated tastes, sights, and sounds, consumed in numbers evocative of enhanced strength.

The threats of magnification were not all so immediately, or sensorily, conveyed. An important, though less dramatic, intimation of this process had long been operating at times outside of this noisy environment, though in obvious league with it: in the breweries looking to taverns for their sales. By the middle of the seventeenth-century, public thirst had seen many a hitherto untitled brewster knighted, and even the birth of a few industrial dynasties.³⁷ To compound matters, monopolies restricting gains to a relatively small number of established brewing families – “common brewers” – lapsed, at least temporarily, not long into the Restoration.³⁸ This was a regulatory development likely welcomed by smaller players – including victuallers, who still very often conducted at least some brewing activity in-

³² *Character of a Tavern*.

³³ Hill, *World Turned Upside Down*, 37, 40.

³⁴ Harold Love, "The Fiddlers on the Restoration Stage," *Early Music* 6, no. 3 (1978): 393; Emily Cockayne, "Cacophony, or Vile Scrapers on Vile Instruments: Bad Music in Early Modern English Towns," *Urban History* 29, no. 1 (2002): 35, 42, 44.

³⁵ "Cacophony," 35, 42, 44.

³⁶ Love, "Fiddlers," 393-4; Cockayne, "Cacophony," 38. Curiously, the Duke of Newcastle, on return from his continental exile, was said to find “the noise of some scraping fiddlers...the pleasantest harmony that he had ever heard.” See Cavendish, *Life*, 85.

³⁷ Clark, *English Alehouse*, 108, 183.

³⁸ *Ibid.*

house.³⁹ The growing numbers and “muscle” of common brewers combined to make brewing a potentially powerful means of social ascension.⁴⁰ Some of the most obvious of the tavern’s challenges to contemporary hierarchies thus resided not just in the preponderance of “mean” it accommodated, but the changes wrought by demand for the drink they consumed.

Further varieties of craftsmanship with connections to the tavern consisted of the prints, mezzotints, and other techniques of reproduction displayed therein. While the seepage of royal imagery into the very walls and doors of taverns was, as Kevin Sharpe notes, a Hobbesian ideal likely welcomed by some royalists, this proliferation – and the techniques underpinning it – was a cause of concern for others.⁴¹ Evelyn, for example, fretted to see the “Heads of *Kings* and *Heros*...permitted to hang for Signes, among *Cats* and *Owles*, *Dogs* and *Asses*, at the pleasure of every *Tavern* and *Tippling-house*.”⁴² At issue was whether representation – in this case the depiction of royalty itself – by common hands constituted a challenge to the nobility, who had their control over the deployment of such symbology thereby watered down. Evelyn advocated for a restrained dissemination of techniques like mezzotint with the same conviction as he argued “copies” of the King’s portrait should be no easier to reproduce than the “Royal Signature.”⁴³ The priorities of the pamphleteer, surveyor, and licenser of the press, Roger L’Estrange, further elucidates the degree to which the tavern housed crafts associated with the dilution, rather than the diffusion, of elite authority. L’Estrange inspected venues – of which the tavern was one – for illegal presses, plates, and

³⁹ Ibid., 184.

⁴⁰ Ibid., 102, 183.

⁴¹ Kevin Sharpe, *Rebranding Rule: The Restoration and Revolution Monarchy, 1660-1714* (New Haven: Yale University Press, 2013), 115.

⁴² John Evelyn, *Sculptura, Or, The History, and Art of Chalcography and Engraving in Copper with an Ample Enumeration of the Most Renowned Masters and their Works: To Which is Annexed a New Manner of Engraving, or Mezzo Tinto, Communicated by His Highness Prince Rupert to the Author of this Treatise*. (London, 1662), 25.; Sharpe, *Rebranding Rule*, 115.

⁴³ Ibid.; Ben Thomas, “Noble or Commercial? The Early History of Mezzotint in Britain,” in *Printed Images in Early Modern Britain: Essays in Interpretation*, ed. Michael Hunter (London and New York: Routledge, 2010), 287-88.

prints. He also penned tracts on the “compliance” of monarchy with English “genius” – which he contrasted with “the Dutch humour, addicted only to *Traffick, Navigation, Handicrafts*, and sordid *Thrift*, and (in defiance of *Heraldry*) every man phansying his own *Scutcheon*.”⁴⁴ Such rhetoric envisaged craftsmanship – rather generally – as a threat to the survival of concepts of lineage fundamental even to a limited monarchy. The tavern hid devices of noble downfall in the hardware for which L’Estrange hunted. But it also displayed them on the very doors through which he burst on his raids. Overt and concealed technologies connected the tavern to exhibitions of power, and its accumulation.

The cognitive and physiological effects of the tavern’s consumables could seem scarcely less an affront to contemporary distinctions. The perceived ability of alcohol to floor all, regardless of relative eminencies, wonderfully suggested the power of this space as a giant vessel – some said “Engine” – for the dissolving of hierarchies.⁴⁵ Hart’s tirelessly reprinted *Character of a Drunkard* combined its exploration of “confusion,” explored in the chapter above, with an emphasis on the degree to which “good names” and “estates” might, where drunkenness abounded, disappear in tandem – as quickly as a glass of ale and venison pasty down the throat.⁴⁶ The degree to which wisdom depended on avoiding the dissolution of the tavern was implied in Thomas Brown’s observation that it was: “Thither *Libertines* repair to drink away their Brains, and piss away their Estates.”⁴⁷ One pamphlet offering – in a satire of contemporary conduct literature – “Instructions how a young gallant should behave himself in a Tavern,” dryly advised, on entering this space, the immediate display of any

⁴⁴ Roger L’Estrange, *The Interest of the Three Kingdoms, with Respect to the Business of the Black Box, and all the Other Pretensions of His Grace the Duke of Monmouth, Discuss’d and Asserted in a Letter to a Friend* (London, 1680), 14; Abigail Williams, *Poetry and the Creation of a Whig Literary Culture 1681-1714* (Oxford: Oxford University Press, 2005), 72.

⁴⁵ *Character of a Tavern*.

⁴⁶ Hart, *Character of a Drunkard*, A2v.

⁴⁷ Thomas Brown, *The Works of Mr. Thomas Brown, Containing, Amusements Serioues and Comical, Calculated for the Meridian of London. To which is added, Ten Letters, on several Subjects...* 2nd ed., vol. 3 (London, 1709), III:3.

“Gentleman-like quality” possessed.⁴⁸ Intimations of gentility would guarantee an enthusiastic reception from a venue devoted to noble demise.

The character of the “drawer,” or “tapster,” on some occasions also the tavern’s proprietor, provided a still more concise figure around which distrust could crystalise. Control of the tap gave the drawer a conspicuous role in the processes of diminution and enlargement playing out around them. Literature often cast this actor as a syphon of coin from genteel to mean – in effect, the biggest cog in “an Engine of the largest size, for draining the Pocket.”⁴⁹ Elsewhere drawers were “the most nimble, the most bold, and the most sudden Proclaimers of your largest Bounty.”⁵⁰ Pamphlets paid attention to the great houses and estates lost to such individuals. As the landed succumbed to temptation, alehouses were “a meaner sort of Cabarets” in which:

...Gentlemen sit, and spend much of their time; drinking of a muddy kinde of Beverage...and at which (I hear) they have consumed many noble Estates...But thus some mean fellow, the Drawer, arrives to an Estate, some of them having built fair houses, and purchased those Gentlemen out of their possessions, who have ruined themselves by that base and dishonourable vice of ibriety...⁵¹

The drawer’s “muddy” ale was a snare into which established families sank. Its dark, earthy qualities evoked a descent into squalor. Some taverns might sell “Spanish Wines” and other more “sophisticated liquors.” But this only made them more attractive to gentlemen, who took the bait with “fury and intemperance” – thus confirming them as a sinister evolution of the drawer’s ale-dedicated model. Traps were also be sprung by pouring less: the trope of the short-changing tapster, a figure equipped with discretely modified pots – raised bottoms and other “false measures” were a common fear – had a long history.⁵² Technology of this kind

⁴⁸ *The Young Gallant's Academy, or, Directions how He Should Behave Himself in all Places and Company as in an Ordinary, in a Play-house, in a Tavern, as he Passes along the Street all Hours of the Night* (London, 1674), 62.

⁴⁹ *Character of a Tavern*.

⁵⁰ *Young Gallant's Academy*, 43.

⁵¹ *A Character of England, As it was Lately Presented in a Letter, to a Noble Man of France*, (London, 1659), 31-2; Marshall, “Mechanic Tyrannie.”

⁵² For “false measures” see Clark, *English Alehouse*, 30.

optimised the sums extracted before lethargy dampened expenditure, and was thus dangerous to those with more wealth than restraint. Equipped with such deceitful hardware, drawers were “Leaches and Vipers:” it was a scandal to see “so sordid and base a sort of People” gratified “with the spoils of honest, and well natur’d men.”⁵³ The resourcefulness of this figure, and their deployment of liquid and material tools of deception, were foci for fears of magnification.

The drawer was just one – evocative – instance of the tavern’s worldly *technê* colliding with those whose authority depended on distance from it. One way through which this could be judged to occur was as part of a larger, civic, problem of industry encroaching on the lineaged. The pamphlet bemoaning ale-houses as a “meaner sort of Cabarets,” cited above, did so in the course of complaining that “this age” should “suffer” things like warehouses – sites of “avarice, malice, meanness, and deformity” – to be built more or less abutting St. Paul’s Cathedral and Whitehall’s Banqueting House.⁵⁴ One genteel traveller to London saw the fumes produced by breweries impinging on “men” like himself. Such complaints literally asserted the ability of tavern-associated trades to obscure material suggestions of authority, as when they blackened clothes like “the fumes of the coal everywhere burnt.”⁵⁵ But the “press” of sub-noble personae and their pursuits was also visible on a smaller scale. Charles Darby’s *Bacchanalia: Or a Description of a Drunken Club* (1680) withdrew from the “congestion” now oppressing a town so “nobly” begun, to focus on congestion inside the tavern.⁵⁶ The poem went through four editions. The “Actors” in the “*Drunken Club*” of the title were, emphatically, *not* “of one Age, Humour, Figure, or

⁵³ *Character of England*, 34.

⁵⁴ *Ibid.*, 11-2, 34.

⁵⁵ Balthasar de Monconys, *Journal des Voyages de Monsieur de Monconys, Conseiller du Roy en ses Conseils d'Etat & Priue, & Lieutenant Criminel eu Siege Presidial de Lyon. Où les Sçavants trouueront vn nombre infini de nouueautez en Machines de Mathematique, Experiences Physiques, Raisonnemens de la belle Philosophie, curiositez de Chymie, & conuersations des Illustres de ce Siecle [...]* Second Partie. Voyage d'Angleterre, Pais-Bas, Allemagne, & Italie. (Lyon, 1666), 13.

⁵⁶ *Ibid.* Charles Darby, *Bacchanalia: Or a Description of a Drunken Club. A Poem.* (London, 1680).

Condition.” “Lord” and “tinker” mixed together, as “things in medley, and confusion run.”

Concern with the heterogeneity of the tavern thus echoed worries over spoiled dress or architectural encroachment. At issue was the peril of proximity: even when the “mean” were not visibly bent on ascension, damage to the material bases of distinction was easily achieved.

Darby’s *Bacchanalia* is an appropriate text with which to end this general exploration of the tavern’s importance to distortions of hierarchy, before moving to consider its connections to experiment. The poem approaches the problem of magnification largely through interrogating the phenomenon of the “club” – an attempt to create an exclusive identity. The very title, “*Drunken Club*,” suggests the fundamental impossibility of an identity unswayed by – and excluding – the tumult of its surrounds. The press of people in any “club” – like the “press” that crushed grapes into wine – meant that regardless of whether one was “Noble” or “did a meaner Title take,” “all” became one homogenous mass.⁵⁷ In an environment of drunkenness, “Cups” worked to “reconcile Degrees,” and “Natures too,” so that clubs reflected the problems plaguing the taverns in which they often met. “Noblest” became only “he who can in drink out-do.” Despite efforts to impose order, drinking even in the context of a “club” levelled hierarchies as it unlevelled heads, culminating in a particular kind of “confusion” – one born of the fluidity around them:

No boast of Blood will here allowed be,
But what from tender Grape is prest.
No need of Heralds, or their Blazonry;
He bears best Coat, who bears his Liquor best...⁵⁸

The problem asserted was this: no club, try as they might – and, through the devices of private rooms and membership processes, they often did – could meet in an aqueous

⁵⁷ Ibid., 2.

⁵⁸ Ibid.

environment like the tavern without its hierarchies dissolving.⁵⁹ While the tavern was a notorious site of rises and falls, Darby's *Bacchanalia* shows the ease with which groups meeting therein could be felt to absorb these dangers.

"...Something of their Contrivance be Mixed with Mine..."

The early Royal Society has occasionally struck scholars as "more like a club than a college," with its Baconian rhetoric unaccompanied by much commitment to the vast hierarchy of "distinct" roles mapped out by the Elizabethan chancellor.⁶⁰ Looking at how experiments associated with the Society expressed the kind of upheaval outlined above provides a way of grasping some of the ways in which experimental communities shared the predicament Darby's *Bacchanalia* sketched for tavern-lodged assemblies. Experiment with connections to this venue, and its associational culture, often revealed waxing measures of sub-noble power. Through experiment, crafts with connections to this environment became conspicuous philosophical interests. Philosophers with claims to gentility were defeated in disputes over priority, wages and most dramatically, in Petty's case, the design of "stately" experiments. Practitioners of experiment were not spared the dangers of this slippery environment.

An immersion in crafts constituting the disruptive nature of tavern life was commonplace for exponents of experiment – even experiments with close ties to the Royal Society. Ben Thomas, in his study of English mezzotint's emerging social significance, points out that John Evelyn's use of the word "secret" to categorise this "trade" conveyed its connections to precisely the kind of "mechanical capricious persons" whose help the virtuoso

⁵⁹ Allen, "Political Clubs," 561-2.

⁶⁰ Quentin Skinner, "Thomas Hobbes and the Nature of the Early Royal Society," *The Historical Journal* 12, no. 2 (1969): 238-9; Peter Dear, "Totius in Verba: Rhetoric and Authority in the Early Royal Society," *Isis* 76, no. 2 (1985): 147.

sought – with no pleasure – when working on his *History of Trades*.⁶¹ These were associations Evelyn glossed while presenting the techniques behind this tavern-hung art as worthy of study, excluding it from the list of “mean and less honourable” crafts compiled for his “noble” friends within the Society.⁶² But not all engagements with artisanal judgement were so well dressed. Boyle, who regularly conversed with men and women involved in cellaring and other aspects of “ordering” liquors, spoke rather daringly of the dependence of experimental methodologies on the “Shops and Practises of Tradesmen.”⁶³ Petty’s archival legacy, much of which circulated during his lifetime, includes sketches of cellars and memoranda on “advancing the consumption of beere & ale.”⁶⁴ It was not just that some of the tavern’s most distinctive consumables were avowed interests of the Royal Society. Lords of the experimental polity deferred to tavern lore.

Experimental indebtedness to the tavern was built out of more than implicit concessions to the craftsmanship embodied in its decoration or retailing. The troubling ease with which this space facilitated heterogenous congregation was reflected in experimental interactions. We do not know if the tavern was among the places Hooke met with “the grinders of my glasses” and other artisans acknowledged in his *Micrographia*.⁶⁵ But the terse records he kept of his urban life show he frequented this space, and – even after his own partial rise in the world through membership of the Royal Society – deferred to its inhabitants. It was “at tavern” that he worked through John Kersey’s *Elements...of Algebra* –

⁶¹ Thomas, “Mezzotint in Britain,” 279, 281.

⁶² Ibid.

⁶³ Boyle ascribed historical reluctances to engage with “Tradesmen” not just to “negligence” but “haughtiness.” For an expression of these views see his “Essay IV, That the Goods of Mankind may be much encreased by the Naturalists Insight into Trades” in *The Works of Robert Boyle*, vol. 6, ed. Michael Hunter and Edward B. Davis (London: Pickering & Chatto, 1999), 467; Walter E. Houghton, “The History of Trades: Its Relation to Seventeenth-Century Thought: As Seen in Petty, Evelyn, and Boyle,” *Journal of the History of Ideas* 2, no. 1 (1941): 57. For Boyle’s interest in cellars more generally see Simon Werrett, *Thrifty Science: Making the Most of Materials in the History of Experiment* (Chicago and London: The University of Chicago Press, 2019), 55-6.

⁶⁴ British Library (London) Add MS 72881, ff. 83-4; Add MS 72897, f. 100.

⁶⁵ Hooke, *Micrographia*, bv.

under the instruction of John Collins, son of an impoverished non-conformist minister.⁶⁶ (Collins' own movement between "notable scholars" and "circles of practical men" in dockyards, taverns, and other "less salubrious parts of London," has also been the subject of recent scholarly attention.⁶⁷) Pepys' diary is no less revealing. For him, London's taverns were one of just a few sites in which, for example, he met the instrument-maker Ralph Greateorex, a curious figure who performed work for Robert Boyle, attended some of the Royal Society's early meetings in Gresham College, but was never recognised with formal membership of the Society.⁶⁸ The tavern was a source of the artefacts and advice pouring into the experimental *milieu* from mathematicians and instrument-makers.

The magnification of such individuals was a process vivid in the ease with which, in this setting, they became *part* of the polity crucial to "new experiments." When Pepys bumped into Greateorex "in my way" as he stepped outside his house in the January of 1660, the two adjourned to a tavern, where Greateorex showed Pepys "the first sphere of wire" – an armillary sphere – "that ever he made." Here Pepys found it "very pleasant."⁶⁹ Whereas we learn virtually nothing of Greateorex's experimental ambitions by reading the minutes of Royal Society meetings, the technician felt able to express his desires over a pot of ale, as when he informed Pepys of his longing – duly recorded by the virtuoso – "to go to Tenariffe to try experiments there."⁷⁰ Shapin has seen in the frequency of Hooke's often requested

⁶⁶ 30 October 1672, *DRH*, 11. Hooke's note reads: "At tavern, Collins, Kerseys book." The "book" was probably a "prospectus" of what would soon be printed as John Kersey's *The Elements of that Mathematical Art Commonly Called Algebra, Expounded in Four Books* (London, 1673).

⁶⁷ Banned from preaching in churches, Collins' father was likely no stranger to instructing in alehouses. For recent work on Collins and his rise, with reference to such spaces as the tavern, see Philip Beeley, "'To the Publike Advancement:' John Collins and the Promotion of Mathematical Knowledge in Restoration England," *BSHM Bulletin: Journal of the British Society for the History of Mathematics* 32 (2017): 61-74, especially 61, 64; "Practical Mathematicians and Mathematical Practice in Later Seventeenth Century London," *The British Journal for the History of Science* 52, no. 2 (2019): 225-228.

⁶⁸ 10 June 1660, *DSP*, 1:14; 22 January 1661, *DSP*, 1:22; 9 June 1662, *DSP*, 2:105; 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), 8.

⁶⁹ 10 June 1660, *DSP*, 1:14.

⁷⁰ 22 January 1661, *DSP*, 1:22.

visits to Arundel House and Lady Ranelagh's lodgings in Pall Mall, and in the rarity of reciprocal approaches from the hosts of such sites to his rooms in Gresham College, a fundamental imbalance: "the philosophical world did not come to Hooke."⁷¹ Yet the tavern was a place in which Hooke, whose family inheritance was estimated to a mere fifty pounds, could – and often did – pull witnesses of standing. His well-studied attempts to assert priority over the balance-spring watch, for example, involved not just pouring over entries in the Royal Society's register books, but displaying his familiarity with the underlying mechanics at a victualling house on Birch Lane, where he:

...Dined with Sir Joseph Williamson, Sr. R. Southwell, Mr. Henshaw, Mr. Creed, Mr. Hill, at Carters 4s. 6d. I read my Theory of Springs and shewd the experiments to illustrate it, all were well pleased.⁷²

Here Hooke's diligent acknowledgement of his commensals' worth – "Sir Joseph Williamson" (then Secretary of State) and "Sr. Robert Southwell (then enjoying the lucrative role of Vice-Admiral of Munster) – make vivid his sensed achievement in managing to "illustrate" his views.⁷³ Hooke is of course not an overlooked figure in scholarship asserting the mutual entanglement of gentility and credibility.⁷⁴ But the well-worn focus on his remunerated, quasi-servile status, should not prevent historians from recognising his place among some of the features of tavern life most corrosive to such distinctions.

The use of the tavern to personalities who lacked, at least in measure, the "resources" of "standing," is also conveyed by the degree to which those *with* a social edge were forced

⁷¹ Shapin, "Who was Robert Hooke?," 260.

⁷² 1 August 1678, *DRH*, 369. Hooke supplies only the name of "Carters" for this venue. He does, however, record visiting it on at least two other occasions, during both of which he ate "potage" and smoked tobacco and, on one occasion, "drank malago." Peter Clark notes that smoking tobacco as a "refreshment" in alehouses was "increasingly popular" during the later Stuart period. Peter Clark, *The English Alehouse: 1200-1830* (London and New York: Longman, 1983), 133, 228. For other visits to "Carters" see Hooke's entries for 7 and 14 December 1675, *DRH*, 198, 200. For Hooke's previous difficulties finding support from the registers see Rob Iliffe, "In the Warehouse: Privacy, Property and Priority in the Early Royal Society," *History of Science* 30, no. 1 (1992): 43-6.

⁷³ The sensitivity to social categories reflected in Hooke's diary is explored in Shapin, "Who was Robert Hooke?," 162-3.

⁷⁴ *Ibid.*; Shapin, *Social History of Truth*.

into this highly fluid arena.⁷⁵ The well-connected Christiaan Huygens, who even before his balance-spring watch furore with Hooke, was pleading *not* to have skimmed the design of the isochronous pendulum clock from the same source, almost surely had the upper hand in disputes of technical priority – at least when waged in more rarefied theatres of conflict.⁷⁶ With Huygens’ credibility banked across such experiential, but also wealth-indicative, feats as grand tours and ponderous book collections, Hooke’s assertions to priority were characterised by Henry Oldenburg as the conceits of a man “who, not having seen much of the world” lacked “that decorum which is necessary among honest folk.”⁷⁷ But the work Huygens put in to securing this verdict in fact privileged less genteel experiences.⁷⁸ Months before Oldenburg’s pronouncements about “honest folk,” Huygens had already judged it necessary to remind the secretary not of transactions in Gresham College itself, but those of “a nearby tavern.”⁷⁹ It was in this vaguely located, porous setting, that the foreign noble claimed to have produced his pendulum clock before “several” of the Society, so that “Hooke ought not to suspect that I have borrowed it from him.”⁸⁰ An appeal to exhibitions of this kind levelled the ground between the rivals. Unlike Huygens, who ultimately could not recall on which of his trips to London he had so gratified tavern-goers, Hooke was known for his serial use of these spaces. He could also move beyond the invocation of recollections, supporting his claims to invention with *ongoing* demonstrations of his familiarity with the relevant principles – in the same or similar settings.⁸¹ Rob Iliffe has explored this kind of “movement outside the Royal Society” in the context of what he calls Hooke’s “denial of its right to

⁷⁵ Talk of the “resources” of “standing” is common through, for example, the work of Steven Shapin. See *Social History of Truth*, 66, 69, 132.

⁷⁶ Iliffe, “In the Warehouse,” 39–40.

⁷⁷ Oldenburg to Huygens, 2 February 1674/5, *CHO*, 11:178. See also *ibid.*, 43. For Hooke’s (limited) travelling experience see Shapin, “Who was Robert Hooke?,” 256–7.

⁷⁸ Iliffe, “Material Doubts,” 285–6; “In the Warehouse,” 43.

⁷⁹ Huygens to Oldenburg, 14 June 1673, *CHO*, 10:30–1. “In the Warehouse,” 43–4.

⁸⁰ *Ibid.*

⁸¹ We have seen, above, how the “spring” experiments Hooke performed on Birchen Lane probably performed this function in the context of his later dispute with Huygens over the spring balance watch. See for example 1 August 1678, *DRH*, 369.

determine the outcome” of such disputes.⁸² But we might also think of the tavern’s movement into the experimental sphere the Society ostensibly policed, with the conduciveness of this space to upheaval reflected in a shaken experimental polity.

Just as illustrative regarding the importance of the tavern to sub-noble magnification were the inconveniences technicians and craftsmen faced in operating outside of it. Pepys’ diary makes it clear that Greatorex could come to the rising naval administrator’s house, as when Pepys received him on the doorstep one afternoon, “so he and I in my chamber, drinking wine and eating anchovies...discoursing of many things in Mathematiques.”⁸³ Yet his presence here was controlled – he was “expected” for dinner – and Pepys resented the few concessions he did make, for example when “it rained very hard...and so he was forced to stay longer than I desired.”⁸⁴ The tavern, on the other hand, was a place in which – as we have seen – Pepys submitted to Greatorex’s professions of ambition, listening to *his* desires, and even recording speculative experimental itineraries.⁸⁵ The confident satisfaction with which Hooke noted having explained his theory of springs to figures as prominent as Williamson and Southwell on Birchen Lane, contrasts with his careful recording of the humiliations he felt in other spaces, including perhaps most famously Lady Ranelagh’s house.⁸⁶ In a similar vein, just a few hours after the Astronomer Royal, John Flamsteed, told Hooke – apparently at Gresham College – that he “spake nothing to purpose,” Hooke gave audience again to the “Society,” this time in a tavern – in which he accounted himself a greater success, having “explained...the reason of the strength of lightning.”⁸⁷ Whatever codes

⁸² Iliffe, “In the Warehouse,” 43.

⁸³ 2 June 1661, *DSP*, 2:112.

⁸⁴ *Ibid.*

⁸⁵ 10 June 1660, *DSP*, 1:14; 22 January 1661, *DSP*, 1:22.

⁸⁶ For Hooke having “illustrated” his theory of springs see 1 August 1678, *DRH*, 369. Steven Shapin draws attention to Hooke’s experience of being “scolded” by Robert Boyle’s sister, Lady Ranelagh, while working on her Pall Mall House. For this episode see 20 January 1673/4, 20 June 1678, *DRH*, 81, 364; Shapin, “Who was Robert Hooke?,” 263.

⁸⁷ 10 May 1677, *DRH*, 289.

impressed themselves on work conducted elsewhere, the tavern was a strategic retreat for personalities whose success depended less on such conventions, than on their distortion.

Such distorting processes of magnification played out over the course of a life as well as an afternoon. Aubrey's *Brief Lives* began – and in the most recent scholarly edition still begins – by sketching the life of “Sir William Petty Knight.”⁸⁸ The “Knight” was said to have spent his childhood among “Artificers, eg. Smyths...watch-maker[s], carpenters, joiners, etc.”⁸⁹ (Similar reports circulated of Hooke, whose father was said to have considered apprenticing him on account of an obvious “Mechanick Genius.”⁹⁰) Petty's own representations of double-bodied shipping made such an adolescence greatly relevant: he was prone to styling this tavern-sloshed program as continuous with “the entertainment of my Childhood & and the employment of my riper years.”⁹¹ An unusually long entry in Evelyn's *Kalendarium* shows his self-representations were convincing – and a source of wonder. Craft of “a monstrous broad sail” were among the alliances, outlays, and manoeuvres the diarist cited while marvelling at his host's rise in the world. The catalyst for these reflections was a dinner Evelyn enjoyed in a house Petty had bought and decorated in Piccadilly. After visiting this “splendid Palace,” having “supped” amid “noble entertainment” and met “his elegant Lady, who could indure nothing mean & that was not magnificent,” Evelyn sniffed the “meaner circumstances” from which “Sir William” and his preoccupations emerged. Acquired wealth was no veil to origins of this nature, at least so long as the “sonn of a meane man” with whom he dined was obviously “in admiration...how he arriv'd to it.” (Not to mention, as Evelyn also noted, indifferent to his “splendid furnitur,” and “indeede rather

⁸⁸ “Sir William Petty Knight,” *BL*, 1:42.

⁸⁹ *Ibid.*

⁹⁰ Robert Waller, “The Life of Dr. Robert Hooke,” in *The Posthumous Works of Robert Hooke, M. D., S. R., Geom. Prof. Gresh. &c. Containing his Cutlerian Lectures, and Other Discourses Read at the Meetings of the Illustrious Royal Society....To these discourses is prefixt the Author's Life, giving an Account of his Studies and Employments, with an Enumeration of the many Experiments, Instruments, Contrivances and Inventions, by him made and produc'd* Curator of Experiments to the Royal Society (London: 1705), ii.

⁹¹ “Epistle Dedicatory,” Bodleian MS Lyell Empt 32, ff. 1-4v; *DB*, 4-6

negligent of his person &c.”⁹²) Double-bodied shipping had a place among visions of wondrous, unnatural enlargement.

It was not just the life of its architect that made this program so evocative of magnification; it conferred power on the very group to which the knight had once belonged: “seamen.” Petty, and many contemporaries, used the word “seamen” with some liberality, referring not just to sailors but carpenters, shipwrights, and the craftsmen of littoral communities who worked – sometimes periodically – on vessels. It was a usage capturing some of the groups and ways of life emphasised by contemporary scholarly talk of the “paramaritime.”⁹³ The extension of double-bodied shipping into sites such as the tavern placed it within reach of such communities – who soon found themselves in a position to pass judgement on it. Illustrative in this regard was the fate of a Royal Society “Committee” appointed to “examine” Petty’s – then still Dublin-based – program in the November of 1662.⁹⁴ Far from acting to limit adjudication to within the Society, the formation of this committee provoked some of the most public and unconfined discussions of double-bodied shipping on record. Its members did not just resolve to appeal to “as many ingenious Gentlemen (especially such as had been most conversant in Navall affaires) who were in & neere this Towne.”⁹⁵ They moved to ensure that “the choice Shippwrights and Seamen of this place” could “meet and conferr about ye promises.”⁹⁶ We do not know where these meetings took place. Perhaps the knight was yet to embrace the tavern in his efforts to nourish support

⁹² 24 March 1675, *DJE*, 56-61.

⁹³ For the concept of the “paramaritime” and associated livings see Gérard Le Bouëdec, “La Pluriactivité dans les Sociétés Littorales XVIIe-XIXe Siècle,” *Annales de Bretagne et des Pays de l’Ouest* 109, no. 1 (2002): 63; Isaac Land, “Port Towns and the Paramaritime,” in *The Routledge Companion to Marine and Maritime Worlds, 1400-1800*, ed. Claire Jowitt, Craig Lambert, and Steve Mentz (London and New York: Routledge, 2020), 192.

⁹⁴ Petty had urged for the formation of this committee. See Petty to Brouncker, 29 October 1662, *Double Bottom*, 31; 15 November 1662, *DB*, 33. For the order of the ‘committee’ see itself see Birch, *History*, 1:131; Hunter, *Establishing the New Science*, 76-7.

⁹⁵ “The Report of Ye Committee,” *DB*, 49-50.

⁹⁶ *Ibid.*

among seamen. But paramaritime opinion, a commodity frequently encountered – even when not purchased – in this setting, was swift to develop through the trial of double-bodied shipping in what Petty himself admitted were “public” or “very public” conditions.⁹⁷ Months before the committee began soliciting the views of Dublin’s salts, one trial on the town’s harbour alone was watched by “some 100 seamen and others.”⁹⁸ Judgement arrived whether invited or not. Seamen swelled in power.

Indications of the use craftsmen and mariners made of this power, born of proximity to experiment, survive in reports of their agility in disposing of Petty’s design. Of the “Severall of ye Company” who “moved generall objections” at one of the meetings convened by the Royal Society’s “Committee,” it was “especially” from “ye Seamen” that the “objections” came thickest.⁹⁹ A Society report into the “sayling of Sir William Petty’s [first] Shipp,” produced by Sir John Clotworthy, first Viscount Massareene and Baron of Loughneagh, conferred unambiguously ignoble origins on the “stormes of censure” into which these experiments now ploughed.¹⁰⁰ “Ye marriners especially,” the Viscount reflected with discomfort, “were interested in their owne way.”¹⁰¹ Being “by tradition sworne to their owne principalls,” this unruly force quickly “made ye lowdest cry.”¹⁰² Massareene allowed that “others” soon joined the fray – among them, the producers of the libel, satire, and scepticism directed towards double-bodied shipping. But he surmised that these less salt-soused critics came to the positions they did because they ascribed to seamen “a kind of infallibility in their Art.”¹⁰³ If the genteel “strengthened ye clamour,” then, they did so by

⁹⁷ Petty to Brouncker, February 1663, *DB*, 59.

⁹⁸ Petty to Moray, 8 July 1663, *DB*, 76.

⁹⁹ “The Report of Ye Committee,” *DB*, 50.

¹⁰⁰ *Ibid.*, 57.

¹⁰¹ *Ibid.*

¹⁰² *Ibid.*, 57.

¹⁰³ *Ibid.*

imbibing and redistributing claims already circulating through the ports of the Stuart archipelago – a hostility originally incubated by now forgotten congregations.¹⁰⁴

This was an aetiology of criticism, and a narrative of experiment, conferring significant power on keepers of maritime lore and craftsmanship; it asserted *their* responsibility for prevailing perceptions of Petty's experiments. It was also an assessment forming the background to Petty's often tavern-based efforts, examined in the previous chapter, to tame such forces. "Banquet" and "floode," to reproduce Southwell's terminology, were part of orchestrated attempts to maintain the fidelity of hired hands, by coaxing them from the wider littoral communities that would otherwise draw their allegiance – and into Petty's ship of state.¹⁰⁵ Petty's speeches to his crew, delivered in contexts of heavy drinking, refuted the concerns not just of "Court Witts and Poetts," but "Carpenters" and "Cityzens," the classes from which he was recruiting and promising promotion.¹⁰⁶ The role of these bacchanalian experiences in producing dissension, and therefore the kind of confusion explored in the preceding chapter, was thus bound up with another – related – effect, more relevant to present purposes: the creation of a new community to which overseer and hands alike possessed claims of membership. In this experimental society, the possibility of ascension – the magnification of the mariner and his household – was palpable. Southwell's record of Petty's hobnobbing with "ye men themselves," includes, as we saw in the introduction to this chapter, the knight promising the construction of an entire "fleete" of double-bodied vessels, so that each of his present "crew" could one day "be a Capt."¹⁰⁷ This was rhetoric evocative of fluidity. Yet it also attested to the power of "seamen" apart from double-bodied shipping – whose concerns threatened to penetrate into the ranks of the crew

¹⁰⁴ Ibid.

¹⁰⁵ Southwell to Oldenburg, *CHO*, 2:119.

¹⁰⁶ Ibid.

¹⁰⁷ Ibid., 118.

Petty anxiously wined and dined. On and off the decks of double-bodied experiments, seamen were bloated with power.

This was an enlargement of agency visible even in developments Petty and his circle chalked up as victories. The most fulsome account of relations with his crew, in which Southwell laboured the importance of commensality, was written precisely when Petty's fraying relations with one of the most landed personalities involved in double-bodied shipping necessitated support from before the mast.¹⁰⁸ By the October of 1663, the deterioration of a partnership with Viscount Massareene, from whom Petty had raised funds for his rather large second vessel – referred to as a “mongrell” – had highlighted the difficulties of partial ownership.¹⁰⁹ The knight wanted the “mongrell” sent to London “full of ugly faults and eyesoars,” while the Viscount wished to keep it on Lough Neagh. Petty looked to his crew to evade the claims of this recalcitrant shareholder.¹¹⁰ The Viscount looked to his standing as Ulster's largest landowner, and a registered subscriber – before witnesses – to the vessel in question.¹¹¹ The ties that proved decisive in this battle were those nourished by “Banquet” and “flood.”¹¹² These experiences elevated crew and their families into a community bounded by quasi-filial bonds. When one of Petty's “chiefe boatmene” had a child, Southwell suggested Petty “could not doe better then be godfather.”¹¹³ The statesman even told Society chieftains in London he had “sett the boat-man on [Petty] to christen his Girle.”¹¹⁴ Surprisingly, “it was done,” with the experimental interests behind the christening of “the little Maide” reflected in her given name: “Cylindra.”¹¹⁵ (Petty's craft were often referred to as “ye cyclinders” on account of their two log-shaped hulls.) In the face of such

¹⁰⁸ Ibid., 119.

¹⁰⁹ Ibid.

¹¹⁰ Ibid.

¹¹¹ National Maritime Museum (Greenwich) SPB 16, no. 22.

¹¹² Southwell to Oldenburg, 13 October 1663, *CHO*, 2: 119.

¹¹³ Southwell to Oldenburg, 4 February 1662/3, *CHO*, 2: 21

¹¹⁴ Ibid.

¹¹⁵ Ibid.

ties, Clotworthy found his shares in the boat worth nothing. For when the Viscount “attempted 3 times to invest her,” the bailiffs he sent out were “3 times handsomely repulsed” by an incentivised crew.¹¹⁶ The power that taverning, and the ties it produced, had bought Petty meant his craft evaded the Viscount’s claims to possession. Yet this power was obviously derivative, dependent on the will of his crew.

The magnification of Petty’s personnel was then soon exhibited in the disasters to which double-bodied shipping became prone. Such inconveniencies as the allegedly recurrent negotiating efforts of his crew – on one occasion he complained “they...ask more wages than formerly” – and the demands of his smiths for the satisfaction of debts recurred as reasons for various delays.¹¹⁷ The frustrations of masters are a recurring theme in studies of working spaces, where the trope of the “technician as excuse” has been explored with some benefit.¹¹⁸ But in this case, there is every suggestion Petty’s hands had realised their own indispensability – and were leveraging it with some skill. The knight complained the seamen he had promised to elevate had taken control of his duplicated hulls, so that he did “owne nothing but ye Duplicity managed by a Crew of seditious saylers!”¹¹⁹ In the November of 1665, suspecting the loss of his third vessel – the “Experiment” – at sea, the virtuoso dialled up his talk of conspiracy. He told Oldenburg they had “stayed” at sea, resting in the Bay of Biscay and thus almost inevitably encountering a violent storm. Among his explanations for this was a “designe...to keep in great pay & avoyd ye press & ye plague.”¹²⁰ It was a statement acknowledging the ungovernable nature of the swabbers he had sought to tame over tavern table. Years later, one of those subscribing to Petty’s fourth vessel in the context of the Dublin tavern meeting (described in Chapter 1 above) regretted the investment on

¹¹⁶ Southwell to Oldenburg, 13 October 1663, *CHO*, 2: 119.

¹¹⁷ National Maritime Museum (Greenwich), SPB 16, no 43; Petty to Moray, 26 August 1663, *DB*, 90.

¹¹⁸ Shapin, *Social History of Truth*, 389-392.

¹¹⁹ Petty to Moray, 26 August 1663, *DB*, 90.

¹²⁰ Petty to Oldenburg, 18 November 1665, *CHO*, 612.

learning that “the seamen swear they would not venture over the Barr in her for £1000 a piece.”¹²¹ Rebellion did not appear in Petty’s experimental narratives as a device to palm off failure, but because his recourse to spaces like the tavern ensured his transactions with tars – even when fraught – were visible to anyone.

Emphasising the scale of this sedition was the vigour with which Petty’s circle had attempted for so long – and again, so publicly – to fend off the problem. This was work involving not just efforts, explored above, to cultivate kinship with his crew, but overtures to the wider community of “seamen” whose influence on his own ranks he feared. Petty’s jangling with investors in one of Dublin’s “Crowne” taverns had led him – to his chagrin – to follow “the advice of good Common seamen.”¹²² (He admitted doing so while believing departure from *his* design would “but bring Newe mischiefs uppon us.”¹²³) Nothing, however, attests to the transformation of craftsmen into pilots of experiment more than when they were given a hand not just in building, but designing, these new ships of state. Not long after launching his first vessel down the Liffey in the December of 1662, Petty addressed “objections” from “one of the chief shipwrights of this Port” by giving him “the building” of his “great Vessel” – a move ensuring, the knight acknowledged, that “something of their contrivance be mixed with mine.”¹²⁴ Perhaps this was why his publicly displayed summons to a Dublin tavern was addressed not just to “Subscribers,” but “all others who Conceive themselves any way Interes’d.”¹²⁵ He had come to admit, when conducting experimental business that had spilled over into such places, the necessity of satisfying “the censorious and ignorant multitude.”

¹²¹ Molyneux to Ashton, 23 December 1684, *DB*, 139.

¹²² Petty to Werden, 18 December 1684, *DB*, 140.

¹²³ *Ibid.*

¹²⁴ Petty to Graunt, 18 December 1662, *DB*, 41.

¹²⁵ National Maritime Museum (Greenwich), SPB 16, no. 37.

“...But Botchers and Brokers...”

We have seen the tavern was important to the ways in which a heterogenous mix of craftsmen, sailors, and others swelled in power through experiment. We will now see how the threat of such magnification loomed large in a range of contemporary works questioning the worth of experimental endeavours. Critics demanded whether some of the most conspicuous forms of experimental activity were not simply the work of craftspeople and artificers. The agency of remunerated hands became a recurring preoccupation. Allusion to the tavern, and the upheaval it accommodated, provided a means of assembling and supporting such representations. Scepticism about the use of experiment to the Restoration thus looked again to the tavern – and the place of experiments in processes of magnification.

The corrosion of distinctions was a common motif in works treating of experiment, many of which often gestured to the role of the tavern, or at least its indulgences, in nourishing this symptom of disorder. Margaret Cavendish’s well-known *Observations on Experimental Philosophy* (1666) suggested defenders of instrumentalised experiments – she had Hooke in mind – were “like those unconscionable men in Civil Wars, which endeavour to pull down the hereditary Mansions of Noble-men and Gentlemen, to build a Cottage of their own.”¹²⁶ One year later, she published another important work: a “Life” of her husband, “the Thrice Noble, High and Puissant Prince William Cavendishe, Duke, Marquess and Earl of Newcastle.”¹²⁷ This second homage to the Duke – her preceding *Observations* had also been dedicated to him – included both itemised reckonings of his “sufferings” (losses to the vulgar) during the civil wars and assurances of his “Temperance.”¹²⁸ Read together, the texts

¹²⁶ Margaret Cavendish, *Observations Upon Experimental Philosophy. To Which is Added, the Description of a Blazing World. Written by the Thrice Noble, Illustrious, and Excellent Princesse. The Duchess of Newcastle* (London, 1666), c2.

¹²⁷ Cavendish, *The Life of the Thrice Noble, High and Puissant Prince William Cavendishe, Duke, Marquess and Earl of Newcastle...Written by the Thrice noble, Illustrious and Excellent Princess, Margaret, Duchess of Newcastle, his Wife* (London, 1667).

¹²⁸ *Ibid.*, 97-8, 151.

insisted on the ease with which noble interests – pecuniary or philosophical – could become beholden to the “poorer sort of Tradesmen.”¹²⁹ “Noble and profitable Arts and Sciences” needed reinforcement against all those that were “but botchers and brokers.”¹³⁰ Philosophical and social change were entangled: the rise of experiment and the civil war both saw the mean swell in power. Pamphlet literature echoed the theme. One pamphlet warning against the “Vices of the Town” dwelt on taverns as well as “new philosophers,” who were “groveling in mechanics...and pinioning with those meaner arts, the mind.”¹³¹ Another surveyed the tavern’s ability to empty pockets before concluding it was an “Academy of Debauchery, where the Devil teaches the seven deadly sins instead of Sciences.”¹³² These texts all portrayed sub-genteel empowerment as a distortion of the social order; work associated with such upheaval was far from useful learning.

Satirical representations of experiment seized on the ease with which ties to enlargement and downfall expressed a uselessness to the Restoration polity. The royalist poet Samuel Butler, thought to have had a hand in writing Thomas Shadwell’s *Virtuoso*, was one commentator preoccupied with these processes.¹³³ His post-humously printed *Elephant in the Moon* portrayed a group of virtuosi – Petty and Hooke conspicuous among them – eyeing lunar “Lands” through their “optick engine.”¹³⁴ The poem has the Royal Society in its sights; but only four of the figures – including Petty and Hooke – huddled around the telescope of this text, and viewing the elephant of its title, have proved recognisable either to its

¹²⁹ Ibid., 82.

¹³⁰ Cavendish, *Observations*, 2-3.

¹³¹ *Remarques on the Humours and Conversations of the Town. Written in a Letter to Sr. T. L.*, (London, 1673), 1, 13, 29, 112, 120.

¹³² *Character of a Tavern*.

¹³³ Butler’s hand in Shadwell’s *The Virtuoso* (London, 1676) is asserted in Hugh de Quehen’s ODNB article on Butler (September, 2004); Simon Malpas, “‘In No One Thing, They Saw, Agreeing’: Experimental Philosophy in Cowley and Butler,” 43, no. 2 (2019): 60.

¹³⁴ Samuel Butler, “The Elephant in the Moon,” in *The Genuine Remains in Verse and Prose of Mr Samuel Butler, Author of Hudibras. Published from the Original Manuscripts, formerly in the Possession of W. Longueville, Esq; with Notes by R. Thyer, Keeper of the Public Library at Manchester.*, 2 vols., vol. 1, ed. R. Thyer (London, 1759). For the circulation of this poem in the Restoration see Sv. Brunn, “The Date of Samuel Butler’s *The Elephant in the Moon*,” *English Studies* 55, no. 2 (1974).

contemporary readers or modern day scholars.¹³⁵ The poem thus privileged the Society's risen men. Petty was depicted seeking a "survey" of the moonscape as "accurate" as that of Ireland, where he had lined his pockets, while Hooke, in "magnifying all he writ / With curious microscopick Wit...magnify'd himself no less."¹³⁶ But the Society was not just depicted in terms of its most magnified members; Butler brought others still more marginal to the fore. The poem is usually remembered for its comic twist: the "elephant" spied during this covetous "survey" of remote estates turned out to be a mouse in the telescope.¹³⁷ It was a belittling discovery made not any Society spear-carrier, but a group of attending footmen who, "seeing the Telescope at leisure, Turn'd Virtuoso's for their Pleasure.../ As those they waited on, had done."¹³⁸ The poem thus brimmed with transformations: mice swelled into elephants, mechanics took up the pursuits "gentlemen," while the pretensions of the whole group – Hooke, Petty, as well as others less "overgrown" – were diminished by the presence of domestics.¹³⁹ It was the kind of upheaval Butler's wider oeuvre associated with taverns, coffeehouses, and the "ale and smoke" in which "gentleman, mechanic, lord, and scoundrel" dissolved into an unsteady "mix."¹⁴⁰

From the pulpit too, Anglican and episcopalian, worries of drastic social change fanned distrust of the tavern – and with it experiment. In his *Treatise of Knowledge and Love* (1689), the moderate presbyterian Richard Baxter reminded the "Rich Men" of the Restoration they had the "*most to lose*" from its failure, before rounding on both "New Experimenters" and taverns.¹⁴¹ In a sermon preached at Westminster Abbey in 1685, South,

¹³⁵ Sv. Bruun, "Who's Who in Samuel Butlers 'The Elephant in the Moon'," *English Studies* 50, no. 1-6 (1969): 382.

¹³⁶ Butler, "Elephant," 2, 10.

¹³⁷ *Ibid.*, 18.

¹³⁸ *Ibid.*, 17.

¹³⁹ *Ibid.*, 17-8.

¹⁴⁰ Samuel Butler, "A Coffee-Man," in A. R. Waller, ed., *Samuel Butler: Characters and Passages from Note-Books* (Cambridge University Press: Cambridge, 2012), 206.

¹⁴¹ Richard Baxter, *A Treatise of Knowledge and Love Compared. In Two Parts: I. Of Falsely Pretended Knowledge. II. Of True Saving Knowledge and Love*. (London, 1689), ar, 253, 257.

known for his hostility to low church politics, reflected on the character of the “dull and heavy Philosopher, who possibly would have made a good Mechanick, and have done well enough at the *usefull Philosophy of the Spade, or the Anvil*.”¹⁴² By this stage in his career, South had not just inveighed against taverns, drunkenness, and experiment – in the same sermons, and sometimes even the same breath. He was beginning to make the political grounds of his distaste for gritty spaces – and those inhabiting them – evident: “the late *Reforming Age*,” he said in another Westminster sermon, was one of excess, in that “none were thought fit for the Ministry but Tradesmen, and Mechanicks.”¹⁴³ The folk most “accounted like *St Paul*” were – he lamented – those “who could *work with their hands*.”¹⁴⁴ His scepticism about the use of experiment to the Restoration, which he conveyed by depositing it among drunkenness, and other vices redolent of mechanic ascension, was thus grounded in a distrust of lower orders and their veneration. The sermon in which he most explicitly placed new experiments “in vice” illustrates this, supplying – as the introduction to this thesis noted – examples of vicious activity in the form of “the *Rebel*,” who had shirked “the Labour of Obedience, Loyalty, and Subjection.”¹⁴⁵ South was, of course, rehearsing old prohibitions against ambition and envy in his pleas “a man” should “honestly and discreetly...sit still, and...enjoy what he has.”¹⁴⁶ But in doing so, he embraced an ethics warning against both experiment, tavern, and upheaval. Distrust of experiment emerged from a concern with this space, in and around which men could be seen – through the practice of experiment itself – thirsting for more than they had.

While a sensitivity to the fragility of contemporary hierarchies could drive a hostility to “new experiments” generally expressed, double-bodied shipping was one specific

¹⁴² Robert South, *Twelve Sermons Preached upon Several Occasions* (London, 1692), 411.

¹⁴³ Robert South, *Twelve Sermons upon Several Subjects and Occasions* (London, 1698), 548.

¹⁴⁴ Ibid.

¹⁴⁵ South, “Practice of Religion,” 50.

¹⁴⁶ Ibid.

endeavour placed amid disorder of this kind. An anonymously written play performed at the Duke's Theatre in 1682, *Mr. Turbulent* (reproduced in 1685 as *The Factious Citizen*), depicted a figure bent on redesigning the ship of state while working within a number of settings, including the tavern. An epilogue to the play avowed that wielders of "Awles, Needles, Hammers, Shears" had no place in attempts to resolve "State Affairs."¹⁴⁷ Sharing this focus on the transgressive inclusion and empowerment of sub-noble personae was the poem of unknown authorship, (first introduced above in Chapter 1), dwelling on Petty's attempts to water his "Lusty swabbers" into compliance.¹⁴⁸ Here Petty's desperation – and the rise to power of his hands – was given vivid expression as, amid bouts of drinking, and other excesses recalling the tavern:

...Knight for Sea-Men being to seek,
Was forc'd to use his Rhetorick,
And with those Swabbers often jangle,
'Cause none would sail his Finglefangle...¹⁴⁹

Drink and "Rhetorick," though, were not persuasive enough. In an indication of the degree to which Petty's seamen milked the reality of their indispensability, money had to change hands before the knight could "pick up some few Tarpaulings."¹⁵⁰ The poem dwelt fulsomely on the vulgar pedigree of the men – they stank "of pitch and tar" – with whom Petty transacted in this environment, and to whose demands he capitulated.¹⁵¹ In doing so, it foregrounded distinctions which – it also suggested – were dissolved in the course of experiment. Years ago Petty had risen from obscurity, a fact the poem noted; now his experiments magnified still more seamen, in an image of ale-lubricated levelling common to criticisms of the tavern.

¹⁴⁷ *Mr. Turbulent*, A4, 24.

¹⁴⁸ "In Laudem," 397.

¹⁴⁹ *Ibid.*

¹⁵⁰ *Ibid.*

¹⁵¹ *Ibid.*, 399.

Conclusion

The tavern accommodated displays of sub-noble power and ingenuity in the Restoration. It was a site of ascension, dissolution, and other forms of social upheaval. This chapter has examined these features of tavern life, and explored the degree to which work with ties thereto absorbed such exhibitions of disorder – in ways reflected in hostile representations of experiment.

Part of retracing this process has involved an examination of how individuals, sociabilities, and varieties of ingenuity important to sub-genteel magnification became visible in experiment itself. This has required moving beyond accounts of experiment emphasising the invisibility or subjugation of artisans, domestics and hired hands. Such histories identify processes and relationships important to a lot of obviously successful and productive experimental work. This look at the situation of experiment amid the tavern, and in particular the magnification of sub-noble personae it enabled, illuminates some of the circumstances in which parties who would ideally be less visible wielded obvious power over experiment. The examples of experimental work explored in this chapter did not so much reflect contemporary hierarchies, as their distortion. The experimental ship of state Petty produced out of the tavern was one in which the agency of carpenters, sailors, smiths, shipwrights, among others, was highly visible. These groups exploited their indispensability to double-bodied shipping, pushing the program itself in directions that suited their interests. Foregrounding their power, and attempts to manage it, is one crucial step in recovering the cost of contact with agents of this kind – a contact the tavern facilitated. Nowhere was this cost more evidently apparent than in the contemporary representations of experiment in which they appeared.

Chapter 3: Experiments in Wives and Whores

Introduction

The two preceding chapters of this thesis have begun with – and returned periodically to – accounts of the “treatment” Petty meted out to various parties in the course of his experiments. These have enabled an exploration of how attempts to construct the kind of community double-bodied shipping required saw experiment overflowing into some troublesome aspects of the tavern: the confusion (Chapter 1) and social enlargement (Chapter 2) for which these venues were notorious. Yet these accounts also show how the reach of experiment into the tavern facilitated its immersion in – and absorption of – another element of tavern life: women. Southwell’s description of the onshore manoeuvring required before Petty’s second vessel could even clear Dublin harbour in the October of 1663, shows the wives and families of those he employed were part of the “banquet” and “flood” judged necessary to his experiments. This was “treatment” given not just to “Crew,” but:

...their wives & children on ye night of imbarquing, when having sent [for] their wives & Children in rings end Coaches he provided them a banquet of burnt wine stued prunes applepyes Gingerbread white sopps and milke with apples and Nutts in abundance and all this besydes Neates tongues and other more solid food for ye men themselves and soe after much Crying and laughing hoping and fearing, he gott them all to part very quietly one from an other Intimating to ye Women yt if they succeeded there was a fleet to be built of double bodyed vessels, whereof every of their husbands would be a Capt, and in time it was not unlikely but they themselves would be ladyes...¹

Southwell, as one of Petty’s closest allies, had reason to portray these costly, bibulous, and unrestrained episodes as experimentally fruitful. It is not surprising that, in his account, Petty’s investment pays off, with “ye women” acquiescing to the virtuoso’s itinerary, and his experiment launched amid scenes of supportive jubilation. (To the promise they would soon “be ladyes,” Southwell had them “simperingly...wiping their eyes,” agreeing that “more

¹ Southwell to Oldenburg, 13 October 1663, *CHO*, 2:118-9.

unlikely things were come to passe.”²) But even Southwell’s report of the resources ploughed into winning over this group hints they could not always be counted on to fall into line. It certainly shows that this cohort, and deference to them, were not remote from experiment – once it had a foot in the tavern, or sociabilities endemic to this setting.

The Restoration greatly heightened sensitivities to the presence and power of women, a process both expedited and reflected in many spaces – including the tavern. A range of contemporary developments, including Charles II’s enthrallment to actresses like Nell Gwynn ([1651]-87) and Moll Davis (1651-1708), and the Duke of York’s secret marriage to the Catholic convert Anne Hyde (1637-71), invested such gendered categories as “wife” and “whore” with fresh salience – planting them in narratives of political excess and national decline. Traditional suspicions of the tavern as a site of feminine allure were mobilised in the construction of these histories; mistresses like Gwynn and Davis were said to have begun their lives on “cold ground.”³ Narratives of a rise from cramped obscurity with corrosive consequences for the ship of state required allusion to places of vice – they necessitated origins in playhouses, bawdy houses, and taverns. But the presence of women from such settings on the political stage also altered the significance of these venues themselves, drawing attention to aspects of them that might otherwise never have appeared so alarming. The tavern had for some time been home to women plying a range of trades; besides prostitution, the presence of “maids” – and, in ale-houses, “ale-wives” – had long led men into a space often managed by women. Such quotidian aspects of this venue, though far from new, were inevitably re-interpreted against the background of courtly upheaval, which for a swathe of the population urged the dangers of submission to feminine artifice. Entangled with other symptoms of disorder residing in the tavern, women – “wives” or “whores” –

² Ibid.

³ Elizabeth Howe, *The First English Actresses: Women and Drama 1660-1700* (Cambridge: Cambridge University Press, 1992), 34; Pritchard, *Outward Appearances*, 21.

contributed greatly to this site's importance to doubts about the viability of the Restoration itself.

This chapter describes how the overflow of experimental work into the tavern ensured its contact with women, and thus, in the context of the Restoration, another variety of political disorder. To do so, it first recovers attitudes to some of the women encountered in this space. It then shows how experimental activity lodged in this domain was almost inevitably as porous; the entry of experiment into the tavern gave “wives” and “whores” a seat at the experimental table. In the case of double-bodied shipping, it was “ye wives,” women whose livelihoods were tied to the men Petty formally employed, who gained a place at this – decidedly non-figurative – table. We will see how these women negotiated pensions with Petty, and even insisted on changes to the ship of state he had proposed. Elsewhere, the “whore” loomed large over other arms of experimental activity; the Royal Society's first chartered president, Viscount William Brouncker, at least occasionally presided over the Society from the tavern, in the company of a “mistress” of his, Abigail Williams. The attendance of this “whore” – as members of the Society referred to her – at such meetings illuminates the tavern's ability to bring experimental interests into contact with a particularly repudiated genre of woman. This chapter looks at how the presence of these women – Brouncker's “whore” or the “wives” of Petty's men – conditioned expressions of doubt about the use of experimental activity. It shows how contemporary representations of experiment, especially those emphasising its ties to the tavern, depicted nothing like the ideal of mastery Southwell was keen to communicate. Privileged instead was the degree to which pilots of experiment were bent to the will of the women around them – even in their bid to steady the ship of state. This chapter thus explores the presence and role of women, “wives” or “whores,” at the heart of the tavern, its experiments, and doubts about their worth in the context of the Restoration.

Recovering the importance of women to the tavern, its experimental activity, and the wider representation of such activity, provides a correction to much scholarship on seventeenth-century experiment, which still often overlooks their presence – especially when orbiting around formally masculine institutions like the Royal Society. The ceremony of the Duchess of Newcastle’s attendance of just one of the Society’s meetings at Arundel House in the May of 1667 has captured scholarly attention for decades.⁴ Yet a longstanding, not to mention occasionally exclusive, focus on this episode seems to have created the impression this was *the* moment a woman entered one of the most obvious examples of a Restoration-era experimental community. It is sometimes said that “apart from the formal invitation to the Duchess of Newcastle, which had been warmly debated and extended only out of respect for her rank, the Royal Society had no dealings at all with women.”⁵ This chapter shows how experiments still very much associated with the Society were within reach of women of considerably less standing than Cavendish. But it also takes a different approach to scholarship uncovering the role of women in experiments further from contexts like the Royal Society, concerned as this work often is with how “knowledge” might be produced from “the margins.”⁶ This survey at the crossroads of tavern, women, and experiment shows

⁴ See for example Londa Schiebinger, *The Mind Has No Sex: Women at the Origins of Modern Science* (Cambridge Massachusetts: Harvard University Press, 1989), 24-6; Frances Harris, "Living in the Neighbourhood of Science: Mary Evelyn, Margaret Cavendish and the Greshamites," in *Women, Science and Medicine: 1500-1700*, ed. Lynette Hunter, and Sarah Hutton (Stroud: Sutton, 1997); Peter Dear, "A Philosophical Duchess: Understanding Margaret Cavendish and the Royal Society," in *Science, Literature and Rhetoric in Early Modern England*, ed. Juliet and David Burchell Cummins (London and New York: Routledge, 2007), 125-142. For a more recent treatment of this episode see Ian Lawson, "Bears in Eden, or, This is not the Garden You're Looking For: Margaret Cavendish, Robert Hooke, and the Limits of Natural Philosophy," *The British Journal for the History of Science* 48, no. 4 (2015): 583-605.

⁵ Harris, "The Neighbourhood of Science," 210. The same impression is given in Schiebinger, *The Mind Has No Sex*, 24-6; Dear, "A Philosophical Duchess," 126-7; Jo Wallwork, "Disruptive Behaviour in the Making of Science: Cavendish and the Community of Seventeenth-Century Science," in *Early Modern Englishwomen Testing Ideas*, ed. Jo Wallwork and Paul Salzman (London and New York: Routledge, 2011), 42. For the suggestion that this was – except for Cavendish’s visit – “a man’s world” see Marjorie Hope Nicolson, *Pepys’ Diary and the New Science* (Charlottesville: The University Press of Virginia, 1965), 104-7.

⁶ The “margins” from which women are often seen operating are of course given concrete form in studies of recipe and medical books. See for example Elaine Leong, *Recipes and Everyday Knowledge: Medicine, Science, and the Household in Early Modern England* (Chicago: The University of Chicago Press, 2018), passim but especially 14-5, 135, 160.

how the women – like the kinds of men examined in the previous chapter – could play a much less constructive role. It emphasises their importance as an inspiration for hostile representation, another feature of experiment provoking insinuations of its association with vice.

“...Venus...Not of the Sea, but the Tap...”⁷

Charles II’s growth into a monarch who “doth mind nothing but pleasures and hates the very sight or thoughts of business” was regularly put down to the women of the court, most particularly the arts – cosmetic, political, and sexual – of his mistresses.⁸ This aetiology of a distraction associated with serious misjudgement focused attention especially acutely on the presence of women. In the Restoration, which for the first time had women performing in commercial theatres, the visibility of some women was, in obvious respects, much greater than in previous decades.⁹ Their sudden appearance in a context known for disguise, performance, and even contrivance, and the ease with which actresses like Nell Gwynn, and her rival, Moll Davis, became royal mistresses, contributed to popular associations with processes of deception and ensnarement.¹⁰ Gwynn and Davis, who both gained royal attention from the stage, both turned out to be just two of a number of a public dalliances increasingly invoked in explanations for the catastrophes of plague (1665) and fire (1666), as well as the humiliations of the Second Anglo-Dutch War (1665-7), and the fiscal straits accompanying it.¹¹ Courtly captivation with such women, from the monarch downwards, revived and strengthened age-old associations of femininity with imperfection, augmenting

⁷ Ape-gentle-woman, or, The Character of an Exchange-Wench, (London, 1673), 2.

⁸ Burnet, *History*, 93-4.

⁹ Howe, *English Actresses*, 19.

¹⁰ N. H. Keeble, *The Restoration: England in the 1660s* (Oxford: Blackwell Publisher, 2002), 175-6; Sharpe, "Country's Darling and Desire," 24.

¹¹ Zwicker, *Lines of Authority*, 90-129; "Politics of Sexual Misconduct," 151-69; Sharpe, "Country's Darling and Desire," 21.

the ease with which women could be ascribed responsibility for disasters of national consequence. When the Stuarts began supplementing English mistresses – Gwynn once famously reassured one crowd she was a “Protestant whore” – with women from foreign courts, the ties between this new political visibility and the corruption of the body politic seemed more assured than ever.

These perceived consequences of a presence on the political stage bred a much wider distrust of women, one revolving around a range of extra-courtly settings, including the playhouse, bawdy house, and – the special focus of this chapter – tavern. Political histories of the Restoration concerned with the “mistress” or “whore,” among other gendered social categories, still very often focus on the women of the court, if no longer quite so myopically on spaces like Whitehall.¹² But women of many kinds – “whores” or otherwise – were ascribed compelling powers outside of such settings. The Earl of Clarendon, whose fall in 1667 followed his opposition to the new women of the court, produced an autobiography in which the monarch’s retreat from “business” to “license and satisfaction” was greatly expedited by the temptations – heavily gendered by him – of “the time itself.” His exploration of such stimuli to royal lethargy was not confined to royal mistresses. It privileged a range of feminine personae and transgressions, finding fault not just with women who “conversed without any circumspection or modesty,” but also those of “stricter and more severe” countenance, who – he alleged – made statesmanship “knotty” for the merry monarch by becoming “wives of seditious preachers.”¹³ Even pestilence travelling from foreign shores was imagined, at least on arrival, to have been fanned by the feminine regions of the political body. The plague ravaging London in 1665 was asserted to have begun “in those parts of the

¹² For courtly women in Restoration politics see for example the essays included in *Politics, Transgression, and Representation at the Court of Charles II*, ed. Julia Alexander Marciari and Catherine Macleod (New Haven & London: Yale University Press, 2007); *Painted Ladies: Women at the Court of Charles II*, ed. Catherine Macleod and Julia Alexander Marciari (London: National Portrait Gallery). More particularly see Sharpe, “Country’s Darling and Desire,” 21–4, 27; Zwicker, *Lines of Authority*, 90–129.

¹³ Clarendon, *Life*, 305.

Town where Uncleaness keeps her Courts, and Venus hath too many Altars and Votaries.”¹⁴

Despite characterisations of the Restoration as a time in which “young people thereof of either sex” were “educated in all the liberty of vice, without reprehension or restraint,” women – even those avoiding charges of outright impiety – were, in these explanations for disaster, deemed capable of enormous damage.

The tavern was not – architecturally, geographically, or even conceptually – far removed from some of the sites important to even the most public and politically troubling examples of feminine power. Early modern “bawdy houses” were often run out of taverns, sometimes from rooms tacked to the side, and frequently from within the midst of the tavern itself.¹⁵ Private rooms in any victualling house, even “respectable” ones, were to some degree out of any proprietor’s immediate control, creating possibilities for illicit sexual encounter, regardless of the venue’s intended functions.¹⁶ The “Hand and Raquet Tavern” on Whitcomb Street, just around the corner from Whitehall’s Court Gate, was thought to provide the monarch with a means of meeting Nell Gwynn.¹⁷ The “young women” Clarendon found responsible for the monarch’s insouciance on account of their conversing “without any circumspection of modesty” did so – he said – at “taverns and common eating houses.”¹⁸ The tavern was a mirror, in which the vices of court and country were reflected.

Alongside built and social continuities with court, theatre, and sex shop, the tavern also possessed features that made its women – or even those passing through – a special, locally formed, source of danger. The liquor consumed in these sites, it was feared, rendered

¹⁴ Gumble, *Life of General Monck*, 417; Hutton, *Restoration*, 229.

¹⁵ Tim Williams-Reinke, “Women, Ale and Company in Early Modern London,” *Brewery History* 135 (2010): 90.

¹⁶ Clark, *English Alehouse*, 147. For cases of sex in “respectable” alehouses see Bernard Capp, “Gender and the Culture of the English Alehouse in Late Stuart England,” in *The Trouble With Ribs: Women, Men and Gender in Early Modern Europe*, ed. Anu Korhonen, and Kate Lowe (Helsinki Collegium for Advanced Studies, 2007), 115.

¹⁷ Leopold Wagner, *More London Inns and Taverns* (Newcastle-Upon-Tyne: Northumberland Press, 1925), 72; John Adlard, “A Note on Nell Gwynn,” *Folklore* 83, no. 1 (1972).

¹⁸ Clarendon, *Life*, 305.

men easy prey.¹⁹ For the philosopher Thomas Browne, alcohol compounded the “impudence of lewd harlots,” so that the tavern was home not just to “*Rakes*,” but “*Whores*,” not only “*Lovers*,” but “*Mistresses*.” Its floor was a sea of lustful reunion in which women could “wash away” more than their own virtue.²⁰ The anonymously published “Character of England,” sometimes attributed to John Evelyn, saw feminine menace and power as feeding off another element of tavern sensuality we have already encountered in this thesis: the fiddler, in Stuart England often an itinerant musician, whose loose performances in the tavern – among other gritty venues – provided opportunities for dance and bodily display.²¹ The ease which women might “daunce after the Fiddle,” this pamphlet complained, and perhaps “kiss freely,” rendered this space one in which “a *Curtesan* in other *Cities* would scarcely vouchsafe to be entertain’d.”²² (A hitherto unnoticed point in favour of Evelyn’s authorship of this work, incidentally, consists of his revulsion on finding a sermon at the Chapel Royal punctuated with flourishes of violin music “better suiting a Tavern or Play-house than a Church.”²³) Far from a passive receptacle for the vices of remoter sites, the tavern possessed sensory characteristics amplifying the dangers of women who elsewhere were lesser threats.

Both Stuart visuality, and popular sentiment towards the court, connected women of reputed power – like the court “whore” – with the tavern in a number of ways. Greatly aiding the perception of equivalencies between courtly license, and the excesses of the street, were the intimations of bodily potency so important to courtly portraiture. The mistresses depicted in the art of Peter Lely drew on Northern traditions known for their mischievous elevation of “tavern bawd” to pastoral subject.²⁴ As though paintings of Gwyn and other mistresses attired

¹⁹ For a general discussion of the connection between drink and sex see Lynn A. Martin, *Alcohol, Sex and Gender in Late Medieval and Early Modern Europe* (New York: Palgrave Macmillan, 2001), 67-71.

²⁰ Brown, *Works of Mr. Thomas Brown*, 3: III:4.

²¹ Love, “Fiddlers,” 391-99.

²² *Character of England*, 34-5.

²³ 1 December 1662, *DJE*, 3:347-8.

²⁴ Alison Kettering, *The Dutch Arcadia: Pastoral Art and its Audience in the Golden Age* (Woodbridge: The Boydell Press, 1983), 59-60; Chloe Wigston Smith, “Dressing Up Character: Theatrical

as shepherdesses were not enough to provoke reflection on their urban, fallen, natures, reproductions of such works were among the cheap prints and mezzotints displayed and auctioned in taverns.²⁵ Hence even a “whore” like Louise de K  rouaille, Duchess of Aubigny, a royal liaison whose biography was sufficiently aristocratic to skirt sites of vernacular vice, probably had reminders of her – perceived – powers extending into metropolitan corners of life.²⁶ Whatever the gains in representing, through a focus on mistresses, the restored monarch as fruitful, present, and beloved, the portraiture and innuendo fundamental to this strategy involved burying even the most assuredly courtly women in the aesthetics of a site hardly above repudiation. The Bawdy House Riots of 1668, in which crowds tore down “little bawdy-houses” from Moorfields to Shoreditch in three days of violence, apparently provoked by fatigue with the “whoredom” of the court, shows how vulgar sites of sensual submission – often, as we have seen, operating out of taverns – could stand as proxies for “the great bawdy-house at White hall.”²⁷ Preoccupations with women who, such episodes reveal, had an apprehended relevance to the health of the nation, could thus take the form of engagement with quotidian settings – the tavern prominent among them.

Commentary exploring the appearance of women at the centre of scandal, disease, and national disaster thus delved heartily into these environs. Well-worn tropes of feminine deceit and enticement were mobilised to assure critics of the corrosive nature of the new and colourful faces of court power. Gwyn was thought to have been “brought up in a bawdy house to fill strong water to the guest[s].”²⁸ The “Hand and Raquet” outside Whitehall was

Paintings from the Restoration to the Mid-Eighteenth Century,” in *Prologues, Epilogues, Curtain-raisers, and Afterpieces: The Rest of the Eighteenth-Century London Stage*, ed. Daniel Ennis and Judith Slagle (Newark: University of Delaware Press, 2007), 77.

²⁵ Heidi Castle-Smith, “‘I Should Go Near to Say he Lies with Her, Yet She’s a Maid.’ From Virgins to Whores, Actresses and Portraits 1600-1737” (PhD thesis, University of Maryland, 2008), 69.

²⁶ For K  rouaille as mezzotint subject see Thomas, “Mezzotint in Britain,” 292-3.

²⁷ 25 March 1668, *ibid.*, 9:131-2; Harris, “The Bawdy House Riots of 1668,” 541-2; Mowry, *The Bawdy Politic*, 56-7; Keeble, *Restoration*.

²⁸ 26 October 1667 in Pepys, *Diary*, 8:503.

straightforwardly referred to as “Nell Gwyn’s Tavern,” on account of its supposed role in facilitating some of the King’s first, extra-theatrical, encounters with Gwyn.²⁹ Writers latched onto Davis’s singing of *My Lodging it is on Cold Ground* in William Davenant’s *The Rivals* (1667), observing how the performance itself served to transport her “from her Bed on the Cold Ground, to a Bed Royal.”³⁰ She likely sang it to the accompaniment of Davenant’s musical “consort,” from all indications heavy on fiddles. Davis’ avowal of her unvarnished origins was thus carried on mendicant strains, recalling performances in the city’s taverns.³¹ Such music gave particular inflection to the kind of “Ground” from whence Davis, in this show of power over the head of the political body, professed to come. (It also helps explain why even worldly actors complained that Davenant’s “musick” – of which this episode was a defining instance – was “wanton.”³²) Some of the Restoration’s most seemingly powerful women were regularly represented through motifs of tavern life.

Royal mistresses, of course, occupied a liminal position; being close to authority, yet objects of suspicion, their repudiation involved asserting connections to places like the tavern – *alongside* settings more traditionally associated with court life.³³ Feminine menaces unable to lean on the crutch of royal affection warranted a less partial association with taphouse excess. The life of Mary Carleton, daughter of a “poor Fidler in *Canterbury*,” who sensationally posed as a “German Princess” to secure a wealthy husband, extended – it was alleged – to luring a watchmaker and his wife into a tavern, where she held them with oysters and neates tongues so their house might be lightened of watches.³⁴ (Such flair for artifice

²⁹ Adlard, “Note on Nell Gwyn,” 61.

³⁰ Howe, *English Actresses*, 34; Pritchard, *Outward Appearances*, 21.

³¹ Love, “Fiddlers,” 397.

³² Colley Cibber, “An Apology for the Life of Mr. Colley Cibber &c.,” in *A Critical Edition of a Apology for the Life of Mr. Colley Cibber*, ed. John Maurice Evans (New York & London: Garland Publishing, 1987), 57.

³³ For criticism grounded in courtly developments see for example Sharpe, “Country’s Darling and Desire,” 23.

³⁴ *An Exact and True Relation of the Examination, Tryal and Condemnation of the German Princesse, Otherwise Cal’d Mary Carleton, at Justice-Hall in the Old Bailey, January 17, 1672...* (London, 1672), 7-8.

became the lament of ballads like “The London Taylor’s Misfortune,” in which a “Lass” invited by a tailor to drink gets the better of her companion, overcoming him with sherry in the “upper room” of a tavern, before absconding with his clothe and “pocket store of coyne.”³⁵) Another pamphlet unveiling Carleton’s powers traced the deceptions of this “*Crafty Whore of Canterbury*” to “the White-Hart Tavern in Smithfield” where, as part of another attempt on male fortune, she came dressed “like a young lord in mans apparel.”³⁶ (Here a further trope illustrative of the tavern’s perceived perils, the *femme déguisée*, was apparently intended to further foreground Carleton’s transgressive life.³⁷) Assertions of recourse to the tavern, and of a dexterous deployment of the resources it furnished for feminine mastery, thus larded some of the very stories integral to Restoration concepts of the powerful woman as “a looking glass, wherein we may see the Vices of this Age Epitomized.”³⁸

Helping shape such phenomena, and the lessons drawn from them, was the notoriety possessed – on a more corporate level – by ordinary women entangled with apprehensions of the tavern. The “whore” was just the tip of a repertoire of gendered personae with concrete connections to the tavern, not far from which was the “wife.”³⁹ In a manner greatly aiding the conceptualisation of more famous feminine transformations and misrepresentations, the “ale-wife” could be more – or less – than “a wife.” Peter Clark, in his survey of English victualling houses, observes that an “attractive wife” was an “obvious asset” to any

³⁵ The London Taylors Misfortune. Or, Cut-Beard-Harding Chous’d by a Country Lass (London) [1685-8].

³⁶ The Lawyer’s Clerk Trapped by the Crafty Whore of Canterbury (London, 1663); The Female Hector, or, the Germane Lady Turn’d Mounsieur. With the manner of her coming to the White-Hart Tavern in Smithfield... (London, 1663). Both works are cited and discussed, along with Carleton’s life, in Kate Lilley, “Mary Carleton’s False Additions: The Case of the German ‘Princess’,” *Humanities Research* 16, no. 1 (2010): 83-4.

³⁷ Bernard Capp, *When Gossips Meet: Women, Family, and Neighbourhood in Early Modern England* (Oxford: Oxford University Press, 2003), 66.

³⁸ *The Counterfeit Lady Unveiled. Being a Full Account of the Birth, Life, Most Remarkable Actions, and Untimely Death of Mary Carleton...* (London, 1673), B; Pritchard, *Outward Appearances*, 36-9.

³⁹ Clark, *English Alehouse*, 83, 147.

proprietor.⁴⁰ They could also be a successful proprietor themselves.⁴¹ Pepys was often drawn to some establishments over others, because of who he expected to find working there. And while his diary tended to gloss encounters with these women as conquests, they were different to his relations – or advances on – women in domestic contexts. They required journeys across town, payments to watermen, and other outlays that might be regretted later.⁴² The promiscuous “ale-wife,” or younger “maid,” drawing the hapless from their hearths to ruin before the tap, helped explain why men might sustain such losses.⁴³ In an evocative image of power, one pamphlet purporting to offer the “Character of a Tavern” drew on the language of planetary inevitability – alongside a masterful pun on the word “bawd” – to present the ale-wife in particular as standing:

...like the Goddess *Semele* (Mother of *Bacchus*) under her all-commanding Canopy, *Casting the Nativities* of your Estates in strange *Aegyptian Hieroglyphicks*...[and then finding]...by the *Horoscope* of the *Board*...That your Fortunes are *short-liv'd*, and your *Purses* are declining into an *Irrevocable Consumption*...⁴⁴

Such power was not purely manifested in an empty wallet. When Pepys heard of the death of Frances Browne, of the Bear Tavern in Southwark, he was deeply affected because “she was the most beautiful woman, as most I have seen.”⁴⁵ Independently of courtly developments, the tavern was a place in which women were depicted robbing men not just of watches, but their wealth, authority, and even the restraint important to moral tranquility.

Classical appreciations of women as at ease in precisely the kind of watery, tempestuous environs that made a grave for the bravest men further rendered the tavern’s women into well-defined, and dangerous, visions of power. Sodden, slippery interiors

⁴⁰ Ibid., 83.

⁴¹ Capp, *When Gossips Meet*., 95; Clark, *English Alehouse*.

⁴² See for example Pepys’ entries for 12 May 1665, 5 February 1667, 8 February 1667, 20 December 1667, 16 March 1669, *DSP*, 6:103, 8:50, 8:156, 8:443, 9:485-6. For his taking a jaunt with “Mary” of the “Harp and Ball Tavern” see 11 July, *DSP*, 6:155.

⁴³ Clark, *English Alehouse*, 83; Capp, “English Alehouse,” 107.

⁴⁴ *Character of a Tavern*, 3.

⁴⁵ 27 February 1667, *DSP*, 8:83

provoked suspicions this was a setting in which women were particularly nimble – and men vulnerable. Venus had emerged from the sea; on the banks of the Thames, some authors insisted, foaming pots and unmopped floors suggested the tavern was an extension of this salty seat of power. Aqueous and warm, entry thereto was, for the ejected minister Edward Bury, invariably followed by still greater capitulations to feminine allure:

That heat which is got in the *Tavern* is oft cool'd in the *Brothel-house*; the Blood heated by *Bacchus* is cool'd by *Venus*: Chastity seldom sleeps in a Drunkards bed, neither doth Virtue lodg with so foul a Swine. *Venus* as 'tis Fabled was ingendred of the Froth of the Sea, and *Venery* is produced by the fumes of Strong drink. The Devils office is not to quench Fire but kindle it, he kindles the Fire of *Lust* by the Fire of *Drunkenness*, and the Fire of *Hell* with both...⁴⁶

One pamphleteer, writing on the promiscuous character of an “exchange wench,” anchored her activity to the alehouse, since she too:

...owns her Original as the Poets say *Venus* doth, from froth, not of the Sea, but the tap, which being tunn'd up in the musty Vessel of some gouty Hostess, lives there...Withal receiving additional nourishment from the aqueous humours of her soul...⁴⁷

A verse on Gwyn, to give one final example, repeated the conventional history of her journey from “cellar” to “throne,” depicting the actress known for having captivated a King as emerging from a “froth” less wholesome:

...from her Birth and Infant Years;
To Venus none so like as she appears:
To Madam Venus the Sea-froth gave Birth;
To Madam Nell, the Scum of all the Earth.⁴⁸

⁴⁶ Edward Bury, *England's Bane, Or the Deadly Danger of Drunkenness Described in a Letter to a Friend: Wherein are many Convincing aggravations of it, in Professors of Religion; and many other things tending to a Reformation of that Beastly Sin* (London, 1677), 21.

⁴⁷ *Ape-gentle-woman, or, The Character of an Exchange-Wench*, (London, 1673), 2; Williams-Reinke, "Women, Ale and Company."

⁴⁸ *The Lady of Pleasure* (London, 1688); Julia Novak, "'Rais'd from a Dunghill, to a King's Embrace:' Restoration Verse Satires on Nell Gwyn as Life Writing," *Life Writing* 13, no. 4 (2016): 455.

Gwyn, and other women with ties to the froth of the tavern, were conceived capable of unsteady the ship of state; such apprehensions encouraged a suspicion not just of women, but venues – like the tavern – important to their rise.

“...No Other Way to Doe It...”⁴⁹

The arrival of experiment in the tavern necessitated its contact with some of the very kinds of women shaping attitudes to his venue, even as they became sources of abiding unease – entering into its notoriety as a place of vice. This was a situation obscured by rhetoric associated with the Royal Society, in particular, which often depicted experimental methodology in terms emphasising its penetration of an elusive (and feminine) nature, thus identifying it with processes of masculine control.⁵⁰ Looking at the tavern as a place of experiment shows how, far from reflecting these ideals of mastery – conveyed, to some degree, in Southwell’s description of Petty’s relations with the wives of his hired hands – experiment could involve subservience to feminine design. The tavern had the capacity to illustrate not the dominance of experiment and its practitioners, but their submission.

Even when conducted at some distance from the tavern, experiment or experimental discourse could betray a striking measure of deference to women with ties to this space. Boyle, in his essays on effluvioms, was reluctant to derive his “conjectures” on the “sowring” effects of thunder on liquors solely on a “tryal” he admitted he had “not made...often enough to rely upon it.”⁵¹ He accordingly looked to the “practice” of “a great Lady, that is a great house-keeper...very curious and expert in divers Physical Observations,” and probably

⁴⁹ Walter Charleton to John Aubrey, 4 February 1671, Bodleian Library MS Aubrey 12, f. 66r.

⁵⁰ Hooke, *Micrographia*, a2r; Sprat, *History*, 62; Pritchard, *Outward Appearances*, 63-5.

⁵¹ Robert Boyle, “Of the Great Efficacy of Effluvioms,” in *Essays of the Strange Subtlety, Great Efficacy, Determinate Nature of Effluvioms. To which are annexed New Experiments to make Fire and Flame Ponderable: Together with a Discovery of the Perviousness of Glass* (London: 1673), 28-31; Werrett, *Thrifty Science*, 56.

engaged in retailing liquor since “the Sowing of Beer and other drinks by Thunder” – Boyle noted – was “no small prejudice to her.”⁵² The *Athenian Mercury*, which styled itself as “communicating” the “experimental improvement” men like Boyle had promised in philosophy, advertised the authority of such women in a different way.⁵³ One merchant used its pages to reveal his trade – he kept a coffeehouse – depended on a “Wife” who, “being Educated in a Tavern, and Naturally inclin’d to wine and Company-keeping of all sorts...puts evil Thoughts into my Mind, and makes my Head often to ake.”⁵⁴ His wife knew how to run a tavern. But the merchant’s reputation suffered while his coffeehouse prospered – because it looked like one: “Neighbours...point their Fingers at me.” A conundrum developed: “if I leave of selling Wine, I lose a certain Profit, and if I continue it, she is exposed.”⁵⁵ Professedly experimental literature like this ensured not just the arts, but the authority, of women associated with the tavern were made very public indeed.

When experimental transactions did descend into the tavern, even women with no recorded knowledge of trade or “practice” had a seat at the philosophical table. Pepys’ diary reveals Abigail Williams, a woman whom the Society’s president, Viscount Brouncker, had taken as a “mistress,” was present during some of the exchanges over which the Viscount presided, including those overflowing from its formal meetings into less formal reunions in London’s taverns. In the July of 1666, Williams sat with Brouncker and others at the Pope’s Head Tavern on Lombard Street, where the physician Walter Charleton gave a “very pretty discourse” concerning teeth. The meeting seems to have involved the kind of factional disagreement characterising many of the Society’s tavern-lodged exchanges. Charleton spoke of “Natures fashioning every creature’s teeth according to the food she intends them,” which

⁵² Boyle, “Efficacy of Effluvioms,” 28-31; Werrett, *Thrifty Science*, 56.

⁵³ *Athenian Mercury*, vol. 11, no 6 (29 July 1693); Helen Berry, *Gender, Society and Print Culture in Late-Stuart England: The Cultural World of the Athenian Mercury* (New York: Routledge, 2016), 78-9.

⁵⁴ *Ibid.*

⁵⁵ *Ibid.*

for humans he thought was fruit. Brouncker made “one or two objections,” arguing that food was made for teeth, “rather than that the teeth was fitted for food.”⁵⁶ But the venue, as well as this disunity, illuminated Williams’ place in an experimental world. Lombard Street, an easy walk from Gresham College, had for years been bristling with some of the most conspicuous arms of experimental activity, including Petty’s efforts to shore up support for his double-bodied shipping. (The Royal Oak Tavern which, we have seen, soaked up much of this work, was just a few doors down on the same street.) But the Pope’s Head itself was, also, a common resort for Society chieftains, as records of the exchanges around blood transfusion attest.⁵⁷ The “discourse” conducted in the presence of Williams was probably not confined to the argument over teeth that fascinated Pepys, but followed the eclectic schedule characteristic of virtuosic conversation. Sitting in the Pope’s Head, she was far from peripheral to such wide-ranging dialogue.

In the case of Williams, a venue like the Pope’s Head constituted a visible association with the experimental community, which other sites – even those facilitating the same proximity – did not. Some months before her appearance on Lombard Street, for example, a group of experimental heavyweights gathered at the house of George Cock, a price-gouging hemp magnate nominated fellow of the Society later in 1666 by Brouncker.⁵⁸ The company included Pepys, a future president of the Royal Society, Sir Joseph Williamson, and Mathew Wren, Bishop of Ely and an uncle of Christopher Wren, among others. They enjoyed “much good discourse” – with Williams again present.⁵⁹ But the relative privacy of Cock’s Greenwich seat gave the Society’s patriarchs considerable control over any wider apprehensions of this presence. Indeed, we only know Williams was there because Pepys’

⁵⁶ 28 July 1666, *DSP*, 7:223-4.

⁵⁷ 14 November 1666, *DSP*, 7:370.

⁵⁸ 8 February 1666, *DSP*, 7:38.

⁵⁹ *Ibid.* “Good discourse” was a description Pepys applied to conversation of many kinds. But in the same month, it was a phrase he used to describe that of the “virtuosi.”

dislike of her encouraged him to record her movements, though not – as he admitted – her convictions. (On hearing Williams took a dim view of *him*, he expressed his attitude to her judgement with perfect clarity: “she be a whore herself, so I value it not.”⁶⁰) There is, accordingly, no account of her contributing to the exchanges she attended. But not only is there is no discounting the possibility she did so, her appearance at the tavern in particular means we must take seriously the possibility she was *seen* to do so – even if she did not. Williams’ appearance at the meetings over which Brouncker presided, including – at least one of – those on Lombard Street, show Williams could have been ascribed a more regular proximity to this circle than the Duchess of Newcastle, whose single visit to Arundel House in 1667 is still raked over by historians as the only example of “a woman known to have attended a meeting of the Royal Society in the seventeenth century.”⁶¹

Williams’ appearance among the experimental polity, expedited by venues such as the Pope’s Head, had its significance coloured by a particular – but in the Restoration, significant – aspect of this visibility: her use of facial cosmetics. For Pepys, who shared contemporary anxieties over the monarch’s submission to the arts of court mistresses, which were often expressed through a loathing of cosmetics, it mattered that Williams was “a painted lady.”⁶² To be such a woman was to resemble figures like Gwynn, who had risen from obscurity to distract the monarch from good government. When Evelyn met the widow of the Count of Monte Feltre (who had been elected to the Royal Society in 1667) and her sister, as they visited London in the Autumn of 1683, he was disappointed to discover that while both ladies were “exceedingly skild in painting,” they did not “spare for Colour on their owne faces”

⁶⁰ 6 August 1666, *DSP*, 7:237

⁶¹ Dear, “A Philosophical Duchess,” 127. The view Cavendish alone had access to meetings is also articulated in Harris, “The Neighbourhood of Science,” 210.

⁶² 16 August 1665, *DSP*, 6:204

either.⁶³ He never mentioned them again in his diary. His advice on decorating a library, penned later, during Pepys' presidency of the Society, held that while portraits of women might hang among those of "heros" like Newton, there should be no space given to any "painted strumpet."⁶⁴ Two decades of Caroline rule, in which distraction and misjudgement had become associated with the arts, and artful appearance, of the "whore," had produced colourful faces of danger. The misjudgement reflected by subservience to faces of this kind was a consequence of their repudiation – a reaction to the "whoredom" of the court. The nation was believed to have taken a turn for the worse after the June of 1664, amid claims the English fleet had missed its chance to destroy the fleeing Dutch at the Battle of Lowestoft.⁶⁵ Blame was piled on Brouncker's brother, Henry Brouncker, who accordingly became a "vicious man" with "severall Bastards" – his disastrous rise owing to his favour with "the mistresses."⁶⁶ Reminders of these last, highly gendered, causes of disorder, already impinging – through family connections – on the circle over which Brouncker ostensibly presided, were brought much closer as a "painted" woman like Williams surfaced in its midst. In facilitating Williams' appearance among the group, the tavern did not associate this experimental milieu with *any* woman, but one resembling the most provocative signs the court – and nation – had "delivered itself up to vice."⁶⁷

The presence of a mistress, or "whore," among the Royal Society, facilitated by the tavern and its accommodation of such women, produced an experimental community mirroring the polity it was supposed to improve – complete with semblances of submission to these gendered personae. Pepys, for example, learned and gossiped of his president's

⁶³ 3 September 1683, *DJE*, 4:336. For Monte Feltre and his involvement with the Royal Society see W. E. Knowles Middleton, "Some Italian Visitors to the Early Royal Society," *Notes and Records of the Royal Society of London* 32, no. 2 (1979), 157-8.

⁶⁴ Evelyn to Pepys, 26 August 1689, *Particular Friends: The Correspondence of Samuel Pepys and John Evelyn*, ed. Guy de la Bédoyère (Woodbridge: Boydell Press, 1997), 189-90.

⁶⁵ Jones, *Anglo-Dutch Wars*, 96.

⁶⁶ 28 March 1688, *DJE*, 4:575.

⁶⁷ Burnet, *History*, 1:262-3, 267.

“mistress” with other women in one of London’s many “King’s Head” taverns, much as he exchanged news of courtly mistresses in the same venues, with the same people.⁶⁸ But of all the sites in which Williams could be seen jangling with Brouncker, which included not just taverns but a number of lodgings, dockyards, and even a moored East Indiaman, the tavern – and as we have seen, particularly Lombard Street venues like the Pope’s Head – was the most redolent of experiment, and populated with its practitioners.⁶⁹ It was thus important to the production of impressions the Viscount took his “lady of pleasure...everywhere with him;” that he *everywhere* made “all the Courtship to her that can be.”⁷⁰ The persistence of Williams’ attendance was, in turn, important because it changed what it meant to seek the Viscount’s patronage. John Aubrey, when complaining to Hobbes of the mathematician John Wallis, asserted Wallis was not just “an egregious lyer and backbiter,” but also “a flatterer, and fawner upon my Ld Brouncker & his miss.”⁷¹ If a philosophical “reputation” was maintained through being a “flatterer” and a “fawner” upon not merely Brouncker himself, but Williams, then proximity to Williams was a vocational matter.⁷² This was certainly how it appeared to Charleton – who had sat with Williams in the Pope’s Head as the talk turned to teeth. The physician found in the necessity of subservience to this mistress of experimental politics a symptom of her power:

...if you would make...[Lord Brouncker] your patron raiser you have no other way to doe it but by bribing his mercenary – who by that means alone became his, after she had passed through almost as many hands as the R. S. has members, & many more than she has teeth in her gumms. This, Sir, is honest counsel, grounded upon a thousand experiments made to the cost and grief of your very affectionate & humble servant, Walter Charleton.⁷³

⁶⁸ For gossip of Williams at the King’s Head see 3 October 1665, *DSP*, 6:251.

⁶⁹ For Williams’ semi-public appearances with Brouncker across a range of venues see for example 21 October 1665, 23 October 1665, and 22 August 1667, *DSP*, 6:236, 6:273, 8:394.

⁷⁰ 3 September 1665, *DSP*, 6:212.

⁷¹ John Aubrey to Thomas Hobbes, 24 June 1675 in *The Correspondence of Thomas Hobbes*, ed. Noel Malcolm, vol. 2 (Oxford: Oxford University Press, 1994), 753.

⁷² *Ibid.*

⁷³ Walter Charleton to John Aubrey, 4 February 1671, Bodleian Library MS Aubrey 12, f. 66r. This letter is also cited in Margaret Willes, *The Curious World of Samuel Pepys and John Evelyn* (New Haven and London: Yale University Press, 2017), 123.

Charleton's "honest counsel, grounded upon a thousand experiments" insisted Williams' power was a fact discoverable by the – sufficiently experimental – philosopher. (Historians of a more speculative bent might also wonder about Williams determining the topics of the discourses around her: the state of her teeth, as described by Charleton, presents the possibility she provoked the dental disagreement recorded by Pepys.) The disparagement of Williams' role in the experimental community offers a tantalising glimpse into the degree to which, courtesy of the tavern, she had one.

The extension of double-bodied shipping to the tavern ensured other women with connections to this space – the "wives" of Petty's hired hands – could also become important to an experimental career. The introduction to this chapter observed how the "flood" and "banquet" described by Southwell as nourishing the acquiescence necessary to Petty's experiments was served to these women as well to "ye men themselves." Southwell, as we saw, emphasised the compliance of "ye wives;" a laden table and strong drink brought them round to at least the temporary, though foreseeably more permanent, loss of their husbands: "he gott them all to part very quietly one from an other."⁷⁴ This assertion of mastery is already belied, as noted above, by the time and resources poured into achieving it. But the background to this outlay is still more telling. Just two months beforehand, Petty was reporting on the recalcitrance that made such expenditures necessary. Prowling Dublin's dockyards for muscle in the August of 1663, the knight noted even his usual hands "doe not onely ask more wages then formerly, but pensions for their wives & children in case of miscarriage."⁷⁵ He was disturbed to learn that "they see no reason why I should purse up ye mony which poore men venture their lives for," a problem no less powerful than the maritime forces into which his vessels ploughed: "this current runs so strong that with all ye wind of

⁷⁴ Southwell to Oldenburg, 13 October 1663, *CHO*, 2:119.

⁷⁵ Petty to Moray, 26 August 1663, *DB*, 90.

my words I can not stem it.”⁷⁶ There is no direct evidence the beneficiaries of these pensions were themselves negotiating directly with Petty or any of his allies, although such petitioning was not unheard of in Stuart times.⁷⁷ Regardless of where they came from, however, demands like this steered Petty’s rhetoric, wallet, and pantry towards the wives and children of his hands. And once at the table with them, as the drinking and feasting recorded by Southwell reveals, these parties became a constituency to be courted, as when Petty was recorded “intimating to ye women, yt if they succeeded...it was not unlikely but they themselves would be ladyes.”⁷⁸

This place at the experimental table, visible amid the kind of displays of abandon so important to apprehensions of the tavern as a seat of feminine power, reflected a number of still more experimental capitulations to women. Concessions to “the wives” of double-bodied shipping’s sailors had actually begun appearing in Petty’s ships themselves some time before talk of pensions, and a rerouting of the virtuoso’s commensal attentions, confirmed the importance of this cohort to experiment. A report commissioned by the Royal Society on Petty’s first ship, undertaken as early as 1662, noted that a number of iron braces had been fitted to this craft – not out of structural necessity, but “merely to prevent feare in ye wives and children of his mariners.”⁷⁹ The earliest iteration of Petty’s experiments in the ship of state thus rather straightforwardly *embodied* the demands of the same women whose acquiescence he later courted amid burnt wine and calf tongues. The vessel produced immediately following this effort, weighed down with iron braces and pension demands, was said to require a large “Ovall Window (or rather hole)” in its cabin before “the people” would

⁷⁶ Ibid.

⁷⁷ For a useful survey of petitioning, and other forms of activism among women whose households depended on maritime activity, see Margarette Lincoln, “Women and the Sea, 1600-1800,” in *The Routledge Companion to Marine and Maritime Worlds, 1400–1800* (London: Routledge, 2020), 355-6.

⁷⁸ Southwell to Oldenburg, 13 October, *CHO*, 2:119.

⁷⁹ “Report of ye Committee of ye Members of ye R. Society in Ireland concerning ye Structure and sayling of Sr Wm Petty’s new shippe,” 5 January 1663, *DB*, 49.

“say Shee is strong enough.”⁸⁰ This reflection on the demands burdening double-bodied shipping, written by Petty for consumption within the Society, eschewed any mention of “women” or “wives.” But the terms it did use – “people,” “multitude,” and “crowd” – regularly described groups of mixed genders. (Contemporary accounts of Dublin’s Court of Claims, for example, an institution mentioned by Petty in the same letter, used these terms liberally, while foregrounding the presence of women among the milieux portrayed.⁸¹) Ships of course were conventionally feminised, but Petty’s references to his windowed craft as a “bratt” he had not put “into some kind of clothes or at least covered...with Irish rags,” suggested the visibility, in this experiment, of the onshore forces he had sought to tame over tankards.⁸² This was a ship of state in which women loomed large.

“...The Only Difficulty that Remained Was to Persuade my Wife ...”⁸³

The ability of experiment to reflect a contact with women encountered in the tavern, illuminating their agility in this setting, was a significant addition to the entanglements compromising its claims to utility. As practitioners conversed among “wives” and “whores,” both categories of women became important to representations of experiment. Depictions of double-bodied shipping, and of experiment more generally, gave conspicuous attention to feminine figures, including that of the wife. At the same time, representations, particularly of the virtuoso, laboured the presence of the “whore.” The evocation of both personae in connection with experiment shows how associations with women exhibited in the tavern were eagerly reproduced outside it. The interactions examined above were thus part of

⁸⁰ Petty to Moray, 31 July 1663, *DB*, 82.

⁸¹ *Ibid.* For women in the context of Dublin’s Court of Claims and its crowds see L. J. Arnold, “The Irish Court of Claims of 1663,” *Irish Historical Studies* 24, no. 96 (1985): 421; Patrick Tuite, “Making the Case for Artaban: Robert Leigh, Katherine Philips and the Court of Claims,” *Women’s Writing* 23, no. 4 (2016): 517.

⁸² Petty to Moray, 31 July 1663, *DB*, 82.

⁸³ Jonathan Swift, *Travels Into Several Remote Nations of the World. In Four Parts* (London, 1726), 4:3.

experimental work, but nothing about them worked to distance experiment from the vices of the Restoration.

Preoccupations with feminine power (including those reflected in attitudes to the tavern, of the kind explored earlier in this chapter) often developed into representations of experiment – in which it sat close to personae important to this problem. The playwright Edward Ravenscroft (1659-97) incorporated women into his portrayals of anatomical procedure, after a career of presenting audiences with bossy wives and scenes of tavernly abandon.⁸⁴ A set of “Remarques” to a country boy warning against servitude to the “Vices of the Town” worried about the “mistresses” of London’s taverns assuming a greater “soverainty” over the youth than his own mother had wielded.⁸⁵ Nor were the city’s “new philosophers” recommended in this satirical advice, apparently because such “distresses” would only encourage the youth to “turn Gallant, and joyn...to the company of Women, to spend whole afternoons in kissing their hands.”⁸⁶ Thomas Shadwell’s *Virtuoso* (1676) presented both “experiment” and “whore” as preoccupations for the virtuoso of the play’s title.⁸⁷ Few scholars have had much to say about why Shadwell’s character, whose function as a Royal Society representative was aided through allusion to its experiments, was assigned a “whore.” But the addition seems more than an afterthought: Shadwell’s *Sullen Lovers* (1668) had earlier featured a protagonist tired of “impertinence” and virtuosic excesses, which he ascribed to an “Honest Drinking-Whoring Age.”⁸⁸ Experiment, and other disruptive

⁸⁴ For Ravenscroft’s depictions of women in “experiment” see *The Anatomist: Or, the Sham Doctor. Written by Mr. Ravenscroft. With the Loves of Mars and Venus. A Play Set to Music. Written by Mr. Motteux. As they are Acted together at the New Theatre, in Little Lincolns-Inn-Fields* (London, 1697), 16-7. For women and taverns see his *Careless Lovers. A Comedy Acted at the Duke’s Theatre* (London, 1673), 34-4, 48-9; *The English Lawyer; A Comedy: Acted at the Royal Theatre* (London, 1678), 37, 41; Capp, *When Gossips Meet*, 51-2.

⁸⁵ *Remarques*, 33.

⁸⁶ *Ibid.*, 120.

⁸⁷ Thomas Shadwell, *The Virtuoso. A Comedy, Acted at the Duke’s Theatre. Written by Thomas Shadwell*. (London, 1676), 54, 63.

⁸⁸ *The Sullen Lovers; Or, the Impertinents. A Comedy Acted by his Highness the Duke of Yorkes Servants* (London, 1668), 2-3, .

forms of learning in which women figured, thus resulted – and here the nation became the figurative subject – in a “body harassed with vitious Loves,” and “infected with innumerable distempers.”⁸⁹ The motif in these, and similar works, was a warning there was little won, and a lot lost, by “lying perpetually in Play-houses, Taverns, and Whore-houses.”⁹⁰

One of the best representations of feminine mastery gave considerable attention to double-bodied shipping which, though aiming to launch experiment beyond the horizons of town and tavern, was shown anchored in such venues – and the women encountered therein. The Irish verse of unknown authorship laying bare Petty’s ale-drenched exchanges with his tars (explored above in Chapters 1 and 2) gave even greater attention to the virtuoso’s haggling with “their wives” than it did his negotiation with these men themselves. The experimental overseer was depicted having just clinched – or so he thought – an alcohol-lubricated deal with his swabbers, when “their wives heard on’t (for they were married.)”⁹¹ The appearance of this new force was described in terms suggesting an emergence from filth, for no sooner had he urged his new hands “to haste” when:

...like made Furies they came running,
From lousing of themselves, and suning...

The dramatic entry of some lice-ridden women onto the experimental floor gave them opportunity for dialogue with Petty, which itself suggested they were less pliable than allies like Southwell had insisted. No sooner did this cohort hove into view, their number alone suggesting power, they were “swareing” their husbands “should no strange Ship enter” nor “goe on so great Adventure...”⁹² The virtuoso was shown cowering, as:

...Like Beldames then the Knight they threaten,
Who did expect he should be beaten,
And allmost had bewraid his Breeches

⁸⁹ Ibid.

⁹⁰ *Remarques*, 13.

⁹¹ Unknown, “In Laudem,” 397.

⁹² Ibid.

To hear their high outrageous Speeches...”⁹³

The text thus brought the wife of experiment, and their power, which Petty had acknowledged in his remarks about onshore “currents,” but which were absent in official accounts of his experiments, into the foreground. The virtuoso’s recourse to the tavern, and its indulgences, looked less like an orchestrated display of magnanimity, than a desperate, irreversible, immersion in the world that had brought his experiments into contact with the threat of feminine government in the first place. Women had a place at this experimental table – and that table, at least in this portrayal double-bodied shipping, had now turned on the experimental overseer.

The same agility with which these women shaped Petty’s program (the structural changes they demanded of his vessels were mentioned above) was also on show as Petty moved from barrels to rhetorical broadsides in a bid to put his craft on the water. The dialogue ascribed to the virtuoso in this poem was no less evocative of his dubious authority than the “outrageous speeches” of the women to which it responded. Petty’s speech, when he could eventually give one, left no doubt the “consent” of women was now a – none too dependable – experimental resource. The promises dangled before his swabbers had to be reeled in and recast to those with whom they shared a hearth. The wives of his men were promised a life free of delousing linen and tending the tap:

Your linsie woolsie will be loathed,
When you in Stuffs, and silks are cloathed,
Nor for your Raggs you’l care a Louse,
Not any more to keep an Alehouse:
Nor wash your Canns, nor wring the Spiggots,
When Husbands Captaines are of Frigots...”⁹⁴

The poem emphatically characterised this “Oration” as an attempt to “satisfie” the “Grutches” of the ragged “dames” whose consent Petty was counting on. Most significantly, in the

⁹³ Ibid., 397-8.

⁹⁴ Ibid., 398.

context of the Restoration, and the movement of women from the peripheries of respectability to the court, the virtuoso addressed these women as the ladies he promised they would be:

Fair Dames (quoth he) 'tis now or never
That all of you'l be made for ever,
If you take what your Starrs doe offer,
And not refuse now their kinde proffer,
For you that are Wives of poor saylors,
As mean as Wives of Lousie Taylors,
I doe forsee it, very shortly,
You'll Gentlewomen be, and courtly.⁹⁵

The author of this verse eventually showed Petty receiving the consent he worked so hard for, the deal sealed as one sodden “dame” declared herself “resolv’d to whet my whissle,” and the virtuoso “called for a whole Barrell.”⁹⁶ But the enterprise was obviously hazardous, the women with whom he transacted were no strangers to the tavern interior, and in this environment Petty does not govern them with the ease Southwell suggested he did. If it was true that “at last he did Sailors gett, / with Mony, good Word, good Ale, and Wit,” it was because the wives had “gave husbands leave” – a show of feminine mastery, for which the tavern was notorious.

Echoes of this power, modelled in the course of experimental work, persist in the works of Jonathan Swift (who, we have already noted, was in his early years an amanuensis to the Restoration diplomat, and critic of experiment, Sir William Temple.) Lemuel Gulliver, the protagonist of Jonathan Swift’s *Travels* (1726), is in Part III of this famous work persistently propositioned by a “*Captain William Robinson*” to venture with him on the high seas. The name “William Robinson” – one of few English names supplied in the text – recalls a figure of some importance to double-bodied shipping: the engineer and architect, Sir William Robinson ([1643]-1712), on whom Petty eventually relied not just for the preparation of his vessels, but collecting subscriptions, and other tasks essential to

⁹⁵ Ibid., 398.

⁹⁶ Ibid., 401.

experimental voyages.⁹⁷ The “Proposal” described in Swift’s *Travels* – Robinson’s attempt to recruit Gulliver – follows much of the complicated dance Petty and his allies performed with their seamen. To begin with, Gulliver is first treated “more like a Brother” than the “inferior” he is (or was). There are overtures of “Friendship.” Eventually he is “plainly invited.” This involves him being promised, among other things, that his “Sallary should be double to the usual Pay,” and that his “Advice” on seamanship will be followed “as much as if I had share in the Command.” These all prove carrots for the veteran of maritime mishap, who tells the reader of his “Thirst” for more excitement – and caves in: “I could not reject his Proposal.” But as if Swift’s aim was to reproduce the negotiations with women of the kind in which double-bodied ventures had had been visibly mired, agreement between these men was not enough: the only Difficulty that remained,” Gulliver explained, “was to persuade my Wife.” In a text laden with allusions to the frustrations and problems plaguing experimental activity, Swift’s characterisation of the “Wife” as a “Difficulty” deserves consideration as one of them. Courtesy of venues like the tavern, Swift could easily have seen – in experiment – the problems women posed to the removal of their husbands from home and hearth.

The protracted nature of the “Difficulty” posed by the wife also lends the *Travels* a significantly double-bodied flavour. In the negotiations between Gulliver and Robinson, the unnamed wife’s consent is secured only with the adverbial “at last” – the same “at last” used in the Irish verse detailing Petty’s ale-soused efforts with the unnamed wives of his swabbers. But the will of Gulliver’s wife appears elsewhere throughout the text, in connection with other seagoing propositions. At one point, Robinson’s recruit records having “consulted”

⁹⁷ For Robinson see Rolf Loeber, “Robinson, Sir William (c. 1643-1712),” *ODNB* (23 September 2004); Edward McParland, “The Office of the Surveyor General in Ireland in the Eighteenth Century,” *Architectural History* 38 (1995): 91-101. Other potential sources for this name exist. It has been pointed out that a “William Robinson” was also captain aboard one of many seventeenth-century vessels called the *Adventure*, a name Swift also used for the ships of Gulliver’s second and fourth voyages (but not the one captained by his “William Robinson” in Part III of the *Travels*, which is called the *Hopewell*.) See Maurice J. Quinlan, “Lemuel Gulliver’s Ships” *Philological Quarterly* 46, no. 3 (1967): 412-7.

with his wife about a prospective journey. On other occasion, he describes her having “protested I should never go to Sea any more.”⁹⁸ Swift’s employment under Temple at Moore Park (which, as Chapter 1 noted, included responsibility for the preparation of materials in which Temple attacked double-bodied shipping), makes Petty’s experiments a plausible inspiration for the wife-worried mariner of his *Travels*. The potential of these ventures as sources of a satire in which the “wife” looms large, forestalling offshore objectives and experiences of discovery, is also suggested by an earlier experience of Swift’s: his life in Dublin, when the masts of Petty’s fourth vessel were part of its skyline.⁹⁹ And if he had never seen any of Petty’s – public – negotiations with the wives of his swabbers, or heard about them from Trinity College’s virtuosi, perhaps he did hear about them from Petty’s daughter, of whom he saw much in the years before his *Travels* appeared in print.¹⁰⁰ He was certainly willing to depict virtuosic interests as instantiating the problem of “slavery to women.” (His 1710 satire of Boylean prose, *Meditation Upon a Broom--Stick*, ridiculed not just an immersion in dirty spaces, but the philosopher’s entry into “every slut’s corner of Nature.”¹⁰¹)

Conclusion

The tavern, in the Restoration, was home to feminine embodiments of disorder. As the “whoredom” of the court, and the rise of women from tavern and bawdy house, stoked worries of enslavement to appearances, women in this space were ascribed dangerous, politically noxious, powers. Not only royal mistresses like Moll Davis and Nell Gwynn, but – partly because of their entrance on the political stage – women of the kind they once were, or

⁹⁸ Swift, *Travels*, 3.

⁹⁹ Irvin Ehrenpreis, *Swift: The Man, His Works, and the Age*, 3 vols., vol. 1 (Cambridge: Harvard University Press, 1962), 84.

¹⁰⁰ See for example the Countess of Kerry to Jonathan Swift, 4 March 1732 *The Correspondence of Jonathan Swift*, ed. Harold Williams, vol. 1 (Oxford: Oxford University Press, 1963), 121, n. 1.

¹⁰¹ Jonathan Swift, *A Meditation Upon a Broom--stick, and Somewhat Beside; Of the Same Author's* (London, 1710), 4.

would have been if not for their ascension, became objects of suspicion. Proprietors, maids, and patrons associated with the tavern – “wives” or “whores” – were potentially sources of national disruption.

The entry of experiment into the tavern facilitated its contact with these repudiated symptoms of disorder. The extension of double-bodied shipping to alcohol-soaked transactions with hired hands rendered it vulnerable not just to the whims of these men, but the women with whom they shared a hearth. The result was a ship of state the very design of which obviously owed to the judgement of “wives.” Meanwhile, the overflow of experimental conversation from Gresham College to such venues as the Popes Head Tavern meant that a woman like Abigail Williams could be seen close to the government of the experimental polity. The consequence of this was a philosophical world in which a “whore” played patron. Behind use of the word “whore” for Williams lurked an acknowledgement of her power. When experiment entered the tavern, then, it reflected some of the Restoration’s most troublesome forms of disorder.

This chapter has not just surveyed some of the developments accounting for the significance so often attached to various kinds of women encountered – or thought to have emerged from – the tavern, and recovered their proximity to experiment. It has shown how this proximity provoked representations of experimental methodology as a capitulation to feminine desire. Pilots of experiment were easily depicted as bent to the will of the women around them. Evocations of gendered personae in the representation of experimental activity show how the entanglement with “wives” and “whores” it exhibited in the tavern was eagerly reproduced outside of it.

Part II: The Coffeehouse

Chapter 4: Experiments in News

Introduction

In the November of 1679, the virtuosos Robert Hooke and Edward Tyson dissected a porpoise at Garraway's, a coffeehouse located on Exchange Alley, Cornhill.¹ One literary product of this episode, Tyson's *Phocaena, or the Anatomy of a Porpess*, situated itself among the "New Tracts, new Lands, new Seas...daily found out," and the "fresh descriptions" buffeting claims of antiquity.² The physical setting of the coffeehouse underscored this identification of experiment with novelty. Coffeehouses were still a recent development in 1679, with one contemporary account of their spread through the Protectorate and Stuart archipelagos tracing them no further than a first shop in London, in 1652.³ Not only were the spaces appreciably new, so were the consumables on offer. And the role of coffeehouse proprietors in introducing new experiences to swathes of citizenry was also exemplified in the very venue in which Hooke and Tyson set to work. Its proprietor, Thomas Garraway, was an author of early tracts and advertisements on tea – the first of which had appeared in the Protectorate weekly, *Mercurius Politicus*.⁴ Still more recently, Garraway's business had been a designated meeting place for those seeking information about a series of "new" experiments in the sheathing of ships, overseen by the naval veteran, Sir Philip

¹ 15 November 1679 in *The Diary of Robert Hooke M.A., M.D., F.R.S.*, ed. Henry W. Robinson, and Walter Adams (London: Taylor and Francis, 1935), 431. For discussion of this episode see Ellis, *The Coffee-house*, 160; Noah Moxham, "Edward Tyson's *Phocaena*: A Case Study in the Institutional Context of Scientific Publishing," *Notes and Records of the Royal Society of London* 66, no. 3 (2012): 242; Didi van Trijp, "Fresh Fish: Observation Up Close in Late Seventeenth-Century England," *Notes and Records of the Royal Society of London* 75, no. 3 (2019): 8-9.

² Edward Tyson, *Phocaena, or the Anatomy of a Porpess, Dissected at Gresham Colledge: With Preliminary Discourse concerning Anatomy, and a Natural History of Animals*. (London, 1680), 1, 3.

³ For coffeehouses and novelty see Brian Cowan, "The Rise of the Coffeehouse Reconsidered," *The Historical Journal* 47, no. 1 (2004): 21. For contemporary accounts privileging 1652, see Markman Ellis, "Pasqua Rosee's Coffee-House, 1652-1666," *The London Journal* 29, no. 1 (2004): 1-24; *The Coffee-house*, 29-41.

⁴ Brian Cowan, *The Social Life of Coffee: The Emergence of the British Coffeehouse* (New Haven: Yale University Press, 2005), 49.

Howard, and his protégé, Sir Francis Watson. For some time, readers of the *Philosophical Transactions* and *London Gazette* alike had been encouraged to bring any questions about these experiments to Garraway's – where, it was promised, men especially employed for the purpose would be stationed to address them.⁵ It was not just that Hooke and Tyson conducted their dissection in a space well associated with novelty; such choices meant experiment could provide the reports and experiences constituting this novelty.

Yet as scholars have been showing for decades now, the coffeehouse consumption of news also grew to involve the dissection of what had once been, at least for many, a less accessible body: the state.⁶ Critical to this development was the importance of the coffeehouse to the distribution of stately information throughout the three Stuart kingdoms, and beyond. This significance to the dissemination of news was of course an early impetus for some of the first scholarly talk of a late seventeenth-century “public sphere.”⁷ More recently, the concept of the “public sphere” has been refined to capture the importance of an extra-courtly public, and thus representation, to post-Reformation politics.⁸ Scholars have explored how various polities wrestled not necessarily to restrict news, but certainly to control the *kinds* of information made widely available.⁹ The coffeehouse, as a seat of malleable – and thus potentially useful – judgements, has remained in view throughout this

⁵ *Philosophical Transactions* (1673), vol 8, no. 100, 6192; *London Gazette* (2 March to 5 March 1673), no. 865. For Sir Philip (or Phillip) Howard and Francis Watson see Lorenzo Magalotti, “An Account of England in the Year 1667-68,” in *Lorenzo Magalotti at the Court of Charles II: His Relazione d'Inghilterra of 1668*, ed. W. E. Knowles Middleton (Waterloo: Wilfrid Laurier University Press, 1980), 86.

⁶ Steven Pincus, “Coffee Politicians Does Create’: Coffeehouses and Restoration Political Culture,” *The Journal of Modern History* 67, no. 4 (1995): 807-34, especially 811; Klein, “Coffeehouse Civility,” 42-3; Cowan, *Social Life of Coffee*, 96-8, 194; Knights, *Representation and Misrepresentation*, 249-50; Sharpe, *Rebranding Rule*, 207.

⁷ Cowan, *Social Life of Coffee*, 2.

⁸ Pincus, Protestantism and Patriotism: Ideologies and the Making of English Foreign Policy, 1650-1668; Knights, *Representation and Misrepresentation*, 5; Peter Lake and Steven Pincus, “Rethinking the Public Sphere in Early Modern England,” in *The Politics of the Public Sphere in Early Modern England*, ed. Peter Lake and Steven Pincus (Manchester and New York: Manchester University Press, 2007), 2-3.

⁹ Jacob Soll, *The Information Master: Jean-Baptiste Colbert's Secret State Intelligence System* (Ann Arbor: University of Michigan Press, 2009), 11.

process.¹⁰ As the pre-eminent site of news consumption in the Restoration, its appreciable importance to the viability of various archipelagic polities has only grown in the light of recent work on the importance of engagement with opinion-out-of-doors – and control of the news responsible for its formation. The picture we have been left with, then, is not just of the coffeehouse as a space of news consumption, but one important to the formulation of political judgement.

While the coffeehouse, as a seat of popular opinion, accommodated a potentially useful source of authority, it also dramatised – perhaps more than any other site – the difficulties in its cultivation. Coffee itself foreshadowed the trouble: no crown servant or government-appointed polemicist had overseen its growth from Levantine curiosity to a daily ritual for thousands.¹¹ In the venues that sprung up to facilitate its consumption on a wider scale, news – much of it unsown by any statesman – circulated in print, manuscript, and rumour.¹² The Restoration became a period in which some of the tools that had been sharpened to prepare the fertile ground of public reasoning struck obstacles in coffeehouse life. Literary, administrative, and regulatory implements often failed to shape the news coursing through this space; state-sanctioned information was contested amid its clamour and clouds of tobacco smoke.¹³ Nor was the problem simply one for government; when state-produced news *did* take root in this critical but troublesome bed, the emerging Whig opposition could repudiate coffeehouses as places of partisanship in much the same manner as royalists.¹⁴ In the early years of the Restoration, before the appearance of a Williamite

¹⁰ Knights, *Representation and Misrepresentation*, 6, 17, 249-251; Cowan, *Social Life of Coffee*, 185-6, 195; Lake and Pincus, "Rethinking the Public Sphere," 11, 20; Sharpe, *Rebranding Rule*, 210, 241, 400.

¹¹ The introductory role is, we shall see, often attributed to seventeenth-century virtuosi. See Woodruff, *Consumption*; Cowan, *Social Life of Coffee*, passim, especially 20-30.

¹² *Social Life of Coffee*, 87, 175, 191, 195; Knights, *Representation and Misrepresentation*, 250.

¹³ For a more successful picture of bureaucratic and regulatory control see Cowan, *Social Life of Coffee*, 185-6.

¹⁴ Knights, *Representation and Misrepresentation*, 6-7. For Williamite worries about partisanship, even favourable partisanship, see C. John Sommerville, *The News Revolution in England: Cultural Dynamics of Daily Information* (Oxford: Oxford University Press, 1996), 99.

alternative to Stuart rule, worries about the corrosiveness of coffeehouse news-mongering were still less reducible to ideology. Over the preceding years, parliamentarians and cavaliers had alike relied on newsletters, published correspondence, (authentic or otherwise), and rumour in efforts to galvanise popular opinion. Decades of disorder manifested in contested revelations had consequences for what renewal looked like.¹⁵ A diversity of news sources portended conflict, and disorder was easily seen in the informatic currents of the coffeehouse. The charges of noise, incivility, and even linguistic decay, levelled at the coffeehouse thus identified transgressive conduct; but this concern with the vices of the space diagnosed threats to the political body, condemning signs not of its restoration, but its perturbation.¹⁶

This chapter thus uses a focus on the coffeehouse to situate experiment amid the currents of information eroding, it could seem, the possibility of a restored order. It looks at how, in entering the coffeehouse, experiment could be found pregnant with symptoms of disorder – not least on account of its entanglement with dangerous information. To do so, it first examines the coffeehouse as an important, but parlous, space in the management of news and its distribution. It then looks at how aspects of experimental activity, courtesy of an attachment to the coffeehouse, could be seen drifting among these treacherous currents. Illustrative of this situation was the publicity of apparently consequential naval technologies, like double-bodied shipping, and the appearance other experimental activities in politically disruptive coffeehouse literature. These were just some of the ways through which experiment could seem at odds with attempts to manage the circulation of information, and thus the task of the Restoration itself. The final part of this chapter considers how the place of experiment amid disruptive news was exploited by critics of particular experiments, as well as experimental activity more generally. We see how the situation of experiment in the

¹⁵ Knights, *Representation and Misrepresentation*, 153; Sharpe, *Rebranding Rule*, 202-3.

¹⁶ Knights, *Representation and Misrepresentation*, 6, 20, 248-9.

excesses of the coffeehouse provoked charges of impropriety, and thus how this space accommodated experiments – in vice. The fruit is an understanding of how the coffeehouse – like the tavern – was a site important not just to experimental practice, but doubts about its worth.

Such a narrative is not, understandably, one practitioners of experiment sought to tell. Tyson's printed account of the dissection he and Hooke undertook at Garraways, for example, concealed the noisy environs in which it had been conducted. While the text praised "new" learning, the title page described the operation as having occurred "at Gresham College."¹⁷ Tyson's dislocated description of his procedure was followed with a dedicatory epistle to Sir Joseph Williamson, who since the earliest years of the Restoration had developed both a government news service, and an intelligence network surveilling its alternatives.¹⁸ Clearly it was judged better to align experimental enquiry with the work of state servants like Williamson, than the spaces his Whitehall secretariat monitored with suspicion. (The decision to approach Williamson for the Royal Society's presidency, taken in 1677, looks like an attempt to squeeze out of the Society's hierarchy the same service provided by Tyson's dedicatory epistle: that of associating experimental learning with the levers of informational control, rather than the coffeehouses with which the administration wrestled.) It is in a bid to look beyond the narratives told by apologetic texts, hierarchies, and other consciously strategic forms of representation, that this chapter examines some of the ventures and exchanges of the coffeehouse, and the ways in which they could provoke understandings of experiment emphasising its connections to disorder – and thus far from

¹⁷ For the full title of Tyson's work, see note 2 above. For Hooke's account, 15 November 1679, *DRH*, 431. Hooke's private record of the episode explicitly states that it was "at Garways [Garraways]" that the two men "Opend fish," though the carcass was possibly hauled back to the College afterwards, since he noted drawing a "2nd figure" of it "at home" two days later.

¹⁸ Tyson, *Phocaena*, A2r-A2v. For Williamson's career see Marshall, *Intelligence and Espionage*, 33-49.

those the assembly encouraged. This is what it means to uncover spaces important not just to experiment, but its repudiation.

While the situation of experiment amid the news of the coffeehouse is something historians no longer flinch from acknowledging in the manner of some early devotees of experiment, there has been little consideration of the degree to which this contact meant criticism of the coffeehouse was couched in a rhetoric that could be re-applied to experimental practice. Rather, work on the coffeehouse as an experimental space has often emphasised its importance to the legitimacy of various forms of early eighteenth-century learning, particularly the promotion of Newtonianism.¹⁹ Such studies show the coffeehouse would, within decades of its appearance, become an important “centre” for the production of knowledge. They also provide a fascinating insight into the degree to which this work would quickly become a public labour – with the utility of philosophy demonstrated by artisans, instrument-makers and teachers.²⁰ Yet this chapter, delving for the most part into the Restoration, rather than the Augustan coffeehouse, takes separately questions of experiment and knowledge production. The experiments it looks at were not particularly credible and epistemologically efficacious through association with this venue, but were instead vulnerable on account of their ties with it. A focus on the Restoration allows a greater exploration of the degree to which a less productive function might be ascribed to the coffeehouse – which would, as scholarship on early eighteenth-century learning reminds us, obtain a more or less uncontested presence in civic and political culture. It is through such an

¹⁹ See for example Stewart, *Rise of Public Science*, 113, 143-6; “Centres of Calculation,” 133-55; Stephen D. Snobelen, “William Whiston, Experimental Lecturing and the Royal Society of London,” in *Collected Wisdom of the Early Modern Scholar: Essays in Honor of Mordechai Feingold*, ed. Anna Marie Roos; and Gideon Manning (Springer, 2023), 394-74. See also Ellis, *The Coffee-house*, 164-5; Knights, *Representation and Misrepresentation*, 59. Less conventionally, coffeehouses are ascribed with “threatening” as well as productive powers in Johns, *Nature of the Book*, 553-4, 560.

²⁰ Stewart, *Rise of Public Science*, 143-6; “Centres of Calculation,” 133-55.

exploration that this chapter recovers the significance of early coffeehouses to experiments of doubtful utility.

The role of the coffeehouse in generating doubts about the worth of experimental enquiry is also one that has been largely absent in literature on the coffeehouse itself. Scholars of this venue have for some time emphasised its dubious status, especially in the first decades of the Restoration.²¹ Yet they have also tended to see, in the early modern English “virtuoso culture” of which experimental activity was one aspect, a source from which the coffeehouse could eventually draw *its* legitimacy.²² On these accounts, virtuosi are conventionally viewed as a conduit through which credibility flowed *to* the coffeehouse, rather as coffee itself travelled, in Europe over the course of the seventeenth-century, from “a relatively restricted circle of gentlemanly elites to a much broader and more diffuse urban milieu.”²³ Consequently, some of the figures with which this chapter deals – personalities like Pepys, Petty, and Hooke – have been credited with much of the “persuasive work” necessary to the legitimisation of coffee and its consumption.²⁴ In exploring the coffeehouse as a place of importance to worries about experiment, this chapter rearranges some of the relationships crucial to these accounts. Rather than tracing the flow of legitimacy from virtuosi to coffee, and its spaces of consumption, it looks at the degree to which concerns about experiment, and its practitioners, drew from criticisms of the coffeehouse, and the circulation of news therein. Rather than characterising the experimental community as a reservoir of credibility readily available to the new coffeehouses, this chapter presents a collection of experimental interests troubling not least on account of their ties to these venues.

²¹ Klein, “Coffeehouse Civility,” 32; Cowan, *Social Life of Coffee*, 15.

²² Woodruff, *Consumption*, 76; Cowan, *Social Life of Coffee*, 11-2, 14.

²³ *Social Life of Coffee*, 3.

²⁴ Woodruff, *Consumption*, 76; Cowan, *Social Life of Coffee*, 2.

“...Whispering...in an Authentick Coffee-House”

When, in 1663, English coffeehouses became the subject of a licensing system developed in addition to the schemes regulating older breeds of public house, this was a development at the centre of attempts to control the flow of information.²⁵ Just one year earlier, the Press Act of 1662 had required the registration and licensing of printed materials.²⁶ Roger L'Estrange, who in addition to becoming “surveyor of the imprimerie,” was one of the first licensors under the new act, was soon involved in the production of two government-sanctioned biweekly newsbooks: *The Intelligencer* and *The Newes*.²⁷ He expressed regret the act dealt only with print, reflecting on the ease with which manuscript material could become “well nigh as publick.”²⁸ His two newsbooks subsumed periodicals recently established, on the eve of the Restoration, by General George Monck, which had themselves replaced those produced under Cromwell’s Secretary of State, John Thurloe.²⁹ And yet within just a few years, the succeeding Restoration secretariat, inspired by Thurloe’s work, had pounced even on L'Estrange’s newsbooks.³⁰ This office was now doing more than gathering information through its intelligence network. It was attempting – through the printed *Oxford Gazette* and a more tailored manuscript service – to manage the kind of content available to different groups of people.³¹ Joseph Williamson, responsible for both

²⁵ For coffeehouse licensing see “Coffeehouse Reconsidered,” 26-27; *Social Life of Coffee*, 184.

²⁶ Johns, *Nature of the Book*, 72.

²⁷ *Roger L'Estrange and the Making of Restoration Culture*, ed. Anne Dunan-Page and Beth Lynch (London and New York: Routledge, 2008), 1; P M. Handover, *A History of the London Gazette* (London: Stationary Office, 1965), 6.

²⁸ L'Estrange’s remarks on the dangers of manuscript are transcribed in Harold Love, *Scribal Publication in Seventeenth-Century England* (Oxford: Oxford University Press, 1993), 74; Martin Dzelzainis, “Managing the Later Stuart Press, 1662-1692,” in *The Oxford Handbook of Law and Literature*, ed. Lorna Hutson (Oxford: Oxford University Press, 2017), 531.

²⁹ James Sutherland, *The Restoration Newspaper and its Development* (Cambridge: Cambridge University Press, 1986), 8-9, 12-5; Marshall, *Intelligence and Espionage*, 31; Handover, *London Gazette*, 6.

³⁰ Marshall, *Intelligence and Espionage*, 31, 60.

³¹ The latter function was visible even within the office, where it was reflected in Williamson’s administrative methodologies and disinclination to delegation. See *ibid.*, 38, 46, 60.

these aspects of the secretariat's work, would later argue for dismantling coffeehouses altogether.³²

Coffeehouses were in conflict with attempts to control information even in regard to printed matter alone. Particularly important in this respect was the role of these spaces in accommodating some of the technologies crucial to circumvention of the licensing regime. In the May of 1674, an illegal press was retrieved from a place called "Brunies Coffee house" – it was promptly destroyed.³³ A failed attempt, on the part of the government, to close down coffeehouses altogether in 1675 was immediately succeeded by offers of reward for the discovery of "any private printing press."³⁴ Seditious salesmanship as well as production had a place in the coffeehouse; hawkers without fixed, raidable venues, found it a convenient space in which to ply their trade.³⁵ Given the power to "search all houses and shops" was important to the enforceability of the new laws, itinerancy posed a problem – and the fact this troubling phenomenon had a habit of wandering onto the coffeehouse floor added to the challenges these venues accommodated.³⁶ One proclamation inveighing against "loose and disorderly people...Hawkers and Pedlers of Books" situated these roving purveyors of illicit literature not just "about the streets, and in other places of Publick resort," but also, more explicitly, "in Coffee-Houses."³⁷ When the House of Lords ordered the burning of one

³² Cowan, *Social Life of Coffee*, 194.

³³ SCA, Court Book D, f. 232v; Johns, *Nature of the Book*, 129-30. "Brunies" is possibly meant to indicate "Browns" or "Bruins" coffeehouse, a reputed whig establishment. See the list of "Taverns and Coffee-Houses Mentioned by Hooke" in *DRH*, 464; Bryant Lillywhite, *London Coffeehouses: A Reference Book of Coffeehouses of the Seventeenth, Eighteenth and Nineteenth Centuries* (London: George Allen and Unwin Ltd, 1963), 136-8.; Allen, "Political Clubs," 571.

³⁴ For the failed attempt at suppression see Cowan, "Coffeehouse Reconsidered," 29. For the attempt to flush out presses, see Love, *Scribal Publication*, 241.

³⁵ Sutherland, *Restoration Newspaper*, 3; Johns, *Nature of the Book*, 156.

³⁶ Sutherland, *Restoration Newspaper*, 3; Johns, *Nature of the Book*, 156-7.

³⁷ A Proclamation for Suppressing and Preventing Seditious and Unlicensed Books and Pamphlets (London, 1688); *Nature of the Book*, 157.

pamphlet accusing the court of papacy and absolutism, the search extended deep into London's coffeehouses, and the jackets of the hawkers frequenting them.³⁸

Coffeehouses also threatened the communicative control the restored regime sought to achieve in accommodating practices of newsgathering much more generally – not least in providing important arteries for the circulation of non-printed materials. There is now a considerable scholarly appreciation of the degree to which scribal publication was still, in the second half of the seventeenth-century, conceived an efficacious venture, not least for the dissemination of news.³⁹ The scribal exchanges that horrified L'Estrange, operating outside of the printing regime he surveyed, were frequently achieved by leaving copies on coffeehouse tables.⁴⁰ Even satirical materials, so deposited, consolidated ties between coffeehouses and newsgathering; news powered the demand for this allusive – and often highly subversive – material.⁴¹ The phenomenon of “manuscript newsletters” directly implicated the coffeehouse in the production of news in competition with regime-sponsored reporting.⁴² Williamson could only look on as it diminished demand for the *London Gazette*, and the manuscript news service offered by his office.⁴³

Further enhancing the perceived dangers of the coffeehouse, and its news, was the degree to which it could float free of tangible substrates altogether. When the Bishop of Oxford and Licensor of the Press, Samuel Parker, spoke of the scourge of non-conformist plotting, he attacked the “deceitful vice” of those who “have their Spys and Emissarys in all

³⁸ Cowan, *Social Life of Coffee*, 196.

³⁹ Love, *Scribal Publication*, 49, 267, 270; Ian Atherton, “The Itch Grown a Disease: Manuscript Transmission of News in the Seventeenth Century,” *Prose Studies* 21, no. 2 (1998): 39-65; Sabrina A. Baron, “The Guises of Dissemination in Early Seventeenth-Century England: News in Manuscript and Print,” in *The Politics of Information in Early Modern Europe*, ed. Brendan Dooley and Sabrina A. Baron (London and New York: Routledge, 2001), 41-56.

⁴⁰ Love, *Scribal Publication*, 82; Johns, *Nature of the Book*, 113; Cowan, *Social Life of Coffee*, 87.

⁴¹ Love, *Scribal Publication*, 270, 280; Johns, *Nature of the Book*, 113.

⁴² *Nature of the Book*, 113.

⁴³ Ian Atherton, “The Itch Grown a Disease: Manuscript Transmission of News in the Seventeenth Century,” *Prose Studies* 21, no. 2 (1998): 53.

corners to fetch in Informations,” “Agents in all parts to communicate Reports,” and “Factors in all places to traffick for News, and to carry on the important Trade of Tales.”⁴⁴ Rumour, courtesy of the country’s thirst for novelty, was pernicious in being easier to produce than print or manuscript: “it is but whispering it in an Authentick Coffee-house, or at a Meeting of the Gossips...that makes it so.”⁴⁵ Parker was possessed with a sense of the *untraceability* of reports he deemed sources of political and religious disruption, and he saw coffeehouses producing this troublesome quality.⁴⁶ Even for those less obviously prejudiced, the coffeehouse interior offered reasons to believe in at least the nebulosity of rumour. Wreathed in smoke, patrons – like the written reports troubling authorities – could almost themselves disappear into the air.⁴⁷ In allusion to this feature of coffeehouse life, dialogues set in such confines often gave their interlocuters names like “smoake” or “black-burnt” – thus insinuating a chameleon-like indistinguishability from the consumables of the space itself.⁴⁸ The layout of the coffeehouse provided further opportunities concealment and anonymity; discourse could take place in “corners” – a word also used, as Adrian Johns has noted, to describe the settings of illicit printing operations.⁴⁹ Side and upstairs rooms provided cover, though Williamson’s proposals for the regulation of coffeehouses show he worried more

⁴⁴ Samuel Parker, *A Defence and Continuation of the Ecclesiastical Politie: By Way of Letter to a Friend in London. Together with a Letter from the Author of the Friendly Debate* (1671), 16. Parker’s views are explored more fully in Lana Cable, “Licensing Metaphor: Parker, Marvell, and the Debate over Conscience,” in *Books and Readers in Early Modern England Material Studies*, ed. Jennifer; Anderson, Elizabeth; Sauer, and Stephen Orgel (Philadelphia: University of Pennsylvania Press, 2002).

⁴⁵ Parker, *Ecclesiastical Politie*, 16-7.

⁴⁶ Ibid.

⁴⁷ Tobacco smoke had long been associated with disobedience towards the Stuart family. See for example Todd Butler, “Power in Smoke: The Language of Tobacco and Authority in Caroline England,” *Studies in Philology* 106, no. 1.

⁴⁸ John Thatham, *Knavery in all Trades: Or, the Coffee-House. A Comedy. As it was Acted in the Christmas Holidays by Several Apprentices with Great Applause* (London, 1664).

⁴⁹ Ibid., B1v; *Crackfart & Tony; or, Knave and Fool: in a Dialogue over a Dish of Coffee Concerning Matters of Religion and Government*, (1680), 1. For ‘corners,’ ‘holes,’ and dubious printing operations, see Johns, *Nature of the Book*, 128, 131.

about the disseminatory potential of larger “common” chambers.⁵⁰ Such disagreement attests to the plurality of ways in which disruption was written into the venue’s architecture.

The mysterious, traceless, transmissibility of coffeehouse rumour provoked comparisons with disease – itself a pressing political problem.⁵¹ Seemingly spread through the air, news arising from the fumes of the coffeehouse shared at least this common and important capability of pathology. The ejaculations of caffeinated patrons were a “plaguy spleen.”⁵² They travelled “pestilent well.”⁵³ And as often damaging rumour, like coffee, circulated through the archipelagic kingdoms, a burgeoning corpus of literature speculated on the impending physiological toll of the “consumption” in which the exchange of novelties – coffee and news – was entangled.⁵⁴ Critiques of importation, addiction to oriental goods, and loss of specie, offered support to more obviously medical literature focusing on the hazards of coffee itself.⁵⁵ Consumption, a concept with application to political and individual bodies, could thus be feared on multiple levels. Considering them together recovers a means through which critics of the Stuart state might speak in concert with its servants. For while Coffeehouse news mongering became increasingly associated with the Whig opposition during the 1670s, a mercantilist distrust of foreign luxuries – even those fast becoming commonplace – was at the same time also emerging from this circle. A variety of political, economic, and medical views emphasising the dangers of coffee thus urged the pestilential qualities of the news mixed with it, identifying the venues responsible for this *mélange* with highly valenced forms of disease and decay.

⁵⁰ Ellis, *The Coffee-house*, 98.

⁵¹ Atherton, “Itch Grown a Disease,” 39, 43, 53-4.

⁵² Thatham, *Knavery in all Trades*, B3.

⁵³ *Crackfart & Tony*, 1.

⁵⁴ For worries about the effects of coffee on individual bodies see Cowan, *Social Life of Coffee*, 36-7.

⁵⁵ *Ibid.*, 18, 36, 56. For literature defending the health of coffee, often produced by virtuosi known for their love of the coffeehouse, see *ibid.*, 50-1; Ellis, *The Coffee-house*, 135-42.

As nativist worries of provenance suggest, traceability, as well as obscurity of origin, could reveal the difficulties created by the coffeehouse. Jason Peacey has recovered the trajectory of the dissident-perused *Haarlem Courant* from the United Provinces to London's coffeehouses.⁵⁶ Scotland Yard compiled lists of implicated proprietors.⁵⁷ Markman Ellis has described how, in the wake of inconclusive actions against de Ruyter's fleet off the shoals of Schooneveld in 1673, Williamson, back on land, was briefed that "all the ordinary people will have it that wee were beaten."⁵⁸ The problem was that Britannia's own "roguish seamen" had written as much in letters sent home "to their friends," which had then swiftly found their way into "some coffee houses."⁵⁹ Such news, it was noted with alarm, "does much prejudice in disheartening the people."⁶⁰ Later that year, as the regime struggled with flagging support for the Third Anglo-Dutch War and the French alliance critical thereto, Williamson's office heard that "a translate" of Dutch news the French had sustained no casualties in joint actions "is read in our coffeehouses," and so – detrimentally – "will be the beliefe of all the English till Doomes Day."⁶¹ Unsparing and unauthorised accounts of Stuart naval embarrassments were thus part of the background to the aborted ban of coffeehouses in 1675, and many were of offshore provenance.⁶² The ease with which extra-territorially produced news competed with regime-managed media has been analysed as part of the growing role popular convictions, fuelled by coffeehouse news, played in determining foreign policy – a process recovered in work by Steven Pincus.⁶³ While opinion-out-of-doors was thus obviously a

⁵⁶ Jason Peacey, "Managing Dutch Advices: Abraham Casteleyn and the English Government, 1660-1681," *Media History* 22, no. 3-4 (2016): 423.

⁵⁷ *Ibid.*

⁵⁸ Henry Ball to Joseph Williamson, 13 June 1663, *LJW*; Ellis, *The Coffee-house*, 89.

⁵⁹ *Ibid.*

⁶⁰ *Ibid.*

⁶¹ Henry Ball to Joseph Williamson, 5 September 1673, *LJW*, 1:12.

⁶² Ellis, *The Coffee-house*, 89.

⁶³ Steven Pincus, "From Butterboxes to Wooden Shoes: The Shift in English Popular Sentiment from Anti-Dutch to Anti-French in the 1670s," *The Historical Journal* 38, no. 2 (1995): 333-361.

potential resource for the restored order, the convictions and reports ventilated in the coffeehouse were among the phenomena rendering its existence a problem.

As the perceived liquidity of news urged comparisons to disease, its symptoms could appear outside, as well as within, the political body. Brian Cowan has described how, in the October of 1676, a naval expedition against Algerian pirates was abandoned after becoming the subject of coffeehouse gossip, and deemed compromised as a consequence.⁶⁴ In the lead up to the Second Anglo-Dutch War, the diplomat Sir George Downing found the gazettes of The Hague replete with news of archipelagic turmoil, the complacency of the Stuart navy, and heavy English losses off the coast of Algiers.⁶⁵ When war broke out, he noted news of the abuse of Dutch prisoners had reached their compatriots back home, making them “more willing to serve and contribute in person and purse” against the Stuart kingdoms.⁶⁶ Atrophied naval capabilities were real weaknesses, and they were apparently consequences of news departing, as well as infecting, the restored polity. News produced in the domestic coffeehouse showed the ship of state was leaking. Such reports were a sign of its vulnerability; they showed its boundaries to be permeable.

With coffeehouse reports proving, for many, so obviously symptomatic of a weakened political body, it is little wonder some of the supposed effects of coffee extended to highly political, and freighted incapacities. Royalist panegyric and courtly conduct had, from the earliest days of the Restoration, systematically feted the restored nation as one of masculinity, fertile and procreative.⁶⁷ In contrast, coffee, appreciably dehydrating, was asserted to render males as “dry” and “unfruitful” as the “Deserts of *Africk*,” from “whence

⁶⁴ Cowan, *Social Life of Coffee*, 199.

⁶⁵ Jason Peacey, “My Friend the Gazetier”: Diplomacy and News in the Seventeenth-Century Europe,” in *News Networks in Early Modern Europe*, ed. Joad Raymond and Noah Moxham (Leiden and Boston: Brill, 2016).

⁶⁶ Quoted in *ibid.*, 429-30.

⁶⁷ Sharpe, “Country’s Darling and Desire,” 10, 18.

that unhappy Berry is said to be brought.”⁶⁸ The well-laboured trope of men reduced to such supposedly unfruitful behaviours as “gossiping” further underscored the variance of the drink, and the sociabilities it induced, from some of the characteristics asserted for the restored state. Commentators found the exchanges of the coffeehouse producing not only sterility, but effeminacy. If women had “any sense or spirit,” one pamphlet proclaimed, “they would remonstrate to his Majestie, that Men in former times were more able than now...[and]...petition his Majestie to forbid Men the drinking of effeminating Coffee.”⁶⁹ Feminine vices were epidemic courtesy of coffeehouse, the venue having produced an “Age” in which, unnaturally, “Men tattle more than Women.”⁷⁰ As coffeehouse news plagued the Stuart archipelago, with perceived consequences for its martial capabilities, these exchanges were depicted in terms suggestive of national enfeeblement.

Such attitudes had great relevance to concepts of learning, in inflecting the range of virtues and vices from which models of knowledge – or its want – could draw.⁷¹ The “pious” vicar of St. Martin-in-the-fields, and future Archbishop of Canterbury, Thomas Tenison, told John Evelyn that his plans to erect a “publique Library” owed to his conviction that many of those visiting coffeehouses “would study & employ their time better, if they had books.”⁷² When Roger North, an advocate for the suppression of coffeehouses, praised the learning of his brother John North, head of Trinity College Cambridge, he emphasised the scholar’s aloofness from the coffeehouse “trade of news,” exhorting instead the “promiscuous use of books.”⁷³ A studied removal from the *milieu* of the town revealed “an excellent scholar,

⁶⁸ *A Character of Coffee and Coffee-Houses*, (London, 1661), 4; *The Women's Petition Against Coffee. Representing to Publick Consideration the Grand Inconveniencies Accruing to their Sex from the Excessive Use of that Drying, Enfeebling Liquor.*, (London, 1674), 2.

⁶⁹ *Coffee and Coffee-Houses*, 4.

⁷⁰ *Ibid.*

⁷¹ Cowan, *Social Life of Coffee*, 93.

⁷² 13 February 1683/4 in *The Diary of John Evelyn*, 6 vols., vol. 4, ed. E. S. de Beer (Oxford: Clarendon Press, 1955), 367; Cowan, *Social Life of Coffee*, 93, 110.

⁷³ Roger North, *The Lives of the Right Hon. Francis North, baron Guilford; the Hon. Sir Dudley North; and the Hon. and Rev. Dr. John North, Together With the Autobiography of the Author*. Ed. by Augustus

industrious, sober,” and “devoted to all good order, religion, and virtue.”⁷⁴ Cowan, whose work touches on these and other examples of withdrawal, observes that “secure” claims to learnedness, and “status” in various learned communities, were often constructed from an “increasingly distant relationship with the world of coffeehouse sociability.”⁷⁵ While many virtuosi were, as we are about to see, irretrievably associated with coffeehouse newsgathering, those able to do so often attempted to obscure these connections.⁷⁶ Such attempts at erasure are reflected in the published account of Hooke and Tyson’s coffeehouse dissection, with which this chapter began. They suggest that the resonances of news traded in this venue – the problems it apparently posed for the health of the restored polity – rendered it a shoal any learning with claims to stately utility would do well to avoid.

“...a State Concern...”

As worries about coffeehouse news created new desiderata for learning, experiment was tied to the kinds of intelligence this space showed were troublesome. Double-bodied shipping was one form of experiment modelling an informatic dissemination in conflict with the control pilots of the restored regime sought to achieve. It will thus guide much of the discussion of the rest of this chapter. Yet even activities conducted far from the coffeehouse floor could be traded, appropriated, and reported in ways which – we will also see – ultimately entangled them with the political disruption this venue accommodated. The urban sources of reports sustaining a good part of the Royal Society’s correspondence meant virtuosi outside of London often received digests of coffeehouse news. Perilous and

Jessopp, D. D., 2 vols., vol. 2, ed. Augustus Jessop (Covent Garden: George Bell and Sons, 1890), 280, 291-2; Cowan, *Social Life of Coffee*, 93; Klein, “Coffeehouse Civility,” 29.

⁷⁴ North, *Lives*, 2.

⁷⁵ Cowan, *Social Life of Coffee*, 109-111.

⁷⁶ *Ibid.*

unhelpful as the coffeehouse was for endeavours with claims to utility, the place of experiment among the news accounting for the distrust directed towards this venue was inescapable.

The significance of experiment as a reportable phenomenon meant activities conducted at some distance from the exchanges of the coffeehouse could be consumed therein.⁷⁷ Rob Iliffe, Steven Shapin, and Adrian Johns have all examined the ways in which Robert Hooke, especially, used this space to read, and seek advice in relation to his work, despite being required to show the fruits of these labours elsewhere.⁷⁸ Conversely, those affecting a strategic degree of withdrawal from this setting, such as Hooke's overseer, Robert Boyle, were, through intelligencing figures like the Royal Society's secretary, Henry Oldenburg, fed a stream of news bringing them into contact with the gossip of this space. Such news was striking in its breadth. Oldenburg routinely provided his correspondents with information of experimental doings to which he would "annex...politicall news."⁷⁹ Boyle, for example, while living in Oxford in 1664, might be fed with "news of State" and "soe too with news from Gresham."⁸⁰ Or he might receive news of "Experiments" with "2. or 3. words of state news."⁸¹ Some of this material Oldenburg procured from the coffeehouse, as when he told Boyle that "yesterday, before our Philosophicall meeting, at a Coffee Club, we had not only State News, but also of Philosophy."⁸² Oldenburg's language kept both these intelligences carefully distinguished from each other; but as "news" they arrived together, in a material suggestion of their inseparability at odds with his – arrestingly diligent – labelling.

⁷⁷ Iliffe, "Material Doubts."

⁷⁸ Shapin, "Who was Robert Hooke?," 254-5; Iliffe, "Material Doubts," 285-318; Johns, *Nature of the Book*, 554-6. See also Cowan, *Social Life of Coffee*, 105-6.

⁷⁹ Oldenburg to Winthrop, 5 August 1663, *CHO*, 2:107

⁸⁰ Oldenburg to Boyle, 1 September 1664, *CHO*, 2:223.

⁸¹ Oldenburg to Boyle, 22 September 1664, *CHO*, 2:235.

⁸² Oldenburg to Boyle, 6 October, 1664, *CHO*, 2:249.

Significantly, in some of these instances, the avowed “political” component of Oldenburg’s news extended to the kind of information the Restoration was built on containing, rather than disseminating. One of the items of “state news” cited above included a count of an English fleet then preparing to enter the Channel on the eve of conflict with the Dutch.⁸³ Oldenburg’s dispatch to Boyle put the force at fifteen Men-of-War. L’Estrange’s government-sanctioned *Intelligencer* gave no indication of the fleet’s size, instead labouring the interest taken by “His Majesty and his Royall Highness [Prince Rupert]” in the preparations – as well as “the many persons of Quality ready to wait upon his *Highness* in his *Expedition*.”⁸⁴ Boyle was not the kind of recipient likely to augment alarm caused by the spread of unsanctioned news in, for example, Williamson’s office, which systematically monitored Oldenburg’s incoming and outgoing correspondence.⁸⁵ Yet the secretary’s imprisonment in the Tower of London once war did break out suggests the dangers of these intelligencing activities were at least assertable.⁸⁶ Whatever the circumstances behind Oldenburg’s captivity, Alan Marshall is persuasive in suggesting it demonstrates the regime’s commitment to the mastery of information, as well as the ease with which newsmongering with ties to experiment could appear an affront to Whitehall’s centralising objectives.⁸⁷ Eventually, Williamson’s circle achieved a less dramatic, though perhaps still partial, control over the network Oldenburg built when Williamson himself assumed the presidency of the Royal Society, less than two months after Oldenburg’s death.⁸⁸ At least until then,

⁸³ Oldenburg to Boyle, 1 September 1664, *CHO*, 2:222. Fleet counts were habitual for Oldenburg. See also, for example, Oldenburg to Boyle, 6 October, 1664, *CHO*, 2:249; Oldenburg to Boyle, 4 July 1665, *CHO*, 2:433.

⁸⁴ 1 October, *Intelligencer* (London, 1664), no. 77.

⁸⁵ Marshall, *Intelligence and Espionage*, 57.

⁸⁶ For interpretations of this episode see Douglas McKie, “The Arrest and Imprisonment of Henry Oldenburg,” *Notes and Records of the Royal Society of London* 6, no. 1 (1948): 28-47; Marshall, *Intelligence and Espionage*, 55-62.

⁸⁷ Marshall situates this episode alongside Williamson’s “inability” to countenance “rivalry” in relation to the receipt and distribution of intelligence. *Intelligence and Espionage*, 59-61.

⁸⁸ Birch, *History*, 3:353.

experimental transactions drifted in clumps of news, on currents the regime could not entirely claim to manage.

Oldenburg's talk of "state news" as something one could "annex" to "experimental news" failed to keep him out of the Tower, but it was calculated to fend off perceptions of a deeper union between what he maintained were two distinct kinds of news. Troublingly, then, it was precisely such an amalgamation that double-bodied shipping embodied. Petty himself, as we have seen from chapter one of this thesis and onwards, described his experiments as "stately."⁸⁹ News about them was thus experimental and political. And the Society was, at first, a consumer of intelligence concerning double-bodies.⁹⁰ By the November of 1663, this was reflected administratively, in the formation of a "committee" of members living in Ireland who were "desired by the president, in the name of the society, to send them an account" of Petty's first vessel.⁹¹ One reason for supposing Oldenburg to have been aware of the perils of identifying the experimental news he brokered with other varieties of intelligence, is that he eventually became instrumental in attempting to distance the Society from double-bodied shipping, and its initial interest in news concerning them. It was Oldenburg who, when Petty's committee was dissolved by presidential order, explained that "the matter of navigation" was a "state concern," and thus "not proper to be managed by the society."⁹² By then, however, London's virtuosi – including many of the Society's members – were addicted to news of these experiments: when Oldenburg ceased to possess any, they flocked to the coffeehouse to get it there. Pepys and Hooke's patron, Sir John Cutler, had news of one of Petty's vessels "showed" to them in a London coffeehouse by the vociferous consumer of weekly mortality bills and other periodical literature, John Graunt.⁹³ These

⁸⁹ Petty, "Epistle Dedicatory to King Charles II," *DB*, 4.

⁹⁰ Birch, *History*, 1:124, 126.

⁹¹ Birch, *History*, 1:131, 183-9.

⁹² Birch, *History*, 1:249.

⁹³ 31 July 1663, *DSP*, 4:256-7. For Graunt's interpretation of mortality bills in the context of news consumption see Richelle Munkhoff, "Reckoning Death: Women Searchers and the Bills of Mortality in Early

exchanges modelled the coffeehouse's notoriety as a space for distributing and consuming news of leaks, ruptures, and other crises in the ship of state. No less significantly, they also suggested it was the experimental practitioner's role to facilitate, rather than regulate, the transmission of such news.

Lending freight to these transactions was the status of Petty's experiments, or reports about them, as news exemplifying the vulnerability of the restored state. The growth of Petty's experiments from models to manned vessels had obvious implications for their accessibility, which the restored monarch himself showed a concern in managing. Perhaps in a bid to stoke interest at Whitehall, Petty, while still in Dublin, had emphasised, in London-bound correspondence, the exposure of his double-bodied craft even before they ventured beyond the Liffey's estuary. As early as 1662, Society grandees close to the court were learning of Petty's first vessel that "The Dutchmen in our Harbour are very busy, not only in kicking at her, but in taking notes & measuring &c."⁹⁴ Letters from Petty and allies in Ireland depicted double-bodied shipping engaged in public regattas with Dutch vessels.⁹⁵ The result was a powerful insinuation of the ease with which news of the design might reach rival powers, or find a place in foreign arsenals. And it was at this point those with a knowledge of the monarch's mind began retreating from their engagement with Petty's program. Southwell remarked on a growing reluctance, within the Royal Society, to "consider of this businesse," and to "declare nothing about it." He noted Brouncker was said to have begun his own series of naval experiments, pointedly conducted in discretion – "before ye the King in small."⁹⁶ The confessedly public nature of Petty's overgrown craft, the coolness of court and King, and the discretion of virtuosi with links thereto, suggest that double-bodied shipping's buoyancy

Modern London," in *Rhetorics of Bodily Disease and Health in Medieval and Early Modern England*, ed. Jennifer C. Vaught (London and New York: Routledge, 2010), 127.

⁹⁴ Petty to Brouncker, 29 October 1662, *DB*, 28.

⁹⁵ Petty to Graunt, 1 November 1662, *DB*, 32; Petty to Brouncker [February 1663], *DB*, 59.

⁹⁶ Southwell to Oldenburg, 16 May 1663, *CHO*, 2:272.

on a sea of news left it in an undesirable predicament: though its failure would not help the state, its success, while so open to scrutiny and appropriation, was potentially disastrous.

The dangers of exposing a capable technology before the state was in an unrivalled position to wield it were even more obviously present with Petty's second vessel, which roamed further afield than its public – but ultimately Ireland-bound – predecessor.⁹⁷ Here the coffeehouse played a crucial role. The letters Graunt showed Cutler and Pepys during their coffeehouse visit announced that this second, still more visible ship, had beaten the packet boat – “the best ship the King hath there” – from Dublin to Holyhead.⁹⁸ Such hints of prowess were precisely what necessitated secrecy. And yet, as Petty enthused over the functions of his second, oversized experiment – carrying cattle, replacing packets, routing conventional craft – it seemed both increasingly unlikely that the “Invention II” would remain out of view of London. Certainly court favourites kept working to persuade Petty into greater discretion. The royal confidante, Sir Robert Moray, suggested that if the ship left Ireland, it should not come directly to London, but first to Portsmouth – “the most proper place for trying her.”⁹⁹ Ironically, this wish was soon made so public that even if Petty *had* complied, thus appeasing those who sought precedence of access for the court, then anyone who wished to see the vessel could have done so simply by taking themselves to Portsmouth. Pepys, for example, heard from Graunt – again at a coffeehouse – that the King was planning “to go to Portsmouth to meet it.”¹⁰⁰ News of courtly attempts to circumscribe the witnessing of double-bodied shipping was thus among the kinds of information spread too quickly for the program to appear under any kind of regulation. Petty's decision to ignore the suggestion

⁹⁷ Petty to Moray, 8 July 1663, *DB*, 76.

⁹⁸ 31 July 1663, *DSP*, 4:256.

⁹⁹ Moray to Petty, 14 September 1663, *DB*, 91.

¹⁰⁰ 14 October 1663, *DSP*, 4:334.

of Portsmouth altogether and send his craft directly up the Thames instead flouted still more overtly these attempts to manage the unveiling of stately novelty.

The coffeehouse was implicated not just in the frustration of elite efforts to restrict access to, and knowledge of, experiment, but some of the difficulties faced by practitioners in managing the presentation of experimental technology.¹⁰¹ While Petty apparently courted unregulated publicity, virtuosi invested in less consequential activities were often highly alert to the varieties of attention they attracted. It was possibly at the Ship Coffeehouse in Whitechapel that Hooke, deep in conversation with the intelligencer Silas Taylor about his “one wheeld chariott,” noticed that two acquaintances – and “another by” whom he apparently did not know – had “heard our discourse.”¹⁰² On another occasion, he was briefing Edmund Wylde on his “contrivance for flying” at Joe’s Coffeehouse on Fleet Street when “a company of 3 strangers interposd.”¹⁰³ Pepys spent one coffeehouse visit learning about developments in counterfeit signatures, memory, and music, among “other most excellent discourses,” not just with his regular interlocutors, Petty and Graunt, but at least one other individual whom he had just met: some “young gentleman I suppose a merchant.”¹⁰⁴ After a coffeehouse-ensconced morning spent hearing from Graunt and Petty about the latter’s then Thames-moored second vessel, Pepys noted he was not the only one to seek such information: “so did many, almost the whole house there.”¹⁰⁵ Like Hooke’s coffeehouse interactions, double-bodied shipping, and discussions devoted to it, exemplified the accessibility of experimental developments. And yet as Hooke’s diary shows, such porousness could be a cause concern even among devotees of experimental methodology –

¹⁰¹ Iliffe, “Material Doubts,” 310.

¹⁰² 15 November 1675, *DRH*, 194; *ibid.* Hooke recounts the discussion as held “at ship,” a locution potentially designating any number of venues, including Whitechapel’s Ship Coffeehouse.

¹⁰³ 30 December 1675/6, *DRH*, 205

¹⁰⁴ Robert Latham and William Matthews identify the “young gentleman” as Thomas Hill, later a friend. 11 January 1664, *DSP*, 5:12.

¹⁰⁵ 30 December 1663, *DSP*, 4:1663.

however sanguine Petty himself may have been. The coffeehouse interior reflected the difficulties of controlling exchanges of news, as spectators impinged on gatherings with an ease surprising even to practitioners of experiment.

Occasionally, it was not so much the stately uses proclaimed for the experiments discussed on the coffeehouse floor, or the chaotic flow of information across this surface, but a proximity to regulatory developments that lent political significance to coffeehouse-situated experimental exchanges. With considerable irony, Hooke discussed the 1675 “Proclamation for the Suppression of Coffee-Houses” with Abraham Hill, then the Royal Society’s treasurer, in a room in Garraways.¹⁰⁶ Having then clearly learned about the proclamation, he could be found later the same day in Johns Coffeehouse. It was there that his intercourse with Wyld about flying was interrupted by three “strangers.”¹⁰⁷ The dilution of this originally virtuosic grouping might well have resulted in Hooke’s machine dropping off the agenda; but the intercourse itself did not stop: there was almost immediately, as Hooke recorded, “Discourse about [the] proclamation.” Hot ale was set on the table. Far from remaining apart from contested newsgathering practices, then, this experimental exchange boiled over into precisely the kind of discussion the Restoration government found troubling – and which, indeed, it was stooping to eradicate through means of the coffeehouse proclamation itself. When an “Additional Proclamation Concerning Coffee-Houses” was issued one week later, Hooke was again at Garraways, dissecting the development with a “one eyed travelling painter.”¹⁰⁸ The relationship morphed into something more experimentally flavoured when the two men met again in the same venue to regard an “Engine” together.¹⁰⁹ Further situating experimental dialogue within contested practices of newsgathering, therefore, was its

¹⁰⁶ 30 December 1675/6, *DRH*, 205; Ellis, *The Coffee-house*, 86-7.

¹⁰⁷ 30 December 1675/6, *DRH*, 205.

¹⁰⁸ 10 January 1675/6, *DRH*, 210; Ellis, *The Coffee-house*, 99.

¹⁰⁹ 13 January 1675/6, *DRH*, 210.

observable persistence through the various expressions of government hostility towards coffeehouse intercourse.

In addition to directly accommodating experiments amid the flow of troublesome intelligence, coffeehouses also became important to experimental news as literature of a kind endemic to these venues reported experimental practice. On one occasion, Petty's ally, John Graunt, saw to it that news of double-bodied shipping reached London through the newsbooks Monck had established with the Restoration, *Mercurius Publicus* and *Kingdome's Intelligencer*. But not before it had been planted in the Dublin-printed *Mercurius Hibernicus*.¹¹⁰ There is still a lot to learn about this peripherally produced periodical, which championed the interests of Ireland's Protestant minority in the uncertain years of Stuart rule. It rolled off a government press, but both it and its proprietor, Samuel Dancer, appear to have been objects of suspicion to Whitehall and vice-regal servants.¹¹¹ Copies were probably read in Dublin's first coffeehouses, which appeared at almost the same time as the new "Irish Mercury."¹¹² Sobriquets coined for Petty's vessels, such as "Wit and Money" and "Xmas Gambol," referred to their proprietor's penchant for wagering on their success.¹¹³ But in doing so, they also spoke to the ease with which experiment could be tied to spectatorship and addiction – both associated with the effects of coffeehouse periodicals. A still more telling christening of Petty's third vessel was "Ye Mercury."¹¹⁴ Years later, documents foundational to the Dublin Philosophical Society, which lent support to a range of

¹¹⁰ June 29 1663, *Mercurius Publicus*, 6 August to 13 August 1663, no. 32; Graunt to Petty, 15 August 1663, *Double Bottom*, 87.

¹¹¹ Robert Munter, *The History of the Irish Newspaper 1685-1760* (Cambridge: Cambridge University Press, 1967), 8; Mark O'Brien, "Journalism in Ireland: The Evolution of a Discipline," in *Irish Journalism Before Independence: More a Disease than a Profession*, ed. Kevin Rafter (Manchester: Manchester University Press, 2011), 9; Toby Barnard, "The Irish Parliament and Print," *Parliamentary History* 33, no. 1 (2014): 98. Dancer had in 1662 been taken into custody for printing, without authorisation, a parliamentary speech. See Raymond Gillespie, *Reading Ireland: Print, Reading and Social Change in Early Modern Ireland* (Manchester University Press, 2005), 106.

¹¹² Andrew Carpenter, "Katherine Philips, 'Philo-Philippa' and Restoration Dublin," *Eighteenth-Century Ireland / Iris an dá chultúr* 33 (2018): 13, 18.

¹¹³ "A Letter from Dublin," *Double Bottom*, 81.

¹¹⁴ *Ibid.*

experimental programs, including a revived version of double-bodied shipping, could hardly avoid association with this space. On one account, the club first met “in a coffeehouse.”¹¹⁵ It was thus not just the physical situation of experimental actors that brought them into association with coffeehouse news, but the ease with which experimental developments might appear in – or become identified with – literature endemic to the coffeehouse.

This was apparent even in relation to the work of personalities who had otherwise rather scrupulously pursued experimental interests while keeping some distance from the coffeehouse itself. As the Licensing Act lapsed amid struggles between King and parliament in 1679, reports of the activities not just of such notoriously urban figures as Hooke, but also Boyle, Evelyn, and Nehemiah Grew began appearing in one of several periodicals launched in the wake of the failure to renew this legislation. The publication in question was the *Domestick Intelligence*, produced for a coffeehouse readership by the bookseller Nathaniel “Nat” Thompson, whose Tory Catholic agenda – enemies called him the “Catholic Gnat” – eventually led to his arrest by London aldermen.¹¹⁶ Later, in 1695, in the context of the Licensing Act’s final throes, works by Society fellows such as John Dryden and Thomas Burnet were mischievously translated and reproduced – in manuscript and print – by the notorious atheist, Charles Blount.¹¹⁷ Blount, son of the traveller, Royal Society fellow and early lover of coffee, Sir Henry Blount, was by then a known advocate for the “*Liberty of the Press*.” Amid the upheaval of Jacobite rule, L’Estrange noted his powers on the coffeehouse

¹¹⁵ Thomas Molyneux, “A Continuation of the Account of Our Family, Written by Me to My Brother, in July, 1694,” in *An Account of the Family and Descendants of Thomas Molyneux, Kt. Chancellor of the Exchequer in Ireland*, ed. Capel and Thomas Phillips Molyneux (Evesham: J. Agg., 1820), 64; Theodore K. Hoppen, *The Common Scientist in the Seventeenth Century: A Study of the Dublin Philosophical Society* (London: Routledge and Kegan Paul, 1970), 23; Paddy Holt, “Performing in a Different Place: The Use of a Prodigy to the Dublin Philosophical Society,” *The British Journal for the History of Science* 53, no. 3 (2020): 371, 377.

¹¹⁶ Sutherland, *Restoration Newspaper*, 13, 84; Cowan, *Social Life of Coffee*, 206.

¹¹⁷ Phillip Harth, *Contexts of Dryden’s Thought* (Chicago and London: The University of Chicago Press, 1968), 76-93; J. A. Redwood, “Charles Blount (1654-93), Deism, and English Free Thought,” *Journal of the History of Ideas* 35, no. 3 (1974): 491; J. R. Jacob, “Restoration Ideologies and the Royal Society,” *History of Science* 18, no. 1 (1980): 34; Johns, “The Ambivalence of Authorship in Early Modern Natural Philosophy,” 68-73.

floor.¹¹⁸ The presence of experimental work in literature issuing from such sources belied the promises of early apologists to manage – rather than provoke – “powerful...disturbance, and contention.”¹¹⁹ Even the most strategically lodged experimental activity could appear among symptoms of coffeehouse unrest.

Appropriation, indeed, was the fate of some of the most sanctioned and apologetic of texts of experiment. Adrian Johns has described how, in 1682, former apprentices of Royal Society’s printer began publishing *Weekly Memorials for the Ingenious* – an obvious copy of *Philosophical Transactions* and Hooke’s later periodical effort, the *Collections*.¹²⁰ Ironically, the *Weekly Memorials* soon itself became a title for which multiple publications of varying provenance contended.¹²¹ Even after the sun had set on Stuart rule, publications with ties to the coffeehouse continued to impinge on literature that had been crucial to defining Restoration experiment. In 1692, the so-called “Athenian Society,” in reality three men meeting in Smith’s Coffeehouse, produced two publications evincing the vulnerability of some of the period’s most official experimental literature: the new arrivals were the periodically released *Athenian Mercury*, and the *History of the Athenian Society*.¹²² The *Mercury*, introduced amid lamentations that the “Doctrins” of the Greeks had been “confin’d to their *Gymnasia*, their *Porches*, and *Gardens*,” affected to arbitrate on matters much as the *Philosophical Transactions* had done – purportedly, on occasions, through recourse to

¹¹⁸ [Charles Blount], *A Just Vindication of Learning: Or, An humble Address to the High Court of Parliament: In Behalf of the Liberty of the Press* (London, 1679), 50; Timothy Crist, “Government Control of the Press After the Expiration of the Printing Act in 1679,” *Publishing History* 5 (1979).

¹¹⁹ See for example Sprat, *History*, 92, 331.

¹²⁰ Johns, *Nature of the Book*, 538.

¹²¹ Ibid.

¹²² Charles Gildon, *The History of the Athenian Society, For the Resolving all Nice and Curious Questions. By a Gentleman, Who Got Secret Intelligence of their Whole Proceedings...* (London, [1692]); Helen Berry, “‘Nice and Curious Questions’: Coffee Houses and the Representation of Women in John Dunton’s *Athenian Mercury*,” *The Seventeenth Century* 12, no. 2 (1997); “An Early Coffee House Periodical and its Readers: the *Athenian Mercury*, 1691-1697,” *The London Journal* 25, no. 1 (2000); Gender, Society and Print Culture in Late-Stuart England: The Cultural World of the *Athenian Mercury*; Urmi Bhowmik, “Facts and Norms in the Marketplace of Print: John Dunton’s *Athenian Mercury*,” *Eighteenth-Century Studies* 36, no. 3 (2003), 345-65.

experiment.¹²³ But it also judged on stately questions. The Earl of Nottingham, then Secretary of State, complained to the King's licenser after it pronounced on the relationship between James II and his apparent daughters.¹²⁴ Meanwhile, the *History* recounted its origins and methods in what Urmi Bhowmik and Helen Berry point out was "a thinly-veiled imitation of Sprat's *History of the Royal Society*."¹²⁵ Here again the departures from the original work hint at the links to coffeehouse intelligence such imitations forged: in this new, altered *History*, the experimental instruments with which the frontispiece of Sprat's apologia had been adorned were replaced with dishes, pots, and other pieces of coffeehouse apparatus. In its emphasis on such equipment, this reworking of a text once charged with disseminating the fruits of experimental enquiry suggested practitioners had lost control over exactly that process. In doing so, the new *History* reflected a phenomenon more directly displayed on the coffeehouse floor.

"...the Most Dangerous Thing in the World..."

The coffeehouse accommodated experiment alongside varieties of news consumption and exchange suggestive of disorder in the post-interregnum world. With newsgathering so

¹²³ The degree to which the experiment played a role in the real or pretended epistemology of the Athenian Society is still a relatively unexplored question. Its publications certainly referenced "experiment." Curiosity about the language of truly asocial infants, for example, met with the "Story of an Experiment," originally recounted by Peter Heylyn, of a child purposefully abandoned on a mountainside to determine precisely such matters. "Facts and Norms," 356. For the original story of this "wise experiment" see Peter Heylyn, *Mikrokosmos. A Little Description of the Great World. Augmented and Revised* (London, 1625), 544. Elsewhere folk were exhorted to consider their own experiences in weighing the responses offered by the "Society," so that a good deal of importance was attached to the fact "we may ordinarily experiment." *Athenian Mercury*, 14 May 1697, 20, no. 1. The Athenian Society's *History* settled the question of its relationship to experimental learning by observing that God had given "rise to two of the noblest Designs, that the Wit of Man is capable of inventing:" "the *Royal Society*, for the experimental improvement of Natural Knowledge, and the *Athenian Society* for communicating not only that, but all other Sciences to all men, as well as to both sexes." Gildon, *History of the Athenian Society*, 3.

¹²⁴ Berry, "Athenian Mercury," 20; *Gender, Society and Print Culture in Late-Stuart England: The Cultural World of the Athenian Mercury*, 23-4. For Northampton's political priorities see David Hosford, "The Peerage and the Revolution of 1688," *Parliamentary History* 2 (2008): 204-5.

¹²⁵ Bhowmik, "Facts and Norms," 351; Berry, "Athenian Mercury."

evocatively in tension with the objective of a restored polity, experiment became a craft readily associated with the downfall of the Restoration itself. Criticisms of experiment – from within and outside of experimental circles – exploited the vulnerability of experiments situated in unregulated exchanges of information. The ability of experimental activity lodged in the coffeehouse to produce, consume, or resemble varieties of news associated with disorder thus created scope for powerful doubts about its worth.

Some of the sharpest criticism of Petty's double-bodied shipping accepted the worth of the design from what might be called an engineering point of view, and looked instead to the consequences of the dissemination of such efficacious technology. These expressions of hostility were built from common criticisms of the coffeehouse, and its ability to fan the spread of news in noxious ways. They could also be propagated from quarters themselves expressive of opposition to this space. Peter Pett, then Navy Commissioner at Chatham, told Pepys – over a private dinner at Pepys' house in Axeyard – that he thought a knowledge of Petty's vessel "the most dangerous thing in the world."¹²⁶ Here, far from the din of the coffeehouse, with Pett and Pepys "all alone...together," the Commissioner grew "mighty serious," as he pondered whether the wider the discovery and use of double-bodied shipping entailed "our loss of the command of the seas and our trade."¹²⁷ It is hard to say how realistic the Commissioner's worries were. At least some Dutch shipmakers were relatively sure that *their* designs could *not* be reverse engineered by foreign powers.¹²⁸ But Petty had claimed to have given Dutch seamen considerable access to his craft. The Commissioner's fears suggest Petty's accounts of unnamed Dutch actors "not only kicking" at his experiment, when displayed in Dublin, "but...taking notes & measuring &c," were frequent enough to elevate

¹²⁶ 27 February 1664, *DSP*, 5:27.

¹²⁷ *Ibid.*

¹²⁸ Dániel Margócsy, "Technology Transfer, Ship Design and Urban Policy in the Age of Nicolaes Witsen," in *Knowledge and the Early Modern City: A History of Entanglements*, ed. Bert de Munck and Antonella Romano (London and New York: Routledge, 2020).

anxieties.¹²⁹ The coffeehouse, as we have seen, played a role in ensuring such accounts reached London, and was thus – in a causal sense – productive of the kind of criticism offered by the Commissioner. Yet more fundamentally, Commissioner Pett’s concern with wider intelligence of Petty’s design invoked processes for which the coffeehouse was notorious: the measurement, judgement, and attempted reconstruction, of the ship of state.

The objection, put to Pepys over his dinner with Pett, that double-bodied shipping might be subject to processes of newsgathering inimical to the Restoration existed in various forms, although opinions differed as to exactly who else would profit from a knowledge of the design. Pett, over his dinner with Pepys, nominated the “the Turkes” as likely beneficiaries.¹³⁰ No less a commentator than the King himself, in early 1663, leaned towards “Hollanders” – a natural choice on the eve of the Second Anglo-Dutch War, but one also possibly reflecting a knowledge of Petty’s coffeehouse boasts of Dutch interest in his experiments.¹³¹ The Commissioner’s belief in the use of double-bodies to “the Turkes” were grounded in his belief that this new design was faster than conventional craft, but no good for burden, from which he deduced that English merchants – who required vessels of burden – would be the last to gain from them. On the other hand, the King tipped the Dutch because, according to one account, as conventional craft were built they could “have non so good as ours but must draw more water than their Harbours will allow.”¹³² A keen sailor himself, Charles was heard remarking on and “taking notice” of just “how little Water” Petty’s craft drew, telling confidantes that he “should be sorry it succeeded in Great, for then Hollanders would have as much advantage of us as we have now of them.”¹³³ The Royal Society’s courtier membership heard him, as he probably hoped they might. Brouncker, who apart from

¹²⁹ Petty to Brouncker, 29 October 1662, *Double Bottom*, 31-2.

¹³⁰ 27 February 1664, *DSP*, 5:27.

¹³¹ Moray to Petty, 4 April 1663, Petty to Brouncker 29 October 1662, *Double Bottom*, 31-2, 65.

¹³² *Ibid.*

¹³³ *Ibid.*

then being the Society's president was also Commissioner of the Admiralty, questioned whether a wider knowledge of Petty's experiments would surrender "the advantage we have in our Ports & Shipping above other Nations (especially the Dutch)," and thus "whether the prosperity thereof be desirable or not."¹³⁴ Worries about intelligence of this experimental program were thus persistent because they were so adaptable: more than one power could be felt liable to learn – and profit – from them.

Reservations about the accessibility of experimental information were not just related to fears of coffeehouse news circulation, thus born of sensitivity to the prospect of wider discovery and national enfeeblement; they explicitly noted experiment's place amid the ungovernable exchanges producing such problems. The same verse pillorying the drunkenness and debauchery of Petty's experiments, introduced above in the course of exploring experiment's ties to the tavern, also connected Petty's ideas to "Coffie Howse and prate."¹³⁵ The virtuoso was depicted travelling to the coffeehouse having tired of time spent "in Studdy." The piece conveys Petty's desire not so much to imbibe or refine ideas but to *divulge* them.¹³⁶ A curious manuscript item in the Bodleian Library, evidently written with Petty's third vessel, the "Experiment," still afloat, scripts "severall seamen & merchants, nay some of the very owners of the ye Engine" reporting and speculating on double-bodied developments.¹³⁷ The dialogue takes place "at a table" in "Johns Coffeehouse," with what was then Petty's latest experiment sustaining a frenetic exchange of gossip "many times between jest & earnest."¹³⁸ The wont of the public to call Petty's second vessel "ye Mercury" probably also alluded to its ability to generate such exchanges.¹³⁹ Imaginings of the fluidity

¹³⁴ Brouncker to Petty, 28 November 1662, *Double Bottom*, 34.

¹³⁵ Unknown, "In Laudem," 393.

¹³⁶ Ibid.

¹³⁷ Bodl. Lyell Empt. 32, ff. 62-3v.

¹³⁸ Ibid. This was possibly the "Johns Coffeehouse" near the royal exchange. See Lillywhite, *London Coffeehouses*, 295.

¹³⁹ "A Letter from Dublin," *Double Bottom*, 81.

of news of double-bodied shipping thus situated this quality deep in some of the most repudiated sociabilities of the coffeehouse. In this regard, critics of the program engaged with a danger vivid in its architect's use of this space.

Double-bodied shipping was a specific transgression with which critics of experiment wrestled; but depreciatory representations of experiment were not always so focused. The place of experiment amid news inimical to the administrative and political agenda of the Restoration was no less capable of insinuation through the abstracted figure of the "virtuoso." The royalist poet, Samuel Butler, described the "character" of "an intelligencer" as "a Factor to certain remote Country *Virtuosos*...unsatisfied with the Brevity of the [government-produced] *Gazette*."¹⁴⁰ In order to "furnish" virtuosi with the news he portrayed them craving, the "intelligencer" loitered in "Clubs and Coffee-Houses" – all part of his intention "to obtain a great Insight into State-Affairs."¹⁴¹ Butler is sometimes thought to have had a hand in the writing of another, more widely recognised critique of experimental activity: Thomas Shadwell's *Virtuoso*. The interests of this play's titular figure are many and, though the coffeehouse-ensconced Hooke is known to have felt himself a target, these surely alluded to the preoccupations of more than one personality.¹⁴² Peter Anstey sees their germ in various reports of experiments and observations published in the *Philosophical Transactions* – a periodical, we have seen, prone to appropriation, and important to semblances of a chaotic and unrestrained dissemination of experiment.¹⁴³ Satire thus recognised and exploited the importance of newsgathering to experiment; Butler's satire, in particular, contrasted virtuosic

¹⁴⁰ "An Intelligencer" in *Samuel Butler: Characters and Passages from Note-books*, ed. A. R. Waller (Cambridge: Cambridge University Press, 1908), 86-7.

¹⁴¹ *Ibid.*

¹⁴² Al Coppola, *The Theatre of Experiment: Staging Natural Philosophy in Eighteenth-Century Britain* (Oxford: Oxford University Press, 2016), 46-8.

¹⁴³ Shadwell, *Virtuoso*, 69; Peter Anstey, "Literary Responses to Robert Boyle's Natural Philosophy," in *Science, Literature and Rhetoric in Early Modern England*, ed. David Burchell (London: Routledge, 2007), 146. 150.

interests and coffeehouse gossip with the kind of informatic control the Restoration was supposed to be built on.

Worries about the publicity of experimental information were vented both inside and outside the Royal Society. On one occasion, according to John Aubrey, Petty presented the Royal Society with “a Discourse of his in Manuscript” on ship building. Brouncker took the item from him – “which he still keepes,” Aubrey noted – warning “’twas to[o] great an Arcanum of State, to be commonly perused.” (Stubbornly, Aubrey did not give up hope of access to the manuscript, noting with satisfaction that his former coffeehouse and Rota Club chum, Robert Wood, “has a Copie of it.”¹⁴⁴) The misgivings expressed by Brouncker anticipated those aired outside of the Society, in some of the most vociferous attacks on it. South’s appreciation for the “Risque of New Experiments,” with which the introduction to this thesis began, arose partly out of a feeling for the dangers of coffeehouse sociabilities – among them, newsgathering. His attack poured scorn not just on experiment, but “Judgements” formed over “Cups” and “Coffee.”¹⁴⁵ He made it clear that at least one of his problems with experiment was its association with novelty. The Stuart state, South implied, was better served by the Church, because this was one body uncorrupted by an appetite for news; the Anglican Church was “a *Royal Society* for settling Old Things, and not for finding out New.”¹⁴⁶ While experimental personalities, Petty among them, had sought to align experiment with the needs of a restored state, South used the thirst for novelty among which experiment sat to illustrate its dangers to the very possibility of stately renewal.

¹⁴⁴ *BL*, 1:51.

¹⁴⁵ South, *Twelve Sermons*, 310.

¹⁴⁶ *Twelve Sermons...the Second Volume*, A4v.

Conclusion

This chapter has shown how the coffeehouse, particularly in the early years of the Restoration, accommodated important aspects of experimental work within a system of news-gathering and exchange. The difficulty with which this system was managed, if it was managed at all, made this space a troublesome one. The conflict of the last few decades, which the Restoration was tasked with concluding, had often taken the form of contested revelations; competition with government-sanctioned information – and indeed any ungovernable flow of information – thus looked like disorder.

The coffeehouse worked against attempts to align experiment with the possibility of a restored political order because, once deposited there, it could be seen drifting among precisely those currents most in need of management. Seemingly consequential naval technologies, like double-bodied shipping, were discussed and learned about in a venue notorious not just for the flow of news within the political body, but the leakage of information outside of it. Accounts of otherwise more innocuous strands of experimental activity were reproduced in coffeehouse literature. Even the most strategically lodged experiments could thus appear among symptoms of coffeehouse unrest.

The place of experiment amid the disruptive courses of coffeehouse news was exploited by critics of particular experiments, as well as experimental activity more generally. Its ties to this setting formed part of the geography fuelling suspicions of its dangers, which often took the form of rhetoric insisting on the corrosive, vicious nature of experiment itself. The coffeehouse – like the tavern – was thus a site important not just to experimental practice, but doubts about its worth.

Part III: The Park

Chapter 5: Experiments in Abundance

Introduction

On 13 May 1663, just one week after the Royal Society received its second royal charter, and on the day its council met for the first time, one of its founding members, Sir Paul Neile, declared “that he had seen an eel in St. James’s Park with a duck in its mouth.”¹ Neile, scion of a royalist family, and a virtuoso who, almost a decade beforehand, had commissioned an approximately thirty-five foot telescope from the craftsman Richard Reeve, is more remembered for his interest in celestial observation than parks, and their exhibitions of appetite and abundance. Yet just a few years into the Restoration, Neil’s heavenly interests were also carrying him to St James’s Park, where a telescope built by Reeve – large enough to be the one he had first commissioned in interregnum years – was installed in 1663.² In some respects, the instrument rose above its new surrounds; suspended by means of a wooden mast, it hardly touched the ground, and observers noted its lofty position “on a mound.”³ Yet it was assuredly also part of the park, and the abundance that this space was, as we will see, designed to display after 1660. Onlookers took in the instrument among the perennially grazing elkes, antelopes, and deer with which St James’s Park was well stocked; flocks of peacocks, cranes, cassowaries, and other birdlife fed at its base.⁴ Neile’s eel, pushing through the park’s bountiful waters, duck in mouth, reminds us that even this spectacular, celestially focused, piece of technology sat among scenes of bestial appetite and gratification. It shows how the geography the park brought experiment into contact with these

¹ Birch, *History*, 1: 238.

² David Stevenson, *Letters of Sir Robert Moray to the Earl of Kinkadine, 1657-73* (New York: Routledge, 2007), 44-5; Frances Harris, “Lady Sophia’s Visions: Sir Robert Moray, the Earl of Lauderdale and the Restoration Government of Scotland,” *The Seventeenth Century* 24, no. 1 (2013): 134.

³ 4 April 1663 in Peter Mundy, *The Travels of Peter Mundy, in Europe and Asia, 1608-1667*, vol. 5, ed. Richard Temple (London and New York: Routledge, 2016), 155-7.

⁴ Sorbière, *Relation d’Un Voyage*, 42. 4 April 1663 in Mundy, *Travels*, 5: 155-7.

observations, giving its practitioners, their technologies, and even their meetings some distance from the park, a role in the propagation of such visions.

The sociabilities germane to the operation of the park's telescope further suggest the importance of Neile's visions of plenty to his experimental philosophy. Observing the skies was not always a possibility; and when it was not, other rewards were sought to pass the time. Cloud cover and cold nights necessitated diversion, a need met through other, more obviously gratifying experiences. Virtuosi waiting for a break in the fog could be treated to cakes, and – a preparation Neile's extant writings reveal a thoroughgoing preoccupation with – apple cider.⁵ When the instrument had been lodged in Whitehall's privy garden, before its move to the park, another prominent courtier, Sir Robert Moray, transported operators with his hospitality, "regaling" them in his lodgings – a pavilion still within an easy walk from the telescope's new surroundings.⁶ Episodes of this kind recollect scholarship on the connections between consumption, taste acts, and experiment, as well as recent work on the importance of commensality to associational culture in a number of early modern contexts.⁷ Yet we lack an account of what it meant to work amid this abundance, and whether it was a setting that *worked* – in the sense outlined in the introduction to this thesis – for practitioners of experiment at all. Neile's duck-gorged eel swam through a space in which experiment was crowded with visions of plenty; such associations invite attention to the significance of the park's bounty in the Restoration, and how this setting fed contemporary understandings of experiment.

⁵ For Neile's interest in cider and other experiences of refreshment see for example his "Discourse of Cider," first published as part of the appendix to John Evelyn's *Sylva*, 30-40.

⁶ 13 May 1661, *Le Séjour de Christian Huygens à Paris et ses Relations avec les Milieux Scientifiques français; suivi de son Journal de Voyage à Paris et à Londres*, ed. Henri L. Brugnans (Paris: Librairie E. Droz, 1935), 170; Stevenson, *Letters*, 45.

⁷ David Goldstein, *Eating and Ethics in Shakespeare's England* (Cambridge: Cambridge University Press, 2013); Wendy Wall, *Recipes for Thought: Knowledge and Taste in the Early Modern English Kitchen* (Philadelphia: University of Philadelphia Press, 2016); Elizabeth Swann, *Taste and Knowledge in Early Modern England* (Cambridge: Cambridge University Press, 2020); Holt, "Appetite for Experiment," 1-17.

In entering into attempts to construct a new authority out of promises of magnanimity, abundance, and indulgence, Restoration parks – particularly public parks – were less a natural space, than one in which representations of the monarchy as a natural source of order were crafted.⁸ Visions of plenty were integral to such representations. Joining the forms of art in which the rule of Charles II was identified with an interest in the satisfaction of his subjects, parks assumed an importance similar to sites of royal hospitality, generosity, and commensality, including the tables of Whitehall.⁹ The abundance of the park was present in the material culture of these settings, furnishing ingredients essential to visualities of control.¹⁰ A range spaces – some of them quite separate and remote – often depended on the park, rendering it an engine for representations of Stuart beneficence. Caroline ascension brought with it a striking renovation of St James's Park, in particular – which, though owing much to the once-exiled prince's experiences with continental courts, broadcast a considerably less absolutist message. Like the portraiture produced by court artists, the parks of London, and elsewhere, were responsible for expressing promises of prosperity, tranquility, and indulgence – promises that provided the bases of a renegotiated, and at times critically contingent, power.¹¹

Staged in the park, then, experiments formed part of a landscape engineered to demonstrate, through exhibitions of plenty, a beneficent régime. They sat among the experiences of satisfaction that made the park not just an economically, but a politically important resource. Creating and reporting on these experiences demonstrated, so it was hoped, the ability of experimental activity to disseminate the park's messages of prosperity,

⁸ McDayter, "Poetic Gardens and Political Myths," 136; Pritchard, *Outward Appearances*, 113-5.

⁹ For Whitehall and promises of royal 'bounty' see Sharpe, *Rebranding Rule*, 12.

¹⁰ For cookery and representations of power generally see Viktoria von Hoffman, "The Taste of the Eye and the Sight of the Tongue: The Relations Between Sight and Taste in Early Modern Europe," *The Senses & Society* 11, no. 2 (2016): 86-7; Ken Albala, *The Banquet: Dining in the Great Courts of Late Renaissance Europe* (Urbana and Chicago: University of Illinois Press, 2007), 9-10. For a general exploration of the dual significance of fowl objects of appetite natural history see

¹¹ Pritchard, *Outward Appearances*, 115-6.

and imbue them with philosophical credibility. Even virtuosi ambivalent about the Restoration must have felt the importance of installing themselves among an abundance contrived to evoke its benefits. Through experimental networks, conventions, and sociabilities, the promises associated with this space could be refined, shared, and vouched for – as Neile did when, at a meeting some distance away from the park itself, he recalled one of the many exhibitions fulfilment with which it was charged.

Spectacles of abundance, however, took on fresh meanings as they became increasingly implicated, for critics across the political spectrum, in the panoply of crises contributing to the downfall of the Restoration. Disasters, for which the sensuality of the government was widely blamed, nourished suspicions it had become incapacitated by bodily appetites.¹² We have already seen, in the course of exploring such spaces as the tavern and the coffeehouse, some of the many ways in which consumption loomed large in criticisms of the new regime, abundance and excess morphing from a promise of restored order into symptom of corruption. Just as the political and experimental machinery of the park clanged into gear, then, the trajectory of a government apparently beholden to gratification provided a demonstration of the dangers to which the satisfactions of this space could lead. This very seriously altered the significance of the park, and the abundance thriving therein. The failure of this setting, apparent some years into the Restoration, to symbolise a vigorous political body, was a development bound up with the fresh articulation of classical grievances against excess and the indulgence of bodily appetites. As upheaval precipitated suspicions of the park's abundance, the park became a setting swarming not just with monuments to the worth of Stuart rule, but its decay.

¹² Zwicker, *Lines of Authority*, 90.

This chapter considers the place of experiment in the park, even as the trajectory of the Restoration altered – for the worse – what it meant to be there. It first recovers the importance of parks to promises of political renewal under a restored monarchy. To do so, it looks at how parks were, as exhibitions of abundance and gratification, engineered to evidence the fruits of a returned Stuart dynasty. It then turns to the place of experiment among these political designs, even as the progressively unsteady trajectory of the Restoration itself turned the promises of this space into deceptions. Finally, the chapter moves outside the worlds of park and experiment, to look at how features of the park – particularly its abundance – coloured representations of experiment. As experiences of indulgence came to forecast not renewal but disorder, experiment – particularly when staged in the park – became vulnerable to association with symptoms of corruption and decline. The appetites exhibited in the park became vices of experiment.

“...Peters sheet, inhabiting this Park...”

While parks had long been significant to the projection of political power throughout Europe, and remained so into the seventeenth-century, the Restoration saw a number of such spaces – St James’s Park foremost among them – given some novel, or at least newly urgent, political functions. By the time of Restoration, French and Italian gardens had already evolved, in scale and design, into the “estate parks” now so commonly studied in connection with Europe’s emerging administrative and political cultures: sweeping landscapes emanating outwards from a large central residence, with formal gardens, statuary, and hunting grounds disappearing over the horizon.¹³ These vast, geometrically inspired designs, were often laid

¹³ Chandra Mukerji, *Territorial Ambitions and the Gardens of Versailles* (Cambridge: University of Cambridge Press, 1997), 8, 35-6; Mirka Beneš, "The Social Significance of Transforming the Landscape at the Villa Borghese, 1606-30: Territory, Trees, and Agriculture in the Design of the First Roman Baroque Park," in *Gardens in the Time of the Great Muslim Empires: Theory and Design*, ed. A Petruccioli (Leiden: Brill, 1997),

out on land that had been especially appropriated for the purpose, or which had until then been tasked with entirely different functions.¹⁴ In early modern Rome, villas – and the gardens radiating outwards from them – were built on the ruins of ancient buildings and fastnesses, which not only provided convenient foundations, but secured claims of lineage and descent from the city, and its earlier peoples.¹⁵ While these and other seventeenth-century parks, including Versailles, expressed such relatively new, in Europe at least, aspects of political culture as the static, territorial state, the land – and parks – to which the Stuarts returned in 1660 were assigned at least one more, freshly important, function: the depiction of monarchy itself as a natural solution to disorder.¹⁶ The negotiated character of this institution's return with the Stuarts imposed special requirements on the business of pro-monarchical representation. The terms of return resolved upon, before the Restoration, between the then future Charles II and his circle, and General Monck as head of the republic's army, had included a free parliament, religious toleration, and indemnity for all but regicides.¹⁷ Confirmation of title for new owners of what had once been Church and Crown lands was also part of the bargain.¹⁸ Not only had monarchy once been deemed dispensable, then, its welcome was now contingent on an ability to modelling a kind of indulgence it had not been known to offer before – at least towards difficult religious and political cohorts. These changing expectations of monarchy formed an important background to the renovations soon witnessed across some of the most visible parks in the three kingdoms, as well as the issuing of official guidance as to how these physical changes were to be read.

1-31; Denis Ribouillault, "The Cultural Landscape of the Villa in Early Modern Rome," in *A Companion to Early Modern Rome, 1492-1692*, ed. Pamela M. Jones, Barbara Wisch, and Simon Ditchfield (Lieden: Brill, 2019), 385.

¹⁴ Mukerji, *Territorial Ambitions*, 20-1, 32.

¹⁵ Ribouillault, "Cultural Landscape of the Villa," 370-1.

¹⁶ For the significance of European parks to territoriality see Mukerji, *Territorial Ambitions*, 8, 35-6; Ribouillault, "Cultural Landscape of the Villa," 385.

¹⁷ Hutton, *Restoration*, 107-9.

¹⁸ *Ibid.*

From the beginning of the Restoration, parks – particularly in view of their ability to create experiences of abundance – formed one dimension of a visuality which, drawing on longstanding identifications between the royal and political “body,” presented the satisfactions of the “merry monarch” – the ducks he ate, the geese he beheld – as promises of magnanimity: suggestions of indulgence towards hitherto discouraged religious and political groups.¹⁹ Sensitive to the bases on which Stuart return had been negotiated, and the importance of demonstrating some progress towards these promises, the poet Edmund Waller offered a panegyric to the beneficence of the new head of the post-interregnum polity in his *On St James’s Park* (1661). Waller’s verses encouraged contemporaries to interpret this space as an assurance the new regime intended to abide by the conditions imposed on it. Waller was teaching a new way of reading St James’s Park, and particularly its abundance: its satisfactions, and the kinds of indulgence possible there, were to convey those of religious and political life under a restored Stuart dynasty. Its variety was to convey diversity of conscience and confession as real possibilities. Visions of plenty – the ease with which “the choicest things that furnisht *Noahs Ark / Or Peters sheet*” could be seen “inhabiting this Park” – were to herald precisely the kind of future promised in order to secure the return of Stuart rule.²⁰ André Mollet, brought from France and commissioned royal gardener the same year as Waller’s verses appeared, would later describe the spaces in which he laboured – including the gardens of Greenwich as well as St James’s Park – as replete with satisfactions and appetitive rewards.²¹ There was nothing accidental about his designation of the park as a setting wherein “there is not one of our senses which finds not it self charmed.”²² When Mollet’s horticultural contributions to the “royal and lordly house” were described in his

¹⁹ McDayter, “Poetic Gardens and Political Myths,” 135-6; Pritchard, *Outward Appearances*, 113-4.

²⁰ Edmund Waller, *A Poem On St. James’s Park as Lately Improved by his Majesty* (London, 1661).

²¹ André Mollet, *The Garden of Pleasure, Containing Several Draughts of Gardens Both in Embroyder’d-Ground-Works, Knot-Works of Grass, as Likewise in Wilderness, and others. With their Cuts in Copper*. (London, 1670), B.

²² *Ibid.*

Garden of Pleasure, posthumously published in English in 1670, they came prefaced with praise of the once exiled monarch's "Royal and Generous bounty."²³

In concert with rhetorical assertions of royal munificence, metropolitan parks were energetically redesigned and maintained to promise an ease which, in the early years of the new order, would otherwise have appeared – at the very best – still to bud. In St James's Park, a new canal, modelled on that of Versailles, and the installation of exotic gifts from foreign courts, ensured it swarmed with a rich variety of life, on which the monarch and his court could feast.²⁴ These had not been features of London's parks when Cromwell's troops had camped there.²⁵ Waller, writing in the wake of the canal's construction, helped himself to the abundance of these new waters in forecasting renewal, as much as the soil above its banks. Fowl, too, were capable of serving as pledges of plenty. The birdlife of St James's Park, which increased in diversity through gifts on the King's return, included species which – though today often associated with ornamental gratification – had a place in culinary, as well as visual, tastes. These included cormorants, cranes, herons and peacocks.²⁶ The participation of the park's abundance in politically freighted suggestions of consumption was particularly apparent in one feature of the re-engineered St James's Park: the duck decoy. The word "decoy," derived from the Dutch words for "duck" and "cage," signified a construction of considerable scale, often consuming above two or three acres of land.²⁷ It consisted of a central pond, from which multiple channels roofed with netting (these being craftily concealed through enmeshment with willows and other cultivated habitat) branched off,

²³ Ibid.

²⁴ Waller, *On St. James's Park*, 5.

²⁵ For London's parks under Cromwell and the Commonwealth see Henry Reece, *The Army in Cromwellian England, 1649-1660* (Oxford: Oxford University Press, 2013), 110; David Roberts, "Caesar's Gift: Playing the Park in the Late Seventeenth-Century," *ELH* 71, no. 1 (2004), 124; McDayter, "Poetic Gardens and Political Myths," 135.

²⁶ For the birdlife of St James's Park see Sorbière, *Relation d'Un Voyage*. For the significance of these birds see Anita Guerrini, "A Natural History of the Kitchen," *Osiris* 35 (2020): 21, 28-32.

²⁷ For the etymology of the word "decoy" and the origins of decoys themselves see Vandra Costello, "Dutch Influences in Seventeenth-Century Ireland: The Duck Decoy," *Garden History* 30, no. 2 (2002): 177-80.

before gradually diminishing in width, to terminate – often – in a disguised cage.²⁸ But the ultimate ends towards which the ducks swam were those of Whitehall, which had wagered heavily on representations of abundance – and identifications of monarch, state, and indulgence.

The efficacy of these visions of reward was not entirely parasitic on contemporary analogising between royal and civic bodies. Cavaliers and privileged office-bearers might, it was hoped, model the diffusion of game, stock, and other satisfactions, to trusted organs of the new polity. The Earl of Essex argued for the indispensability of Phoenix Park outside Dublin, since its loss would mean “y^e Governor” did not have “command of a Buck for his owne Table,” and would thus deprive the viceregal court of a “Place of pleasure.”²⁹ Visitors to Greenwich Park, which Mollet had a hand in redesigning alongside his responsibilities for St James’s Park, noticed the royal residence there stood “close” to “a game park.” The Queens House, situated on a hill rising out of this expanse, was accordingly accounted “a pleasure house.”³⁰ Following the example of the renovated St James’s Park, duck decoys were constructed in localities across the Isles.³¹ Stuart visuality invested heavily in mechanisms designed to display not just the consumption, but the distribution, of abundance. Perhaps alert to the dangers of stuffing too many promises into the royal body itself, ever a more vulnerable frame after the decapitation of Charles I, much was loaded into the more capacious repository of the park – where those designated as deserving, mostly cavaliers who had received relatively little out of the Restoration, could be seen sustained and duly rewarded.

²⁸ Ibid.; Michael Ezban, “Decoys, Dikes and Lures: Polyfunctional Landscapes of Waterfowl Hunting,” *Studies in the History of Gardens & Designed Landscapes* 33 (2013): 193-207.

²⁹ Essex to the Earl of Shaftesbury, 8 March 1672/3, *Essex Papers*, ed. Osmund Airy (Westminster: Camden Society, 1890), 59.

³⁰ H. J. Louw, “Some Royal and Other Great Houses in England: Extracts from the Journal of Abram Booth,” *Architectural History* 27 (1984): 504.

³¹ Costello, “Dutch Influences,” 177-90; Ezban, “Decoys, Dikes and Lures,” 193-207.

Yet as devices for asserting the munificence, and thus the viability of the restored polity, landscapes of abundance were naturally the subject of suspicion once events placed in doubt the very order they were supposed to promise. The former royalist soldier, Richard Allestree, conceived the Fire of London as a sign that even the holiest “houses,” “temples,” and “monuments” of the city had been “polluted” with exhibitions of vice.³² His *Causes of the Decay of Christian Piety* (1667) found vices in the urban heart of the Restoration, contrasting this landscape of indulgence with the kind of devotion possible in a true “wilderness.”³³ It has been pointed out Allestree may have been the first to use the word “beast,” or “bestial,” to refer to “the animal nature of man.”³⁴ But the bestiality of which he spoke was not a danger originating from within. Instead, developing a conception of piety fundamentally at odds with panegyrics to the luscious plenty of the park, Allestree urged a repudiation of “the gross and carnal, such as may court and gratifie the bestial part of us.” Far from joining poets like Waller in equating abundance with “Paradise,” Allestree asserted their fundamental polarity:

...had we proposals of a *Mahumetan* Paradise, were we to expect our bliss only in the satiating of our appetites, it might be reasonable here to whet them before hand...and by frequent antepasts excite our gust for that profuse perpetual meal. Had we only the prospect of a *Canaan*...the salvation of a Joshua, and affluence milk and honey could produce...[it]...would be no wonder, if we never voluntarily endured the thirst and famine of the wilderness, but be always as they desiring meat...But when our religion makes us no such tender, when all its hopes are of another make...What pretence can we have to cherish that here, which we must wholly be divested of hereafter...?³⁵

The Raphael of Milton’s *Paradise Lost*, printed the same year as Allestree’s *Decay*, warned Eve, in a vivid identification of rationality with restraint, that “Knowledge is as food, and needs no less her Temperance over Appetite.”³⁶ In Milton’s epic, groves of the kind

³² Allestree, *Decay of Christian Piety*, A4v.

³³ *Ibid.*, 5.

³⁴ Peter Sahlin, *1668: The Year of the Animal in France* (New York: Zone Books, 2017), 25.

³⁵ *Ibid.*, 4.

³⁶ Milton, *Paradise Lost*, 7.126-7. Raphael’s advice informs the discussion of temperance in Emily E. Speller, “‘For Knowledge is as Food’: Digesting Gluttony and Temperance in Milton’s *Paradise Lost*,” *Early*

celebrated by Waller were excoriated in a reminder that “paradise” – and the innocent forms of consumption it accommodated – had indeed been “lost.” Given Waller’s *St James’s Park* began by identifying this new metropolitan “Paradise” with the one he referred to simply – and openly – as “the first,” scholars like David Quint have aptly seen Milton offering an interrogation of Waller’s park-oriented, regime-serving “puffery.”³⁷

Other disasters provoked further reflection on the significance of abundance; the naval embarrassments attending the outbreak of the Second Anglo-Dutch War in 1665, in particular, were easily deemed a disruption to the national renewal the park was supposed to have promised. The poet Andrew Marvell, who Curtis Whitaker speculates was unenamoured with the redesigned St James’s Park, included in his libels against the new administration scenes in which the King dined luxuriously while the Dutch fleet crept up the Thames in the June of 1667.³⁸ Tying these charges of decadence to the park was the fact that Marvell’s verses were a satirical response to Waller’s writings – most immediately his *Instructions to a Painter*, released as a broadside after the ultimately indecisive Battle of Lowestoft in the June of 1665. Waller’s *Instructions* is often remembered as an unconvincing attempt to “draw” the events of Lowestoft as a “Victory,” despite the Duke of York’s fleet missing its chance to pursue and annihilate the retreating Dutch.³⁹ In seeking images of political vitality in an engagement that came to look increasingly inconclusive, Waller did not just extend the range of settings on which his rhetoric depended from the “prodigal” St James’s Park to the – less

Modern Studies Journal 2 (2009). Other explorations of Milton’s attitude to feasting include Arvind Thomas, “Milton and Table Manners,” *Milton Quarterly* 40, no. 1 (2006).

³⁷ David Quint, “Milton, Waller, and the Fate of Eden,” *Modern Language Quarterly* 78, no. 3 (2017): 439-440.

³⁸ For speculations on Marvell’s attitude to St James’s Park in particular see Curtis Whitaker, “Andrew Marvell’s Garden-Variety Debates,” *Huntington Library Quarterly* 62, no. 3 (1999), 296-311.

³⁹ Zwicker, *Lines of Authority*, 95; Dzelzainis, “Waller, Marvell, and ‘La Belle Stuart’ Reconsidered,” 90; Noelle Gallagher, “‘Partial to Some One Side’: The Advice-to-a-Painter Poem as Historical Writing,” *ELH* 78, no. 1 (2011): 86-9.

certain – “wat’ry field” of battle.⁴⁰ He exposed the limitations of the abundance he had earlier christened a guarantor of political prosperity. His earlier flourishes had appealed to the geography of St James’s Park in attempting to link its abundance with the triumph – including naval triumph – of the restored regime, dwelling on the freshly dug channel through which the waters of the Thames communicated with those of the park’s canal.⁴¹ Through this channel, the contents of “*Noahs Ark*” and “*Peters sheet*” – the plenty of the park – spilled into the Thames estuary: an image of magisterial bounty overflowing into military, but especially naval, might. In challenging Waller’s portrait of victory, Marvell developed a political epistemology in which evidence of the Stuart administration’s viability flowed the other way, with mishaps like Lowestoft rippling back upstream to illuminate the deceits of an abundance the park was engineered to promise. Marvell’s verses showed how the failures of the new government nourished scepticism towards attempts to connect the health of the state with the restored “Prince’s Pleasure.”⁴² Energetically constructed connections between natural and imperial bounty, park and martial vigor were coming undone.

With such libels a threat to the new regime, further shows of excess – which, in rendering the promises of spaces like St James’s Park increasingly illusory, lent credibility to charges of decadence and decline – became horrifying developments even for faithful servants. After his downfall, the Earl of Clarendon, widely blamed for the longevity of conflict with the Dutch, took to declaring war the consequence of “a very savage appetite.” Gluttonous satisfactions of the kind with which parks across the three kingdoms were stuffed had led, he declared, only to conflict, which he likened to the career of a wild beast – specifically, a boar – tearing through the tranquility of a garden: “is it not a most detestable

⁴⁰ Edmund Waller “Instructions to a Painter,” in *Poems on Affairs of State: Augustan Satirical Verse, 1660-1714*, vol. 1, ed. George deForest Lord (New Haven & London: Yale University Press, 1963), 26, 30.

⁴¹ Waller, *On St. James's Park*, 3-4.

⁴² *Ibid.*, 3.

Thing,” he asked, “to open a Gap to let this wild boar enter into the Garden of Christians, and to make all this Havock and Devastation in Countries planted and watered by the equal redeemer of Mankind?”⁴³ Sir William Temple, who began his diplomatic career during the Second Anglo-Dutch War, retired decades later to write essays on “gardening,” insisting – in line with critiques of the courtly excess blamed for the humiliations of the 1660s – on “Temperance.”⁴⁴ The writings of personalities like Clarendon and Temple show how even royalists once close to the court, as well as purveyors of libel, distinguished between the abundance with which the new regime had, in settings like the park, identified itself, and the paradisaical ease of a true “Garden of Christians.” It was a scepticism which, drawing on the increasingly illusory nature of the tranquility Stuart parks were contrived to advertise, insisted – at its most forceful – that such paradise had been “lost.”

There was perhaps another sense in which the appetites of the park could have left the very objectives of this space dismembered rather than fulfilled. Peter Sahlin has seen in the *menagerie* of Versailles and, in particular, its birdlife, a shift towards representations of authority in which “the sovereign was not properly identified with the savagery and animality of a wild beast or wolf.”⁴⁵ Certainly St James’s Park, at least, was supposed to ward off impressions of sovereign brutality in its hagiographic casting of the monarch as an indulgent provider, feeding clamouring hordes of fowl.⁴⁶ But as we have seen, many of the park’s animals were edible, and indeed prized delicacies. Unlike the grounds of Versailles, where purpose-built structures enclosed the site’s animals, access to the beasts, fowl and fishes of parks in London, Greenwich, and further afield, remained – notwithstanding the renovations

⁴³ Edward Earl of Clarendon, *A Collection of Several Tracts of the Right Honourable Edward, Earl of Clarendon, Author of the History of the Rebellion and Civil Wars in England* (London, 1727), 207-8.

⁴⁴ William Temple, “Upon the Gardens of Epicurus; Or of Gardening in the Year 1685,” *Miscellanea. The Second Part* (London, 1690), 86.

⁴⁵ Sahlin, *Year of the Animal*, 66.

⁴⁶ Cibber, “Life,” 72.

accompanying the advent of the Restoration – comparably easy for a wide range of people.⁴⁷ When creatures of the park appeared on plates in Whitehall, therefore, there was an element of royal predation, even competition with public interests, less discernible outside Paris, where absolutist architecture helped determine who could view the *menagerie*. While the park, in accommodating such exhibitions as the feeding of ducks, was contrived to evoke the capability of the Restoration to fatten stomachs, the public nature of its wildlife allowed for an appreciation of loss when royal or courtly consumption thereof took place. Even before the unsteady trajectory of the new administration gave a special valence to feasting and exhibitions of appetite, the Stuart park – open for all to see – could easily produce images of avarice. If the park aimed to depict the magnanimity and indulgence of the government, the pleasures of its head would ideally not come at the expense of other members of the political body – but they did.

“...Philosophical Supper...”

Practitioners of experiment entangled themselves in the abundance of the park, and its consumption, through their enthusiasm and interest in the life it supported. The ease with which observations of parkscape, and experiences of its rewards, were shared across experimental networks attests to the significance of this space as a seat of contrivance and invention. Significantly, however, it reminds us of the role virtuosi played in disseminating the promises of renewal these spaces were engineered to convey – even when they extended to increasingly problematic exhibitions of abundance.

Experimental renewal was located perhaps most fulsomely in the fauna of the urban park. Evelyn’s interest in St James’s Park is often remembered as an extension of his forays – some of them printed – into forestry; but his diary reveals an immersion in the staggering

⁴⁷ For access to Versailles see Sahlins, *Year of the Animal*, 23, 72.

variety of fauna lodged therein. He placed himself among “Infinite flocks of severall sorts of ordinary, & extraordinary Wild foule.” The pleasure he took in avian diversity was rhapsodically reported alongside “Deere of severall countries, White, spotted like Leopards, Antelope: An Elke, Red deer, Robucks, Staggs, Guinny Goates[,] Arabian sheepe &c.”⁴⁸ Edward Browne, son of the philosopher Thomas Browne, and a formal member of the Royal Society from 1668, took in this variety amid a visit to London replete with anatomy lectures and searches for chemical ingredients.⁴⁹ Studies of both Brownes have linked these figures to the Royal Society intellectually, as well as socially, through a shared interest in “things of wonder and curiosity as well as experimentation.”⁵⁰ This interest extended to a parkscape pregnant with political overtures. Also recording the abundance of this space alongside a portfolio of experimental interests were a cohort of foreign visitors, for whom ingratiating themselves at court was a priority. This group, who on occasion shared and encouraged each other’s accounts, included personalities such as Hobbes’ protégé Samuel Sorbière, and Ferdinand Albrecht, Duke of Brunswick-Luneburg, who combined an experimental disposition with an interest in London’s leafier corners.⁵¹

The ingenuities with which this setting was crowded furnished observations of abundance. The park, as a constructed environment, housed more than objects of natural history; its built components – like the material technologies with which experiment is more commonly associated – produced novel, highly *unnatural*, observations. In St James’s Park, experimental grandees wallowed in one of the space’s most innovative features: the decoy.

⁴⁸ 9 February 1665, *DJE*, 3:399-400.

⁴⁹ Edward Browne’s travel diary is reproduced as the “Journal of Mr. E. Browne” in *Sir Thomas Browne’s Works Including his Life and Correspondence*, 4 vols., ed. Simon Wilkin (London: William Pickering, 1836), 1:42-59. His description of St James’s Park occurs on p. 50.

⁵⁰ For Thomas Browne, Edward Browne, and the Royal Society’s experimental network, see Christopher D’Addorio, “Raining Mice and Russian Leather: The Production of Knowledge in the Early Royal Society and Thomas Browne’s *The Garden of Cyrus*,” *ELH* 84, no. 1 (2017): 1-32.

⁵¹ Sorbière, *Relation d’Un Voyage*, 42. 65-6, 74; Monconys, *Journal de Voyages*; Jill Kohl, “The Curious Traveller: Literary and Non-Literary Documents of a Visit to Restoration London,” *German Life and Letters* 36, no. 3 (1983): 219-31.

Built under the supervision of the Dutch expert, Sydrach Hilcus, this decoy – described above – embraced methods known in the early seventeenth-century Netherlands, including baiting the pond with domestic fowl, and luring wild birds with artificial nests.⁵² Evelyn greatly admired these contrivances – but invention also extended into the bodies of the wildlife around it.⁵³ A crane with one leg amputated above the knee picked its way through these surrounds, walking with the help of “a wodden or boxen leg & thigh with a jonyt for the knee so accurately made, that the poore creature could walke with it, & use it as well as if it had ben natural.”⁵⁴ Browne marvelled that this fabricated limb could serve so “dexterously,” in a diary revealing Evelyn was not alone in his appreciation of a landscape populated with experimental wonders.⁵⁵ Neile’s eel with a duck in its mouth, with which this chapter began, was an observation that could have been easily made in the course of observing the park’s decoy. It could with scarcely less ease have been the result of looking across the park’s new canal – another highly artificial theatre which, essentially a large trough, provided a laboratory for exploring effects of wind and other “agitations” on tides.⁵⁶ In another suggestion of the degree to which abundance sat among the contrivances of the park, Christopher Wren and the royalist virtuoso, Thomas Henshaw, were able to observe the behaviour of the park’s seal-in-residence courtesy of “a pool” apparently “made for” the animal.⁵⁷ There was nothing natural about observations made in such contrived settings; they took place amid, and often depended on, aspects of a newly renovated park. Observing abundance required attention to highly experimental features of park life – the same environs engineered to establish, as a visible truth, the bounty brought by the Restoration.

⁵² McDayter, "Poetic Gardens and Political Myths," 137; Costello, "Dutch Influences," 180; Ezban, "Decoys, Dikes and Lures," 195.

⁵³ 9 February 1665, *DJE*, 3:399.

⁵⁴ *Ibid.*

⁵⁵ 25 February 1664, Browne, "Journal," 1:50.

⁵⁶ Birch, *History*, 3:216.

⁵⁷ *Ibid.*, 3:403.

The intrusion of curiosity into the park, and its abundance, penetrated deeply into the rapacity on show therein. Reporting on bestial appetite and its gratification gave observers of this artificial space a role in diffusing the visibility it had been constructed to express. Evelyn began one of his longest descriptions of St James's Park with a recount of his attempt to "examin" the throat of a pelican, marvelling at its beak "above 2 foote long."⁵⁸ He watched it "tosse up & turne a flat-fish, plaice or flounder to get it right into its gullet...which being filmy stretches to a prodigious widenesse when it devours a great fish &c."⁵⁹ But even this show of greed was eclipsed by the water fowl, which "would eat as much fish as its whole body weighed, I never saw so unsatiabable a devourer...[and]...admir'd how it could swallow so much...I believe it to be the most voracious creature in nature." The gannets, another familiar sight in the park, were "also greate devourers, & are said soone to exhaust all the fish of a pond..."⁶⁰ Neile shared his duck-gorged eel with the Society as a response to his fellow royalist and virtuoso, Henshaw, telling the group he had seen "an eel choaked with a water-rat, the two hind legs hanging out of its mouth."⁶¹ With the doings of St James's seal rendered observable through means of its purpose built pond, one of the creature's most arresting habits turned out to be that it ate its food beneath the water.⁶² The park's fabrications yielded observations of gratification; virtuosi diligently reported on them – reproducing and endorsing them as witnesses. Even as the trajectory of the Restoration encouraged scepticism towards the very prodigality once contrived to assure of its success, exponents of experiment immersed themselves in the gluttony outside its gates.

Experimental philosophers were not just witnesses to these displays, but participants, often rolling up their sleeves and entering the feast itself. When Moray informed the Society

⁵⁸ 9 February 1665, *DJE*, 3:399.

⁵⁹ *Ibid.*

⁶⁰ *Ibid.*

⁶¹ Birch, *History*, 1:238.

⁶² *Ibid.*, 3:403.

that “the king had made an experiment of keeping a sturgeon in fresh water in St. James’s Park,” it was immediately “moved to kill it, and see how it would eat.”⁶³ Continuity with Stuart prodigality was also a feature of experiment evinced in the roles, and even quotidian itinerary, of the restored monarch. Charles was both superintendent to the renovation of metropolitan parks, as well as the Society’s official patron and founder.⁶⁴ He would periodically visit the experimental installations dominating these spaces, including the great telescope of St James’s Park, as he would also stop to feed the birds beside them.⁶⁵ Both gestures brought the monarch into contact with an experimental world, ensuring experimental technology protruded out of – and endorsed – his promises. The ease with which Charles could pass between the fixtures of decoy and telescope illustrated the degree to which his representations sat within reach of new forms of affirmation. The park thus expressed what membership of experimental circles like the Royal Society, which listed courtiers and servants of the new regime, was also doubtless designed to announce: experiment was a vocation serving courtly appetites.

Experiment also sat close to another aspect of the park’s significance to Stuart apologetics: its potential to model the distribution of bounty across the breadth of the new polity. Here private, provincial parks, came to the fore. Evelyn, visiting the inquisitive Lady Clarendon at Swallowfield Park, was greatly moved by the ease with which the objects of curiosity celebrated in his *Sylva*, and its preface addressing the state of St James’s Park, were to be found on these grounds. It was not just “the delicious & rarest fruits of the garden” providing a “plentifull dinner” and sustaining an “antient hospitality” for a family with an

⁶³ Birch, *History*, 1:281; D. C. Martin, “Sir Robert Moray, F. R. S. (1608?-1673),” in *The Royal Society: Its Origins and Founders*, ed. Harold Hartley (London: The Royal Society, 1960), 246; Jenny Uglow, *A Gambling Man: Charles II and the Restoration* (London: Faber and Faber, 2010), 242.

⁶⁴ For Charles’ supervision of park works see McDayter, “Poetic Gardens and Political Myths,” 136-7; David Jacques, “Garden Works in Greenwich Park, 1662-1728,” *The Court Historian* 11, no. 2 (2006): 150. For his role as founder of the Royal Society see E. S. de Beer, “King Charles II, Fundator et Patronus,” *Notes and Records of the Royal Society of London* 15, no. 1 (1960): 39-45; Hunter, *Science and Society*, 48.

⁶⁵ Mundy, *Travels*, 5: 157-8; Cibber, “Life,” 19; Sprat, *History*, 133, 149.

inter-generational commitment to the monarchy. Delicacies of the kind installed outside

Whitehall abounded here too:

...The Canale, & fishponds...[were]...so well & plentifully stor'd with fish,
that for Pike, Carp, Bream, & Tench; I had never seene any thing approaching it:
We had Carps & Pike &c of size fit for the table of a Prince, every meale, &
what added to the delight, the seeing hundreds taken in the drag, out of which
the Cooke standing by, we pointed what we had most mind to, & had Carpes
every meale...

As Evelyn described the contentments of Swallowfield, he vouched for a diffusion of abundance that was intensely symbolic. In Ireland, where Lady Clarendon's husband would serve as Charles II's Lord Lieutenant, an assiduously encouraged influx of Dutch protestant immigration allowed for the refurbishment of parks and estates with decoys dwarfing – while also recollecting – those of centres such as St James's Park.⁶⁶ Viscount Massareene, a member of the Royal Society with landholdings in Ulster, and a shareholder in Petty's second double-bodied vessel, took advice from emigré engineer Martin Jansen van Heyninge regarding the construction and maintenance of a decoy on his lands outside Antrim Castle.⁶⁷ Others experimenting with decoy engineering of a kind encountered in London included the Irish tory and virtuoso, Viscount Conway.⁶⁸ As the contentments of the park performed their promissory role through overflow into the estates of confidantes and viceregal grandees, so did experiments advertise the distribution of abundance across the restored polity.

Experiment not only involved relishing and recreating elements of the metropolitan park; it enhanced the reach of its fruits. Operators of the King's Tube exemplified this process, drinking their cider – a product of the orchards of cavalier estates, such as Neile's – outside in the park, or in the Whitehall lodgings of personalities like Moray. Experiment here allowed, through Neile's cider, the preservation of the park's fruits, and provided, through the

⁶⁶ Costello, "Dutch Influences," 177-90.

⁶⁷ Ibid., 181, 187.

⁶⁸ Ibid., 181.

King's Tube, an occasion for their public consumption. Evelyn did not need to visit the landscape tended by the "extraordinarily skill'd" Lady Clarendon, or indeed any other *grounds*, to experience the bounty of "Gardens & Waters" celebrated in his published and unpublished writings. Through engines like Denis Papin's "Digester," a contrivance for cooking food at high pressures, he and other virtuosi could taste the kind of delicacies yielded by parks in the course of a "Philosophical Supper."⁶⁹ Such technology not only reproduced constituents of the park in new settings; it *augmented* abundance through enlarging – in species such as the pike and tench Evelyn had admired with Lady Clarendon – the boundaries of what was consumable. Through engines like the "digester:"

...the hardest bones of Biefe itselfe, & Mutton, were...made as soft as Cheeze...[while producing]...an incredible quantity of Gravie, & for close, a Gellie, made of the bones of biefe, the best for clearnesse & good relish, the most delicious that I had ever seene or tasted; so as I sent my Wife a glasse of it, to the reproch of all...[that]...the ladys ever made of the best Harts-horne &c: We Eate Pick & other fish with bones & all without any impediment: but nothing exceeded the Pigeons, which tasted just as if baked in a *pie*...⁷⁰

The air-pump, so often regarded the "great paradigm" of seventeenth-century experiment, was frequently crammed with foodstuffs, its virtuosi operators enthusing over its potential to preserve delicacies retrieved from parks and gardens.⁷¹ Preservation experiments, conducted far from sites of horticulture, spread the experiential ingredients of peramble and discovery familiar to such landscapes. As Papin presented the Royal Society with cherries, apples, raspberries and strawberries boiled *in vacuo* and sealed in jellies of boiled bones, he was expanding the reach of qualities endemic to the park – diffusing its phenomenology. Experiment closed the experiential gap between grove and laboratory, orchard and experiment – striving to "keep" the "smell and taste" of fruits encountered in the park.⁷²

⁶⁹ 12 April 1682, *DJE*, 4:278-9.

⁷⁰ *Ibid.*

⁷¹ RSA CLP/18i/15, f. 30, f. 36; Birch, *History*, 4:503. For air-pump experiments as paradigmatic trials see Shapin and Schaffer, *Leviathan*, 4.

⁷² RSA CLP/18i/15, f. 30, f. 36; Birch, *History*, 4:503

Those preoccupied with the dissemination of experimental philosophy only emphasised its significance as an extension of abundance, notwithstanding the ease with which these contentments were increasingly associated with license and disorder. Hooke's *Micrographia* brazenly informed "the *Gentlemen* of our Nation" that a commitment to experiment meant "not only...*beholding* and *contemplating*, but...*tasting* too those fruits of Natural knowledge."⁷³ Sprat's *History* sought to emphasise the appeal of the "new" philosophy by gesturing to the "noble rarities...everyday given in" from the "Fishponds, the Parks, the Gardens, of *Gentlemen*."⁷⁴ While the Bishop found it necessary to assure readers the philosophers he celebrated were not all "*voluptuous* men," a curiosity for objects of the park – and secondarily, the table – was supposed to illustrate how "much dispers'd" was "the Genius of *Experimenting*."⁷⁵ The Lyonnais virtuoso, Balthasar de Monconys, who became a member of the Royal Society after his visit to London in 1663, published his encounters with its experimental wonders alongside accounts of his banquets with virtuosi at Whitehall. Readers saw him moving from the Kings Tube to dinners consisting of:

...eight great plates, that covered the table all filled with large roasted meats, & others of fowl: and above all, three great plates filled with diverse salads...some dishes, in which there were no less than six roasted chickens, in others five pigeons, & all in a butter sauce, some plated sausage...with strong raisins, some patisseries, & one sole stew. There was also deer tongue, well smoked; some plates of fish including salmon, sturgeon, & some salty oysters...the best were the large sides of beef – all excellent.⁷⁶

Evelyn's attempts to situate "Natural Science" in the parks and plantations of the Restoration involved not just publications like the *Sylva*, but conversations over tables laden with the "fruits" of these settings. So intertwined was the intake of knowledge and nourishment for Evelyn that, when old age loomed to deprive him of the ability to attend these meetings

⁷³ Ibid.

⁷⁴ Sprat, *History*, 72, 343-4.

⁷⁵ Ibid., 71.

⁷⁶ See Monconys' entry for 25 June 1663 in *Journal des Voyages de Monsieur de Monconys, Conseiller du Roy en ses Conseils d'Etat & Priue, & Lieutenant Criminel eu Siege Presidial de Lyon [...]* *Second Partie. Voyage d'Angleterre, Pais-Bas, Allemagne, & Italie...* (Lyon, 1666), 81.

himself, he complained of living “sterved and half-famish’d.”⁷⁷ It was possible to live without “philosophical supper;” Evelyn could – and, in old age, did – withdraw from the experimental table, even as it groaned under the weight of the park’s yield. But such withdrawal from the feast was, for Evelyn, a journey into “wilderness,” an isolation from the “regalo” of experimental life.⁷⁸

Finally, the immediacy of London’s metropolitan parks not just to the excesses of government, but town (something distinguishing it from the grounds of courts like Versailles), meant its experiments were often an extension of more public, less courtly, experiences of plenty. Pepys and the experimental enthusiast John Creed stumbled into St. James’s Park to watch Ralph Greateorex’s water-raising engine after a morning drinking healths at a “Rhennish wine house.”⁷⁹ It was a route illustrating the ease with which the park’s engineering novelties were situated among the vices of urban, as well as titular and courtly, excess. Still within view of Greateorex’s engines, the notoriously “hard drinking” chemist Nicasius Le Fèvre was installed in a laboratory purporting to publicise its endeavours for “all persons which compose Civil Society.”⁸⁰ Those flocking from town could also take in the sight of the King’s Tube; and if well-watered by the time they approached the instrument, they would not – on this basis at least – have been distinguishable from its handlers. When clouds prevented Moray, Neile, and a posse of other courtiers, including the Earl of Kinkadine, from satisfying Christiaan Huygens’ astronomical curiosity when the telescope was still lodged among the parterres of the Privy Garden, the visiting Huygens was provided with more earthly pleasures, which he enthusiastically essayed. (Neile’s cider was “fort

⁷⁷ Evelyn to Pepys, 7 July 1694, *Particular Friends*, 246. For more of Evelyn’s reminiscing on the satisfactions of his earlier life see Evelyn to Pepys, 6 July 1693, *Particular Friends*, 238; Evelyn to Pepys 7 January 1695, *Particular Friends*, 256.

⁷⁸ *Ibid.*, 245.

⁷⁹ Pepys, 11 October 1660, *Diary*, 1:263-4.

⁸⁰ Nicasius Le Fèvre, *A Discourse Upon Sr Walter Rawleigh's Great Cordial* (London, 1664), 1; Andrew J. Mendelsohn, “Alchemy and Politics in England 1649-1665,” *Past & Present* 135, no. 135 (1992): 58-62. For Le Fèvre’s capabilities as a drinker see 22 January 1652, *DJE*, 3:54.

excellent.”)⁸¹ These were all men of status, and cider, as briefly mentioned, was a drink with special, cavalier, resonances. But in the park, confusion with the motley crew swarming through contemporary depictions of its vices was a heightened risk. In its mists, beneath the night sky or the arboreal canopy, gentlemen quenching their thirst and slaking their appetite more easily resembled groups of “sailors,” “guards,” “pimps” and “gaolers” than almost anywhere else.⁸² While the union of experiment with the satisfactions of abundance certainly left it entangled with the appetites of the court, the court’s proximity to town created the potential for confusion with more public, though no less freighted, forms of excess.

“...Pleasures of a Hogg...”

The situation of experiment amid the abundance of the park was a predicament reflected in expressions of animosity towards it. Observable connections to this space left experiment deposited in a visuality of renewal which, within the first decade of the Restoration, had become increasingly unconvincing. As abundance ceased to symbolise a healthy state, experiment had a place not among portents of a restored polity, but symptoms of its premature decline. While the park furnished opportunities for experimental observation, distrust towards the spectacles of fulfilment it had been designed to convey ensured ties to this terrain produced – or were at least reflected in – some particularly troublesome portrayals of experiment.

Scepticism towards Stuart apologetics, and its use of the park, located experiment among vices of political significance – vices illuminating the deceptions of this space.

⁸¹ Ibid.

⁸² This sketch of the park’s population appeared in the Earl of Rochester’s response to Waller’s verses. See John Wilmot, Earl of Rochester, “A Ramble in St. James’s Park,” in *The Works of John Wilmot, Earl of Rochester*, ed. Harold Love (Oxford: Oxford University Press, 1999), 76-80.

Decadence, and the descent of the new regime into disorder, was a preoccupation for Marvell, whose *Instructions to a Painter* poems wove allusions to experimental activity into their repudiation of Waller's park-inspired, pro-Stuart oeuvre.⁸³ Historians have seldom followed Marvell's allusions to experiment much further than a mention of Hooke in the *Last Instructions* of 1667.⁸⁴ Yet even this poem alone exhibits a much more sustained interest in experiment – and it does so in the course of challenging the very assurances Waller sought to convey by appeal to the park. As Steven Zwicker points out, in the *Last Instructions* appetite was now suggestive of political decay; abundance of corrosive luxury. It is, therefore, significant that some of this text's embodiments of voracity – notably the Duchess of York – were also depicted as devotees of experiment.⁸⁵ The Duchess, for various reasons an easy surrogate for criticism of the new government, was depicted in terms emphasising both her appetite and the fact she was the Earl of Clarendon's daughter (economically, through reference to her "Chancellor's belly."⁸⁶) The Duchess had also, his *Instructions* implied, surpassed the Royal Society in her "studying" – an activity the poem situated against the background of moon, stars, "neighbouring elms," and "green leaves."⁸⁷ Experimental curiosity was thus here embodied among the vices of appetite depicted by Marvell. The park, evoked arboreally as well as more generally through reference to the boundlessness of York's

⁸³ Marvell, "Last Instructions to a Painter," *PAM*, 367, 369; Martin Dzelzainis, "Marvell and Science," in *The Oxford Handbook of Andrew Marvell*, ed. Martin and Edward Holberton Dzelzainis (Oxford: Oxford University Press, 2019), 181. For Marvell's poems as a satirical attack on Waller see Zwicker, *Lines of Authority*, 95-7; Timothy Raylor, "Marvell and Waller," in *The Oxford Handbook of Andrew Marvell*, ed. Martin Dzelzainis and Edward Holberton (Oxford: Oxford Handbooks Online, 2019), 642-5; Dzelzainis, "Waller, Marvell, and 'La Belle Stuart' Reconsidered," 78.

⁸⁴ The poem instructed a painter of "our Lady State" to "With Hooke then, through the microscope, take aim." Marvell, "Last Instructions to a Painter," *PAM*, 367. The reference to Hooke is noted and discussed, for example, in Denise E. Lynch, "Politics, Nature, and Structure in Marvell's 'The Last Instructions to a Painter,'" *Restoration: Studies in English Literary Culture, 1660-1700* 16 (1992): 82-92; Gallagher, "'Partial to Some One Side,'" 95. More wide-ranging treatments of Marvell and "experiment" include Dzelzainis, "Marvell and Science," 180-205; Joanna Picciotto, *Labors of Innocence in Early Modern England* (Cambridge: Harvard University Press, 2010), 344-56.

⁸⁵ Marvell, "Last Instructions," *PAM*, 368-9

⁸⁶ For Duchess of York's utility to satire concerned with problems of state see Zwicker, *Lines of Authority*, 97-8.

⁸⁷ *Ibid.*

appetite, were part of what it meant for the Duchess to be a “Philosopher beyond Newcastle’s wife.”⁸⁸ Meanwhile, York’s identity as an “inventress,” which the poem also affirmed through comparison to both Margaret Cavendish, Duchess of Newcastle, as well as the Royal Society, emphasised the constructed, possibly deceitful, character of the abundance Marvell’s whole series of *Instructions* poems reduced to decadence – and placed among problems of state.⁸⁹ Just as experiment was to be seen in the parks to which Stuart apologists had appealed in the early years of the Restoration, it was now targeted in the interrogation of such displays, and the appetites they accommodated.

The entanglement of park with experiment in suggestions the Restoration would produce a new, paradisaical age of ease, ensured their dismissal in tandem – once the abundance both were supposed to evidence became illusory. John Milton’s *Paradise Lost*, printed as Marvell’s verse circulated in manuscript, placed experimental enquiry among the perils of gratification – and among reasons why St James’s Park, in particular, was no paradise. David Quint has recently complicated longstanding appreciations of Milton as a poet unengaged with Restoration literature, illuminating instead Milton’s preoccupation with – and repudiation of – park-leaning panegyrics to the Stuart administration.⁹⁰ But as Milton dismantled pro-Stuart parallels between St James’s Park and a restored Eden, in the course of doing so he questioned the utility of some of the park’s most experimental contrivances. Visions afforded by the “Glass of *Galileo*” – of which the park Waller lauded had provided an impressive example – were “less assured” than the sights of Eden.⁹¹ There were once visions to be had of a “Gard’n...with Cedars crown’d;” with this terrain now lost, philosophers saw only “Imagind Lands and Regions in the Moon.”⁹² Such contrasts

⁸⁸ Ibid., 368.

⁸⁹ Ibid.

⁹⁰ Quint, “Fate of Eden.”

⁹¹ Milton, *Paradise Lost*, V, 260.

⁹² Ibid.

undermined identifications of the contemporary park with a rejuvenated and virtuous paradise, severing the concepts of Restoration from renewal; at the same time, they questioned the worth of the experimental endeavours that were part of attempts to construct such politically expedient displays. Raphael's dictum that "Knowledge is as food," and the poem's pervasive insistence on "Temperance over Appetite," thus emerged out of suspicion of the contemporary park, and technologies lodged within it. Political and epistemological promises fell together, as they had – in the park – grown together.

The dangers of appetite, and of submission to illusions of abundance, was a theme in works produced from much closer to the court, and its less urban retreats, than either Marvell or Milton had been. The royalist playwright Thomas D'Urfey, accounted a producer of "virtuoso satire," found prodigality illusory as a sign of renewal – in politics or learning.⁹³ One of his satires, spoken at Newmarket, where Charles II hunted, rode, and feasted with his entourage, took aim at the "King's Dinner," where "Learning & Good Manners...quit the Room."⁹⁴ South's animadversions against experiment recycled advice directly given to the government, as when, in a sermon preached to court, he warned against "the British guidance of sence and appetite."⁹⁵ A republication of South's sermon of 1667, and the rhetoric it used to situate the Royal Society's experiments in "vice" (with which the introduction to this thesis began), further illustrates the contiguity of attacks on experiment with deplorations of courtly appetites. The reappearance of this sermon in the second volume of his *Sermons Preached on Several Occasions* (1694), meant that – long after the abundance the park was supposed to associate with Stuart rule had indeed proved a mirage – his criticisms of experiment remained wedded to preoccupations with excesses of state. In this

⁹³ For D'Urfey and "virtuoso satire" see Coppola, *Theatre of Experiment*, 33, 42-3.

⁹⁴ Thomas D'Urfey, *Madam Fickle: or the Witty False One. A Comedy as it Acted at his Royal Highness the Duke's Theatre*. (London, 1676), 60-3; *New Poems Consisting of Satyrs, Elegies, and Odes: Together With a Choice of Collections of the Newest Court Songs, Set to Musick by the Best Masters of the Age* (London, 1690), 60-3; Coppola, *Theatre of Experiment*; 42, 52-3; Jenkinson, *Culture and Politics*, 226.

⁹⁵ South, *A Sermon Preached Before the Court at Christchurch Chappel in Oxford*, 9.

volume, South's depiction of experimental appetite reappeared alongside crisp denunciations of what he called the "pleasures of a Hogg."⁹⁶ Bestial appetite, South implied, was a scourge to be kept at arms length from seats of government: "A goat, or a Swine, in a Chair of State, cannot be more odious, than ridiculous."⁹⁷ The language spilled over into his attack on the Royal Society, whose membership he charged with being "wholly incapable of entertaining any Design above the present gratification of their Palates, and whose very Souls and Thoughts rise no higher than their throats."⁹⁸ South doubt's about the utility of experiment, like those of Marvell, with whom he otherwise shared very little in common, emerged from suspicions of appetite and its gratification, exhibitions for which the new administration – in large part due to spaces like the park – had become notorious.

Reminders of the park, and its phenomenology, were not far from even some of the most straightforward – and perhaps, in a contemporary sense, successful – identifications of experiment with unbounded appetite. Thomas Shadwell's *Virtuoso* inserted the play's titular "virtuoso" into a narrative staged not just in the laboratory, but extending into walks through gardens and grottos. The production presented its audience with a lover of experiment modelling exactly the kind of interest, celebrated by Sprat and others, in the "rarities...everyday given in" from "fishponds...parks...[and]...gardens."⁹⁹ Experimental curiosity, and an appetite for abundance, were thus – as they had been for Milton – inseparable – and they were therefore interrogated in tandem. The play's dialogue alluded to experiments conducted on plants in St James's Park. But it was its emphasis on consumption, a process not confined to the park itself, that best recalled the appetites with which this space had left experiment entangled. The "virtuoso" was forever inviting more restrained members

⁹⁶ Ibid., 9; *Twelve Sermons*, 11.

⁹⁷ *Twelve Sermons...the Second Volume*, 300.

⁹⁸ Ibid., 49.

⁹⁹ Sprat, *History*, 72.

of the cast not just to experiments, but feasts, as when he sought company for the dissection of a Lobster, “and afterwards to take a dish of meat, and discourse of the noble Operation.”¹⁰⁰ When this voracious observer of bounty endemic to the Stuart park first appeared, he was scripted to do so lying “on a table,” in the course of learning to swim like a frog.¹⁰¹ Significantly, this was a scene opening effortlessly from a prior sequence taking place outside, amid the plants and ponds from which such life came, with an especially designed movable screen expediting the transition between greenery and domesticity, the one sweeping into the other with novel ease.¹⁰² With even such settings as the house, laboratory, and banqueting table storing, recalling, and preserving the fruits of the park, its importance to experiment – and everything wrong with it – was implied through emphasis on the very permeability of ostensibly more withdrawn settings like the laboratory.

The location of these allusions to park, bounty, and boundless appetite, in such a canonical representation of the “virtuoso,” and his ambitions, as Shadwell’s, illuminates the importance of both the space and its vices to other portrayals of experiment. To begin with, as Frances Harris has observed, the play was performed during a particularly hot, stormy summer; it was thus well attended, generating – and prejudicing – arguments about the Royal Society and its interests for weeks.¹⁰³ This served to fan the play’s criticism, and in particular its presentation of a voracious virtuoso, through London – at the very least. Those offending Royal Society stalwarts like Hooke and Evelyn with their questions, reservations, and scepticism that summer thus expressed, in a secondary sense, doubts about the utility of

¹⁰⁰ Thomas Shadwell, *The Virtuoso. A Comedy, Acted at the Duke's Theatre*. Written by Thomas Shadwell. (London, 1676), 4, 7, 32.

¹⁰¹ *Ibid.*, 25.

¹⁰² Shadwell, *Virtuoso*, 25. For an explanation of this device see Jocelyn Powell, *Restoration Theatre Production* (London: Routledge and Kegan Paul, 1984), 55-6; Al Coppola, *The Theatre of Experiment: Staging Natural Philosophy in Eighteenth-Century Britain*, (Oxford: Oxford University Press, 2016), 43.

¹⁰³ Frances Harris, *Transformations of Love: The Friendship of John Evelyn and Margaret Godolphin* (Oxford: Oxford University Press, 2002), 257-9. See also John Shannahan, “Theatrical Space and Scientific Space in Thomas Shadwell’s *Virtuoso*,” *SEL Studies in English Literature 1500-1900* 49, no. 3 (2009): 549-71; Coppola, *Theatre of Experiment*, 10-1.

experiment owing to an engagement with the park's abundance, and its consumption. But also suggestive of the importance of this space, and its vices, are the play's literary inspirations. While scholarship on *The Virtuoso*, insofar as it has sought provocations for Shadwell, has largely focused on the experimental literature to which his play alludes, there has been comparably little attention to antecedent satirical treatments of experiment and the Royal Society – and thus scant consideration of how they too might betray a wider engagement with the problem of abundance.¹⁰⁴ Here, too, the creatures with which the park was stocked – and thus the space itself – could be glimpsed. Samuel Butler, who some commentators have given a hand in writing *The Virtuoso* had, by the 1670s, a history of producing satires of experiment and of the Royal Society.¹⁰⁵ His "Satire of the Royal Society," likely published in the 1660s, had the King's virtuosi hungry for knowledge of precisely the kinds of park life that were supposed to identify this space with "Peters Sheet:"

What is the nat'ral cause why fish
That always drink do never piss?
Or whether in their home, the deep,
By night or day they ever sleep?¹⁰⁶

Fishy waters had been one of the most recognisable components of the abundance amid which experimental observations were made. Within a decade of the Restoration, with its promises of ease the subject of suspicion and doubt, the learning supposed to evidence this new future was also of questionable use.

¹⁰⁴ For scholarship focusing on experimental literature as sources for Shadwell's satire see Claude Lloyd, "Shadwell and the Virtuosi," *MLA* 44, no. 2 (1929): 472-494; Anstey, "Literary Responses to Robert Boyle's Natural Philosophy," 145-62; Andrew Black, "The Orator in the Laboratory: Rhetoric and Experimentation in Thomas Shadwell's *Virtuoso*," *Restoration: Studies in English Literary Culture, 1660-1700* 37, no. 1 (2013): 3-17; Coppola, *Theatre of Experiment*, 32-5.

¹⁰⁵ Butler's partial authorship of *The Virtuoso* is suggested, without argument, in Hugh de Quehen's *ODNB* article on Butler (September, 2004); Malpas, "Cowley and Butler," 60. For Butler's satires throughout the 1660s see, for example, William C. Horne, "Curiosity and Ridicule in Samuel Butler's Satire on Science," *Restoration: Studies in English Literary Culture, 1660-1700* 7, no. 1 (1983): 8-18.

¹⁰⁶ Samuel Butler, "A Satire Upon the Royal Society," in *The Poetical Works of Samuel Butler*, ed. John and George Lyle Galbraith Mitford (London: W. Pickering, 1835), 157.

Looming large among park-lodged pursuits vulnerable to representations of experiment, and its doubtful worth, was the very instrument poking so conspicuously out of the shrubbery of St. James's Park: the telescope. We have already seen how one of Milton's clearest allusions to experimental activity, made within his *Paradise Lost*, and its scepticism of Waller's park-leaning panegyrics, was to the search for "Imagind Lands and Regions in the Moon." The accompanying insinuation, that the earth and its bounty was not enough for the court's philosophers, was hardly surprising in a poem labouring the downstream consequences of a "gluttonous first sin." But instrumental ingenuity emerged out of avarice elsewhere. Butler's *Elephant in the Moon*, and its depiction of greedy observation (already examined in Chapter 3, in connection with social magnification), further identified telescoping with voracity. Lunar experiences were brought back to earth – likened to surveys through which Petty, in particular, had sought a share of fruitful land in Ireland, which he now fought to retain as royal connections proved integral to title in Restoration Ireland.¹⁰⁷ When the "virtuoso" of Aphra Behn's *Emperor of the Moon* first appeared, expressing his obsession with the daily movements of a lunar monarch, he did so standing in "a Garden" – his hunger expressed in the insufficiency of this setting, despite its association with contentment, to keep from him scanning foreign landscapes with "a Telescope twenty (or more) Foot long." Here also, and no less suggestively, "tryal" brought the philosopher into contact with sovereign appetite.¹⁰⁸ The dependence of telescoping on corners of the Stuart state redolent of appetite, and increasingly problematic exhibitions of abundance, left it mired in the earth from which it strove to see further.

¹⁰⁷ Butler, "Elephant in the Moon," 2. For the importance of court and royal connections to the Restoration land settlement in Ireland see L. J. Arnold, *The Restoration Land Settlement in County Dublin, 1660-1688* (Dublin: Irish Academic Press, 1993), 98; S. J. Connolly, *Religion, Law and Power: The Making of Protestant Ireland 1660-1760* (Oxford: Oxford University Press, 1992), 14-5.

¹⁰⁸ Aphra Behn, *The Emperor of the Moon: A Farce* (London, 1687), Cv.

When the Glorious Revolution confirmed the collapse of the Restoration in 1689, and with it decades of scepticism about its viability, experiment – like other components of the park contrived to evidence the health of Stuart rule, was still more vulnerable to hostile representation. Augustan satires of learning, many of them written with an eye to Whig favour, often looked back to the experiments of the Restoration, deploring the abundance from which they came. Jonathan Swift's whig friend William King, in his *Dialogues of the Dead* (1699), presented a woman who was, in her innocence, horrified to hear her friend had fallen in with a "virtuoso," who took "his bill of Fare out of *Atheneaus*, and cover'd my Table with the most surprizing Dishes imaginable."¹⁰⁹ The tory Edward Ward, out to investigate the "Promiscuous Encouragement of Vice" in his *Secret History of Clubs*, found it no less difficult to pass over the "Philosophical Supper" Evelyn and his friends had enjoyed, in the course of loading Papin's digester with pike and tench – and other delicacies of the park.¹¹⁰ It was a piece of technology unambiguously placed among an ultimately grotesque penchant for tasting *any* available "novelty."¹¹¹ Even Mary Astell's attempt to compare the "Vices" of men and women found the former disadvantaged by those whose "study is like *Noah's Ark*, the general Rendezvous of all Creatures."¹¹² Explicitly comparing "these Gentlemen" who "ransack all Parts both of Earth and Sea" to "the Ass that eats all promiscuously, and without distinction, to satisfy his *Appetite* and support *Nature*," Astell argued the unbounded curiosity of the Royal Society rendered them a "Faithless, Incredulous Generation of Men."¹¹³ Clearly, charges of appetite, and unproductive immersion in abundance were, like fish from the canal watched by Neile, slow to expire.

¹⁰⁹ William King, *Dialogues of the Dead. Relating to the Present Controversy Concerning the Epistles of Phalaris* (London, 1699), 33.

¹¹⁰ Ward, *Secret History of Clubs*, 16-7.

¹¹¹ *Ibid.*

¹¹² Mary Astell, *An Essay in Defence of the Female Sex. In Which are Inserted the Characters of a Pedant, a Squire, a Beau, a Virtuoso, a Poetaster, a City-Critick, &c. In a Letter to a Lady. Written by a Lady.* (London, 1696), 102.

¹¹³ *Ibid.*, 96-100, 105.

Conclusion

This chapter has recovered the place of experiment in the park, as the trajectory of the Restoration altered – for the worse – what it meant to be there. The metropolitan parks of London, especially, were important to the promises of renewal on which the legitimacy of the restored Stuart monarchy depended. While continental parks and gardens like Versailles expressed such new aspects of European political culture as the static, territorial state, those of London had at least one other, more defensive, function: the depiction of monarchy as a natural solution to the problem of disorder. These were landscapes engineered to express the fruits of a returned Stuart dynasty, at a time when the events of the preceding decades might be taken to imply that monarchy itself was far from essential.

The problem for experiments situated in this promissory landscape, was that the progressively unsteady trajectory of the Restoration transformed its promises into deceptions. Against the background of courtly indolence and naval disaster, abundance ceased to look promising at all – instead becoming a sign of decadence. As experiences of indulgence came to forecast not renewal but disorder, experiment – particularly when staged in the park – became vulnerable to association with symptoms of corruption and decline. The visions experimental practice had grown to create and report on – visions like Neile's duck-gorged eel – were distrusted as guides to what the future of the Restoration would look like.

Nowhere was this problem more obvious and acute than in the importance experiment had, within the first decade of the Restoration, to representations of decadence. Texts as diverse as Marvell's poetry, Shadwell's plays, and Butler's verses all foregrounded – from different perspectives – the deceptions of park-lodged abundance while dwelling on the dubious worth of activities and personalities important to experiment. This chapter has used such

critics to look at how spectacles of appetite and gratification propagated in the park became vices visible in experiment.

Chapter 6: Experiments in Sensuality

Introduction

At least as recalled in the minutes of the Royal Society, Neile reported his satiated eel in a conversation brimming with still more politically evocative fare. For the meeting at which this exhibition of appetite was relayed was one also concerned with another observable process, on the park's eastern – palatial – boundary: procreation. Our best understanding of how the Society might involve themselves in such an affair comes from the Society's first chartered president, Viscount Brouncker, who resolved, during the meeting in question, to place "some fishes" swollen with spawn in a cistern in Whitehall.¹ His royalist companion Sir Robert Moray, a denizen of Whitehall, was also praised for his mastery of "the way of breeding fish by transporting spawn."² Yet another royalist operator, and a founding fellow of the Society, the Earl of Kincardine, was then tasked with investigating "in what season the spawn must be gathered, how managed, and in what sort of fishes."³ All this is to say that, discursively, Neile's observations of gratification, his contributions to disseminating the abundance of the park, shaded off into paens to the procreative powers observable in Whitehall. These powers and processes were, to the virtuosi among whom Neile shared his observations, congruous – like the palace itself – to the activity of the park.

Just as the fecundity of Whitehall was, through the interests of experimental circles, entangled with visions of the park, so too were some of the most forceful reminders of the prolificity of the palace's proprietor. The sexual life of Charles II, assigned, on the basis of its fruits, a daring apologetic function in the work of historians like Kevin Sharpe, was regularly

¹ Birch, *History*, 1:238. It is unclear if Brouncker ever lived in Whitehall. His name is not among the occupants of rooms listed in George Vertue's engraving of the Whitehall plan of 1670, reproduced in Simon Thurley, *The Whitehall Palace Plan of 1670* (London: London Topographical Society, 1998), 62-3.

² Birch, *History*, 1:238.

³ Ibid.

evinced in parks.⁴ Here the restored monarch walked and conversed with mistresses, women with whom he was known to have had children.⁵ In helping direct attention to his burgeoning intramural legacy, such displays of intimacy are often interpreted as having aimed to associate Charles with at least one variety of potency.⁶ On this picture, they were contrived to enhance the degree to which royal puissance might be an observation of nature. Private parks and estates yielded opportunities for similar representations, pens and tongues capably reproducing for wider consumption what metropolitan eyes had missed.⁷ As a trait aimed at demonstrating power, fecundity was strategically asserted through reunions, walks, and conversations in landscapes maintained to evoke the natural legitimacy of the Restoration. Expressed through the sensual interactions it accommodated, the viscosity of Stuart renewal was a show emerging effortlessly out of the abundance of the park – and, with particular efficacy, from sensual reminders of royal fecundity.

Like analogies constructed between alimentary gratification and the prosperity of the state, spectacles requisite to the assertion of fecundity, and, through it, restored power, also had their force tampered by contemporary catastrophe. The medley of disaster – natural, naval, and political – lending freight to gratification progressively throughout the 1660s impinged on the theatre of intimacy staged in the park. The burgeoning cohort of royal mistresses, essential to contemporary representations of royal power, were – as the court's wisdom became subject to contention – easily dubbed vicious snares.⁸ The sensuality of the

⁴ Sharpe, "Country's Darling and Desire," 1-32, especially 20-1; *Rebranding Rule*, 121, 164, 192. For importance of mistresses to Stuart apologetics more generally see Zwicker, *Lines of Authority*, 92-4.

⁵ Sharpe, *Rebranding Rule*, 164.

⁶ Ibid.

⁷ Rachel Weil, "The Female Politician in the Late Stuart Age," in *Politics, Transgression, and Representation at the Court of Charles II*, ed. Julia Alexander Marciari and Catherine Macleod (New Haven and London: Yale University Press, 2007).

⁸ Zwicker, *Lines of Authority*, 94-5, 97; "Politics of Sexual Misconduct," 152, 154-5; Murray, "'Transgressing Nature's Law': Representations of Women and the Adapted Version of the *The Tempest*, 1667," 19; Sharpe, "Country's Darling and Desire," 15; *Rebranding Rule*, 72, 214-5; Williams, *Whig Literary Culture*, 111.

park thus closely followed – and was often part of – its increasingly unconvincing insistence on abundance. But it was also a setting exposing the new regime to still more epistemologically freighted charges. In accommodating shows of royal proximity with actresses known for disguise, as well as foreign and confessionally dubious women, parks were obvious sites of error and deception. Like taverns, they were capable of accommodating prominent, sexually defined, threats to a still largely unestablished – and, in view of these threats, increasingly uncertain – order. From very early on, the sexuality of Whitehall was expressed through the interactions of the park; but the park was also part of the process through which the apologetic value of sensuality itself evaporated.

Despite the importance of bodily intimacy to representations of an increasingly contested power, and – via the park – its co-extensivity with large pockets of experimental space, little consideration has been given to how experimental practice, so situated, worked (or otherwise.) Perceptions – or misperceptions – of the new women of the court have been the subject of some stimulating studies.⁹ The epistemological ramifications, in spaces like the park, of the presence of women implicated in narratives of imperial, and – in the case of the restored monarch – cognitive decline, are explored in the work of such scholars as Will Pritchard.¹⁰ Yet scholarship devoted to the experiments of the Restoration, despite their presence in this space, has had little to say about these connections, and how they might have impacted on attempts to establish and defend experimental methodology. Recognition of the importance of women, intrigue, and sensuality to the experiments of the park seems more or less confined to undeveloped acknowledgements of the Duchess of Portsmouth's involvement in events leading to the establishment of the Greenwich Observatory in 1675.¹¹

⁹ See for example Weil, "Female Politician," 177-91.

¹⁰ Pritchard, *Outward Appearances*, passim, but especially 123-5. See also McDayter, "Poetic Gardens and Political Myths."

¹¹ The fullest treatment of the Duchess's involvement in these events is provided in Adam Perkins, "King Charles and the Founding of the Royal Observatory," in *The History of Celestial Navigation* (Springer, 2020), 31-4. For a footnote-length claim the Duchess was somehow "linked" to the "foundation of the ROG"

Such brief asides fail to recover what the presence of such reminders of Stuart sensuality meant for the philosophy through which it was partly expressed. We lack an account of how feminine personalities and powers, at once implicated in the sexual politics of the court, and a familiar aspect of park sensuality, entered into the story of experimental philosophy – particularly an account sensitive to the reputedly vicious threat they constituted.

This chapter therefore descends into a space swarming not just with experiments, but increasingly contested representations of restored power. It charts how, in what should now be a familiar pattern, what might have seemed a convenient setting for experiment in the first years of the Restoration came to provide powerful grounds for its dismissal. As the displays of sensuality implicated in a wider visuality of fecundity became reasons not to celebrate the restored Stuart court, but to doubt its rationality, experiments had less to gain from sharing the park with them. Neile and his companions endorsed excursions into the fecundity adjoining, and partly expressed through, the abundance of the park; others did not.

“...Love and Fertility...”

The seeds of the restored regime’s overt sensuality, and its display in arboreal settings such as the park, lay partly in the demands created by its own – not entirely self-written – mythology. As Charles II began arranging the corners of his state over which he had some control – and shovels were, accordingly, applied to spaces like St James’s Park – printed, hand-written, and oral histories, not all of official provenance, pruned out a story from earlier times. This was the narrative of the his escape – then as a young prince – following the defeat of his army at the Battle of Worcester in 1651; versions of the story had the future sovereign

see Rebekah Higgit, "'Greenwich Near London': the Royal Observatory and its London Networks in the Seventeenth and Eighteenth Centuries," *The British Journal for the History of Science* 52, no. 2: 317, note 98. See also Hunter, *Science and Society*, 95.

hiding in the boughs of an oak, while Cromwell's forces scoured the ground around its trunk.¹² The image of the Prince clinging to the boughs of this "royal oak," as a city's worth of taverns has ever since been called, reminds us of the physical terms in which Stuart power, even in its weakened state, was uncompromisingly portrayed.¹³ Charles' refuge in the canopy evinced a bodily vulnerability. This was, to be sure, potentially dangerous imagery – one privileging such emasculating conditions as deprivation, concealment, and fatigue. Such narratives needed to be carefully channelled into apologetic courses, like the waters of the canal constructed in St James's Park. They therefore needed contrapuntal representations, among them media designed – as parks could be – to aid their interpretation and, in the case of this story, to affirm its *temporality*. With the right conclusion, narratives like that of the royal oak depicted the "Preservation" of monarchical power – an essential antecedent to its restoration. The royal body had once been forced to hide; for that reason, after 1660, reminders of its vigor, walking in plain sight beneath the kind of canopy it once concealed itself in, had a role to play in heralding royal reappearance.

Like the freshly constructed *patte d'oie* of St James's Park, beginning from a point slightly to the north-east of Whitehall's "old staircase," and radiating outwards, some of the most important suggestions of sovereign vigour extended beyond the restored monarch's palace.¹⁴ In walks especially, the King was now to be seen. He was not hiding in, but now moving *beneath*, the trees of the park – a reappearance evoked through public interactions with servants, courtiers, and perhaps most distinctively, mistresses.¹⁵ The significance of this

¹² This story, and its various versions, are analysed in connection with Stuart apologetics in Sharpe, *Rebranding Rule*, 88-91. For an attempt to reconstruct the historical events on which it was based, and identify the tree in question, see Paul Stamper, "The Tree that Hid a King: The Royal Oake at Boscobel, Shropshire," *Landscapes* 3, no. 1 (2002): 19-35.

¹³ For the presence of Charles II's body in Stuart visuality see Sharpe, *Rebranding Rule*, 189; "Country's Darling and Desire," 12.

¹⁴ The Old Staircase was just one of the more conspicuous of many connections between Whitehall Palace and St James's Park, including the "park gate" leading to Horse Guard Yard and the "passage from the park" marked on the Whitehall plan of 1670. The plan is reproduced in Thurley, *Palace Plan*, 61-5.

¹⁵ 1 March 1671, *DJE*, 3:573.

latter presence lay in the ability of women to furnish perhaps the most powerful suggestions of his renewed bodily strength. One of the women with whom Charles could be seen conversing on his walks through St James's Park was the actress Nell Gwynn (already encountered in Chapter 3 of this thesis), who was known to have born him at least one child.¹⁶ Gwynn's house backed onto the park, so that part of meeting Gwynn would have involved descending the staircase near the termination of one of the new *patte d'oie*'s rays, and walking towards the Royal Garden beside St James's Palace, in the park's northern corner. The King's sorties across this landscape, and Gwynn's reception of him, were probably, for many, one of the most direct reminders of this particular relationship.¹⁷ The monarch's ability to talk to Gwynn from the Royal Garden as the actress stood, at least a storey's height above him on the back-terrace of her house, was crucial to the highly visible character of these exchanges. The royal body no longer cowered in the treetops; it descended to renew itself, and sensual exchange – including suggestions of procreative power – was part of that renewal.

The park's centrality to representations of restored power, especially those expressed through reminders of the returned monarch's productive sexual life, was partly a function of representations unconfined to this space – and mistresses were such a representation. Gwynn, when seen in conversation with the King, reminded spectators of other royal mistresses, among them Barbara Villiers (whose relationship with Charles made her Countess of Castlemaine, and Duchess of Cleveland.)¹⁸ In this sense, she was the embodiment of at least two phenomena. The first was that of the "painted woman," who was (as we saw in Chapter 3) asserted to have risen from such spaces as the tavern, bawdy house, and theatre.¹⁹ The

¹⁶ 1 March 1671, *DJE*, 3:573; Sharpe, *Rebranding Rule*, 170-1.

¹⁷ 1 March 1671, *DJE*, 3:573.

¹⁸ *Ibid.*

¹⁹ 5 October 1667, *DSP*, 8:463.

second was the cohort of mistresses at court more generally. (This second group included not just actresses and orange-women, but aristocratic women like Cleveland, whose biography was more aloof than that of Gwynn, or her fellow performer-turned royal consort, Moll Davis.) There were obvious differences between the two kinds of mistress.²⁰ But the “mistress” itself was a recognisable category, not least on account of an almost serial presence in royally commissioned portraits, such as those produced by Peter Lely, in which “royal bastards” joined these women on the canvas.²¹ Through these and other depictions of mistresses, and their children to the King, a monarch whose marriage to the Portuguese infanta Catherine de Braganza had produced no heir modelled the renewal demanded by his history of vulnerability.²² Despite contemporary obsessions with the powers of mistresses, then, these figures also served, as Kevin Sharpe has insightfully observed, as “representations of the king.”²³ This meant, crucially, that the presence of mistresses in the park – and thus the park itself – had a significance deeply inflected by the monarch’s closed door affairs. Just as the park was crucial to reminding the public of courtly liaisons, mistresses – and other reminders of profligacy lodged in the park – were imbued with a sensuality derived from their importance to a procreative Stuart apologetics.

The architects of this apologetics, and the strategies through which it was expressed, were also, in some cases, conspicuous features of park life. The Earl of Arlington, whose political importance indicated in his early rise to the position of his Secretary of State in 1662, was widely seen facilitating some of the most crucial royal liaisons; he also married his daughter to a child born of Charles and Cleveland.²⁴ Known – like other liaison brokers – as a

²⁰ Sharpe, “Thy Longing Country’s Darling and Desire,” 21.

²¹ Sharpe, *Rebranding Rule*, 100.

²² *Ibid.*, 100, 170-1.

²³ *Ibid.*; “Thy Longing Country’s Darling and Desire,” 8-9, 12, 22-3.

²⁴ Robin Eagles, “‘The Inkhorn Lord’? Locating Arlington’s Connections,” in *Henry Bennet, Earl of Arlington, and his World: Restoration Court, Politics, and Diplomacy*, ed. Robin Eagles and Coleman Dennehy (New York and London: Routledge, 2021), 14, 19.

“pimp,” Arlington resided in Goring House, the “natural centre” of St James’s Park on the opposite side of the Canal to Whitehall, on the site of what is now Buckingham Palace.²⁵ Built to advertise, through luxury and situation, its owner’s importance to the new regime, this house probably played a role similar to Arlington’s residence at Euston Park – which also housed sensual interactions increasingly important to the political world in which Arlington moved.²⁶ Henry Brouncker, brother of the Royal Society’s president, Viscount William Brouncker (see Chapter 3), and Groom of the Duke of York’s Bedchamber, was another important figure in displays of sensuality. He was accounted a broker of York’s liaisons, and therefore another “pimp.”²⁷ He also held the Rangership of Phoenix Park outside Dublin, thus combining official responsibilities for maintenance of this important vice-regal landscape with functions no title could capture.²⁸ The proximity, not just of mistresses, but those charged with engineering their presence at court, to Stuart parks, and the offices and processes germane to their management, enhanced and reflected the sensuality of these spaces.

The women whose bodies were charged with evincing Stuart renewal were present, too, in attempts to compel the park’s sensuality (as well as its abundance, described in Chapter 5 above) into forecasting a prodigal and powerful empire. The “beauties of the British court” were women featuring prominently in the *Instructions to a Painter* Waller composed in 1665, in the wake of his *On St James’s Park*.²⁹ This attempt to portray the indecisive Battle of Lowestoft, of June that year, as a victory, sought to show how the presence of court “beauties” gave to the “soldier” a “valeur” of which the “wat’ry wilderness

²⁵ 28 March 1665, *DJE*, 3:404; McDayter, “Poetic Gardens and Political Myths,” 145; Jacobsen, “Luxury Consumption,” 313.

²⁶ Jacobsen, “Luxury Consumption,” 299; Eagles, “Inkhorn Lord?,” 15.

²⁷ 10 June 1666, *DSP*, 7:159; 24 June 1667, *DSP*, 8:286.

²⁸ Litton C. Falkiner, “The Phoenix Park, Its Origin and Early History, with Some Notices of Its Royal and Viceregal Residences,” *Proceedings of the Royal Irish Academy (1889-1901)* 6 (1900): 478.

²⁹ Waller, “Instructions,” 6.

yields no supply.”³⁰ The land, and its women, provided what the ocean could not. The only of these “beauties” specifically identifiable in Waller’s *Instructions* is the Duchess of York (soon, as we saw in Chapter 5, to bear the brunt of satirical reactions to such optimism in the face of naval and other varieties of mishap). But York evoked the larger cohort of park-appearing women so important to extra-literary representations of restored power. The Duchesses’ liaisons, her (secretive and confessionally suspect) marriage to the King’s brother, and her connection – through her father, the Earl of Clarendon – to the ministry, all meant she embodied the most prominent vices of the court mistress, and the worst consequences of Stuart sexual profligacy.³¹ Perhaps most importantly, York was easily seen in the park. Waller, in his *Instructions*, cast her, recalling Venus, as a goddess with ties to the sea, as well as to “love and fertility.”³² Like the canal of St James’s Park, whose construction he had lauded a few years earlier, York – and through her, again, the construct of the mistress – was tasked with attesting to the renewal of the Stuart body. Waller’s *Instructions* thus asserted what his *On St James’s Park* had first urged: that pleasures prophesied the rewards of future naval and imperial might under a restored monarchy. But this time it was for the Duchess to show that the new women of the court, so visible in the park, could “help the nation where such beauties spring.”³³

As such feminine, park-appearing evocations of royal puissance became important to assertions of renewal, doubts about the longevity of the ostensibly restored polity crystalised around precisely such displays. When Marvell’s verses interrogated the failures of Lowestoft and, by implication, Stuart government, they challenged not just identifications of viability and abundance (as explored in Chapter 5), but also, more particularly, suggestions the

³⁰ Ibid., 7; Zwicker, *Lines of Authority*, 95-6.

³¹ *Lines of Authority*, 95.

³² Waller, “Instructions,” 6-7; Zwicker, *Lines of Authority*, 96.

³³ Waller, “Instructions,” 6-7.

“Beauties of the Court” could indeed “help...the nation.”³⁴ Partly through appealing to historical appreciations of the role of sensual vices in imperial collapse, and tropes of Roman decadence, Marvell’s verses placed sensuality – a sensuality the park was built to convey – foremost in accounts of contemporary administrative failings. In the case of Lowestoft, he was greatly aided by convictions that not just the Duke of York, but his “pimp” – Henry Brouncker again – were to blame for this forsaken opportunity to annihilate the Dutch fleet.³⁵ Beliefs of this kind, and their endorsement in verses like Marvell’s, wove personalities known for sexual distraction (the Duke of York), or its facilitation (Brouncker), into narratives of national debasement. Once the import of Lowestoft became clear, as it did when the undestroyed Dutch fleet wreaked havoc on English vessels in the Thames estuary in 1667, sensuality became part of “the luxury and waste of the Court.”³⁶ Those with few republican or parliamentary sympathies watched with horror as sensuality threatened the regime they had worked for. Burnet’s account of the Dutch incursion placed consorts among the royal preoccupations most efficiently creating a “general contempt” of the restored sovereign:

Upon the news of the *Dutch* fleet’s being in the river, the King did not ride down himself, nor appear at the head of his people, who were then in such imminent danger...[but]...he was very cheerful that night at supper with his Mistresses, which drew many libels upon him, that were writ with as much wit as malice, and brought him under general contempt. He was compared to *Nero*, who sung while *Rome* was burning.³⁷

When, in this fateful June, the *Royal Charles*, flagship of the English fleet, was seized, and disappeared over the horizon under foreign hands, eyes turned to a monarch who appeared under feminine government. Far from symbolising renewal, sexual promiscuity was now implicated in the demise of “the whole kingdom,” a development greatly altering the significance of the parks in which it had been staged.

³⁴ Ibid.

³⁵ Gallagher, “Partial to Some One Side,” 89.

³⁶ Burnet, *History*, 1:242, 1:250

³⁷ Burnet, *History*, 1:250; Nicolson, *Conway Letters*, 259; Dzelzainis, “Waller, Marvell, and ‘La Belle Stuart’ Reconsidered,” 88.

The evolving significance of the women through which royal sensuality was expressed in the park, their evolution from intimations of renewal to suggestions of decadence, was a process aided by traditions associating sensuality with gendered conceptions of deception, and its guises. Seneca, whose stoicism made him “the philosopher” for many cavaliers during the doubtful years of Stuart exile, had seen “Virtue...in front of the city walls, dusty and stained,” while “pleasure” concealed herself in shadier environs – “pallid, or else painted and made up with cosmetics like a corpse.”³⁸ The “paint” which women like Gwynn and Davis applied to their faces enhanced not only their features, but the ease with which they could represent the philosophical problem of mere *appearance* itself. Coalescing with the – originally at least – concealed Catholicism of mistresses like York and Villiers, and the confessional allegiances more forthrightly advertised by the French and Roman identities of still other mistresses such as the Duchesses of Portsmouth and Mazarin, cosmetic artifice sanctioned diagnoses of royal enslavement. The submission of the monarch to appearances was a development suggested through observations – at times made in the park – that the “great beauty” of the King’s lovers tended to “disorder” him; that “often he was not master of himself;” or that he was at the “command” of his lovers like a “slave.”³⁹ As war, among other things, fed a gnawing scrutiny of expenditure, extra-marital courtship compounded the national significance of such moral and epistemological snares. The straits of the 1660s thus saw the celebration of libertinism expressed in the courtly promiscuity cede

³⁸ Seneca, “On the Happy Life,” in *Moral Essays*, ed. and trans. John W. Basore (Cambridge: Harvard University Press, 1932), 117. For Seneca as “the philosopher” during the Restoration see J. G. Burton, “Reading the Psalms with Athanasius and Seneca: Stoicism and Providence in the Earl of Clarendon’s ‘Contemplations,’” *Renaissance Studies* 25, no. 2 (2011): 308-9; Martin Dzelzainis, “‘All Things Serious and Sacred’: Clarendon as Essayist,” in *Clarendon Reconsidered: Law. Loyalty. Literature. 1640-1674*, ed. Philip Major (London and New York: Routledge, 2018), 103.

³⁹ Burnet, *History*, 94; 27 July 1667, *DSP*, 8:356; Henry Ball to Joseph Williamson, 10 October 1673, *Letters Addressed from London to Sir Joseph Williamson while Plenipotentiary at the Congress of Cologne in the Years 1673 and 1674*, 2 vols., vol. 2, ed. William Christie (London: Camden Society, 1874), 34-5; David Allen, “The Political Function of Charles II’s Chiffinch,” *Huntington Library Quarterly* 39, no. 3 (1976): 280-1.

ground to classical apprehensions, to which the country's plight gave credence, that wisdom demanded vigilance towards, rather than complicity with, sensuality.

This made the park a space crucial to the flagging efficacy of the sensuality tasked with instantiating Stuart renewal; like the cosmetics distorting the features of some of the most important women to wander through it, the park further distinguished their appearance from displays of credible bodily and civic government. Actresses, orangewomen, and bawds, were all familiar aspects of the open spaces within a walk of Whitehall. In environments so well populated with professions of guise, appetite, and seduction, it is not surprising that visitors, as well as many of those calling London home, marvelled at the means through which a variety of feminine appearances were part of the landscape of the park.⁴⁰ Edward Kynaston, one of few male actors to play female roles into the Restoration, was known to sit among the women circling Hyde Park, riding among them in their coaches – as though one of them.⁴¹ Far from favourites like Gwynn diluting their ties to artifice through appearances on the leafier stage of the park, these extra-theatrical performances were consumed where the potential for deception and misjudgement were scarcely less palpable.⁴²

Another component of the park evocative not just courtly sensuality, but confusion and error, were the carriages and coaches contending with each other in this space. Scholars concerned with early modern cities like Rome have explored the role of vehicles in terms emphasising their propensity for indicating power and prestige, as doubtless they did on the paved streets of London's urban districts. The nature of London's parks, however, meant spectators could not always be sure what they were looking at.⁴³ Coaches circulated through

⁴⁰ Pritchard, *Outward Appearances*, 113.

⁴¹ Cibber, "Life," 72. For the park as a social resort before and after the theatre see for example 7 May 1662, *DSP*, 3:79.

⁴² Pritchard, *Outward Appearances*, 112-4.

⁴³ John Hunt, "Carriages, Violence, and Masculinity in Early Modern Rome," *I Tatti Studies in the Italian Renaissance* 17, no. 1 (2014).

Hyde Park, conveying men and women around its notorious “ring.”⁴⁴ But conditions were frequently unforgiving. Fog and mist dampened the ability of livery, insignia, and other would-be guides to standing to fulfil their elsewhere illuminating functions. In dry weather, it often happened that the occupants of coaches were identified only with difficulty, clouds of dust inhibiting surveys of touring gentry or sometimes even the coaches themselves.⁴⁵ The “abondance” of vehicles not only impeded lines of vision; the greater the number of vehicles, the more the “horrid” dust flung up by horses accumulated in low-hanging banks – adding another gritty layer to disguises achieved through the arts of dress or cosmetics.⁴⁶ The geography of the park thus acted in concert with the materials of theatre, paint and costume – tools of the mistress and other embodiments of sensuality – to conceal identities behind a dense and refractory accretion: burying truths elsewhere discoverable.

What *could* be seen and heard was often no less capable of entangling the sensuality of the park with symptoms of crisis. Cleveland’s fine clothing was often visible as she rode through Hyde Park in her coach. But the “trappings” of mistresses, when seen, were routinely read as marks of their royal favour and, especially in the wake of the late 1660s, resented in view of the government’s parlous financial position. The Duchess of York’s coach was certainly, in the right circumstances, capable of recognition in the park; but this was a vehicle likened – in Marvell’s widely read poetry – to the Duchess’s rump.⁴⁷ It thus symbolised, in at least one widely read and influential satire, the bloated appetites of the court.⁴⁸ Waller’s early verses, as we have seen, presented the park as a place of love *and* good government. Perhaps the best known mockery of this idea, the Earl of Rochester’s *Ramble in St James’s Park*, portrayed this space as one of disordered sensuality.⁴⁹ Waller had laid out his Arcadian

⁴⁴ Pritchard, *Outward Appearances*, 118.

⁴⁵ 10 April 1665, *DSP*, 6:77.

⁴⁶ 27 March 1668, *DSP*, 9:136; 1 May 1663, *DSP*, 4:120

⁴⁷ Marvell, “Last Instructions,” *PAM*, 369; Zwicker, *Lines of Authority*, 110.

⁴⁸ Zwicker, *Lines of Authority*, 110.

⁴⁹ Rochester, “Ramble,” 76-80.

depiction of “Lovers walking” beneath the “Amorous Shade” in concert with an imagery of wise government: “What Nation shall have Peace, where War be made, / Determin’d is in this oraculous shade.”⁵⁰ Yet in Rochester’s *Ramble*, as the name itself suggests, the visibly lustful architecture of the park fostered disorientation; sensuality grew from it to obscure, and sully, the sky itself: “Rowes of Mandrakes tall did rise, Whose lewd Tops Fuck’d the very Skies.”⁵¹ Among Rochester’s readers were those who would have experienced the entanglement of sensuality and crisis in St James’s Park for themselves, most poignantly when the cannons of the Dutch fleet – the successes of which, as we have seen, were already colouring the significance of sensuality – were heard by “everyone” assembled there in the July of 1667.⁵²

Country parks and estates outside of London could no less successfully accommodate dramatic reminders of a distracted, weakened government; a range of personalities and events connected them to the symptoms of disorder thriving in metropolitan parks. Charles’ Closet Keeper, William Chiffinch, was an occupant of quarters communicating – usefully enough for royal liaisons – with the royal rooms in Whitehall, as well as being the owner of a scarcely less accommodating deer park beside the King’s house in Newmarket.⁵³ The “sad fitts” of “apoplexy” often succeeding the monarch’s open-air trysts here were thus tied to the turbulence exhibited, after similar reunions, in more cloistered demesnes like Whitehall’s Privy Garden.⁵⁴ Phoenix Park, just outside Dublin, dramatically attested to the urgency of Whitehall’s profligacy when it was scandalously granted – in its entirety – to the Duchess of Cleveland.⁵⁵ The grant was only abandoned after the Earl of Essex proposed to recompense

⁵⁰ Waller, “St James’s Park,” 4, 6.

⁵¹ Rochester, “Ramble,” 76.

⁵² 4 June 1666, *DSP*, 7:145.

⁵³ Allen, “Chiffinch,” 280-1.

⁵⁴ Henry Ball to Joseph Williamson, 10 October 1673, *Williamson while Plenipotentiary*, 2: 34-5; Allen, “Chiffinch,” 280-1.

⁵⁵ Litton C. Falkiner, “Phoenix Park,” 479; Robin Usher, *Protestant Dublin 1660-1760: Architecture and Iconography* (New York: Palgrave Macmillan, 2012), 26.

the Duchess through means of a new “Tax through ye whole Kingdome.”⁵⁶ In or out of town, it seemed, sensuality seemed freshly undesirable; there were new reasons to deplore spaces of lust, and the disorder they produced.

As the turmoil of the park grew, overshadowing the arcadian order early Restoration poets like Waller had sought to establish as one of its defining features, it was easily known as a site of irrational surrender to sensation. Here men – like the hounds with which they hunted – were often depicted driven not by rationality, but misled by instincts.⁵⁷ Charles Sedley’s *The Mulberry-Garden* (1668) presented the park as an unrivalled opportunity for contact with women because it was “so full of Beauties, that like a Pack of Hounds in a Hare Warren you cou’d not hunt one for another.”⁵⁸ George Etherege’s *She Wou’d if she Cou’d* (also 1668) had one gallant declaring that “...a right bred Grey-hound can as well forbear / Running after a Hare when he sees her, as I can / Mumbling a pretty Wench when she comes in my way.”⁵⁹ To make matters worse, not everyone had confidence that sense would return once the game was up. The devotional writing of the cleric Edward Wettenhall referred to “those, whom after the Play, generally the Tavern or the Park takes up, till satiety of pleasures renders them unfit for any thing but sleep.”⁶⁰ The sensory rewards of the park could thus be deemed no less overwhelming than the instincts and temptations leading thereto. One pamphlet unpicked the cognitive consequences of such disorientation in describing the park – along with “the Play-house, the Eating-house, and the Coffeehouse” – as home to an “unintelligible buzz.”⁶¹

⁵⁶ Earl of Essex to Charles II, 4 May 1673, *Essex Papers*, 81.

⁵⁷ Pritchard, *Outward Appearances*, 112.

⁵⁸ Charles Sedley, *The Mulberry-Garden, A Comedy. As it is Acted by his Majestie’s Servants at the Theatre-Royal*. (London, 1668), 44.

⁵⁹ George Etherege, *She Wou’d if She Cou’d, a Comedy. Acted at His Highnesse the Duke of York’s Theatre. Written by George Etherege Esq.* (London, 1668), 11.

⁶⁰ Edward Wettenhall, *Two Discourses for the Furtherance of Christian Piety and Devotion. The Former Asserting the Necessity and Reasonableness of a Positive Worship...The Later Considering the Common Hindrances of Devotion...* (London, 1671), 86.

⁶¹ *Remarques*, 124.

As the sensuality of the court became increasingly important to uncertainties about the government of the three kingdoms, the rapacity of the park – through which it was often expressed – became a metaphor of crisis. The Earl of Essex, who had fought to preserve Phoenix Park from falling into the hands of the Duchess of Cleveland, compared the “crude lottery” of the Restoration land settlement in Ireland to “flinging the reward upon the death of a deer among a pack of hounds, where every one pulls and tears what he can for himself.”⁶² As this bitter reflection reveals, the phenomenon of the royal mistress, in which Stuart visuality was dramatically invested, became capable of embodying the ills, rather than the viability of the political body. Their appearance in this space helped make it, as Will Pritchard has argued, one of the most crucial “sites where Restoration London grappled with women’s outward appearances.”⁶³ More generally, it was one hosting and further problematising appearances of sensuality.

“...The...Use of Standing Groves...”

The King’s philosophers did not stand apart from the sensuality of the park, even as it morphed from an assurance of the Restoration’s viability, into a sign of its corruption. A variety of experimental technologies, preoccupations, and personalities were, from the earliest days of this new political era, planted in the park – and once situated, they proved difficult to transplant. Such features of park-life as its oaks, carriages, and royal dalliances were designed or observed in experimental circles, and not always in ways contrasting the practice of experiment with the deceptions of this environment. Parks were places of experiment, even once a regime that had embraced sensuality came to illuminate its dangers.

⁶² For Essex’s efforts against Cleveland see for example his letters to the Earl of Shaftesbury 12 April 1673, Sir Henry Capel 12 April 1673, and Charles II, 4 May 1673, *Essex Papers*, 71, 73, 80-1. For Essex on the Restoration land settlement see Connolly, *Protestant Ireland*, 138.

⁶³ Pritchard, *Outward Appearances*, 113.

Experiment entered the park, and its sensuality, early; exponents were, at first, understandably keen to plant themselves in a terrain to which the restored monarch clearly attached such special importance. The first book to receive the imprimatur of the Royal Society was John Evelyn's *Sylva, Or a Discourse of Forest-Trees, and the Propagation of Timber* (1664).⁶⁴ It was printed before such works as Hooke's *Micrographia* (1665), and Sprat's *History of the Royal Society* (1667), in response to interest, from naval quarters, in the "praeserving" of timber.⁶⁵ Like Petty's immersion in double-bodied shipping, Evelyn's foray into the woods was pitched as an attempt to strengthen – through experiment – the ship of state. But it also deposited Evelyn's, and the Society's, promises of useful philosophy among spaces and objects – parks and their oaks – important to the new Stuart apologetics of sensuality. The book expounded on how the "propagation of Natural Philosophy" depended on parks and forests – spaces, as we have seen, crucial to the display restored power. A dedication to the returned Charles alluded to his arboreal concealment after the Battle of Worcester – the kind of narrative royal recourse to parkscapes, among other elements of Stuart sensuality, were to shepherd into conclusions of reappearance and renewal. A second edition of the *Sylva*, produced in 1670, in the context of scepticism (described above) towards this apologetics, was more defensive. It contained an entirely new chapter on "the Sacrednesse, and Use of standing Groves" – the "grove" being an attempt to carve out from the park a space wherein wisdom and pleasure could still plausibly co-exist. Groves were not "onely frequented by the great *Scholars*, and the great *Wits*, but by the greatest *Statesmen* and *Polititians*."⁶⁶ Here love and wise decision-making, Evelyn implied, had long been

⁶⁴ John Evelyn, *Sylva, Or a Discourse of Forest-Trees, and the Propagation of Timber in his Majesties Dominions*... (London, 1664). Noah Moxham, "The Uses of Licensing: Publishing Strategy and the Imprimatur at the Early Royal Society," in *The Institutionalisation of Science in Early Modern Europe*, ed. Giulia Giannini and Mordechai Feingold (Leiden and Boston: Brill, 2019), 265.

⁶⁵ Ibid.; Beryl Hartley, "Exploring and Communicating Knowledge of Trees in the Early Royal Society," *Notes and Records of the Royal Society of London* 64 (2010): 229.

⁶⁶ Evelyn, *Sylva*, 2ed., 235.

intertwined. This was the kind of space in which rulers of the ancient world had, “amongst other weighty matters...treated of *Matches* for their *Children*, and the Young people made *Love* in the cooler Shades, and ingrav’d their *Mistriss*’s Names upon the Bark...”⁶⁷ It is doubtful the precedents adduced by Evelyn reconciled many of his readers to the restored court, and its use of such environs. They certainly, however, illustrate the entanglement of experiment with this sensuality well into the Restoration.

As the *Sylva*’s insistence on the park as a field of experiment was reiterated in a string of editions, exhibitions of ingenuity were often the work of personalities with strong ties to that most important embodiment of park sensuality: the mistress. The scandalous grant of Phoenix Park to the Duchess of Cleveland was widely traced to the intrigues of Henry Brouncker, the younger brother of the Royal Society’s president.⁶⁸ Contemporaries could thus attribute to Brouncker both a responsibility for the park’s management, as well as a complicity in Cleveland’s courtly maneuvering. Viscount William Brouncker’s habit of keeping a mistress (see the discussion of Abigail Williams in Chapter 3 above) alongside whom he sat in taverns, discoursing of philosophy, probably made it harder for contemporaries to overlook such fraternal ties. (Williams’ “painted” face would have recalled those of actresses like Gwynn, and in fact suggests – along with other things – Williams herself had career in the playhouse.⁶⁹) Elsewhere, the mechanical ingenuities of the inventor Sir Samuel Morland were features of the park outside Euston belonging to the Earl of Arlington, a fellow of the Royal Society and, as we have also seen, another reputed “pimp” for the Stuart household.⁷⁰ Not far out of London, visitors to Greenwich Park could stumble

⁶⁷ Ibid.

⁶⁸ Arthur Capel Earl of Essex to Francis Godolphin, 1 April 1673, *Essex Papers*, 67. Falkiner, “Phoenix Park,” 478; Usher, *Protestant Dublin*, 26.

⁶⁹ For Pepys’ descriptions of both women see for example 16 August 1665, *DSP*, 6:204; 5 October 1667, *DSP*, 8:463-4.

⁷⁰ For Arlington’s park at Euston see 16 September 1671, *DJE*, 3:591. For Arlington as “pimp” see Eagles, “Inkhorn Lord?,” 15.

across the “*Italian Glasse-house*” owned by yet another Society fellow, and associate of Cleveland’s faction, the Duke of Buckingham.⁷¹ The site was said to produce glass “blowne of finer mettall, than that of [Milan];” it thus invited comparisons with Buckingham’s Vauxhall factory – from whence came “Looking-glasses far larger & better than any that come from *Venice*.”⁷² In and outside of London, and indeed across the three kingdoms, the work of men known for producing both new luxuries and Stuart promiscuity strengthened ties between experiment and sensuality.

The place of experiment amid the “propagation” evidenced by the park was further suggested by the fact it was virtually a residential space for key experimental personalities. Robert Moray, who kept his garden pavilion in Whitehall until his death in 1672, was never far from the “King’s Tube,” even after it was moved from the privy garden into St. James’s Park.⁷³ Evelyn congratulated himself on having “perswaded” the Earl of Arlington “to bring his Park” at Euston – the seat of Samuel Morland’s water raising engines and originally “neere a mile” from Arlington’s “palace” – near enough “as to comprehend his house with in it.”⁷⁴ When in London, Arlington resided in Goring House, on the opposite side of the canal to Whitehall. Given this was the site from which the park’s new *patte d’doie* radiated, Mark McDayter has observed it seemed much more the “natural centre” of St James’s Park than anywhere else. (Goring House stood on the site of what is now Buckingham Palace.⁷⁵) The alchemical pursuits of Nicaise Le Fèvre, brought from France and made apothecary to the royal household in 1660, were staged in a “very beautiful Laboratory” which one visitor described – with telling simplicity – as situated “in the Park of St James’s.”⁷⁶ Goring House was part of Le Fèvre’s rounds. When he tended to Arlington’s household, treating its

⁷¹ 13 June 1673, *DJE*, 4:13.

⁷² 10 September, *DJE*, 4:98-9.

⁷³ 5 April, 25 April and 13 May 1661, in *Séjour*, 163-4, 168, 170; Harris, “Lady Sophia’s Visions,” 134.

⁷⁴ 16 September 1671, *DJE*, 3:591.

⁷⁵ 28 March 1665, *DJE*, 3:404; McDayter, “Poetic Gardens and Political Myths,” 145.

⁷⁶ Sorbière, *Relation d’Un Voyage*, 81; Mendelsohn, “Alchemy and Politics.”

occupants, he could thus be seen contributing to a seat crucial to displays involving the monarch and his mistresses. The situation of Le Fèvre's charges in different parts of St James's Park meant he did not often need to leave the landscape in which he lived and conducted alchemical investigations of interest to the Royal Society.⁷⁷

Like various editions of Evelyn's *Sylva*, which sought to argue there was a place for useful philosophy in landscapes of sensuality, texts and activities associated with other branches of experiment insisted, with the park still in view, that learning and pleasure could flourish together. Hooke's *Micrographia*, which proposed "*Experimental Philosophy*" not only as a "matter of high *rapture* and *delight* of the mind, but as "*a material and sensible Pleasure*," found some of this "pleasure" rooted in St James's Park.⁷⁸ Descriptions of the "Sensible Plants" which the royal physician, Timothy Clarke, had found growing in a garden within the park were included in the *Micrographia*. (Clarke's "Observations" of these plants, and his accompanying musings on the bases of "sensibility," appeared as an appendix to Hooke's notes on the "Schematisme or Texture of Cork."⁷⁹) They thus provided some indication of where Hooke found the bodies he hoped would provide not just for "contemplation," but the kind of "satisfaction...which most men prefer of *the very Senses themselves*."⁸⁰ The garden in question looks to have been that of Charles' closet keeper, William Chiffinch, whose complicity in precisely those satisfactions "which most men prefer" was everyone's knowledge.⁸¹ Two years later, the "exactness" of the "*Optick-glasses*" enabling these very studies were, in Sprat's *History*, put down to "the care, and expence of the Duke of *Buckingham* – thus entangling the visions this technology achieved with the

⁷⁷ CSPD, 1664-5, 573; Birch, *History*, 1: 54, 214, 420; Jacobsen, "Luxury Consumption," 299-302.

⁷⁸ Hooke, *Micrographia*, d2, 161-121.

⁷⁹ Ibid., 116-121.

⁸⁰ Ibid., d2, 161. For the reading of Clarke's "Observations" to the Society on 14 August see Birch, *History*, 1:37.

⁸¹ Allen, "Chiffinch," 289.

“pimp” Duke’s business operations in Vauxhall and Greenwich Park.⁸² The political clout securing the patents on which Buckingham’s glassworks relied obviously drew from his ability to broker the liaisons dismaying spectators of the court conduct.⁸³ There could therefore be, among readers not just of Evelyn’s *Sylva*, but Hooke’s *Micrographia* and Sprat’s *History*, little doubt of the importance of both park and sensuality to arms of experiment like microscopy. Microscopes and the glasses they used, either emerging from or descending into pieces of park life, illuminated the place of experiment among exhibitions of sensuality.

Even without these technologies, experimental curiosity hovered close to the park – and its dangers. In the August of 1677, for example, Evelyn made observations of the woods, engines and buildings of Arlington’s Euston Park – these were the kind of descriptions with which his *Sylva* abounded.⁸⁴ He lingered over its rows of ashes, fountains, and waterways – the last engineered by Morland.⁸⁵ Euston Park was also a place, however, in which, some years earlier, Evelyn was just as carefully describing the devices through which the King and the Duchess of Portsmouth developed and advertised their relationship.⁸⁶ In a manner reminiscent of his studies of park flora, Evelyn strove to distinguish his experience of this budding union from the claims of received wisdom and hearsay. The methodology of the *Sylva* overflowed into what he – in the semi-privacy of his diary – accepted was a fraught attempt to separate, through observations of sensuality, the truth from what was “universally reported.” His attempt to get to the bottom of the conduct around him was protracted:

It was universaly reported that the faire Lady...was bedded one of these nights, and the stocking flung, after the manner of a married Bride: I acknowledge she was for the most part in her undresse all day, and that there was fondnesse, & toying, with that young wanton; nay ’twas said, I was at the former ceremonie,

⁸² Sprat, *History*, 250-1.

⁸³ For Buckingham as “pimp” and an ally of the Duchess of Cleveland see 12 July 1667, *DSP*, 8:331.

⁸⁴ 10 September 1677, *DSP*, 4:116-9.

⁸⁵ *Ibid.*

⁸⁶ 10 October 1671, *DSP*, 3: 598-90. For the significance of the mock marriage, or rumours thereof, see Weil, “Female Politician,” 179, 183-5.

but tis utterly false, I neither saw, nor heard of any such thing whilst I was there, though I had ben in her Chamber & all over that apartment late enough; & was my selfe observing all passages with curiosity enough: however twas with confidence believed that she was first made a Misse as they cald these unhappy creatures, with solemnity, at this time &c...⁸⁷

The language redolent of Evelyn's immersion in the sensuality of Euston Park – what he “saw,” “heard,” and found “my selfe...observing...with curiosity enough” – was language connecting his investigations there with those he defended in the *Sylva*. The Earl of Sunderland, another of the party at Euston on this occasion, as well as a *protégé* of Arlington's and a fellow of the Royal Society, was also a keen student of developments between the King and Duchess.⁸⁸ The kind of displays both men strove to understand at Euston Park were no less fathomable for Evelyn at St James's. Just months beforehand, he had walked “thro St James's Parke” to the royal garden, in the process of which he “both saw and heard a very familiar discourse” between the King and Nell Gwynn – before the King retired to “the Dutches of Cleavelands, another Lady of Pleasure & curse of our nation.”⁸⁹ While experimental texts promoted new tools and methods for working in – and understanding – spaces of sensuality, their authors, and the circles in which they moved, were ultimately close to displays evoking not a conquest of the senses, but submission thereto.

Even without such notoriously deceptive personae as mistresses in the foreground, parks were media through which the most deliberate and careful observations could fail to penetrate. Pepys and the self-described “Greshamist” William Penn – a lover of “careful observation” – failed in their bid to get a view of the Duchess of Newcastle among the “number of coaches” engulfing Hyde Park in the Spring of 1667.⁹⁰ This was not just a

⁸⁷ 10 October 1671, *DSP*, 3:589-90.

⁸⁸ *Ibid*; Weil, “Female Politician,” 183-4. J. P. Kenyon, *Robert Spencer, Earl of Sunderland* (New York: Longmans, Green and Co., 1958), 18.

⁸⁹ 1 March 1671, *DJE*, 3:573.

⁹⁰ 1 May 1667, *DSP*, 8:197. For Penn and “experiment” see Penn's letters to John Aubrey, 13 June 1683, John Harrison, 11 January 1686/7, and Sir John Lowther, 16 August 1701 in *The Papers of William Penn*, 5 vols., ed. Richard S. Dunn; et al. (University of Pennsylvania Press, 1981-7), 2:394-6, 3:138, 4:65.

disappointment illustrating the ease with which patrons and practitioners of experiment alike could blend into the landscape of the park. (The Duchess, as well as her surreptitious observers, would – as is well known – attend a meeting of the Royal Society where she watched “many experiments.”⁹¹) For the two men, it was a matter of frustration that, despite the efforts invested in “seeing my Lady Newcastle,” they ultimately “could not, she being fallowed and crowded upon by coaches all the way she went.”⁹² Pepys was diligent in recording what they *could* see – “I could see she was in a large black coach, adorned with silver instead of gold, and so with the curtains and everything black and white” – but it was not a successful interrogation: “other parts I could not make.”⁹³ These virtuosi had not conquered, but were beaten in the park; its population, expanse, and dust, made even otherwise conspicuous figures recalcitrant to observation. In exactly the kind of site texts like Evelyn’s *Sylva* had argued was full of the “propagation of Natural Philosophy,” a future Society president and his chum fared no better than anyone else.

A more dramatic suggestion of defeat was the submission of individuals with ties to parks and gardens, as well as the experimental community, to women – some of whom very capably embodied the sensuality of the park. Henry Howard, Duke of Norfolk, in whose family seat the Royal Society regularly met after the Great Fire of 1666, possessed an interest in parkscapes comparable to that of his brother, Charles Howard, known as “ye Societies gardener.”⁹⁴ For this overlord of the experimental world, the design of grounds was, in at least one famous instance, regarded a symptom of his surrender to “excessive passion.”⁹⁵ When, after his wife’s death, he took – as his mistress – the actress Jane Bickerton, a “very beautiful” woman already entangled in intrigue through her relationship with the Duke of

⁹¹ 30 May 1667, *DSP*, 8:242-3.

⁹² *Ibid.*

⁹³ *Ibid.*

⁹⁴ Oldenburg to Boyle, 10 November 1664, *CHO*, 2:297.

⁹⁵ Magalotti, “An Account of England in the Year 1667-68,” 115.

Buckingham, London abounded with reports Howard was building her “a villa on the Thames that he can go to through his garden.”⁹⁶ Just as Evelyn despaired to see the King courting Cleveland – a “Lady of Pleasure & curse of our nation” – in a space his *Sylva* had declared one of learning and judgement, so too was he troubled that a “person & a family,” of such importance to the Royal Society, “should...[be]...dishonor[’d] and polute[d]...with those base, & vicious Courses he of late...was falln into...”⁹⁷ Even virtuosi noted for their Stoicism could, in proximity with the court, and its park-displayed vices, fall into semblances of error. Robert Moray’s perceived relationship, towards the end of his life, with his niece, Lady Sophia Lindsay, was pronounced not just a “digression,” but one “sorry to see” in “so great a Philosopher.”⁹⁸ Dalliances impinged on philosophical work, and claims to see through appearances. Places of courtly sensuality – among them the park – accommodated this process. The royal confidante spent his last days not just the subject rumours, but as close to the court, and its parterres, as he had ever been (the only door to his lodgings, stuffed with curiosities and instruments, opened onto Whitehall’s privy garden.⁹⁹)

“...Encroachments of Sence, and Delights of Sensuality...”

The park’s importance as a place of experiment, and one alive with reminders of the Restoration’s ills – particularly the restored court’s submission to sensuality – was reflected in a range of representations against which practitioners of experiment struggled. Contemporary works gestured to the location of their craft amid intrigues of love and lust. Identifications of experimental activities with sensory capitulation, and depictions of the “whore”-smitten virtuoso (also touched on in Chapter 3, in connection with the tavern),

⁹⁶ Ibid.

⁹⁷ 17 October 1671, *DJE*, 3:592-3.

⁹⁸ Burnet quoted in Harris, “Lady Sophia’s Visions,” 144.

⁹⁹ Ibid., 134.

recalled politically freighted forms vice encountered in the park. Thus, while apologists hoped to commend their craft through occupation of this space, the symptoms of disorder it accommodated proved difficult to shake off. Representations of experiment, in which it appeared alongside the vices of the park, show this space could work against the experiments lodged therein.

As sensuality became, for many, a sign of decadence, depictions of the park often reflected its accommodation of this danger – as well as experiment. Many of the sex comedies for which the Restoration was famous, including William Wycherley’s *Love in a Wood; or, St James’s Park* (1668) affirmed the significance of the park as a place of assignation, abounding with decidedly sensual varieties of “tryal” and “experiment.”¹⁰⁰ One pamphlet bemoaning the “Vices of the Town” complained of the “pretences” of “new philosophers,” as well as the “unintelligible buzz” of the park.¹⁰¹ The “loves” of the “virtuoso” Arthur Oldlove, in Thomas D’Urfey’s *Madam Fickle* (1676), were explored alongside the “pleasures” of park-based “intrigues.”¹⁰² At one point in the play, when informed his niece had “gone to the park,” Oldlove became apoplectic: “these new damnable Customs utterly undo the Nation.”¹⁰³ But the virtuoso’s place among, rather than aloofness from, such politically freighted reminders of error was a situation conveyed through Oldlove’s eventual deception by another female character.¹⁰⁴ A (professed) expertise in determining the authenticity of objects thus failed, in this play, to save both individuals and nation from the park, and its sensuality. Experiments so situated were, accordingly, prone to representations insisting on their entanglement with this fraught landscape.

¹⁰⁰ William Wycherley, *Love in a Wood, or St James’s Park. A Comedy* (London, 1672); William Davenant, *The Rivals. A Comedy. Acted by his Highness the Duke of York’s Servants* (London, 1668), 13, 21.

¹⁰¹ *Remarques*, 1, 120-121, 124.

¹⁰² Thomas D’Urfey, *Madam Fickle: or the Witty False One. A Comedy as it Acted at his Royal Highness the Duke’s Theatre*. (London, 1676), 10, 16, 27, 36.

¹⁰³ *Ibid.*, 27.

¹⁰⁴ *Ibid.*, 16, 18-21.

Some of the park's most conspicuous experiments, as well as reminders of its sensuality, loomed large in intimations of the uselessness of experiment itself. Shadwell, whose wider works have often been situated among Whig critiques of courtly "excess," placed both the "whore" and the "sensible plant" described in Hooke's *Micrographia*, among the most incriminating experimental curiosities.¹⁰⁵ Other features of park life became metaphors for the fruitlessness of experimental learning. Butler's "character" of a "virtuoso" observed of this figure that "His learning is like those Letters on a Coach, where many being writ together no one appears plain."¹⁰⁶ Attempts, on the part of apologists, to uproot the "King's Tube" from its surroundings, setting it apart from the indulgences of courtiers who "never regard the stars," and would be "dishonoured" to invent "anything other than new fashions of dress," proved vulnerable to ridicule.¹⁰⁷ Awkwardly wielded in the thick of courtly "fashions," and poking out of a shrubbery accommodating more corporeal investigations, the trappings of telescoping easily suggested the sensual distraction of the philosopher.¹⁰⁸ As experimental hardware bristled beneath the "majestic shade," it inspired understandings of experiment altogether inimical to that set out in Evelyn's *Sylva*; "labors" collapsed into "delights," and "discoveries" morphed into nocturnal indulgences.¹⁰⁹

No less significantly, allusions to experiment helped sustain that most influential and widely consumed of attacks on the new administration, and its park-displayed vices:

Marvell's *Last Instructions*. This last of Marvell's instructions-to-a-painter poems was (as

¹⁰⁵ Shadwell, *Virtuoso*, 2. For Shadwell on the pleasures of the court see Williams, *Whig Literary Culture*, 71-8; Jenkinson, *Culture and Politics*, 207.

¹⁰⁶ *Characters and Passages*, 81.

¹⁰⁷ Sorbière, *Relation*, 74; Samuel Butler, "An Occasional Reflection on Dr. Charlton's Feeling a Dog's Pulse at Gresham-College. By R. B. Esq.," in *The Genuine Remains in Verse and Prose of Mr. Samuel Butler, Author of Hudibras. Published from the Original Manuscripts, formerly in the Possession of W. Longueville, Esq; With notes by R Thyr, Keeper of the Public Library at Manchester. In Two Volumes.*, ed. R. Thyr (Dublin: 1759), 1:409-10.

¹⁰⁸ See for example Aphra Behn, *The Emperor of the Moon: A Farce* (London, 1687), 7-8; Ingrid Jendrzewski, "Exceedingly Ridiculous": Telescopes on Display on the Seventeenth-Century Stage," in *Scientific Instruments on Display*, ed. Silke Ackermann, Richard L. Kremer, Mara Miniati (Leiden and Boston: Brill, 2014), 183-4.

¹⁰⁹ Jenkinson, *Culture and Politics*, 207.

explained in Chapter 5 above) written in response to Waller's park-appealing representations of a thriving administration. The *Last Instructions*, which took Anne Hyde as an embodiment of sensual appetite – a problem, we have seen, advertised in parks – explicitly invoked the Royal Society in the course of repudiating the Duke of York's subservience to the devices of Hyde, who became Duchess of York when the Duke secretly married her in the October of 1661.¹¹⁰ The arts through which Hyde subdued the Duke – and thus the dangers of the court's "beauties" – were conveyed through a panoply of allusions to experiment. Hyde was depicted drawing on her appearance, among other arts, to engineer a marriage with consequences for the succession: to "experiment upon the crown."¹¹¹ Imputations of her lack of virginity, deceitful nature, and the dubiousness of her claims to have born the Duke a child, were all achieved through an ingenuity comparable to that of the Royal Society, as Hyde:

...perfected that engine, oft assay'd,
How after childbirth to renew a maid
And found how royal heirs might be matur'd
In fewer months than mothers once endur'd...¹¹²

So successful were Hyde's experiments in sensuality, the Duke's chaplain, Joseph Crowther, who performed the secret marriage ceremony, was depicted not just officiating over a union, but divorcing experiment from any connection to a stable ship of state. The devices through which Hyde ensnared the Duke certainly did not tend to the good of the polity as apologists had promised experiment would: "the rare inventress" was "free / Of Highness's Royal Society." Evelyn, and his fellow travellers, had – in the park – attempted to plant a vision of experiment unencumbered with any expressions of dangerous sensuality; Marvell suggested some of the women, liaisons, and displays of fecundity abounding in this space were experiments in the very foundations of the state.

¹¹⁰ Zwicker, *Lines of Authority*, 110.

¹¹¹ Marvell, "Last Instructions," *PAM*, 368.

¹¹² *Ibid.*

The sensuality of experiment was also a problem foregrounded by distinguishing the park, in which it had been so conspicuously situated, from the less transgressive, temperate pleasures of the classical garden. Several of the more specific allusions to experimental activity in Shadwell's *Virtuoso* served to contrast the "Extravagancies" of experimental life with the wisdom of classical Epicureanism – as taught in the Gardens of Epicurus.¹¹³ The virtuoso's dalliances with his "whore" further suggested both an entanglement in freighted intrigues and a remoteness from Epicurean tranquility. Sir William Temple, who forged his diplomatic career amid the Second Anglo-Dutch War – an event, we have seen, focusing attention on the problem of sensuality – expressed a hostility to experimental pretensions, while lauding the Epicurean garden as a resort for those "endeavouring to subdue, or at least to temper their Passions, and reduce their Appetites to what Nature seems only to ask and need."¹¹⁴ His *Gardens of Epicurus; or of Gardening in the Year 1685* distinguished the "Temperate" landscapes he admired from the "Extravagant" ways into which had fallen "Caligula and Nero, and too many others, known enough in Story."¹¹⁵ (This was a rather pointed distinction, given 1685 was, significantly, the year of Charles II's death, and comparisons between Nero and the restored monarch had been pervasive since at least the verses of Marvell almost twenty years earlier.¹¹⁶) The gardens with which the old statesman contrasted decadence – "in the year 1685" – were not just country seats, but those with scant connection to the restored court, most notably Moor Park in Herefordshire, after which he eventually named his own estate outside Farnham. His scepticism about the "use" of experiment" thus came larded with a repudiation of its shadier settings.¹¹⁷

¹¹³ Shadwell, *Virtuoso*, 2-3.

¹¹⁴ William Temple, *Miscellania. The Second Part* (London, 1690), 82-7, 94.

¹¹⁵ *Ibid.*, 81, 94.

¹¹⁶ Marvell, "Last Instructions," PAM, Burnet, *History*, 1:250; Zwicker, *Lines of Authority*, 105; Dzelzainis, "Waller, Marvell, and 'La Belle Stuart' Reconsidered," 88.

¹¹⁷ *Ibid.*, 127.

Significantly, it was from such contemporary criticism, and its engagement with the park, that the longheld reputation of microscopy as a sensual craft emerged. We have already seen how park-lodged experiments, including observations published in Hooke's *Micrographia*, washed up in satires like Shadwell's *Virtuoso*.¹¹⁸ Such specific allusions were bound up with more general criticism from figures like Temple and South (the latter quoting from the *Micrographia* in his sermon of 1667), who warned against both experiment and the "encroachments of sence, and delights of sensuality."¹¹⁹ These texts, written from within the Restoration, amid an interrogation of its sensuality, were emphatically *not* culminations of an insistence on the sensuous nature of experiment. Rather, they sit upstream of a tradition – one enduring, like criticisms of Restoration decadence, well into the eighteenth-century – of viewing microscopy, in particular, as an enslavement to the kind of appearances with which the Stuart park had been well stocked.¹²⁰ In this strand of criticism, exemplified in the works of Swift (who, we have seen, served as Temple's amanuensis at Moor Park), the deceits of women loomed large. When Gulliver, in his voyage to the enlarged land of Brobdingnag, is confronted with the disfigured, cancerous, nature of feminine skin, breasts, and bodies, he reflects on "our *English Ladies*, who appear so beautiful...because their Defects [are] not to be seen but through a Magnifying glass."¹²¹ The discoverer rehearses what where by then well known Restoration-era promises, expounded by virtuosi bent on defending the situation of experiment in the park, that deceits of this kind can be exposed "by Experiment." But as scholars such as Deborah Armiter and Kristen Girtten point out, Gulliver is, in Brobdingnag,

¹¹⁸ See p. 129 above. Shadwell, *Virtuoso*, 2.

¹¹⁹ South, *A Sermon Preached Before the Court at Christchurch Chappel in Oxford*, 8; William Temple, "Upon Ancient and Modern Learning," in *Miscellanea. The Second Part*. (London: 1690), 78-9.

¹²⁰ For eighteenth-century criticisms of microscopy, particularly those placing it at the mercy of feminine "whims," see for example Deborah Armiter, "The Sexual Politics of Microscopy in Brobdingnag," *Studies in English Literature, 1500-1900* 47, no. 3 (2007): 619-40; Kristen M. Girtten, "Mingling with Matter: Tactile Microscopy and the Philosophic Mind in Brobdingnag and Beyond," *The Eighteenth Century* 54, no. 4 (2013): 497-520.

¹²¹ Jonathan Swift, *Travels Into Several Remote Nations of the World. In Four Parts.*, vol. 1 (London, 1726), 22-3.

ultimately not aloof from, but among and at the mercy of, the appearances he claims to expose.¹²² He is, in this place, like Shadwell's titular "virtuoso," not just an experimental, but a governed man – as governed as a monarch in the park. The indebtedness of Swift's *Travels* to contemporary suspicions of Restoration experiment, which drew from its contact with the park, suggests the ability of this space to cast a long shadow over experiments lodged therein.

Conclusion

The park entered the first years of the Restoration as a place seeded with promises; it staged women, and interactions with them, important to a procreative apologetics designed to advertise an age of political renewal. It was here that a once fatigued and vulnerable royal body demonstrated its powers through public exchanges with mistresses, at least some of whom were known to have born the King children – and who would not otherwise have received the attention they did. These suggestions of sensuality, occurring in parks in and outside of London, were some of the chief means through which the fecundity so important to Stuart visuality was asserted.

The significance of these displays soon deviated from that intended by the new regime and its loyalists, as a range of natural, naval, and political disasters cast doubt on the very renewal they were contrived to promise. The administrative deficiencies and misjudgements these developments were felt to illuminate brought the court's wisdom into contention. The presence of mistresses and other women close to government, which the park had so successfully evidenced, was now easily conceived not as a sign of renewal, but an explanation for the increasingly unsteady trajectory of the Restoration itself.

Experimental technologies, preoccupations, and personalities were, from the earliest days of the Restoration, planted amid the sensuality of the park – and once situated there,

¹²² Armintor, "Sexual Politics of Microscopy," 619-20; Girtten, "Mingling with Matter," 497, 509-10.

these proved difficult to transplant, even as the significance of this sensuality transformed around them. The woods, carriages, and even dalliances in which this ultimately problematic aspect of the park resided were either designed or observed in experimental circles – and not in ways that showed experiment or its advocates were well-equipped to deal with the deceptions of this environment. As displays of courtly sensuality became objects of suspicion, morphing from assurances of political health to symptoms of disorder, the park housed hazards – and experiment was now among them.

Conclusion:

Working Without Spaces of Virtue

This thesis began with a sermon of Robert South's, often cited in histories of experiment: one written, preached, and printed in 1667 – a year of special importance to doubts about the health of the Restoration. South was concerned with vice, a symptom of political disorder, which he located in many settings, from the court to the tavern table. This sermon – like most of the materials with which the final third of all chapters in this thesis deal – placed experiment among this symptom of disorder. It did not find experiment in spaces of temperance, civility, or other politically inflected virtues. Works of this kind illustrate how debate about experiment, and its utility in the Restoration, could orbit spaces rather different from those that have loomed large in its histories.

In moving away from canonical sites, South's sermon – and texts like it – require histories of experiment that move in similar directions. This thesis has taken some steps in those directions, entering spaces capable of provoking – or vindicating – insinuations of the place of experiment in vice. It has done so by looking at how three different sites – the tavern, coffeehouse, and park – could work in this way. For each of these sites, it has explored one or more forms of disorder housed therein, the entanglement of experiment with this disorder, and the degree to which such connections were reflected in contemporary criticism. In doing so, it has offered a picture of how sites could function to produce doubt about the utility of experiment to the restored polity.

The power of places of vice to provoke or vindicate criticism of experiment need not be conceived as operating at the expense of spaces working on a constructivist model. If anything, the discovery that experiment was often quartered where it was vulnerable to

attack, in some cases attracting suspicion within experimental circles, augments our appreciation of how much – constructive – work more scrupulous settings did. Occupancy of the sites this thesis has explored urges anew one of the most fundamental, and important, insights of scholarship on places of virtue: the contingency of the productivity – and indeed successes – of these spaces. The taverns, coffeehouses, and parks of the Restoration should remind us that “experiment,” and such processes as the “production” or “making” of knowledge are best not, at least as a matter of reflex, treated together. Some places of experiment were not equipped for such constructive tasks; and while investigating those that were is obviously fruitful, the predominance of such sites in contemporary scholarship does not help our understanding of what experiment could look like.

Descending into places of vice – places in which experiment exhibited connections with disorder – certainly alters our view of what an experimental actor might look like. Studies of successful settings are often compelled to emphasise the strategic “invisibility” of women, technicians, and other parties who – though perhaps in attendance on experiment – could not be allowed too obvious an agency.¹ Throughout this thesis, however, we have seen how seamen, wives, and mistresses, could wield highly visible varieties of power – courtesy of the entry of experiment into spaces facilitating their enlargement. When William Petty was forced (as shown in Chapter 3) to change the design of his experiments, capitulating to a group of women whose acquiescence he had been openly courting for years, feminine government – not invisibility – became a feature of experiment. As this example also demonstrates, these women – precisely because their effects on the Restoration itself were so widely feared – became important not just to the production of experiment, but doubts about the stability of the state. Expanding our range of experimental spaces, and reconsidering the

¹ Shapin, *Social History of Truth*, 360.

functions of space itself, shows how a much wider cast of people had a role in experiment – *and* its repudiation.

In the course of investigating places of vice, this thesis has also had something to say about why experiment wound up in such dangerous territory. We do not need to assume either naivety or senselessness on the part of the vice-immersed practitioner. The first few chapters of this thesis, those focusing more closely on Petty’s double-bodied shipping, suggested occupancy of the tavern, in particular, could arise out of attempts to engage threats to the state. Petty took to the tavern in order to – literally – combat the problem of political instability. (Transfusions too, were similarly therapeutic in political intent.) Were Petty to have created order out of this space – through, for example, securing the assent of his crew, Royal Society rivals, and so on – then his claims to have strengthened the ship of state would have had an onshore measure of success. Here, then, occupancy developed out of an audacious bid to tackle the problem of political confusion head on. Elsewhere, occupancy is explicable as the result of the significance of a space changing over time. John Evelyn (as Chapter 6 showed) situated the “propagation of *Natural Science*” in the park before the trajectory of the Restoration meant its exhibitions of abundance and sensuality morphed from promises of renewal to corrosive deceptions.² This thesis has, therefore, offered two forms of an answer to the question of why experiments came to inhabit such perilous spaces: the first privileging intentions to engage with the problem of disorder; the second foregrounding the ability of a site, especially one important to the apologetics of a new regime, to mean something rather different once that regime has been tested.

² Evelyn, *Sylva*, A4.

How did Spaces Work against Experiment?

There are also some lessons to be drawn about *how* spaces could work, in the less constructive sense expounded throughout this thesis. The power of spaces to render experiment vulnerable to association – in wider representations of the craft – with freighted forms of vice rested on certain qualities and attributes of space other than that most obvious prerequisite: vice itself. The spaces explored in this thesis provide some insights into what accounted for their power to work against experiment.

Perhaps the most important of characteristics underpinning the antagonistic efficacy of a site was a certain public status. The relevant notion of “public” is that lying closest to porous, and pertinent to questions of accessibility. It is not that of ownership. Neither the taverns nor the coffeehouses of the Restoration, nor even – though less straightforwardly – its parks – were free from the grip of individual, or restricted, possession.³ But these were spaces with considerably less prohibitions concerning access than those which historians of seventeenth-century experiment, and particularly Restoration experiment, have typically analysed. The rooms of Gresham College or Lady Ranelagh’s Pall Mall House, over which the constructivist model of space was laid out, were deemed – correctly – to have been “restricted,” bristling with “thresholds,” and even “vividly marked out with boundary-stones and warning notices.”⁴ Here, the practitioner of experiment, operating with the benefit of such borders, could exert considerable control over which – and whether any – aspects of experimental work were more widely encountered.⁵ Taverns, parks, and coffeehouses did not permit such control. In spaces like these, control was largely surrendered; those

³ For metropolitan parks and the question of ownership see McDayter, “Poetic Gardens and Political Myths,” 135.

⁴ Shapin and Schaffer, *Leviathan*, 337; Shapin, “The House of Experiment,” 383-4.

⁵ Such control is, of course, what talk of the “technologies” of “virtual witnessing” was designed to capture. “Pump and Circumstance: Robert Boyle’s Literary Technology,” *Social Studies of Science* 14, no. 4 (1984): 481-20; Shapin and Schaffer, *Leviathan*, 60.

superintending over experiments in any of these environments relinquished their ability to broker direct or “virtual” access.⁶ Apologetic depictions of experiments practised in such spaces became just one among many competing representations of experiment. Some measure of public status, then, and more than that of a room in a gentleman’s house, was important to the power of space to work against experiment.

There is also perhaps something to be learned about the limits – or extent – of this power. The spaces discussed in thesis were all places of experiment. And yet experiments did not always need to enter these settings in order to be associated with them. Chapter 3, for example, showed how purportedly “experimental” literature – including the *Athenian Mercury* – could, in describing the strategies of ale-wives, and other embodiments of tavern-craft, create impressions of connections between this space and experimental work. Chapter 4 described how even impeccably situated experiments, by such personalities as Robert Boyle and John Evelyn, were reproduced in coffeehouse periodicals of dubious provenance. Experimental news could thus enter a space of consumption and debate without their original bearers setting foot inside. While entry into disorder was clearly a significant, often irreversible step, a space of disorder could sometimes do much of its work before this step was ever taken. To put it another way: a space could work against experiment as soon as it was deemed important to experiment. This is not as surprising a finding as might first appear. Constructivist models have long conferred on more rarefied, virtuous settings, a power extending beyond their boundaries, with occupants mobilising literary and other “technologies” to reproduce selected features of such sites – and advertise an attachment to them.⁷ Public and less virtuous spaces did not necessarily – when places of experiment – simply produce experiment; they could also absorb it from cleaner sites.

⁶ Shapin, “Pump and Circumstance,” 481-20; Shapin and Schaffer, *Leviathan*, 60.

⁷ Ibid.

This thesis has presented a few places of experiment in the Restoration. But it has not delved into settings that worked as they usually do in histories of experiments in this period, or more generally. It has explored experiments that did not have access to the repertoire of virtues from which the most persuasive claims to utility might be constructed. Far from being concerned with access to virtues, and other sources of authority, it has been concerned with spaces isolating experiment from such resources: experiments “in vice.”

Bibliography

- Adamson, Ian. "The Royal Society and Gresham College." *Notes and Records of the Royal Society of London* 33, no. 1 (1978): 1-21.
- Adi, Ophir, and Steven Shapin. "The Place of Knowledge: A Methodological Survey." *Science in Context* 4, no. 1 (1991): 3-21.
- Adlard, John. "A Note on Nell Gwyn." *Folklore* 83, no. 1 (1972): 61-7.
- Albala, Ken. *The Banquet: Dining in the Great Courts of Late Renaissance Europe*. Urbana and Chicago: University of Illinois Press, 2007.
- Allen, David. "Political Clubs in Restoration London." *The Historical Journal* 19, no. 3 (1976): 561-80.
- . "The Political Function of Charles II's Chiffinch." *Huntington Library Quarterly* 39, no. 3 (1976).
- Allestree, Richard. *The Causes of the Decay of Christian Piety. Or an Impartial Survey of the Ruines of Christian Religion, Undermin'd by Unchristian Practice. Written by the Author of the Whole Duty of Man*. London, 1667.
- Anstey, Peter. "Literary Responses to Robert Boyle's Natural Philosophy." In *Science, Literature and Rhetoric in Early Modern England*, edited by David Burchell. London: Routledge, 2007.
- Ape-Gentle-Woman, or, the Character of an Exchange-Wench*. London, 1673.
- Armintor, Deborah. "The Sexual Politics of Microscopy in Brobdingnag." *Studies in English Literature, 1500-1900* 47, no. 3 (2007).
- Arnold, L. J. "The Irish Court of Claims of 1663." *Irish Historical Studies* 24, no. 96 (1985): 417-30.
- . *The Restoration Land Settlement in County Dublin, 1660-1688*. Dublin: Irish Academic Press, 1993.
- The Art of Good Husbandry, or, the Improvement of Time Being a Sure Way to Get and Keep Money...* 2 ed. London, 1675.
- Astell, Mary. *An Essay in Defence of the Female Sex. In Which Are Inserted the Characters of a Pedant, a Squire, a Beau, a Vertuoso, a Poetaster, a City-Critick, &c. In a Letter to a Lady. Written by a Lady*. London, 1696.
- Atherton, Ian. "The Itch Grown a Disease: Manuscript Transmission of News in the Seventeenth Century." *Prose Studies* 21, no. 2 (1998): 39-65.
- . "The Itch Grown a Disease: Manuscript Transmission of News in the Seventeenth Century." *Prose Studies* 21, no. 2 (1998): 39-65.
- Barnard, Toby. "The Irish Parliament and Print." *Parliamentary History* 33, no. 1 (2014).
- Baron, Sabrina A. "The Guises of Dissemination in Early Seventeenth-Century England: News in Manuscript and Print." In *The Politics of Information in Early Modern Europe*,

- edited by Brendan Dooley and Sabrina A Baron. London and New York: Routledge, 2001.
- Baxter, Richard. *A Treatise of Knowledge and Love Compared. In Two Parts: I. Of Falsely Pretended Knowledge. Ii. Of True Saving Knowledge and Love*. London, 1689.
- Beeley, Philip. "Practical Mathematicians and Mathematical Practice in Later Seventeenth Century London." *The British Journal for the History of Science* 52, no. 2 (2019): 225-248.
- . "'To the Publike Advancement:' John Collins and the Promotion of Mathematical Knowledge in Restoration England." *BSHM Bulletin: Journal of the British Society for the History of Mathematics* 32 (2017).
- Behn, Aphra. *The Emperor of the Moon: A Farce*. London, 1687.
- Beneš, Mirka. "The Social Significance of Transforming the Landscape at the Villa Borghese, 1606-30: Territory, Trees, and Agriculture in the Design of the First Roman Baroque Park," in *Gardens in the Time of the Great Muslim Empires: Theory and Design*. Edited by A. Petruccioli. Leiden: Brill, 1997.
- Berry, Helen. "An Early Coffee House Periodical and Its Readers: The Athenian Mercury, 1691-1697." *The London Journal* 25, no. 1 (2000): 14-33.
- . *Gender, Society and Print Culture in Late-Stuart England: The Cultural World of the Athenian Mercury*. New York: Routledge, 2016.
- . "'Nice and Curious Questions': Coffee Houses and the Representation of Women in John Dunton's *Athenian Mercury*." *The Seventeenth Century* 12, no. 2 (1997).
- Bhowmik, Urmi. "Facts and Norms in the Marketplace of Print: John Dunton's *Athenian Mercury*." *Eighteenth-Century Studies* 36, no. 3 (2003).
- Bičák, Ivana. "A Guinea for a Guinea Pig: A Manuscript Satire on England's First Animal-Human Blood Transfusion." *Renaissance Studies* 34, no. 2 (2019).
- Birch, Thomas. *The History of the Royal Society of London for Improving of Natural Knowledge, from Its First Rise. In Which the Most Considerable of Those Papers Communicated to the Society, Which Have Hitherto Not Been Published, Are Inserted in Their Proper Order, as a Supplement to the Philosophical Transactions*. 4 vols. London, 1756.
- Black, Andrew. "The Orator in the Laboratory: Rhetoric and Experimentation in Thomas Shadwell's *Virtuoso*." *Restoration: Studies in English Literary Culture, 1660-1700* 37, no. 1 (2013): 3-16.
- [Blount, Charles]. *A Just Vindication of Learning: Or, an Humble Address to the High Court of Parliament: In Behalf of the Liberty of the Press*. London, 1679.
- Boyle, Robert. "Of the Great Efficacy of Effluvia." In *Essays of the Strange Subtlety, Great Efficacy, Determinate Nature of Effluvia. To Which Are Annexed New Experiments to Make Fire and Flame Ponderable: Together with a Discovery of the Perviousness of Glass*. London, 1673.
- Brown, Thomas. *The Works of Mr. Thomas Brown, Containing, Amusements Serioues and Comical, Calculated for the Meridian of London. To Which Is Added, Ten Letters, on Several Subjects...* 2nd ed. Vol. 3, London, 1709.

- Brunn, Sv. "The Date of Samuel Butler's *the Elephant in the Moon*." *English Studies* 55, no. 2 (1974).
- Bruun, Sv. "Who's Who in Samuel Butlers 'the Elephant in the Moon'." *English Studies* 50, no. 1-6 (1969): 381-89.
- Burnet, Gilbert. *Bishop Burnet's History of His Own Time*. London, 1724.
- Burton, J. G. "Reading the Psalms with Athanasius and Seneca: Stoicism and Providence in the Earl of Clarendon's 'Contemplations'." *Renaissance Studies* 25, no. 2 (2011).
- Bury, Edward. *England's Bane, or the Deadly Danger of Drunkenness Described in a Letter to a Friend: Wherein Are Many Convincing Aggravations of It, in Professors of Religion; and Many Other Things Tending to a Reformation of That Beastly Sin*. London, 1677.
- Butler, Samuel. "A Satire Upon the Royal Society." In *The Poetical Works of Samuel Butler*, edited by John and George Lyle Galbraith Mitford, 156-9. London: W. Pickering, 1835.
- . *Samuel Butler: Characters and Passages from Note-Books*. Edited by A. R. Waller. Cambridge: Cambridge University Press, 1908.
- Butler, Todd. "Power in Smoke: The Language of Tabacco and Authority in Caroline England." *Studies in Philology* 106, no. 1: 100-118.
- Cable, Lana. "Licensing Metaphor: Parker, Marvell, and the Debate over Conscience." In *Books and Readers in Early Modern England Material Studies*, edited by Jennifer; Anderson, Elizabeth; Sauer and Stephen Orgel. Philadelphia: University of Pennsylvania Press, 2002.
- Capp, Bernard. "A Door of Hope Re-Opened: The Fifth Monarchy, King Charles and King Jesus." *Journal of Religious History* 32, no. 1 (2008): 16-30.
- . "Gender and the Culture of the English Alehouse in Late Stuart England." In *The Trouble with Ribs: Women, Men and Gender in Early Modern Europe*, edited by Anu Korhonen, and Kate Lowe, 103-127: Helsinki Collegium for Advanced Studies, 2007.
- . *When Gossips Meet: Women, Family, and Neighbourhood in Early Modern England*. Oxford: Oxford University Press, 2003.
- Carpenter, Andrew. "Katherine Philips, 'Philo-Philippa' and Restoration Dublin." *Eighteenth-Century Ireland / Iris an dá chultúr* 33 (2018): 11-32.
- Castle-Smith, Heidi. "'I Should Go near to Say He Lies with Her, yet She's a Maid.' From Virgins to Whores, Actresses and Portraits 1600-1737." PhD thesis, University of Maryland, 2008.
- Cavendish, Margaret. *The Life of the Thrice Noble, High and Puissant Prince William Cavendish, Duke, Marquess and Earl of Newcastle...Written by the Thrice Noble, Illustrious and Excellent Princess, Margaret, Duchess of Newcastle, His Wife*. London, 1667.
- . *Observations Upon Experimental Philosophy. To Which Is Added, the Description of a Blazing World. Written by the Thrice Noble, Illustrious, and Excellent Princesse. The Duchess of Newcastle*. London, 1666.
- The Character of a Tavern. With a Brief Draught of a Drawer*. London, 1675.
- The Character of a Torey*. London, 1681.

- A Character of Coffee and Coffee-Houses*. London, 1661.
- A Character of England, as It Was Lately Presented in a Letter, to a Noble Man of France*. London, 1659.
- The Christians Guide: A Treatise Shewing the Grounds, Necessity, and End of Devotion. With Rules and Directions for the Leading of a Holy Life*. London, 1683.
- Cibber, Colley. "An Apology for the Life of Mr. Colley Cibber &C.". In *A Critical Edition of a Apology for the Life of Mr. Colley Cibber*, edited by John Maurice Evans. New York & London: Garland Publishing, 1987.
- Clarendon, Edward Earl of. *A Collection of Several Tracts of the Right Honourable Edward, Earl of Clarendon, Author of the History of the Rebellion and Civil Wars in England*. London, 1727.
- . *The Life of Edward Earl of Clarendon, in Which Is Included, a Continuation of His History of the Grand Rebellion. Written by Himself. Now for the First Time Carefully Printed from the Original Ms Preserved in the Bodleian Library*. Oxford: Oxford University Press, 1857.
- Clark, Peter. *The English Alehouse: 1200-1830*. London and New York: Longman, 1983.
- Cockayne, Emily. "Cacophony, or Vile Scrapers on Vile Instruments: Bad Music in Early Modern English Towns." *Urban History* 29, no. 1 (2002).
- Connolly, S. J. *Religion, Law and Power: The Making of Protestant Ireland 1660-1760*. Oxford: Oxford University Press, 1992.
- Cooper, Alix. "Homes and Households." In *The Cambridge History of the Science*, edited by Katharine Park, and Lorraine Daston, 224-237. Cambridge: Cambridge University Press, 2008.
- Coppola, Al. *The Theatre of Experiment: Staging Natural Philosophy in Eighteenth-Century Britain*. Oxford: Oxford University Press, 2016.
- Costello, Vandra. "Dutch Influences in Seventeenth-Century Ireland: The Duck Decoy." *Garden History* 30, no. 2 (2002).
- Cowan, Brian. "The Rise of the Coffeehouse Reconsidered." *The Historical Journal* 47, no. 1 (2004): 21-46.
- . *The Social Life of Coffee: The Emergence of the British Coffeehouse*. New Haven: Yale University Press, 2005.
- Crackfart & Tony; or, Knave and Fool: In a Dialogue over a Dish of Coffee Concerning Matters of Religion and Government*. 1680.
- Crist, Timothy. "Government Control of the Press after the Expiration of the Printing Act in 1679." *Publishing History* 5 (1979).
- D'Addorio, Christopher. "Raining Mice and Russian Leather: The Production of Knowledge in the Early Royal Society and Thomas Browne's the Garden of Cyrus." *ELH* 84, no. 1 (2017): 1-32.
- D'Urfey, Thomas. *Madam Fickle: Or the Witty False One. A Comedy as It Acted at His Royal Highness the Duke's Theatre*. London, 1676.
- Darby, Charles. *Bacchanalia: Or a Description of a Drunken Club. A Poem*. London, 1680.

- Davenant, William. *The Rivals. A Comedy. Acted by His Highness the Duke of York's Servants*. London, 1668.
- de Beer, E. S. "King Charles II, Fundator Et Patronus." *Notes and Records of the Royal Society of London* 15, no. 1 (1960): 39-45.
- de Monconys, Balthasar. *Journal Des Voyages De Monsieur De Monconys, Conseiller Du Roy En Ses Conseils D'estat & Priue, & Lieutenant Criminel Eu Siege Presidial De Lyon. Où Les Sçavants Trouueront Vn Nombre Infini De Nouueautez En Machines De Mathematique, Experiences Physiques, Raisonnemens De La Belle Philosophie, Curiositez De Chymie, & Conuersations Des Illustres De Ce Siecle [...] Second Partie. Voyage D'angleterre, Pais-Bas, Allemagne, & Italie*. Lyon, 1666.
- Dear, Peter. "A Philosophical Duchess: Understanding Margaret Cavendish and the Royal Society." In *Science, Literature and Rhetoric in Early Modern England*, edited by Juliet and David Burchell Cummins, 125-142. London and New York: Routledge, 2007.
- . "Totius in Verba: Rhetoric and Authority in the Early Royal Society." *Isis* 76, no. 2 (1985): 144-161.
- The Diary of John Evelyn*. Edited by E. S. de Beer. 6 vols. Vol. 4, Oxford: Clarendon Press, 1955.
- The Diary of Robert Hooke M.A., M.D., F.R.S.* Edited by Henry W. Robinson, and Walter Adams. London: Taylor and Francis, 1935.
- Doty, Jeffrey S. *Shakespeare, Popularity and the Public Sphere*. Cambridge: Cambridge University Press, 2017.
- Dzelzainis, Martin. "'All Things Serious and Sacred': Clarendon as Essayist." In *Clarendon Reconsidered: Law. Loyalty. Literature. 1640-1674*, edited by Philip Major. London and New York: Routledge, 2018.
- . "Managing the Later Stuart Press, 1662-1692." In *The Oxford Handbook of Law and Literature*, edited by Lorna Hutson. Oxford: Oxford University Press, 2017.
- . "Marvell and Science." In *The Oxford Handbook of Andrew Marvell*, edited by Martin and Edward Holberton Dzelzainis, 180-205. Oxford: Oxford University Press, 2019.
- . "Waller, Marvell, and 'La Belle Stuart' Reconsidered." In *Edmund Waller (1606-1687): New Perspectives*, edited by Philip Major. Leiden: Brill, 2022.
- Eagles, Robin. "'The Inkhorn Lord'? Locating Arlington's Connections." In *Henry Bennet, Earl of Arlington, and His World: Restoration Court, Politics, and Diplomacy*, edited by Robin Eagles and Coleman Dennehy. New York and London: Routledge, 2021.
- Ehrenpreis, Irvin. *Swift: The Man, His Works, and the Age*. 3 vols. Vol. 1, Cambridge: Harvard University Press, 1962.
- Ellis, Markman. *The Coffee-House: A Cultural History*. London: Weidenfeld and Nicolson, 2004.
- . "Pasqua Rosee's Coffee-House, 1652-1666." *The London Journal* 29, no. 1 (2004).
- Essex Papers*. Edited by Osmund Airy. Westminster: Camden Society, 1890.
- Etherege, George. *She Wou'd If She Cou'd, a Comedy. Acted at His Highnesse the Duke of York's Theatre. Written by George Etherege Esq.* London, 1668.

- Evelyn, John. *Sculptura, or, the History, and Art of Chalcography and Engraving in Copper with an Ample Enumeration of the Most Renowned Masters and Their Works: To Which Is Annexed a New Manner of Engraving, or Mezzo Tinto, Communicated by His Highness Prince Rupert to the Author of This Treatise*. London, 1662.
- An Exact and True Relation of the Examination, Tryal and Condemnation of the German Princesse, Otherwise Cal'd Mary Carleton, at Justice-Hall in the Old Bailey, January 17, 1672...* London, 1672.
- Ezban, Michael. "Decoys, Dikes and Lures: Polyfunctional Landscapes of Waterfowl Hunting." *Studies in the History of Gardens & Designed Landscapes* 33 (2013): 193-207.
- Falkiner, Litton C. "The Phoenix Park, Its Origin and Early History, with Some Notices of Its Royal and Viceregal Residences." *Proceedings of the Royal Irish Academy (1889-1901)* 6 (1900).
- Gallagher, Noelle. "'Partial to Some One Side:' The Advice-to-a-Painter Poem as Historical Writing." *ELH* 78, no. 1 (2011): 79-101.
- The Genuine Remains in Verse and Prose of Mr Samuel Butler, Author of Hudibras. Published from the Original Manuscripts, Formerly in the Possession of W. Longueville, Esq; with Notes by R. Thyer, Keeper of the Public Library at Manchester*. Edited by R. Thyer. 2 vols. Vol. 1, London, 1759.
- Gildon, Charles. *The History of the Athenian Society, for the Resolving All Nice and Curious Questions. By a Gentleman, Who Got Secret Intelligence of Their Whole Proceedings...* London, [1692].
- Gillespie, Raymond. *Reading Ireland: Print, Reading and Social Change in Early Modern Ireland*. Manchester University Press, 2005.
- Girten, Kristen M. "Mingling with Matter: Tactile Microscopy and the Philosophic Mind in Brobdingnag and Beyond." *The Eighteenth Century* 54, no. 4 (2013): 497-520.
- Goldie, Mark. "The Unacknowledged Republic: Officeholding in Early Modern England." In *The Politics of the Excluded*, edited by Tim Harris, 153-84. New York: Palgrave, 2001.
- Goldstein, David. *Eating and Ethics in Shakespeare's England*. Cambridge: Cambridge University Press, 2013.
- Guerrini, Anita. "Anatomists and Entrepreneurs in Early Eighteenth-Century London." *Journal of the History of Medicine and Allied Sciences* 59, no. 2 (2004): 219-239.
- . "The Ghastly Kitchen." *History of Science* 54, no. 1 (2016): 71-97.
- . "A Natural History of the Kitchen." *Osiris* 35 (2020): 20-41.
- Gumble, Thomas. *The Life of General Monck, Duke of Albemarle, with Remarks Upon His Actions*. London, 1671.
- Hailwood, Mark. *Alehouses and Good Fellowship in Early Modern England*. Woodbridge: The Boydell Press, 2014.
- Hall, Marie Boas. *Promoting Experimental Learning: Experiment and the Royal Society 1660-1727*. Cambridge: Cambridge University Press, 1991.

- Hammond, Charles. *Truth's Discovery; or the Cavalier's Case Clearly Stated by Conscience and Plain-Dealing. Presented to the Honorable Commissioners, and All Indigent Officers, and Souldiers*. London, 1664.
- Handover, P M. *A History of the London Gazette*. London: Stationary Office, 1965.
- Harris, Frances. "Lady Sophia's Visions: Sir Robert Moray, the Earl of Lauderdale and the Restoration Government of Scotland." *The Seventeenth Century* 24, no. 1 (2013): 129-155.
- . "Living in the Neighbourhood of Science: Mary Evelyn, Margaret Cavendish and the Greshamites." In *Women, Science and Medicine: 1500-1700*, edited by Lynette Hunter, and Sarah Hutton, 198-217. Stroud: Sutton, 1997.
- . *Transformations of Love: The Friendship of John Evelyn and Margaret Godolphin*. Oxford: Oxford University Press, 2002.
- Harris, Tim. "The Bawdy House Riots of 1668." *The Historical Journal* 29, no. 3 (1986).
- . "Revisiting the Causes of the English Civil War." *Huntington Library Quarterly* 78, no. 4 (2015).
- . "'Venerating the Honesty of a Tinker': The King's Friends and the Battle for the Allegiance of the Common People in Restoration England." In *The Politics of the Excluded*, edited by Tim Harris. New York: Palgrave, 2001.
- Harrison, Peter. "Religion, the Royal Society and the Rise of Science." *Theology and Science* 6, no. 3 (2008): 255-271.
- Hart, John. *The Dreadfull Character of a Drunkard. Or, the Odious and Beastly Sin of Drunkenness Described and Condemned Shewing the Fearful Judgements That Have Befallen Notorious Drunkards: With Brief Exhortations to Perswade Men from That Swinish and Abominable Sin*. 10th ed. London, 1663.
- Harth, Phillip. *Contexts of Dryden's Thought*. Chicago and London: The Universty of Chicago Press, 1968.
- Hartley, Beryl. "Exploring and Communicating Knowledge of Trees in the Early Royal Society." *Notes and Records of the Royal Society of London* 64 (2010): 229-250.
- Heylyn, Peter. *Mikrokosmos. A Little Description of the Great World. Augmented and Revised*. London, 1625.
- Higgit, Rebekah. "'Greenwich near London': The Royal Observatory and Its London Networks in the Seventeenth and Eighteenth Centuries." *The British Journal for the History of Science* 52, no. 2: 297-322.
- Hill, Christopher. *The World Turned Upside Down*. London: Temple Smith, 1972.
- Hobbes, Thomas. *The Correspondence of Thomas Hobbes*. Edited by Noel Malcolm. 2 vols. Oxford: Oxford University Press, 1994.
- Hoffman, Viktoria von. "The Taste of the Eye and the Sight of the Tongue: The Relations between Sight and Taste in Early Modern Europe." *The Senses & Society* 11, no. 2 (2016): 83-113.
- Holt, Paddy. "An Appetite for Experiment: Putting Early Royal Society Tastes Back on the Table." *Notes and Records of the Royal Society of London* (2022).

- . "Performing in a Different Place: The Use of a Prodigy to the Dublin Philosophical Society." *The British Journal for the History of Science* 53, no. 3 (2020): 371-388.
- Hooke, Robert. *Micrographia: Or Some Physiological Descriptions of Minute Bodies Made by Magnifying Glasses with Observations and Inquiries Thereupon*. London, 1665. http://gateway.proquest.com.ezproxy1.library.usyd.edu.au/openurl?ctx_ver=Z39.88-2003&res_id=xri:eebo&rft_id=xri:eebo:image:58757.
- Hoppen, Theodore K. *The Common Scientist in the Seventeenth Century: A Study of the Dublin Philosophical Society*. London: Routledge and Kegan Paul, 1970.
- Horne, William C. "Curiosity and Ridicule in Samuel Butler's Satire on Science." *Restoration: Studies in English Literary Culture, 1660-1700* 7, no. 1 (1983).
- Hosford, David. "The Peerage and the Revolution of 1688." *Parliamentary History* 2 (2008): 191-214.
- Houghton, Walter E. "The History of Trades: Its Relation to Seventeenth-Century Thought: As Seen in Petty, Evelyn, and Boyle." *Journal of the History of Ideas* 2, no. 1 (1941): 33-60.
- Howe, Elizabeth. *The First English Actresses: Women and Drama 1660-1700*. Cambridge: Cambridge University Press, 1992.
- An Humble Apology for Non-Conformists with Modest and Serious Reflections on the Friendly Debate and the Continuation Thereof. By a Lover of Truth and Peace*. London, 1669.
- Hunt, John. "Carriages, Violence, and Masculinity in Early Modern Rome." *I Tatti Studies in the Italian Renaissance* 17, no. 1 (2014).
- Hunter, Judith. "English Inns, Taverns, Alehouses and Brandy Shops: The Legislative Framework, 1495-1797." In *The World of the Tavern: Public Houses in Early Modern Europe*. Edited by Beat Kümin and B. Ann Tlusty. London and New York: Routledge, 2017.
- Hunter, Michael. *Establishing the New Science: The Experience of the Early Royal Society*. Woodbridge: The Boydell Press, 1989.
- . *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.
- . *Science and Society in Restoration England*. Cambridge: Cambridge University Press, 1981.
- Hutton, Ronald. *The Restoration: A Political and Religious History of England and Wales, 1658-1667*. 1993.
- Iliffe, Rob. "'In the Warehouse': Privacy, Property and Priority in the Early Royal Society." *History of Science* 30, no. 1 (1992): 29-68.
- . "Material Doubts: Hooke, Artisan Culture, and the Exchange of Information in 1670s London." *The British Journal for the History of Science* 28, no. 3 (1995): 285-318.
- Jacob, J. R. "Restoration Ideologies and the Royal Society." *History of Science* 18, no. 1 (1980): 25-38.

- Jacobsen, Helen. "Luxury Consumption, Cultural Politics, and the Career of the Earl of Arlington, 1660-1685." *The Historical Journal* 52, no. 2 (2009).
- Jacques, David. "Garden Works in Greenwich Park, 1662-1728." *The Court Historian* 11, no. 2 (2006): 149-153.
- Jenkinson, Matthew. *Culture and Politics at the Court of Charles II, 1660-1685*. Woodbridge: The Boydell Press, 2010.
- . "Preaching at the Court of Charles II: Court Sermons and the Restoration Chapel Royal." In *The Oxford Handbook of the Early Modern Sermon*, edited by Hugh Adlington. Oxford: Oxford University Press, 2011.
- Johns, Adrian. "The Ambivalence of Authorship in Early Modern Natural Philosophy." In *Scientific Authorship: Credit and Intellectual Property in Science*, edited by Mario Biagioli and Peter Galison. London and New York: Routledge, 2003.
- . "Coffeehouses and Print Shops." In *The Cambridge History of Science. Volume 3. Early Modern Science*, edited by Katharine Park and Lorraine Daston. Cambridge: Cambridge University Press, 2006.
- . *The Nature of the Book: Print and Knowledge in the Making*. Chicago and London: The University of Chicago Press, 1998.
- Jones, J. R. *The Anglo-Dutch Wars of the Seventeenth Century*. Oxon: Routledge, 2013.
- Jusserand, J. J. *A French Ambassador at the Court of Charles the Second*. London: Fisher Unwin, 1892. <https://archive.org/details/frenchambassador00jussuoft>.
- Keeble, N. H. *The Restoration: England in the 1660s*. Oxford: Blackwell Publisher, 2002.
- Kenyon, J. P. *Robert Spencer, Earl of Sunderland*. New York: Longmans, Green and Co., 1958.
- Kettering, Alison. *The Dutch Arcadia: Pastoral Art and Its Audience in the Golden Age*. Woodbridge: The Boydell Press, 1983.
- Key, Newton E. "'High Feeding and Smart Drinking:' Associating Hedge-Lane Lords in Exclusion Crisis London." In *Fear, Exclusion and Revolution*, edited by Jason McElligott. London: Routledge, 2006.
- Key, David. "Plato and the Ship of State." In *The Blackwell Guide to Plato's Republic*, edited by Gerasimos Santas, 189-213. Malden: Blackwell Publishing, 2006.
- Klein, Lawrence. "Coffeehouse Civility, 1660-1714: An Aspect of Post-Courtly Culture in England." *Huntington Library Quarterly* 59, no. 1 (1996): 30-51.
- Knights, Mark. *Representation and Misrepresentation in Later Stuart Britain: Partisanship and Political Culture*. Oxford: Oxford University Press, 2005.
- Kohl, Jill. "The Curious Traveller: Literary and Non-Literary Documents of a Visit to Restoration London." *German Life and Letters* 36, no. 3 (1983): 219-231.
- Kümin, Beat. *Drinking Matters: Public Houses and Social Exchange in Early Modern Central Europe*. Palgrave Macmillan, 2007.
- . "Public Houses and Their Patrons in Early Modern Europe." In *The World of the Tavern: Public Houses in Early Modern Europe*, edited by Beat Kümin, and B. Ann Tlusty. London and New York: Routledge, 2017.

- L'Estrange, Roger. *The Interest of the Three Kingdoms, with Respect to the Business of the Black Box, and All the Other Pretentions of His Grace the Duke of Monmouth, Discuss'd and Asserted in a Letter to a Friend*. London, 1680.
- . *Toleration Discuss'd, in Two Dialogues I. Betwixt a Conformist, and a Non-Conformist...Ii. Betwixt a Presbyterian, and an Independent...* London, 1670.
- Lake, Peter, and Steven Pincus. "Rethinking the Public Sphere in Early Modern England." In *The Politics of the Public Sphere in Early Modern England*, edited by Peter Lake and Steven Pincus, 1-30. Manchester and New York: Manchester University Press, 2007.
- Land, Isaac. "Port Towns and the Paramaritime." In *The Routledge Companion to Marine and Maritime Worlds, 1400-1800*, edited by Claire Jowitt, Craig Lambert and Steve Mentz. London and New York: Routledge, 2020.
- Lawson, Ian. "Bears in Eden, or, This Is Not the Garden You're Looking For: Margaret Cavendish, Robert Hooke, and the Limits of Natural Philosophy." *The British Journal for the History of Science* 48, no. 4 (2015): 583-605.
- Ideology and Politics on the Eve of the Restoration: Newcastle's Advice to Charles II*. Edited by Thomas P. Slaughter. Philadelphia: The American Philosophical Society, 1984.
- Le Bouëdec, Gerard. "La Pluriactivité Dans Les Sociétés Lottorales Xviie-Xixe Siècle." *Annales de Bretagne et des Pays de l'Ouest* 109, no. 1 (2002): 61-90.
- Le Fèvre, Nicasius. *A Discourse Upon Sr Walter Rawleigh's Great Cordial*. London, 1664.
- Le Séjour De Christian Huygens À Paris Et Ses Relations Avec Les Milieux Scientifiques Français; Suivi De Son Journal De Voyage À Paris Et À Londres*. Edited by Henri L. Brugmans. Paris: Librairie E. Droz, 1935.
- Letters Addressed from London to Sir Joseph Williamson While Plenipotentiary at the Congress of Cologne in the Years 1673 and 1674*. Edited by William Christie. 2 vols. Vol. 2, London: Camden Society, 1874.
- Lilley, Kate. "Mary Carleton's False Additions: The Case of the German 'Princess'." *Humanities Research* 16, no. 1 (2010).
- Lillywhite, Bryant. *London Coffeehouses: A Reference Book of Coffeehouses of the Seventeenth, Eighteenth and Nineteenth Centuries*. London: George Allen and Unwin Ltd, 1963.
- Lincoln, Margarette. "Women and the Sea, 1600-1800." In *The Routledge Companion to Marine and Maritime Worlds, 1400-1800*. London: Routledge, 2020.
- Lloyd, Claude. "Shadwell and the Virtuosi." *MLA* 44, no. 2 (1929): 472-494.
- Lloyd, Paul. "The Changing Status of Offal: A Fashionable Food in England between 1545 and 1655." *Food, Culture & Society* 15, no. 1 (2012).
- Loftus, Dudley. "A Letter to a Person Concerning the Society." In *Papers of the Dublin Philosophical Society*, edited by K. Theodore Hoppen, 907-10. Dublin: Irish Manuscripts Commission, 2008.
- Louw, H. J. "Some Royal and Other Great Houses in England: Extracts from the Journal of Abram Booth." *Architectural History* 27 (1984): 503-509.
- Love, Harold. "The Fiddlers on the Restoration Stage." *Early Music* 6, no. 3 (1978).

- . *Scribal Publication in Seventeenth-Century England*. Oxford: Oxford University Press, 1993.
- Lynch, Denise E. "Politics, Nature, and Structure in Marvell's 'the Last Instructions to a Painter'." *Restoration: Studies in English Literary Culture, 1660-1700* 16 (1992): 82-92.
- Magalotti, Lorenzo. "An Account of England in the Year 1667-68." In *Lorenzo Magalotti at the Court of Charles II: His Relazione D'inghilterra of 1668*, edited by W. E. Knowles Middleton. Waterloo: Wilfrid Laurier University Press, 1980.
- Maguire, Nancy Klein. *Regicide and Restoration: English Tragicomedy*. Cambridge: Cambridge University Press, 1992.
- Malpas, Simon. "'In No One Thing, They Saw, Agreeing': Experimental Philosophy in Cowley and Butler." 43, no. 2 (2019).
- Margócsy, Dániel. "Technology Transfer, Ship Design and Urban Policy in the Age of Nicolaes Witsen." In *Knowledge and the Early Modern City: A History of Entanglements*, edited by Bert de Munck and Antonella Romano. London and New York: Routledge, 2020.
- Marshall, Alan. "'Faisons Meieux': Henry Bennet, Earl of Arlington and His Political Tactics." In *Henry Bennet, Earl of Arlington, and His World: Restoration Court, Politics and Diplomacy*, edited by Robin Eagles and Coleman Dennehy. New York and London: Routledge, 2021.
- . *Intelligence and Espionage in the Reign of Charles II, 1660-1685*. Cambridge: Cambridge University Press, 1994.
- . "'Mechanic Tyrannie': Anthony Ashley Cooper and the English Republic." In *Anthony Ashley Cooper, First Earl of Shaftesbury 1621-1683*, 27-76. New York: Routledge, 2016.
- Martin, Lynn A. *Alcohol, Sex and Gender in Late Medieval and Early Modern Europe*. New York: Palgrave Macmillan, 2001.
- McCormick, Ted. *William Petty and the Ambitions of Political Arithmetic*. Oxford: Oxford University Press, 2009.
- McDayter, Mark. "Poetic Gardens and Political Myths: The Renewal of St James's Park in the Restoration." *The Journal of Garden History* 15, no. 3 (1995): 135-148.
- McKenny, Kevin. "The Restoration Land Settlement in Ireland: A Statistical Interpretation." In *Restoration Ireland: Always Settling and Never Settled*, edited by Coleman Dennehy. New York: Routledge, 2016.
- McKie, Douglas. "The Arrest and Imprisonment of Henry Oldenburg." *Notes and Records of the Royal Society of London* 6, no. 1 (1948): 28-47.
- McNally, David. "Locke, Levellers and Liberty: Property and Democracy in the Thought of the First Whigs." *History of Political Thought* 10, no. 1 (1989).
- McParland, Edward. "The Office of the Surveyor General in Ireland in the Eighteenth Century." *Architectural History* 38 (1995): 91-101.
- Mendelsohn, Andrew J. "Alchemy and Politics in England 1649-1665." *Past & Present* 135, no. 135 (1992): 30-78.

- Middleton, W. E. Knowles. "Some Italian Visitors to the Early Royal Society." *Notes and Records of the Royal Society of London* 32, no. 2 (1979): 157-173.
- Milton, John. *Paradise Lost. A Poem Written in Ten Books*. London, 1667.
- Mollet, André. *The Garden of Pleasure, Containing Several Draughts of Gardens Both in Embroider'd-Ground-Works, Knot-Works of Grass, as Likewise in Wilderness, and Others. With Their Cuts in Copper*. London, 1670.
- Molyneux, Thomas. "A Continuation of the Account of Our Family, Written by Me to My Brother, in July, 1694." In *An Account of the Family and Descendants of Thomas Molyneux, Kt. Chancellor of the Exchequer in Ireland*, edited by Capel and Thomas Phillips Molyneux, 53-78. Evesham: J. Agg., 1820.
- Morgan, John. "Science, England's 'Interest' and Universal Monarchy: The Making of Thomas Sprat's History of the Royal Society." *History of Science* 47, no. 1 (2009): 27-54.
- Mowry, Melissa M. *The Bawdy Politic in Stuart England, 1660-1714: Political Pornography and Prostitution*. London and New York: Routledge, 2004.
- Moxham, Noah. "Edward Tyson's *Phocaena*: A Case Study in the Institutional Context of Scientific Publishing." *Notes and Records of the Royal Society of London* 66, no. 3 (2012).
- . "The Uses of Licensing: Publishing Strategy and the Imprimatur at the Early Royal Society." In *The Institutionalisation of Science in Early Modern Europe*, edited by Giulia Giannini and Mordechai Feingold. Leiden and Boston: Brill, 2019.
- Mr. *Turbulent: Or, the Melanchollicks. A Comedy as It Was Acted at the Duke's Theater*. London, 1682.
- Mukerji, Chandra. *Impossible Engineering: Technology and Territoriality on the Canal Du Midi*. Princeton: Princeton University Press, 2009.
- . *Territorial Ambitions and the Gardens of Versailles*. Cambridge: University of Cambridge Press, 1997.
- Muldrew, Craig. *The Economy of Obligation: The Culture of Credit and Social Relations in Early Modern England*. London: Palgrave, 1998.
- Mundy, Peter. *The Travels of Peter Mundy, in Europe and Asia, 1608-1667*. Edited by Richard Temple. Vol. 5, London and New York: Routledge, 2016.
- Munkhoff, Richelle. "Reckoning Death: Women Searchers and the Bills of Mortality in Early Modern London." In *Rhetorics of Bodily Disease and Health in Medieval and Early Modern England*, edited by Jennifer C. Vaught, 119. London and New York: Routledge, 2010.
- Munter, Robert. *The History of the Irish Newspaper 1685-1760*. Cambridge: Cambridge University Press, 1967.
- Murray, Barbara. "'Transgressing Nature's Law': Representations of Women and the Adapted Version of the *the Tempest*, 1667." *Literature and History* 12, no. 1 (2003).
- Neufeld, Matthew. *The Civil Wars after 1660: Public Remembering in Late Stuart England*. Woodbridge: The Boydell Press, 2013.
- . *Pepys' Diary and the New Science*. Charlottesville: The University Press of Virginia, 1965.

- Nicolson, Marjorie Hope. *The Conway Letters: The Correspondence of Anne, Viscountess Conway, Henry More, and Their Friends 1642-1684*. Edited by Sarah Hutton. Oxford: Clarendon Press, 1992.
- Norris, John. *A Murnival of Knaves, or, Whiggism Plainly Display'd, and (If Not Grown Shameless) Burlesqu't out of Countenance*. London, 1683.
- North, Roger. *The Lives of the Right Hon. Francis North, Baron Guilford; the Hon. Sir Dudley North; and the Hon. And Rev. Dr. John North, Together with the Autobiography of the Author. Ed. By Augustus Jessopp, D. D.* Edited by Augustus Jessop. 2 vols. Vol. 2, Covent Garden: George Bell and Sons, 1890.
- Novak, Julia. "'Rais'd from a Dunghill, to a King's Embrace:' Restoration Verse Satires on Nell Gwyn as Life Writing." *Life Writing* 13, no. 4 (2016): 449-464.
- O'Brien, Mark. "Journalism in Ireland: The Evolution of a Discipline." In *Irish Journalism before Independence: More a Disease Than a Profession*, edited by Kevin Rafter. Manchester: Manchester University Press, 2011.
- Oldenburg, Henry. *The Correspondence of Henry Oldenburg*. Edited by A. Rupert Hall and Marie Boas Hall. 17 vols. Madison: The University of Wisconsin Press, 1966.
- Macleod, Catherine, and Julia Alexander Marciari. *Painted Ladies: Women at the Court of Charles II*. London: National Portrait Gallery, 2001.
- Parker, Samuel. *A Defence and Continuation of the Ecclesiastical Politie: By Way of Letter to a Friend in London. Together with a Letter from the Author of the Friendly Debate*. 1671.
- Parkin, Jon. *Science, Religion and Politics in Restoration England: Richard Cumberland's De Legibus Naturae*. Woodbridge: The Boydell Press, 1999.
- Particular Friends: The Correspondence of Samuel Pepys and John Evelyn*. Edited by Guy de la Bédoyère. Woodbridge: Boydell Press, 1997.
- Peacey, Jason. "Managing Dutch Advices: Abraham Casteleyn and the English Government, 1660-1681." *Media History* 22, no. 3-4 (2016).
- . "'My Friend the Gazetier': Diplomacy and News in the Seventeenth-Century Europe." In *News Networks in Early Modern Europe*, edited by Joad Raymond and Noah Moxham, 420-42. Leiden and Boston: Brill, 2016.
- Peck, Linda. *Consuming Splendor: Society and Culture in Seventeenth-Century England*. Cambridge: Cambridge University Press, 2005.
- Penn, William. *The Papers of William Penn*. Edited by Richard S. Dunn;, Mary Maples Dunn;, Marianne S. Wokeck;, Joy Wiltenburg;, Alison Duncan Hirsch;, Craig W. Horle;, Edwin B. Bronner; and David Fraser. 5 vols.: University of Pennsylvania Press, 1981-7.
- Perkins, Adam. "King Charles and the Founding of the Royal Observatory." In *The History of Celestial Navigation*: Springer, 2020.
- Picciotto, Joanna. *Labors of Innocence in Early Modern England*. Cambridge: Harvard University Press, 2010.
- Pincus, Steven. "'Coffee Politicians Does Create': Coffeehouses and Restoration Political Culture." *The Journal of Modern History* 67, no. 4 (1995): 807-834.

- . "From Butterboxes to Wooden Shoes: The Shift in English Popular Sentiment from Anti-Dutch to Anti-French in the 1670s." *The Historical Journal* 38, no. 2 (1995).
- . *Protestantism and Patriotism: Ideologies and the Making of English Foreign Policy, 1650-1668*. Cambridge: Cambridge University Press, 1996.
- Poems on Affairs of State: Augustan Satirical Verse, 1660-1714*. Edited by George deForest Lord. Vol. 1, New Haven & London: Yale University Press, 1963.
- Politics, Transgression, and Representation at the Court of Charles II*. Edited by Julia Alexander Marciari and Catherine Macleod. New Haven & London: Yale University Press, 2007.
- Pritchard, Will. *Outward Appearances: The Female Exterior in Restoration London*. Lewisburg: Bucknell University Press, 2010.
- Quinlan, Maurice J. "Lemuel Gulliver's Ships". *Philological Quarterly* 46, no. 3 (1967).
- Quint, David. "Milton, Waller, and the Fate of Eden." *Modern Language Quarterly* 78, no. 3 (2017).
- Rawleigh Redivivus; or, the Life & Death of the Right Honourable Anthony Late Earl of Shaftesbury*. London, 1683.
- Ray, John. *The Correspondence of John Ray: Consisting of Selections from the Philosophical Letters Published by Dr. Derham, and Original Letters of John Ray, in the Collection of the British Museum*. Edited by Edwin Lankester. London, 1848.
- Raylor, Timothy. "Marvell and Waller." In *The Oxford Handbook of Andrew Marvell*, edited by Martin Dzelzainis and Edward Holberton. Oxford: Oxford Handbooks Online, 2019.
- Redwood, J. A. "Charles Blount (1654-93), Deism, and English Free Thought." *Journal of the History of Ideas* 35, no. 3 (1974).
- Reece, Henry. *The Army in Cromwellian England, 1649-1660* (Oxford: Oxford University Press, 2013)
- Remarques on the Humours and Conversations of the Town. Written in a Letter to Sr. T. L.* London, 1673.
- Ribouillault, Denis. "The Cultural Landscape of the Villa in Early Modern Rome." In *A Companion to Early Modern Rome, 1492-1692*, edited by Pamela M. Jones, Barbara Wisch and Simon Ditchfield. Leiden: Brill, 2019.
- Rieppel, Lukas. "Museums and Botanical Gardens." In *A Companion to the History of Science*, edited by Bernard Lightman. Chichester: Wiley Blackwell, 2016.
- Roach, Joseph. "Celebrity Erotics: Pepys, Performance, and Painted Ladies." In *Politics, Transgression, and Representation at the Court of Charles II*, edited by Catherine Macleod and Julia Alexander Marciari. New Haven and London: Yale University Press, 2007.
- Roger L'estranger and the Making of Restoration Culture*. Edited by Anne Dunan-Page and Beth Lynch. London and New York: Routledge, 2008.
- Sahlins, Peter. *1668: The Year of the Animal in France*. New York: Zone Books, 2017.
- Schaffer, Simon. "Regeneration: The Body of Natural Philosophers in Restoration England." In *Science Incarnate: Historical Embodiments of Natural Knowledge*, edited by

- Christopher Lawrence and Steven Shapin, 85-120. Chicago: The University of Chicago Press, 1998.
- Schiebinger, Londa. *The Mind Has No Sex: Women at the Origins of Modern Science*. Cambridge Massachusetts: Harvard University Press, 1989.
- Secord, Anne. "Science in the Pub: Artisan Botanists in Early Nineteenth-Century Lancashire." *History of Science* 32, no. 3 (1994).
- Sedley, Charles. *The Mulberry-Garden, a Comedy. As It Is Acted by His Majestie's Servants at the Theatre-Royal*. London, 1668.
- Shadwell, Thomas. *The Sullen Lovers; or, the Impertinents. A Comedy Acted by His Highness the Duke of Yorkes Servants*. London, 1668.
- . *The Virtuoso. A Comedy, Acted at the Duke's Theatre. Written by Thomas Shadwell*. London, 1676.
- Shannahan, John. "Theatrical Space and Scientific Space in Thomas Shadwell's Virtuoso." *SEL Studies in English Literature 1500-1900* 49, no. 3 (2009): 549-571.
- Shapin, Steven. "The House of Experiment in Seventeenth-Century England." *Isis* 79, no. 3 (1988): 373-404.
- . "'The Mind Is It's Own Place': Science and Solitude in Seventeenth Century England." *Science in Context* 4, no. 1 (1990): 191-218.
- . "Pump and Circumstance: Robert Boyle's Literary Technology." *Social Studies of Science* 14, no. 4 (1984): 481-520.
- . *A Social History of Truth: Civility and Science in Seventeenth-Century England*. Chicago and London: University of Chicago Press, 1994.
- . "Who Was Robert Hooke?". In *Robert Hooke: New Studies*, edited by Michael Hunter and Simon Schaffer, 253-86. Woodbridge: The Boydell Press, 1989.
- Shapin, Steven, and Simon Schaffer. *Leviathan and the Air-Pump: Hobbes, Boyle, and the Experimental Life*. Princeton: Princeton University Press, 1985.
- Sharpe, Kevin. *Rebranding Rule: The Restoration and Revolution Monarchy, 1660-1714*. New Haven: Yale University Press, 2013.
- . "'Thy Longing Country's Darling and Desire': Aesthetics, Sex, and Politics in the England of Charles II." In *Politics, Transgression, and Representation and the Court of Charles II*, edited by Julia Marciari Alexander, and Catharine MacLeod. New Haven: Yale University Press, 2007.
- . "Virtues, Passions and Politics in Early Modern England." *History of Political Thought* 32, no. 5 (2011).
- Sir Thomas Browne's Works Including His Life and Correspondence*. Edited by Simon Wilkin. 4 vols. London: William Pickering, 1836.
- Skinner, Quentin. "Thomas Hobbes and the Nature of the Early Royal Society." *The Historical Journal* 12, no. 2 (1969): 217-239.
- Slack, Paul. *The Impact of Plague in Tudor and Stuart England*. London: Routledge & Kegan Paul, 1985.
- Slichter, Charles. *Science in a Tavern: Essays and Diversions on Science in the Making*. Madison: The University of Wisconsin Press, 1938.

- Smith, Pamela H. "Laboratories." In *The Cambridge History of Science. Volume 3. Early Modern Science*, edited by Katharine Park, and Lorraine Daston and Lorraine Daston, 290-304. Cambridge: Cambridge University Press, 2008.
- Snobelen, Stephen D. "William Whiston, Experimental Lecturing and the Royal Society of London." In *Collected Wisdom of the Early Modern Scholar: Essays in Honor of Mordechai Feingold*, edited by Anna Marie Roos; and Gideon Manning, 349-74: Springer, 2023.
- Soll, Jacob. *The Information Master: Jean-Baptiste Colbert's Secret State Intelligence System*. Ann Arbor: University of Michigan Press, 2009.
- Sommerville, C. John. *The News Revolution in England: Cultural Dynamics of Daily Information*. Oxford: Oxford University Press, 1996.
- Sorbière, Samuel. *Relation D'un Voyage En Angleterre, Où Sont Touchées Plusieurs Choses, Qui Regardent L'estat Des Sciences, & De La Religion, & Autres Matieres Curieuses*. Paris, 1664.
- Sorrenson, Richard. "The Ship as a Scientific Instrument in the Eighteenth Century." *Isis* 11 (1996).
- South, Robert. *A Sermon Preached before the Court at Christchurch Chappel in Oxford*. Oxford, 1665.
- . *Twelve Sermons Preached Upon Several Occasions*. London, 1692.
- . *Twelve Sermons Preached Upon Several Occasions. The Second Volume*. London, 1694.
- Southgate, B. C. "Forgotten and Lost: Some Reactions to Autonomous Science in the Seventeenth Century." *Journal of the History of Ideas* 50, no. 2 (1989): 249-268.
- Speller, Emily E. "'For Knowledge Is as Food': Digesting Gluttony and Temperance in Milton's Paradise Lost." *Early Modern Studies Journal* 2 (2009).
- Sprat, Thomas. *The History of the Royal-Society of London, for the Improving of Natural Knowledge*. London, 1667.
- . *A Letter Containing Some Observations on Monsieur De Sorbier's Voyage into England. Written to Dr. Wren, Professor of Astronomy in Oxford. By Thomas Sprat, Fellow of the Royal Society*. London, 1665.
- Stamper, Paul. "The Tree That Hid a King: The Royal Oake at Boscobel, Shropshire." *Landscapes* 3, no. 1 (2002).
- Stevenson, David. *Letters of Sir Robert Moray to the Earl of Kinkadine, 1657-73*. New York: Routledge, 2007.
- Stewart, Larry. "Other Centres of Calculation, or, Where the Royal Society Didn't Count: Commerce, Coffee-Houses and Natural Philosophy in Early Modern London." *The British Journal for the History of Science* 32, no. 1 (1999): 133-55.
- . *The Rise of Public Science: Rhetoric, Technology, and Natural Philosophy in Newtonian Britain*. Cambridge: Cambridge University Press, 1992.
- Sutherland, James. *The Restoration Newspaper and Its Development*. Cambridge: Cambridge University Press, 1986.

- Swann, Elizabeth. *Taste and Knowledge in Early Modern England*. Cambridge: Cambridge University Press, 2020.
- Swift, Jonathan. *A Meditation Upon a Broom--Stick, and Somewhat Beside; of the Same Author's*. London, 1710.
- Swift, Johnathan. *The Correspondence of Jonathan Swift*. Edited by Harold Williams. 3 vols. Oxford: Oxford University Press, 1963.
- . *Miscellanies*. Vol. 11, London, 1746.
- . *Travels into Several Remote Nations of the World. In Four Parts*. Vol. 1, London, 1726.
- Syfret, R. H. "Some Early Critics of the Royal Society." *Notes and Records of the Royal Society of London* 8, no. 1 (1950): 20-64.
- Sylva, or a Discourse of Forest-Trees, and the Propagation of Timber in His Majesties Dominions...* London, 1664.
- Temple, William. *Miscellanea. The Third Part*. London, 1701.
- . "Upon Ancient and Modern Learning." In *Miscellanea. The Second Part*. London, 1690.
- Thatham, John. *Knavery in All Trades: Or, the Coffee-House. A Comedy. As It Was Acted in the Christmas Holidays by Several Apprentices with Great Applause*. London, 1664.
- Thomas, Arvind. "Milton and Table Manners." *Milton Quarterly* 40, no. 1 (2006).
- Thomas, Ben. "Noble or Commercial? The Early History of Mezzotint in Britain." In *Printed Images in Early Modern Britain: Essays in Interpretation*, edited by Michael Hunter. London and New York: Routledge, 2010.
- Thurley, Simon. *The Whitehall Palace Plan of 1670*. London: London Topographical Society, 1998.
- Tinniswood, Adrian. *The Royal Society & the Invention of Modern Science*. 2019.
- The Triumph of Truth: In an Exact and Impartial Relation of the Life and Conversation of Col. James Turner...* London, 1663.
- Tuite, Patrick. "Making the Case for Artaban: Robert Leigh, Katherine Philips and the Court of Claims." *Women's Writing* 23, no. 4 (2016): 504-526.
- Tyson, Edward. *Phocaena, or the Anatomy of a Porpoise, Dissected at Gresham Colledge: With Prealiminary Discourse Concerning Anatomy, and a Natural History of Animals*. London, 1680.
- Unknown. "In Laudem Navis Germinae E Portu Dublinij Ad Regem Carolum Iidum Missae." In *Verse in English from Tudor and Stuart Ireland*, edited by Andrew Carpenter, 390-401. Cork: Cork University Press, 2003.
- Usher, Robin. *Protestant Dublin 1660-1760: Architecture and Iconography*. New York: Palgrave Macmillan, 2012.
- van Trijp, Didi. "Fresh Fish: Observation up Close in Late Seventeenth-Century England." *Notes and Records of the Royal Society of London* 75, no. 3 (2019).
- Wagner, Leopold. *More London Inns and Taverns*. Newcastle-Upon-Tyne: Northumberland Press, 1925.

- Wall, Wendy. *Recipes for Thought: Knowledge and Taste in the Early Modern English Kitchen*. Philadelphia: University of Philadelphia Press, 2016.
- Waller, Edmund. *A Poem on St. James's Park as Lately Improved by His Majesty*. London, 1661.
- Waller, Robert. "The Life of Dr. Robert Hooke." In *The Posthumous Works of Robert Hooke, M. D., S. R., Geom. Prof. Gresh. &C. Containing His Cutlerian Lectures, and Other Discourses Read at the Meetings of the Illustrious Royal Society....To These Discourses Is Prefixt the Author's Life, Giving an Account of His Studies and Employments, with an Enumeration of the Many Experiments, Instruments, Contrivances and Inventions, by Him Made and Produc'd Curator of Experiments to the Royal Society*, i-xxvii. London, 1705.
- Wallwork, Jo. "Disruptive Behaviour in the Making of Science: Cavendish and the Community of Seventeenth-Century Science." In *Early Modern Englishwomen Testing Ideas*, edited by Jo Wallwork and Paul Salzman, 41. London and New York: Routledge, 2011.
- Ward, Edward. *The Secret History of Clubs, Particularly the Kit-Cat, Beef-Stake, Vertuosos, Quacks, Knights of the Golden-Fleece, Florists, Beaus, Etc.* London, 1709.
- Weil, Rachel. "The Female Politician in the Late Stuart Age." In *Politics, Transgression, and Representation at the Court of Charles II*, edited by Julia Alexander Marciari and Catherine Macleod. New Haven and London: Yale University Press, 2007.
- Werrett, Simon. *Thrifty Science: Making the Most of Materials in the History of Experiment*. Chicago and London: The University of Chicago Press, 2019.
- Wettenhall, Edward. *Two Discourses for the Furtherance of Christian Piety and Devotion. The Former Asserting the Necessity and Reasonableness of a Positive Worship...The Later Considering the Common Hindrances of Devotion...* London, 1671.
- Whitaker, Curtis. "Andrew Marvell's Garden-Variety Debates." *Huntington Library Quarterly* 62, no. 3 (1999).
- Wigston Smith, Chloe. "Dressing up Character: Theatrical Paintings from the Restoration to the Mid-Eighteenth Century." In *Prologues, Epilogues, Curtain-Raisers, and Afterpieces: The Rest of the Eighteenth-Century London Stage*, edited by Daniel Ennis and Judith Slagle. Newark: University of Delaware Press, 2007.
- Willes, Margaret. *The Curious World of Samuel Pepys and John Evelyn*. New Haven and London: Yale University Press, 2017.
- Williams-Reinke, Tim. "Women, Ale and Company in Early Modern London." *Brewery History* 135 (2010): 88-106.
- Williams, Abigail. *Poetry and the Creation of a Whig Literary Culture 1681-1714*. Oxford: Oxford University Press, 2005.
- Wilmot, John, Earl of Rochester. "A Ramble in St. James's Park." In *The Works of John Wilmot, Earl of Rochester*, edited by Harold Love, 71-80. Oxford: Oxford University Press, 1999.
- Winterbottom, Anna. "An Experimental Community: The East India Company in London, 1600-1800." *British Journal of the History of Science* 52, no. 2 (2019).

- Wintroub, Michael. "The Looking Glass of Facts: Collecting, Rhetoric and Citing the Self in the Experimental Natural Philosophy of Robert Boyle." *History of Science* 35, no. 2 (1997).
- The Women's Petition against Coffee. Representing to Publick Consideration the Grand Inconveniencies Accruing to Their Sex from the Excessive Use of That Drying, Enfeebling Liquor.* London, 1674.
- Wood, Andy. *Riot, Rebellion and Popular Politics in Early Modern England*. London: Red Globe Press, 2002.
- Wood, Anthony à Athenae Oxoniensis. *An Exact History of All the Writers and Bishops Who Have Had Their Education in the Most Ancient and Famous University of Oxford, from the Fifteenth Year of King Henry the Seventh, Dom. 1500, to the End of the Year 1690...* 2 vols. Vol. 2, London, 1692.
- Wood, P. B. "Methodology and Apologetics: Thomas Sprat's 'History of the Royal Society'." *The British Journal for the History of Science* 13, no. 1 (1980): 1-26.
- Woodruff, Simon. *Consumption and the Making of Respectability, 1600-1800*. New York and London: Routledge, 2002.
- The Works of Robert Boyle*. Edited by Michael Hunter and Edward B. Davis. Vol. 6, London: Pickering & Chatto, 1999.
- Wycherley, William. *Love in a Wood, or St James's Park. A Comedy*. London, 1672.
- Yamamoto, Koji. *Taming Capitalism before Its Triumph: Public Service, Distrust, and 'Projecting' in Early Modern England*. Oxford: Oxford University Press, 2018.
- Zwicker, Steven. *Lines of Authority: Politics and English Literary Culture, 1649-1683*. Ithaca and London: Cornell University Press, 1993.
- . "Virgins and Whores: The Politics of Sexual Misconduct in the 1660s." In *Andrew Marvell*, edited by Thomas Healy: London and New York, 1998.