The story goes that some time in the 1630s or thereabouts Dr William Harvey, discoverer of the circulation of the blood, disguised himself as a wizard, gained entry to a witch’s dwelling, asked to see her ‘familiar’, a tame toad, then sent her off to buy some ale so that he could open up the belly of the toad with his dissecting knife to prove that it was not a ‘familiar’ but just ‘an arrant naturall toad’. Historians have fashioned Harvey’s experiment into a parable of the seventeenth-century triumph of science over superstition. This essay will reappraise their verdict.

The source for this anecdote is a long document that was published in two parts in the May and June editions of the Gentleman's Magazine of 1832. The text appears in the antiquarian section of the magazine, accompanied by a covering letter, signed, according to the magazine’s usual protocol, only with the initials B.C.T.: ‘I send you a copy of a manuscript containing some curious particulars on the subject of Demonology’. The manuscript itself seems to have consisted of three sections of text and an unsigned letter. One of the sections of text carries the date 16 January 1685/6 and the letter is dated Ash Wednesday 1685/6. The story about Harvey appears at the end of the letter. My reappraisal of Harvey’s experiment takes the form of an archaeology of this text – I examine the rhetorical uses to which it has been
put, discuss some of the political and cultural context surrounding its publication in 1832 and attempt a horizontal excavation of the circumstances in which it was originally written in the 1680s.

Let us begin, as archaeologists must, with the top layer. The most recent published use of this text that I could find was in a 1997 article in The Proceedings of the Royal College of Physicians of Edinburgh. Reminding the reader that the physician who discovered the circulation of the blood lived in a pre-industrial ‘world of fear and uncertainty . . . governed not by the laws of nature but by irrational forces’, the authors of this essay suggest that ‘in the short course of that dissection it can seem that magic had yielded to science’.2 This extravagant claim originates with Keith Thomas, who made use of the anecdote in his gripping Religion and the Decline of Magic:

The new science also carried with it an insistence that all truths be demonstrated, an emphasis on the need for direct experience and a disinclination to accept inherited dogmas without putting them to the test . . . the implications of this new attitude can be seen in the story of how the physician, William Harvey, carefully dissected a toad alleged to be a witch’s familiar . . .3

Thomas’s source for the text was Wallace Notestein, whose 1911 History of Witchcraft in England also makes strong claims for Harvey’s experiment: ‘. . .here was a man who had a scientific way of looking at superstition. The advent of such a man was most significant in the history of witchcraft, perhaps the most significant fact of its kind in the reign of Charles I.’4 Also indebted to Notestein for this tale was Geoffrey Keynes, whose 1966 Life of William Harvey cites this story along with Harvey’s better-documented and more famous intervention in the case of the Lancashire witches as further proof of his heroic, demonology-busting objectivity.5 Notestein got wind of this story via Frederick Andrew Inderwick’s 1888 Sidelights on the Stuarts, in which, in an interesting twist, the heroic significance of the dissection is credited not to the good doctor, but to the monarch who supposedly put him up to it, Charles I.6

There are variations of emphasis among these tellings, but in each case the story of Harvey’s experiment serves to support a model of the philosophical convulsions of the seventeenth century in which Science, armed only with the truth, did battle with the powerfully-entrenched prejudices of the age and won. I want to argue that this antiquarian fragment can only be mobilized to support such an account by virtue of a reading that leaves almost everything out. As soon as we turn to the 1832 volume of the Gentleman’s Magazine we discover the anecdote embedded in a much longer and richer text which already promises to disrupt the reassuring asymmetry set up in these interpretations between modern reason and ancient nonsense.
The first, undated, section of text consists of a description of the civic structure of the borough of Malmesbury, in which the author makes clear his political leanings:

Being to mention Malmesbury often in the ensuing narration, I have thought it not unfit, to say something of the policy of that auntient Corporation, which by the justice and clemency and liberality of former Kings, hath not only retained its auntient forme of Government, but hath been inriched with great quantitys of land, which are disposed amongst the Freemen and Guildeners, by very just and prudent methods.

There follows a shameless piece of royalist propaganda describing a serene hierarchy unbroken since the granting of right of common by King Athelstan ‘whose monument is yet extant in Malmesbury’. The reader is invited to admire a parade of civic virtues consequent upon the wise disposition of the land by ‘that magnanimous King’, including the fact that ‘upon a diligent inquiry made about 4 years since, there was found in North Wiltshire very few Papists. . .’

The second section of text tells of a cabal of Malmesbury witches and the sufferings of their victims. It names ‘John Barlowes wife, convicted of and executed for Whitchcraft about 55 years since’ and then recounts the suicide of one Alice Elger who had the misfortune to be suspected of witchcraft when Malmesbury was ‘in the hands of the Armys ranged against the King; that the Soldiers and some of the lowest of the people did in the mercat place use her very roughly. . .’ There follows a long account of the hexing of a Mr Bartholomew and the bewitching of a gardener’s daughter by one Goody Orchard, ‘beleived to be a Witch universally’. The section ends with Goody Orchard’s conviction and execution.

The last part of the manuscript, dated 16 January 1685/6, narrates the examination of fourteen people – twelve women and two men – accused of bewitching young Master Thomas Webb (grandson of the afore-mentioned Mr Bartholomew). The author tells how ‘Ann Tilling, widdowe’, had broken down and confessed to the boy’s mother that she and two other women had bewitched Thomas. The unfortunate Ann Tilling had been recruited by the others to make up the threesome necessary for their spells, ‘Goody Clark being bedrid’. Since her recruitment she had met with other witches and ‘did eate and drink all together, and consulted of their business, which was the avenging themselves uppon theyr enimys’. The confession snowballed and ‘Besides the three first uppon Tilling’s confession, eleven persons, 2 men and nine women, were apprehended and examined. . .’

The account of the arrest of the fourteen suspects and their preliminary examination by the Alderman and three justices is rapidly disposed of, but the pace slows when a fourth justice turns up, ‘not being perhaps very
The fourth justice is the hero of the piece and, of course, the manuscript's author. Rather oddly inserted between sections one and two of the text is his unsigned covering letter to someone in Cambridge in which he apologizes for the manuscript's shortcomings and gives a pious explanation of why he refers to himself in the third person. The author complains that he has

had people with me (and have some yet) uppon Justice business, ever since I did rise in the morning, which hinders me from giving you the accompt of many occurrences very extraordinary. Amongst which is the Relation of a Rat which followed and would ever be with that worthy Gentleman Sr Edward Norris, then residing in Ireland; an aparition to Mr. William Howard . . . and several relations of that kind. . .

The letter concludes with the story about Harvey, which the author introduces thus:

I acknowledge with wonder sufficient I have heard severall persons, very learned otherwyse, affirme there were not, neyther could be, any witches; amongst others, Doctor Harvey was induced by a very weake experiment to be of that mind; I was very familiarly acquainted with him, and was often abroad with him, and had severall discourses with him about things in his faculty, but principally about natural philosophy, I agreeing with him for much the more part. I once asked him what his opinion was concerning Whitchcraft; whether there was any such thing? Hee told mee he believed there was not. I asked him what induced him to be of that opinion?

Upon reading the full text a picture emerges of its author – a royalist justice of the peace, a pious Anglican, friendly with William Harvey, familiar with contemporary natural-philosophical controversy, and curious about all manner of natural and supernatural phenomena. His actions in the examination of the Malmesbury witches are presented to his Cambridge correspondent as those of a compassionate and sophisticated man:

I know you will approve the methodes I persuaded the other Justices to use, which were not to persuade any one of the accused to confess, much lesse to menace any of them, to take nothing for evidence which was sayd by a boy of 12 years old, in his fitts of being possessed . . . I also advised to procure two of the ablest Ministers . . . to speak generally with the
Women, and to discover, if they could, whether there was ... any madness, deep melancholily, or hatred of life in Tilling, who confessed.

* * *

In a passage about familiars Keith Thomas assures the reader that 'The toad familiar experimentally dissected by William Harvey on a famous occasion clearly had an objective existence'.7 Toft and Mackenney, the authors of the 1997 article about Harvey, take the opposite stance, characterizing the story as 'a piece of folklore . . . in the same category as St Francis's conversations with birds'.8 But the story is neither fact nor folklore: it enjoys a material existence within copies of the 1832 Gentleman's Magazine, from which can be conjectured a series of events that become increasingly remote – the composition of a text in 1686, a conversation between the author of the text and Harvey sometime before the doctor's death in 1657, and, at the end of the series, the actual events recounted in that conversation, a confrontation between a witch and the discoverer of the circulation of the blood.

In this section I reconstruct the circumstances of the text's composition by identifying its author and its intended audience. I hope to demonstrate that in the context of post-revolutionary English natural philosophy the witchcraft beliefs of the narrator of Harvey's experiment would have had as great a claim to modernity as Harvey's witchcraft scepticism. Having restored the relative credibility of the author of the text I then take the liberty of using certain features of his account to advance a revisionist reading of the encounter between the King’s physician and the witch’s toad.

It was the antiquarian and biographer John Aubrey, one of Malmesbury's famous sons, who led me to the obscure figure who wrote the manuscript – a close friend of Aubrey, known to posterity only for that friendship and for an incompetent military manoeuvre during the Civil War denounced by Clarendon in his History. In A Natural History of Wiltshire Aubrey says:

About 167_ there was a Cabal of witches detected at Malmesbury. They were examined by Sir James Long of Draycot-Cerne, and by him committed to Salisbury Gaol. I think there were 7 or 8 women hanged. There were odd things sworn against them, as the strange manner of dyeing of H Dennys horse, and of flying in the air on a staffe. These examinations Sir James hath fairly written in a book, which he promised to give to the Royall Societie.9

Among Aubrey's letters at the Bodleian is an undated letter from Sir James Long detailing his intentions to write the piece. Long thanks Aubrey for sending 'My Lord Hale's book', (a 1682 pamphlet reporting a witch trial in Bury St Edmunds presided over by Hale),10 and then exclaims:

Good god How far as thes cases different from our Malmesbury matters – I assure you that I was so farr concerned uppon the consideration of
thos tryalls lately printed that I resolved and doe resolve to publish – notwithstanding the more than ordinary share I had in them – all thos transactions – and addresse them to our President and Fellowship . . .

The rest of the letter outlines the structure that Long intended to employ in his narrative, beginning with his resolution to ‘set forth the policy of Malmesbury and how the Alderman to whose assistance wee were called is qualified there . . .’ and ending with his (unrealized) ambition to ‘adde a Briefe discourse coniectural indeed of natural Magique and close all with the naturall history of certayne animals’ including a ‘coniecture of unicorones’ which would ‘detect the errors of antiquity . . .’

Aubrey could only date the events recounted in the manuscript to the nearest decade – ‘167’ – and what survives of Long’s text mentions no date, but we can do better: the names of the three women who end up being sent to Salisbury – Tilling, Peacock, and Witchall – appear in the Gaol Books for 1672 along with the name of their alleged victim – Thomas Webb. The Gaol Books state that only Tilling and Witchall were found guilty which tallies with the manuscript: ‘. . .I brought it to pass, that but three of those were committed, of which two were convict and executed’. There were other accusations made against the women which did not feature in Long’s account, including the ‘killing of 8 gueldings and 7 mares, value £150, of goods of Henry Dennynge, by witchcraft’. But Henry Dennynge’s horses were mentioned by John Aubrey in the quote given above, suggesting that Aubrey’s knowledge of the case exceeded what survives of Long’s account – either from conversations with his friend, from sections of Long’s manuscript or letters which are no longer extant, or from independent sources.

John Aubrey never mentioned James Long without extolling his charms; this might explain why such an obscure figure merited an entry in the 1895 edition of the Dictionary of National Biography. According to this account Long was born in 1613, educated in England and France, and joined the royal army some time after the outbreak of the Civil War. In 1645 he was returning from escorting the Prince of Wales to Bristol when he was ambushed by parliamentarians at Devizes. Long was captured and of his four-hundred horses only some thirty-odd succeeded in getting away. Long was soon exchanged for a parliamentarian prisoner captured by the other side, and by 1649 he was able to reclaim his estate from the Protectorate. According to Aubrey he wrote a book on the ‘History and Causes of the Civill War’ which is not extant. In 1673, at the death of his uncle, Long succeeded to the baronetcy and estates of Wraxhall and Draycot. He died in 1692.

Aubrey’s praises were liberally quoted in the DNB article. Long is described by him as: ‘great memorie; great historian and romaneer; great falconer and for horsemanship; for insects; exceeding curious and searching long since in naturall things’. Long assisted Aubrey with The Natural History of Wiltshire and his letters to Aubrey on fishes, birds, reptiles,
insects and minerals were inserted in the original manuscript. When Aubrey was broke and embroiled in legal troubles of various kinds he often stayed with Sir James:

My honoured and faithfull friend Colonell James Long, of Draycott, since Baronet, was wont to spend a week or two every autumne at Aubrury [Avebury] in hawking, where severall times I have had the happiness to accompany him... The flight of the falcons was but a parenthesis to the Colonell's facetious discourse... and the Muses did accompany him with his hawkes and spaniels.14

Such was his charm that even Cromwell was won over:

Oliver, Protector, hawking at Hounslowe Heath, discoursing with him, fell in love with his company, and commanded him to weare his sword, and to meete him a hawkeing, which made the strict cavaliers look on him with an evil eye.15

The author of the DNB entry was Thomas Seccombe whose Twelve Bad Men of 1885 included a character sketch of the witch-finder Matthew Hopkins. Unable to reconcile his portrait of a charming cavalier with such activities, he made no mention that Sir James had been mixed up in the prosecution of the Malmesbury witches. Long's letters to Aubrey in the Bodleian Library also suggest a rather more complicated character. Written in a breathless style almost devoid of punctuation,16 they chronicle, among other misadventures, a punch-up in a coffee shop with someone who asserted that the execution of Charles I was lawful, and a 'distemper' brought on by an attempt to poison him by 'a Barbarous and revengfull woman'.17

Long was evidently proud of his membership of the Royal Society and sent soil samples to Aubrey for chemical testing as well as descriptions of the wild animals and birds found on his estate. He extended his hospitality to one Doctor Grew 'untill hee bee satisfied in his experiments...'.18 and nagged Aubrey to get on with the natural history of Wiltshire.19 As a landowner he seems to have participated in various land-improvement schemes, returning a number of times to a discussion of a proposal to join the rivers Avon and Isis, and at one point inviting the surveyor of the scheme to stay at Draycot Cerne.20 Long's aristocratic charm, his ardent Royalism, and his enthusiastic participation in the intellectual life of his time might well have brought him into contact with William Harvey, despite the thirty-five year difference in their ages. We know that Harvey and King Charles were in Newmarket in 1636, so perhaps that was the occasion of the doctor's encounter with the witch who lived on the borders of Newmarket Heath.21 Long's description of his friendship with Harvey seems to evoke a happy time – riding around with the King's physician, discoursing on natural
philosophy – so let us conjecture that the conversation in which Harvey recounted his experiment occurred before the Civil War had broken out. Assuming both these things, the conversation would have taken place between 1636 and 1640, when James Long was an amusing young aristocrat in his twenties and Harvey the venerable but still vigorous doctor in his sixties.

But in the twentieth-century readings of Harvey’s experiment James Long disappears. Our impulsive, charming, slightly-paranoid Fellow of the Royal Society becomes nothing but the carrier of the story about the heroic doctor.²² Notestein goes so far as to invert the rhetoric of the whole passage by implying that the shadowy narrator approves of Harvey’s conclusions: he paraphrases the tale, leaving out the preamble in which Long calls it a ‘weake experiment’ and then says ‘The narrator adds: “I am certayne this for an argument against spirits or witchcraft is the best and most experimentall I ever heard”’.²³ Notestein thereby recruits the narrator as a ‘modern’ like himself, bowled over by the Doctor’s rationalism.

A close reading of the text, equipped with the identities of its author and intended audience, yields a very different picture. Long’s narration of the experiment was actually highly critical. A tone of gentle mockery is often detectable:

[Harvey] told me that when he was at Newmercat with the King, he had heard there was a woman who dwelt at a lone house on the borders of the Heath, who was reputed a Witch; that he went alone to her, and found her alone at home, alighted, and went into the house to her. Hee said shee was very distrustful at first; but when hee told her he was a vizard, and came purposely to converse with her in their common trade, then shee easily believed him; for, say’d hee to mee, ‘You know I have a very magicall face’, and looking upon mee, and gathering upp his face, I indeed thought hee had.

After Harvey gained the trust of the witch, he asked to see her familiar.

Shee immediately fetched a little milk, and put it in a flat dish, and went to a chest and chucked with her mouth, as toads doe when they call one another; and immediately a toad came from under the chest, and drunk some of the milke.

Harvey stopped the toad from finishing its snack, then sent away its mistress with a shilling to get some ale ‘for they, beinge Brother and Sister, must drink together’. When she was well on her way he fetched the saucer of milk, went to the chest where the toad had its hiding place, readied his scalpel and tongs, and made the same little chucking noise. The toad hopped out. ‘His tongues were ready in his hand, he caught up the toad in them; his dissecting knife was ready alsoe, he opened the toades belly, out came the milk.’
After recounting Harvey's anecdote, Long gives a brutal summary of Harvey's reasoning:

... he concludes there are no witches very logistically; his argument in effect is this: – A woman had a tame toad, which she believed to bee a spirit and her familiar; the toad upon dissection proved an arrant naturall toad, and had really eaten milk, and not in appearance onely, therefore there are no witches.

For Long, questions about witchcraft were simply not susceptible to the techniques of the anatomy theatre. By the crudity of his logic Harvey placed himself so far outside Long's boundary of reason that Sir James attempts only the most gentle of rebuttals:

I did know the Doctor's temper well, and that it did not much concern me what opinion he was of in that poynt. I onely say'd, 'I think I have heard their Spirits have recourse to toades or other animalls (which the witches keep and feed) at set times, or wherefore Spirits are called upon extraordinary occasions, but doe not exert them constantly, for then the poor divells would have a very bad time of it'.

From his brutal reduction of the argument – 'the toad ... had really eaten milk and not in appearance only, therefore there are no witches' – and the content of his counter-argument – 'Spirits have recourse to toades ... at set times ... but doe not exert them constantly ...' – it would appear that Long objected to Harvey generalizing a universal falsification by extension from a singular negative instance. Conclusions about the invisible workings of spirits and demons could not be so easily drawn. By declaring that 'this for an argument against spirits or witchcraft is the best and most experimentall I ever heard', Long was not giving Harvey's activities the stamp of his approval; he was asserting that this 'weake experiment' was the best that anyone could hope for in the doomed attempt to prove the non-existence of the realm of the spirits from singular occasions when spirits failed to show up.

Long might well have expected the Royal Society recipients of his manuscript to be sympathetic to his criticism of Harvey's reasoning. The understanding, production and control of non-observables, including demons, was central to the experimental programme of the Royal Society. Long did not confront Harvey's 'science' with his 'superstition': the conflict here was between two natural philosophies, with Long standing as the representative of a highly-successful and progressive experimental programme whose fruits have been claimed for modernity at least as often and as assiduously as the discovery of the circulation of the blood.

Royal Society research into the realm of the spirits could be said to find its warrant in the prescriptions of Harvey's patient Francis Bacon, whose
books laid out the experimental programme for his Great Instauration.\textsuperscript{24} His last book, the posthumously published \textit{Sylva Sylvarum} (1627), has sometimes received rough treatment at the hands of historians of science, who regard it as an aberrant product of Bacon’s decline, but in his own time the book was the most successful of his works. The final chapter is called ‘Experiments in consort touching transmission and influx of immateriate virtues, and the force of the imagination’, and outlines various experiments designed to ascertain the means of operation of incorporeal forces, including the power of demons and witches. Other natural events which fall into the category of the transmission of immateriate virtues include the transmission of disease and odour, the movements of the tides, the drawing power of amber, jet and magnets, the influence of the planets, operations of sympathy and antipathy and the invisible power of the mind. Bacon asserts that: ‘All operations by transmission of spirits and imagination have this; that they work at a distance, and not at touch . . .’\textsuperscript{25}

Bacon’s treatment of telepathy, wart-charming and witchcraft was no less naturalistic than his discussions of magnetism and tides. He was engaged in an attempt to understand the operation of demons, spirits and the imagination as behaving according to the laws that govern corporeal things. His favourite model for the effects of the imagination was that of physical contagion. He proposes, for example, that

\begin{quote}
if a witch by imagination should hurt any far off, it cannot be naturally, but by working upon the spirit of some that cometh to the witch; and from that party upon the imagination of another; and so upon another; till it come to one that hath resort to the party intended; and so by him to the party intended himself.\textsuperscript{26}
\end{quote}

This naturalistic demonology played an important role in seventeenth-century thought: it enabled natural philosophers to speculate as to the boundaries of various invisible phenomena. As Stuart Clark points out in his \textit{Thinking With Demons} (1997): ‘Whatever else writers on demonism and witchcraft were doing, then, they were also engaged in a task of scientific demystification . . .’\textsuperscript{27}

Royal Society experimenters hitched these Baconian prescriptions to a mechanical philosophy that, far from excluding spirit, actually generated a host of subtle fluids, aethereal substances and divine interventions. By assigning a completely passive role to matter, the mechanical philosophy needed recourse to a panoply of spiritual agents both in order to explain such obvious phenomena as first motion and mind and in order to protect the Society against imputations of atheism. In an essay written in the 1670s, for example, Robert Boyle wrote that the most important functions in medicine and natural philosophy were performed by ‘a very agile and invisible sort of fluids called spirits, vital and animal . . .’\textsuperscript{28}

Restoration experiments in pneumatics and optics that were concerned
with producing vital spirits in the controlled space of the laboratory were complemented by the demonological programme of Royal Society fellows Joseph Glanvill and Henry More, concerned with experimental confirmation of spiritual agents in the outside world. In his Hydrostaticks, published in 1672, Scottish mathematician George Sinclair illustrated the continuity of these two strategies by combining them both in a single text. The first section of the book was a description of his hydrostastical experiments, the second section described his replication of Boyle’s experiments with the air pump, and the third part consisted of miscellaneous observations, one of which was an account of the haunting of the Campbell family by a devil. He justified the inclusion of this narrative by claiming that he was thus ‘advancing the Historical part of Learning in order to [sic: relating to] Spirits, upon which the Scientifical part doth so much depend . . .’

Sinclair used a frog in one of his pneumatical experiments, dumping her into the receiver of his beloved air pump: ‘. . . when the receiver was exhausted, I perceived her sides to swell very big, and when the stop-cock was turned to let in the Air again, her sides clapped close together . . .’ From a modernist perspective the experimentally-induced suffocation of Sinclair’s frog belongs with Harvey’s vivisection of the witch’s toad. In seventeenth-century terms, however, the witch’s toad was a closer cousin of the ‘spirit familiar’ perceived by James Long, a toad that is intermittently used as a conduit for diabolic influence.

Sinclair’s account of the Campbell family’s misfortunes found its way into More and Glanvill’s 1681 Saducismus Triumphantus, the culmination of their work of collecting, organizing and publishing spirit testimony, wearing, as More put it in the preface to an earlier work Antidote Against Atheism (1653), ‘the Garb of the Naturalist’. After Glanvill’s death in 1680, More collected together his colleague’s writings on witchcraft and started to add to them. As well as Sinclair’s demon narrative he added a series of further testimonials from physicians, clerics, justices and aristocrats whose social and professional standing conferred credibility on their stories.

Long enjoyed sporting the garb of the naturalist, as is shown by his contributions to Aubrey’s Natural History of Wiltshire, and he continued to wear it in his capacity as examiner of the Malmesbury witches. His demonology, as revealed by the long speech at the end of the text where he distinguishes between four uses of the word ‘witch’, is thoroughly naturalistic – the first kind of witch is merely melancholy in the humoral sense (‘corrupted by atrabilis’, or full of bile) such that ‘theyr looks, when fixed upon a living object many times, destroys it by a certayn poysen, very contrary to the purpose of those miserable people, so that it sometimes affects their beloved children’. The close fit between More’s material and the contents of Long’s manuscript suggests that the Cambridge divine to whom Long’s letter was addressed might actually have been Henry More.

Whether or not it was More to whom he was writing, Long’s politics, theology and naturalistic demonology placed him firmly within the Royal
Society tradition. The success of the Royal Society version of the mechanical philosophy was in part due to its usefulness to the Anglican establishment in the aftermath of the Civil War. Glanvill, More and Boyle sought to develop a natural philosophy that would protect orthodox Anglican theology against its numerous enemies — atheists, enthusiasts, papists and so on. Long’s text, with its pious reference to the fact that he was fasting on Ash Wednesday, was absolutely continuous with these concerns. At the time of writing he was on the front line of defence of Anglicanism: when James II sent out his notorious letter of 1687 asking Members of Parliament and Justices who would support his repeal of anti-Catholic legislation, Long, like More and the Cambridge Platonists, replied that he would support the King’s Declaration of Indulgence but he had to draw the line at the repeal of the Penal and Test Acts in the name of protecting the Church of England.

Anglicans also viewed with concern the vast repertoire of what they regarded as vulgar techniques for healing, divination, protection and decision-making that constituted the practical aspect of early modern popular culture. As well as being naturalistic, Long’s taxonomy of witches stressed the inefficacy of the rituals of witchcraft. The first kind of witch was merely ill, the second and third were inadvertent servants of the devil, and only the fourth kind – the witch who entered into an ‘explicitt contract with some uncleane spirits’ – was responsible for her actions, and even then only derivatively because in each of the last three cases it was demons that did the actual work, not peasants. Every section of Long’s manuscript reveals an intertwining of Anglican piety, royalism, and elite demonology typical of Royal Society natural philosophers of the late seventeenth century.

‘I did know the Doctor’s temper well’, Long says, ‘and that it did not concern me what opinion he was of in that poynt . . .’ Long’s gently satirical representation of Harvey, nearly thirty years after the doctor’s death, portrayed Harvey’s thought as out of step with the subtleties of Restoration natural philosophy. Given Harvey’s role as a patron of experimental pneumatics in Oxford in the 1650s, how is it that Long was able to hint to his Royal Society interlocutors that on some matters Harvey’s opinion was so easily disregarded? We know that Harvey was an Aristotelian whose loyalties lay with the conservative research program of his Paduan teacher Fabricius. The goal of his experimental programme was the Aristotelian one of establishing universal principles applicable to all animals, and his focus on the anatomy of the heart sprung from an Aristotelian conviction that the heart was the seat of the animal’s ‘vegetative soul’ and a microcosm of the sun. Although Harvey’s Aristotelianism was thoroughly experimental and anti-scholastic, could it have been this conservatism that provided Long with the resources to portray Harvey as old-fashioned? The idea that the spiritual or occult status of the toad could be ascertained by an examination of its anatomy might have smacked of Papist superstition to a progressive member of the 1680s Royal Society. It is the irony of his portrayal of Harvey
that Long ended up reviled in the nineteenth century for his superstition and then completely erased in the twentieth as an irrelevance that could only stand in the way of the pure light of Harvey's heroic modernity.

Long also lets his readers know that Harvey's experiment was not politically innocent – his narration of the events directly following the dissection show the doctor wielding some heavier guns than just the naked truth:

The good Doctor, upon the woman's returne, who found him busy in observing what the toad would do in the pickle hee had put him in, was in danger to have a more magical face than hee had before, and habit too; the woman let or rather threw downe the pitcher of ale, flew like a tigris at his face ... The Doctor intreated fayrly, offered money, would have persuaded 'twas not a Divell but a meer toad. That way not prevayling, hee turned his tale, sayd hee was the King's Phisitian, sent by the King to discover whether indeed shee was a witch; if a witch to have her apprehended; if not, to undeceave her, if hee could. The name of the King and the word apprehending, brought her into a better temper ... the Doctor got away; tolde the Kinge, whose leave he had to go upon the expedition, the whole story, which was pleasant entertaynment for that good King at his dinner.

Here Long provides the anxious post-modern reader with materials for a revisionist interpretation of Harvey's experiment in which his scalpel is not the bearer of truth but the cutting edge of a set of power relationships. The witch's utter disregard of Harvey's argument that her toad 'twas not a Divell' indicates that whatever value she placed on the relationship between herself and her familiar, it withstood the knowledge that the toad 'had really eaten milk and not in appearance onely'. The doctor's experiment now reads as a confrontation between cultures whose different belief systems slide off each other: his anatomical gesture cannot prove anything in that 'lone house on the borders of the Heath'. Failing to impress her with his arguments and unable to buy her off, Harvey changed his story, switched his pose from wizard to witchfinder, and in so doing displayed particularly nedly the power relationship between his culture of the dissecting knife and her peasant magic: 'The name of the King and the word apprehending brought her into a better temper ...'

* * *

The twentieth-century authors with whom I began this essay interpreted Harvey's experiment as ushering in modernity. In the seventeenth century, however, there was little to choose in terms of progressive thought between William Harvey and James Long, the narrator of the story. In this concluding section I return briefly to 1832, to one aspect of the political backdrop against which Harvey's experiment became once again visible via the Gentleman's Magazine, in order to argue that the modernity of Harvey's
scalpel was the outcome of a reorganization of the categories of reason and unreason that has its origins in the 1830s.

The covering letter which 'B.C.T.' sent to the Gentleman's Magazine with his copy of Long's manuscript was headed 'Malmesbury, May 5'. Two days later, on 7 May 1832, the report of the committee that drew up the Anatomy Act, a medical counterpart to the Great Reform Act, had its second reading in the House of Commons. In this section I examine the changing relationship between anatomy and state power, especially its abrupt reform in 1832, in an attempt to expose some of the conditions that produced the various interpretations of Harvey's 'weak experiment'.

Anatomy had long been entangled with state power: dissection was an early modern form of punishment. Some of the corpses anatomized by William Harvey were available to him via Henry VIII's allowance to the English companies of Barbers and Surgeons of four hanged felons every year; he received his education at Caius College which had the distinction of the use of two criminal cadavers. In the sixteenth and seventeenth centuries anatomical demonstrations were public spectacles, highly orchestrated, in which the felon, the executioner, and the anatomist each played a role in repairing the fabric of sovereign power momentarily damaged by an act of lawlessness. Against this background Harvey's toad dissection would have had all the punitive overtones that are suggested by Long.

The relationship between the medical profession, the ruling elite and the judiciary continued unabated through the eighteenth century. The participation of the anatomist in the rituals of judicial punishment intensified with the passing of the 'Murder Act' of 1752 in which judges were given discretion to include dissection in sentencing for murder. The Act was explicit in the use that was to be made of the spectacle of dissection: it was designed so that 'some further terror and peculiar mark of infamy be added to the punishment of death' and 'to impress a just horror in the mind of the offender and on the minds of such as shall be present'. Despite an increase in the number of available bodies as a result of this legislation, at the turn of the nineteenth century supply still lagged far behind demand; by the 1820s the anatomy schools were principally supplied by body snatchers who plundered the graves of the newly-dead. In 1828 a commission was appointed to look into this problem: its recommendation was that anatomists be allowed to use the bodies of people too poor to pay for their funerals.

Ruth Richardson's luminously angry book Death, Dissection and the Destitute (1987) reveals the harsh consequences of this rationalizing move. Rather than removing the punitive stigma of dissection, she argues, the Anatomy Act merely displaced it from the bodies of murderers to those of the poor. The reformers put a gloss of utilitarian rationality on this manoeuvre by means of an assault on popular beliefs about the sanctity of human remains.

The Anatomy Act heralded a shift in Harvey's reputation. In 1830 he was
the Tory hero of *Lives of British Physicians*, his achievements credited to 'the rank in society occupied by physicians in this country...' By 1832 he could become a heroic figure to those who sought to legitimize the principles that underlay the Anatomy Act. Dr Southwood Smith, the author of 'Use of the Dead to the Living', first published as an article in the Benthamite *Westminster Review* in 1829 and reprinted as a pamphlet in 1832, pointed out to his readers that 'The circulation of the blood, for example, never could have been discovered without dissection'. Southwood Smith went on to try and disabuse his audience of that 'formidable obstacle opposing the prosecution of anatomical investigations', an irrational attachment to the corporeal remains of those we love.

As part of the same programme of medical reform, vivisection was also subjected to the rationalizing scrutiny of the utilitarians. Bentham, an animal lover, had famously included animals in his utilitarian schema, and throughout the 1830s various reforms were suggested in the medical journals of the day, including a proposal to restrict animal experimentation to cold-blooded creatures such as frogs and toads. In 1832 Harvey's assault on peasant beliefs by means of a toad vivisection would have come across as a supremely Whig gesture, a microcosm of the Anatomy Act, with the 'anatomy riots' of the period after the Act was passed as the witch's helpless retaliation against Harvey writ large.

It is striking that B.C.T.'s covering letter to the *Gentleman's Magazine* never mentions William Harvey. B.C.T. offers his own horrified denunciation of witchcraft beliefs without referring to the doctor's part in undermining them:

Experience or the evidence of their own senses, appear to have no influence on the judgement of witnesses, judges, or juries. They saw the accused standing at the bar, completely in their power, offering no resistance, and incapable of escaping from their injustice; yet notwithstanding this, considered the mutterings of a wayward sullen boy, and the ravings of delirium, sufficient evidences of the wretched victim's guilt, and without the slightest remorse consigned her to an ignominious death.

According to the *Nichols File of the Gentleman's Magazine*, B.C.T. is one of the reviewing artists of the Gallery of British Artists in Pall Mall. This review reveals Taylor's position on the political upheavals of the time. After enumerating the royal and aristocratic purchasers of paintings from the exhibition, he argues that his exalted list shows that Whig reforms would endanger Tory patronage of the arts:

... confidence is reviving in that class of society from which those arts derive their greatest encouragement. One fact in corroboration of our view of the question, is very remarkable, and no less honourable to the
party concerned in it. Lord Monson, who purchased Gatton [country
estate] for 70,000l, the whole of which sum he is likely to lose by ‘the Bill’,
[the 1832 Reform Bill] has come forward, and given one hundred guineas
for two small pictures!43

The amateur antiquarian B.C. Taylor was then a Tory to whom Harvey’s
experiment had no significance as part of a story of scientific progress.
Taylor’s successor was F.A. Inderwick whose 1888 interpretation also
erased Harvey, this time in favour of King Charles I. But the Whig hero of
1832 returned when the anecdote fell into the hands of twentieth-century
historians. It was in the context of the Whig reforms of the 1830s that
materialism and the erasure of superstition became yoked together in a
respectable form, untainted by the ferocity of the French Revolution. In
1686 Long’s rational Anglican demonology was part of the solution to the
problem of civil disorder in the aftermath of the Civil War; by 1832 Harvey’s
anatomical gesture could be read as confident materialism and assimilated
into the most successful deflection of civil strife implemented in nineteenth-
century Europe. The stage was thus set for the modernist retelling of
Harvey’s experiment which celebrated it as nothing more than a procedure
for the stripping away of illusion.

Taylor lamented that ‘Experience or the evidence of their senses appear
to have no influence on the judgement of witnesses, judges or juries’, but a
close reading of Dr Harvey’s ‘weak experiment’ and the interpretations of
it advanced in 1686, 1832, 1888, 1911 and today can expose the processes by
which the validity of sensory evidence is negotiated by political power.
Royal Society members James Long, Joseph Glanvill, Henry More and,
indeed, Robert Boyle could freely ignore negative evidence for the non-
existence of spirits; positive spirit testimony by reliable witnesses was
experiential evidence. It was Harvey’s ‘experiment’ that would have con-
travened their notions of rigorous empirical procedure.

From the ‘pleasant entertainment’ that it provided for King Charles, to
Long’s fastidious Anglican rejection of its logic, to B.C.T.’s furious Tory
repudiation of the errors of the past, to the Whig modernist readings that
upheld the practices of science as nothing more than access to the truth, to
my own anxious, post-colonial championing of the irrational, retellings of
Harvey’s micro-anatomy draw and redraw the boundary of reason by a
process of exclusion. Modernity is the outcome of this process of reinter-
pretation, not the cause of the actions of those who end up as the heroes of
modernity’s parables.

NOTES AND REFERENCES

I am very grateful to Simon Schaffer and Jim Secord for their comments on earlier drafts
of this paper.
7 Thomas, Religion and the Decline of Magic, p. 524.
10 See Gilbert Geis and Ivan Bunn, A Trial of Witches: a seventeenth-century witchcraft prosecution, Routledge, London and New York, 1997. This account of the Bury St Edmunds case includes a full reprint of the pamphlet that inspired Long to write his own account of the Malmesbury witches and some interesting discussion of the use of experimental procedures in the trial presided over by Hale. Long evidently thought that Hale's handling of the prosecution was more 'credulous in matters of Witchcraft' than his own intervention in the case of the Malmesbury witches, saying that he saw 'smale cause to condemn thos poore women...'
12 Inderwick, Sidelights, p. 191.
16 The dramatic improvement in Long's style in his apologia for the treatment of the Malmesbury witches can be explained by his comment at the end of the letter detailing how he was going to write the piece that it will 'bee the easier for mee to doe because I have a very able emanuensis...'
17 Long to Aubrey, 16 July 1676, Aubrey Ms 12, p. 267.
18 Long to Aubrey, 3 June 1682, Aubrey Ms 12, p. 275.
19 For Long's pride in his membership of the Royal Society and some negotiations about 'Blew Marle', see Long to Aubrey, 16 July 1676, Aubrey Ms 12 p. 267; for a modest disclaimer about his contribution to one meeting of the Royal Society see the undated letter to Aubrey beginning on p. 290; for a discussion of the chemical composition of another soil sample see Long to Aubrey 5 March 1682/3, p. 279; for his contributions to Aubrey's Natural History of Wiltshire see Long to Aubrey 30 Jan. 1686/7. The best discussion of John Aubrey's activities as a member of the Royal Society, and an excellent background to Long's enthusiastic participation, is Michael Hunter's John Aubrey and the Realm of Learning, Duckworth, London, 1975.
20 Aubrey Ms 12, p. 290.
21 See Keynes, Harvey, p. 213.
22 Notestein does examine the rest of the manuscript for insights into witchcraft beliefs but this is in another chapter, kept entirely separate from the story about Harvey. Inderwick, Notestein's source, does the same.
23 Notestein, Witchcraft, p. 162.


30 Sinclair, Hydrostaticks, p. 223.


33 So numerous were the enemies of the faith that the title of a lecture translated by George Sinclair in 1684 listed - in alphabetical order - no fewer than twenty-two heresies that the contents of the lecture were designed to refute.


39 Southwood Smith, 'Use of the Dead to the Living', 3rd edn, London, 1832, p. 5. The copy I used was bound into a single volume with some other materials from the 1830s at the Wellcome Library in London. See Richardson, Death Dissection and the Destitute, for a discussion of this pamphlet.

40 Neither Southwood Smith nor William Harvey could be accused of hypocrisy in this regard, both of them having performed autopsies on their own fathers!


42 Apart from this tiny scrap of evidence, B.C.T. seems to have left no paper trail whatsoever. He does not appear in any records for Malmesbury or in the 1841 census for Wiltshire. It is possible, of course, that B. C. Taylor was a pseudonym.