Faith in Numbers: Quantifying Gin and Sin in Eighteenth-Century England

Jessica Warner

Three years after Walpole's Excise Scheme had gone down in flames Parliament passed a bill that raised the excise on distilled spirits by 400 percent.[1] That was the Gin Act of 1736, and among its other controversial provisions were one that unleashed a small army of informers on the capital and another that instructed the commissioners of excise to try and punish publicans who sought to evade the act. It was a stunning reversal. Just two years earlier, Walpole's party had paid dearly at the polls for having floated a bill that was, in principle at least, revenue neutral,[2] and for more than a year, from the introduction of the Excise Scheme to the general election of 1734, the public had been deluged with invectives against both excises and the officials who collected them. If the act's reliance on excises augured against its passage, so too did the purposes to which they were put. Of the roughly 15,000 bills Parliament considered between 1690 and 1790, only 1,000 or so concerned social issues, and these also happened to have the lowest odds, roughly fifty-fifty, of passing.[3] Yet here was an act that used taxation not to raise revenues but to change behavior. This raises an obvious question: why did the backers of this particular bill succeed when so many others had failed?

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[1] From 5 shillings a gallon to 20 shillings. I use the term "gin" in the sense contemporaries used it: to denote cheap spirits distilled from domestic grain.

[2] The Excise Scheme is the subject of several outstanding studies, including Raymond Turner, "The Excise Scheme of 1733," *English Historical Review* 42 (1927), 34–57; Paul Langford, *The Excise Crisis: Society and Politics in the Age of Walpole* (Oxford, 1975); William J. Hausman and John L. Neufeld, "Excise Anatomized: The Political Economy of Walpole's 1733 Tax Scheme," *Journal of European Economic History* 10, no. 1 (1981): 131–43; and Jacob M. Price, "The Excise Crisis Revisited: The Administrative and Colonial Dimensions of a Parliamentary Crisis," in *England's Rise to Greatness, 1660–1763*, ed. Stephen B. Baxter (Berkeley, 1983), 257–321.

[3] Joanna Innes, "Parliament and the Shaping of Eighteenth-Century English Social Policy," *Transactions of the Royal Historical Society* 40 (1990): 69–70; Julian Hoppit, *Failed Legislation, 1660–1800: Extracted from the Commons and Lords Journals* (London, 1997), 9.

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One of the advantages they had over their opponents was that they were better at manipulating numbers, both as evidence for their claims and as a means of establishing themselves as impartial experts. This is not to say that their use of numbers was especially sophisticated. It was not. The most they ever attempted was to take two time series and posit a causal relationship between them. Their statistical model, such as it was, staked everything on one independent variable: gin. Hence, gin's oversized role as the "Author of All Sin," with everything else—poverty, disease, crime, poor work habits, and poor mothering—rising and falling with it.

This use of statistics avant la lettre is the one aspect of the gin craze that has escaped the scrutiny of historians. There are political histories,[4] social histories,[5] and even one purporting to link "representations" of gin drinkers to the "whole history of eighteenth-century social, economic, and intellectual change."[6] But there are none detailing the ways in which political arithmetic was used to set the terms of the debate and pressure Parliament into passing legislation whose sweep and social agenda were unusual for the time. This strategy was actually used twice, in 1736 and then again in 1751, and so my first goal is to compare and contrast how numbers were used in two very different political environments.

In using political arithmetic both the industry and its critics were using a method that had remained essentially unchanged since its inception in the early 1660s. The fact that political arithmetic would continue to be used until the end of the eighteenth century has always raised the question of its relationship to the two disciplines that would come to eclipse it: political economy and the modern science of statistics. The first made its appearance in the 1760s, and here Julian Hoppit speaks for most historians when he insists that it bore only a superficial relationship to its predecessor.[7] Hoppit gives several compelling reasons for saying this: most of the publications that passed for political arithmetic were simply too short to indulge in sophisticated numerical arguments; numbers were, in any event, almost always subordinate to strictly narrative passages; and, most damningly, there was

[4] As in Peter Clark, "The 'Mother Gin' Controversy in the Early Eighteenth Century," *Transactions of the Royal Historical Society* 38 (1988): 63–84; and Lee Davison, "Experiments in the Social Regulation of Industry: Gin Legislation, 1729–1751," in *Stilling the Grumbling Hive: The Response to Social and Economic Problems in England, 1689–1750*, ed. Lee Davison, Timothy V. Hitchcock, Tim Keirn, and Robert B. Shoemaker (New York, 1992), 25–48.

[5] As in M. Dorothy George, *London Life in the Eighteenth Century*, 2nd ed. (New York, 1964), 27–42; George F. E. Rud, "'Mother Gin' and the London Riots of 1736," *Guildhall Miscellany* 10 (1959): 53–63; Hans Medick, "Plebeian Culture in the Transition to Capitalism," in *Culture, Ideology, and Politics: Essays for Eric Hobsbawm*, ed. Raphael Samuel and Gareth Stedman Jones (London, 1983), 84–112; Jessica Warner and Frank Ivis, "'Damn You, You Informing Bitch': Vox Populi and the Unmaking of the Gin Act of 1736," *Journal of Social History* 33, no. 2 (1999): 299–330; and Jessica Warner, *Craze: Gin and Debauchery in an Age of Reason* (New York, 2003).

[6] Jonathan White, "The 'Slow but Sure Poyson': The Representation of Gin and Its Drinkers, 1736–1751," *Journal of British Studies* 42, no. 1 (2003): 35–64.

[7] This includes George Norman Clark, *Science and Social Welfare in the Age of Newton* (Oxford, 1937), 144–46; William Letwin, *The Origins of Scientific Economics: English Economic Thought, 1660–1776* (London, 1963), 207; Alfred William Coats, "Mercantilism: Economic Ideas, History, Policy," in *On the History of Economic Thought: British and American Economic Essays* (London, 1992), 43–62; Terence Wilmot Hutchinson, *Before Adam Smith: The Emergence of Political Economy, 1662–1776* (Oxford, 1988), 9; and Peter Groenewegen, *Eighteenth-Century Economics: Turgot, Beccaria and Smith and Their Contemporaries* (London, 2002), 3.

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no real canon, and, by extension, no foundation on which to build a true discipline like political economy.[8]

A somewhat stronger case can be made for seeing a link between the quantifiers of the seventeenth and eighteenth centuries and the statisticians of the nineteenth century. Here we are told that the quantifiers' great innovation was the use of tables to display and compare data, a practice that through sheer repetition helped reinforce the idea that numbers constituted a distinct and special form of evidence. Mary Poovey makes this point in *A History of the Modern Fact*,[9] as does Andrea Rusnock in her book on the eighteenth-century quantifiers.[10] Elsewhere we read that the quantifiers prepared the ground for looking at populations as aggregates. In Michel Foucault's hands, this new way of looking and thinking becomes part and parcel of the concept of "biopolitics";[11] in Alain Desrosières's, it becomes a stepping stone to establishing numbers as autonomous—and unassailable—social facts.[12]

The tendency, in short, has been to focus on political arithmetic's place in the history of science, on its relationship to the two disciplines that rose from its ashes. Considerably less attention has been paid to its practical applications, including, most notably, its use in lobbying Parliament. Joanna Innes notes that production data "was occasionally collected and used in lobbying,"[13] while John Brewer gives several examples in his history of the Excise Office.[14] Whether these practical applications were the exception or the rule is a question whose answer awaits a systematic review of the thousands of bills Parliament was asked to consider over the course of the eighteenth century. The same gap stands in the way of any blanket generalizations about the quality of propaganda that made use of numbers. That said, the current wisdom is that political arithmetic went through two distinct phases in the eighteenth century, the first ending with the fall of Walpole, the second beginning with the rise of the Pelhams. In the first period, that of the Gin Act of 1736, we have political arithmetic at a low point: the original giants, John Graunt and William Petty, are long dead; their successors are undistinguished; and the place of numbers in policy debates is neither firm nor established. In the second period,

[8] Julian Hoppit, "Political Arithmetic in Eighteenth-Century England," *Economic History Review* 49, no. 3 (1996): 516–40, and "The Contexts and Contours of British Economic Literature, 1660–1760," *Historical Journal* 49, no. 1 (2006): 79–110.

[9] Mary Poovey, *A History of the Modern Fact: Problems of Knowledge in the Sciences of Wealth and Society* (Chicago, 1998), 29–91.

[10] Andrea Rusnock, *Vital Accounts: Quantifying Health and Population in Eighteenth-Century England and France* (Cambridge, 2002), chap. 1. This is also noted in her earlier "Biopolitics: Political Arithmetic in the Enlightenment," in *The Sciences in Enlightened Europe*, ed. William Clark, Jan Golinski, and Simon Schaffer (Chicago, 1999), 49–68.

[11] Most famously in Michel Foucault, *The History of Sexuality*, trans. Robert Hurley (New York, 1978), 1:140–43. This is further developed in Michel Foucault, "The Politics of Health in the Eighteenth Century," in *Power/Knowledge: Selected Interviews and Other Writings, 1972–1977*, ed. Colin Gordon (Brighton, 1980), 166–82.

[12] Alain Desrosières, *The Politics of Large Numbers: A History of Statistical Reasoning*, trans. Camille Naish (Cambridge, MA, 1998), chap. 5.

[13] Joanna Innes, "Power and Happiness: Empirical Social Inquiry in Britain from 'Political Arithmetic' to 'Moral Statistics,'" in *Inferior Politics: Social Problems and Social Policies in Eighteenth-Century Britain* (Oxford, 2009), 132.

[14] John Brewer, *The Sinews of Power: War, Money, and the English State, 1688–1783* (Cambridge, MA, 1990), 214.

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that of the Gin Act of 1751, we have political arithmetic enjoying a new lease on life: moral reform is back in fashion, Parliament is increasingly willing to tackle social issues, and there is a new appetite for the sorts of social numbers political arithmetic can generate.[15]

The problem with the Gin Acts of 1736 and 1751 is that they are an imperfect fit with this periodization. The types, breadth, and quality of the numbers used in the 1736 debate were in fact higher than they would be fifteen years later, and the difference, I would argue, had a great deal to do with the political circumstances of the moment. The task of comparing the two debates is complicated by the fact that political arithmetic was the most desultory of techniques, with no canon and no real standards (Hoppit's complaint). But the best quantifiers, Graunt in particular, were keenly aware of the limitations of their data, and so it seems fair enough to judge our own quantifiers by two broad criteria: how they went about selecting their data and whether they were entirely forthcoming when using data whose defects were a matter of public knowledge. However, my real focus is on a factor so basic that it is all too easily overlooked: the cards each side was dealt. If, as I hope to show, the anti-gin camp had access to more data, was likelier to be believed because it was headed up by clerics, and faced an opposition that was both disorganized and incapable of coming up with convincing numbers of its own, then here were three very good reasons for its quantifiers to take shortcuts with political arithmetic. My essay, by inference, is not so much about political arithmetic as the loop between it and the playing field in which it operated. Otherwise put, how much of an advantage did the reformers enjoy going into the fray, and how much did this affect the quality of their calculations and statistical inferences? And when the playing field changed, which it most decidedly did between 1736 and 1751, did the face of political arithmetic change with it?

QUANTIFYING THE PAMPHLETS

Gin did not excite the same political interest the Excise Crisis had or the 1753 Jew Bill would, and this is reflected in the total number of pamphlets produced between 1700 and 1751. My own count, based on the *English Short Title Catalogue*, yields just forty-nine publications, including eight one-page petitions. The total is almost evenly divided between the two sides: twenty-four for the reformers and twenty-five for the distillers. Only one-quarter of the total, six for the industry and five for their opponents, included any calculations at all, while the anti-gin camp actually produced more pieces of satirical verse (seven in all) than propaganda with a mathematical component. Hoppit's claim, that the quantifiers shied away from making numerical proofs the mainstay of their arguments, is reinforced when one looks inside these ten publications. In four, all written against gin, numbers are simply relegated to a statistical appendix, the longest occupying ten pages out of thirty-eight, the shortest just five out of seventy-two. In four, all written on

[15] This is variously observed by Paul Langford, *A Polite and Commercial People: England, 1727–1783* (Oxford, 1989), chap. 4; Richard Connors, "'The Grand Inquest of the Nation': Parliamentary Committees and Social Policy in Mid-Eighteenth-Century England," *Parliamentary History* 14, no. 3 (1995), 285–313; Bob Harris, *Politics and the Nation: Britain in the Mid-Eighteenth Century* (Oxford, 2002), chap. 7; and Innes, "Power and Happiness," 133ff.

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behalf of the industry, calculations are few and far between, leaving just two publications (discussed below) in which the industry made a serious attempt to answer the reformers' political arithmetic point for point.

THE TWO SIDES COMPARED

Let me start with the industry, which had, until 1729, enjoyed the backing of Parliament. The largest single trade group (to use the modern term for it) was the London Company of Distillers. It was, in the grand scheme of things, a relative newcomer among the City's guilds, having been chartered in 1638, and to this one company, which represented only one side of the trade (the producers of raw spirits) and only one city (the capital), fell the entire burden of defending an entire industry. And try as it might, it had no idea how big and how valuable that industry might be. How much grain did the provincial distillers use each year? The company's hacks could only say that the "Quantity of Malted Corn consumed in Making of *Brandy* throughout the whole Nation must be much more than here Incerted, there being few Great Towns but have *Distillers* in them."[16] The company's own record keeping was equally sketchy. Where London's more established guilds kept close tabs on their members and used this information to collect dues and build war chests, the London Company of Distillers had no idea how many people actually belonged to it. All that could be said with any confidence was that the number was somewhere in the range of 300—"as near as can be computed."[17] If the company could not keep track of its members, still less could it keep track of the raw materials it used in any given year. Hence, the wild guesstimates that fill its pamphlets. In one pamphlet, published in 1726, we have it on the authority of a "*late Calculation*, which, I believe upon Examination, will be found to be very Just and Moderate, that the *Distillers* in and about *London*, do yearly consume *two hundred thousand Quarters* [1,600,000 bushels] of *Corn*."[18] In another pamphlet, published just three years later, the number has jumped to "not less than Three hundred Thousand Quarters of Corn yearly, besides great Quantities of Molasses and Sugars," and in yet another pamphlet, published in 1736, the annual number has jumped yet again, this time to "400,000 quarters of Grain of different denominations."[19]

The company's inability to quantify itself was a serious liability when it started to come under attack, for its two strongest arguments, that it was an important source of revenue and that it provided landowners with a lucrative market for their grain, inevitably begged the question of how many bushels of grain it was purchasing and then turning into taxable spirits.[20] The company's failure to forge alliances with the processing and retail ends of the trade further weakened its hand. The most obvious

[16] *The Case of the Distillers of London* (London[?], 1714).

[17] *The Case of the Distillers Company, and Proposals for the Better Regulating of the Trade* (London[?], 1736), 2.

[18] *A Modest Plea for the British Distillery* (London, 1726), 18. Daniel Defoe gives the same figure in *A Brief Case of the Distillers, and of the Distilling Trade in England* (London, 1726), 3.

[19] *The Case of the Master, Wardens and Company of Distillers of London* (London[?], 1729), 2; *An Impartial Enquiry into the Present State of the British Distillery* (London, 1736), 16.

[20] A quarter was the equivalent of eight bushels.

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problem was that the industry failed to present a united front. But what made matters worse was the company's habit of blaming any irregularities in the trade on non-members and retailers. Chief among the first were the so-called compound distillers. Their role was to rectify the raw spirits the company produced, and many of these "petty distillers" were also in the business of selling drinks directly to the public. They, along with the even less reputable keepers of the gin shops, were routinely condemned in the company's propaganda. The compound distillers are the villains in the one pamphlet Defoe wrote on behalf of the company, concocting liquors out of "such mixt and confus'd Trash, as they could get to work from."[21] When the company petitioned against the pending Gin Act of 1736, it insisted that the real culprits were "disorderly Shops" and that any attempts to regulate the industry should be directed at the compound distillers. [22] In pointing the finger elsewhere the company was clearly hoping to save itself. But it did so at the price of admitting that there was a problem, and having done this, it had, for all intents and purposes, yielded a key point to the reformers. On two occasions, the company went one step further by professing to be just as concerned as the reformers were about gin's effects on the health and morals of the working poor. The first such attempt occurred shortly before the Gin Act of 1736 took effect, with the company hoping to avoid the worst by insisting that it had "for some Time reflected with the deepest Concern, on those horrid Abuses which have been made of Spirituous Liquors, by the excessive Drinking of them among the common People."[23] The second attempt, again a rearguard action, occurred just as the Gin Act of 1751 was gaining momentum, and here the company made the rather remarkable assertion that it took a dim view of intemperance.[24]

The company's message, in short, suffered not only from a lack of strong internal data but also from a lack of consistency. Of the people charged with putting this message into words, only one stands out. That was Defoe, and his involvement was limited to a pamphlet he wrote in 1726. What he himself thought is less clear, but just a few months earlier, in December of 1725, he had been just as warm in his denunciation of gin, and before that there had been the unflattering portrait of dram drinkers in *The History and Remarkable Life of the Truly Honourable Col. Jacque* (1723).[25] And two years after writing for the company Defoe was back to being its gadfly, denouncing it in the strongest possible terms in *Augusta Trimphans*.[26]

The first real crisis the industry faced came in 1729, the year Parliament raised both the excise on distilled spirits and the licensing fees to be paid by retailers. This time around the industry found a pamphleteer among one of its own: a London distiller named Elias Bockett. Bockett was given to writing satirical verse

[21] Defoe, *Brief Case of the Distillers*, 19.

[22] *Case of the Distillers Company*, no pagination.

[23] *The Case of the Malt Distillers, &c* (London[?], 1736), no pagination.

[24] *The Consequences of Laying an Additional Duty on Spirituous Liquors, Candidly Considered* (London, 1751), 3.

[25] Daniel Defoe, "Self Murder: Royal Gin Recommended. A Satire," in *Daniel Defoe: His Life, and Recently Discovered Writings*, ed. William Lee (New York, 1969), 450–52, and *The History and Remarkable Life of the Truly Honourable Col. Jacque*, ed. Samuel Holt Monk (Oxford, 1989), 240.

[26] Daniel Defoe, *Augusta Triumphans: Or, the Way to Make London the Most Flourishing City in the Universe* (London, 1728), 45–47.

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in his spare time, and the Gin Act of 1729 inspired him to write not one but two poems: *Geneva: A Poem* (1729) and *Blunt to Walpole: A Familiar Epistle in Behalf of the British Distillery* (1730). Bockett also happened to be a Quaker, and he had a long history, stretching back to 1717, of writing on behalf of his coreligionists.[27] His two poems on gin were, from this perspective, something of an aberration, and by 1732 he was back to defending the Quakers. Bockett died in 1735, and shortly after that, in April of 1736, a new name emerged, a "Mr. Crawfor," who is described in the company's journals as having written "several Treatises lately published in answer to several Invectives before published against the Distillery and otherwise."[28] These almost certainly included *The Case of the Distillers Company, and Proposals for the Better Regulating the Trade* and *The Case of the Malt Distillers, &c.*, both of which date from the early months of 1736. Crawford may very well have been the author of several other anonymous pamphlets also published in 1736, the most notable—and most statistically sophisticated—being *An Impartial Enquiry into the Present State of the British Distillery* and *A Supplement to the Impartial Enquiry*.

With the passage of the Gin Act of 1736 the company was forced to curtail its pamphleteering, and whatever ambitions it had of returning to the fray at a later date were not helped by deciding to pay its printer £13 instead of the £14 he had requested. Six years later, the company was still in arrears to this same printer, though the amount now owed, just over £23, would indicate that it was still commissioning the occasional pamphlet. There are really only four possible candidates for such pamphlets: *A Letter from a Member of Parliament to his Friend in the Country*, published shortly after the Gin Act of 1736 took effect; *The Worth of Liberty*, published in 1737; *A Perfect View of the Gin Act, with its Unhappy Consequences*; published by Reay Sabourn in 1739; and finally, from 1741, the two-page *Proposal to Raise 500,000 Pounds a Year*. The first includes many of the excise figures that appear in *A Supplement to the Impartial Enquiry* (discussed below), suggesting that they were written by the same person. (The likeliest candidate, as already noted, is Crawford.) The second was a dispirited rearguard action, complaining of the hardships the distillers had suffered as a result of the Gin Act of 1736. The third, Sabourn's pamphlet, was a more ambitious affair, for instead of rehashing the company's usual arguments it flogged the fatal flaw in the Gin Act of 1736: its reliance on informers to ferret out gin sellers. A Scot with a grudge against the Excise Office,[29] Sabourn used the occasion to carry on his feud, providing, in the process, a surprisingly accurate picture of the role local excise officers

[27] Evelyn Noble Armitage, *The Quaker Poets of Great Britain and Ireland* (London, 1896), 52.

[28] London Metropolitan Archives, *Journal of the Court of the London Company of Distillers,* 13 April 1736.

[29] Or so one may infer from the publication, in 1729, of Sanbourn's *Oppression Exposed, or, Liberty and Property Maintained: Being an Enquiry into the Several Mismanagements of Persons Concerned in the Revenues of Customs and Excise in Scotland*. In 1727, Sabourn, then a solicitor in the Court of Exchequer, had made similar claims about the collection of the apprentice duties, without, however, offering any evidence. His request to head up an investigation was turned down (Joseph Redington, ed., *Calendar of Treasury Papers* [London, 1889], 438).

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played in recruiting informers and coordinating their activities.[30] After Sabourn, the company would appear to have cut back still further on its publishing ventures, and even in 1751, when gin once again came under withering attack, it produced only one pamphlet in its defense: *The Consequences of Laying an Additional Duty on Spirituous Liquors, Candidly Considered*.[31]

It is almost painful to compare this motley assortment of pamphleteers, most of them obscure and only some of them committed to the cause, to their counterparts among the reformers. The most obvious difference is social standing, for all four of the reformers who used political arithmetic happened to be clerics. They were Thomas Wilson (1703–84), Isaac Maddox (1697–1759), Josiah Tucker (1713–99), and Stephen Hales (1677–1761). I will start with Wilson, whose *Distilled Spirituous Liquors the Bane of the Nation* (1736) has the distinction of being both the first and the most ambitious of their efforts. Wilson was the son of an obscure and saintly bishop, Thomas Wilson of Sodor and Man, and, unlike his father, he had few scruples about accepting multiple livings. There are hints of a scandal while he was an undergraduate at Oxford, but this did not keep him from graduating (in 1721) or from spending much of the next twelve years in the orbit of the university. In the early 1730s he came into contact with the Wesley brothers. He was briefly associated with their Holy Club, but soon after he became openly critical of Methodism. In 1735, he was in London, lobbying both the queen and the bishop of London for a benefice. It was at this time that he undertook to write a pamphlet denouncing the dangers of cheap gin. However many his motives, one of them was almost certainly to curry favor with the queen, who, he claimed, was "an hearty enemy to distilled and spirituous liquors."[32] The project also recommended Wilson to Sir Joseph Jekyll, the master of the rolls and another known enemy of gin. For several months, Wilson was left to wonder whether he would ever be reimbursed for his efforts,[33] but in the end he did very well for himself, for by the time he left London, in December of 1737, he had, with Jekyll's help, been awarded two livings: St. Stephen's Walbrook and St. Benet's Sherehogg.[34] After that, he all but retired from publishing, his only subsequent publication being an introduction to William Hole's *Ornaments of Churches Considered, with a Particular View to the Late Decoration of the Parish Church of St. Margaret, Westminster* (1761).

Maddox was the one bishop in the group, having been appointed to the see of St. Asaph in 1736 and the see of Worcester in 1743. He was also the one native Londoner, which may help account for why he was so personally invested in the fight against gin. He was educated at the University of Edinburgh, receiving his

[30] Jessica Warner, Frank Ivis, and Andree Demers, "A Predatory Social Structure: Informers in Westminster, 1737–1741," *Journal of Interdisciplinary History* 33, no. 4 (2000): 617–34; Jessica Warner and Frank Ivis, "Informers and Their Social Networks in Eighteenth-Century London: A Comparison of Two Communities," *Social Science History* 25, no. 4 (2001): 563–87; and Warner, *Craze*, 144–46, 152, 161–62, 171.

[31] The company did, however, also pay for printed copies of the solicitations and accounts it submitted to Parliament, as noted in its journal entry for 9 July 1751.

[32] C. L. S. Linnell, ed., *The Diaries of Thomas Wilson, D.D. 1731–37 and 1750* (London, 1964), 11 December 1735.

[33] Linnell, *Diaries of Thomas Wilson*, 1 November 1736.

[34] John Keble, *Life of the Right Reverend Father in God, Thomas Wilson* (Oxford, 1863), 2:906.

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master's in 1723, and a year after that he was also awarded a bachelor's degree from Oxford. He had what Wilson so clearly wanted for himself: a brilliant career.

Tucker was just finishing his studies at Oxford when the Gin Act of 1736 took effect, but by the time the second campaign against gin began, in 1750, he was already a well-known author, having made his mark with *A Brief Essay on the Advantages and Disadvantages, which Respectively Attend France and Great Britain* (1749). His career within the church was less than stellar (he started as a curate and ended as a dean), but, unlike Wilson, Tucker genuinely seems to have been more interested in his writings, most of them on economics, than in his career. Hales presents much the same profile as Tucker: a comfortable if obscure living within the church coupled with a long and distinguished publication record. A brilliant physiologist and botanist, he was almost certainly the most mathematically sophisticated member of the group, having been exposed to Newtonian mechanical philosophy while at Cambridge.[35] He was also the one member who happened to be a fellow of the Royal Society.

I should briefly mention one other cleric, though he was not one of the quantifiers. His name was Adam Holden, and his two contributions to the debate, *The Trial of the Spirits* and a vindication of the same, both date from 1736. The first created enough of a splash to provoke a rebuttal, and the author (T. S.) was almost certainly Timothy Scrubb.[36] Like Wilson, Holden was hoping to ingratiate himself with Jekyll, dedicating the first pamphlet both to him and to Walpole. This last dedication marks Holden as either a fool or a wit, for Walpole's aversion to raising the excises on distilled spirits was a matter of public knowledge. In any event, the gesture did not raise Holden out of obscurity, and all that can be said about him was that he was living in Greenwich as of 1736. His only other known publication was a funeral sermon dating from 1710.[37]

Political arithmetic is supposed to have become a dissenter's pastime in the second half of the century, or so we are told by Peter Buck and Andrea Rusnock.[38] Whatever its truth, the observation does beg the question of whether our own quantifiers were entirely at home in the Church of England. My impression is that they were. Jekyll, who was neither a cleric nor a quantifier, had the strongest ties to the dissenting community: he was born into a dissenting family, attended a nonconformist seminary in London, and left the bulk of his estate to the widows and orphans of dissenting ministers. And though he himself ended up taking communion in the Church of England, he made no secret of his opposition to the Test Act. The strictness of his personal life also had the distinct whiff of dissent (we have it on Wilson's authority that Jekyll was a "very exact man in his family," leading his household in prayers each day at 7:50 in the morning and 9:50 at night).[39] But among the clerics, only Maddox seems to have had close ties to the dissenting community (it was thanks to their help that he was able to attend the

[35] D. G. C. Allan and R. E. Schofield, *Stephen Hales: Scientist and Philanthropist* (London, 1980), 11.

[36] *A Proper Reply to a Scandalous Libel, Intituled, The Trial of the Spirits* (London, 1736).

[37] Adam Holden, *A Funeral Sermon on Mr. Richard Wells, Preach'd at Deptford, 3 October 1710* (London, 1710).

[38] Peter Buck, "People Who Counted: Political Arithmetic in the Eighteenth Century," *Isis* 73, no. 1 (1982): 36; Rusnock, *Vital Accounts*, 10.

[39] Linnell, *Diaries of Thomas Wilson*, 14 September 1736.

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University of Edinburgh).[40] Wilson, as we have already seen, quickly soured on Methodism, while Tucker's very first publication was a blistering attack on George Whitefield.[41] Years later, in 1772, he would sit down to write a spirited *Apology for the Present Church of England*.

What the reformers did have was an impressive track record of joining religious societies and serving on the boards of charitable foundations. Wilson, like his father, was a member of the Society for Promoting Christian Knowledge (SPCK), as were Hales and Maddox.[42] Tucker, whose career mostly postdates the gin craze, is to be found speaking warmly of the society in a sermon it sponsored and had published in 1766.[43] Jekyll also happened to be a member, along with James Vernon, a commissioner of excise who strongly supported the Gin Act of 1736.[44] Three reformers (Jekyll, Wilson, and Hales) were active in Oglethorpe's Georgia Society, and two (Jekyll and Wilson) were active in the Society for the Propagation of the Gospel in Foreign Parts. Jekyll, who was a very rich man, was much sought after by the voluntary hospitals that were springing up in the city, and among his honorary positions was that of president of the Westminster Infirmary.[45] Maddox was the president of the Middlesex County Hospital, and Hales was on its governing board.[46]

These tokens of religious and civic virtue may have given the reformers the moral high ground going into the fight against a poorly organized and not entirely reputable industry, but they also placed them outside the pinnacles of Georgian society. Jekyll's "constant profession of having the public good at heart" made him persona non grata with Walpole,[47] while Wilson, with his constant requests for preferment, came close to achieving the same status with the queen and the bishop of London.[48] The sense that the crusade against gin was the unpopular cause of unpopular men clearly weighed on Adam Holden, who, insisted, just a little too defensively, that "I am no Ways *disaffected* to the present Government, nor to any *Minister* or *Ministers* of State. . . . I am no *grumbling Patriot*."[49] But for all of the disabilities that came with high principles the fact remains that this group had access to people more powerful than themselves, and this by itself gave them an incalculable advantage over their opponents. Wilson may have been a minor and importunate cleric, but he was still the son of a bishop, and his diaries show that he met Queen Caroline

[40] *Dictionary of National Biography* (Oxford, 2004), 36:80.

[41] Josiah Tucker, "Of the Pernicious Nature and Tendency of Methodism," *Gentleman's Magazine*, May 1739, 238–43.

[42] For the senior Wilson's involvement in the SPCK, see Keble, *Life of the Right Reverend Father in God, Thomas Wilson*, 2:576, 589.

[43] Josiah Tucker, *A Sermon Preached in the Parish-Church of Christchurch, London, on Wednesday, May the 7th, 1766* (London, 1766).

[44] Clark, "Mother Gin' Controversy," 74; Henry Paget Thompson, *Thomas Bray* (London, 1954), 97.

[45] Paul A. Slack, *From Reformation to Improvement: Public Welfare in Early Modern England* (Oxford, 1999), 143.

[46] Clark, "'Mother Gin' Controversy," 74–76; Allan and Schofield, *Stephen Hales*, chap. 6.

[47] John Wilson Croker, ed., *Memoirs of the Reign of King George the Second*(London, 1848), 1: 373–75, 2:139. This is also noted in Romney Sedgwick, ed., *The History of Parliament: The House of Commons, 1715–1745* (New York, 1970), 174–76.

[48] Linnell, *Diaries of Thomas Wilson*, 11.

[49] Adam Holden, *The Trial of the Spirits* (London, 1736), 2.

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of Ansbach twice and Walpole at least once. He was twice in the company of Lady Walpole and once in the company of Walpole's mistress, Maria Skerrett. Maddox was appointed clerk of the closet to Queen Caroline at an early stage in his career, while Hales, at a late stage in his career, was appointed clerk of the closet to the Princess of Wales. Jekyll, in addition to his connections in Parliament, was also master of the rolls (from 1717 until his death in 1738), and one of his relations, Lord Hardwicke, was by then chief justice of the king's bench and a member of Walpole's inner circle.

The fact that our four quantifiers were themselves on a roughly equal social footing—all had attended university, and all were clerics—was itself useful, for it made it that much easier for them to cooperate and build their own republic of letters. Theirs was an admittedly very small republic, and it did not achieve critical mass until the midcentury campaign against gin. The seeds were sown in the early 1730s, when Wilson and Hales, both active members of the SPCK and the Georgia Society, became fast friends and frequent correspondents.[50] By 1751, the network had grown to include Henry Fielding, Maddox, and Tucker, with all five encouraging, publicizing, and citing each other's efforts against gin. Fielding quoted Maddox in *A Dissertation on Mr. Hogarth's Six Prints* (1751), and he cited Wilson in *An Enquiry into the Causes of the Late Increase of Robbers* (1751). He also consulted Wilson before publishing the *Enquiry*, while Wilson's diaries, as noted below, show that he teamed up with Tucker and Hales to step Maddox through the bills of mortality. For his part, Maddox cited and quoted the "pious and benevolent Dr. Hales of *Teddington*" and put in a plug for Tucker's forthcoming pamphlet on gin. Tucker, in turn, cited both Wilson and Fielding.

Whether a university education made the reformers better mathematicians is less clear; if John Arbuthnot is to be believed, it may even have hindered their progress.[51] Of the four, only Hales seems to have emerged from the experience as a serious mathematician. Maddox, by contrast, had to have other people help him with his numbers, freely admitting that "'Tis not for me to attempt any Estimate founded upon Calculations of political Arithmetic."[52] Tucker's economic writings show him to have been at home with political arithmetic, but they give no hint of a grounding in calculus. All that can be said about Wilson is that he, like his colleagues, had been exposed to the quadrivium by virtue of having attended university.

DATA

The reformers may have been more numerate than their opponents, but was this an advantage? The goal, after all, was to use enough numbers to get a politician's attention but not so many as to lose it, and to that extent the reformers would

[50] This is evidenced in the frequent mentions of Hales in Wilson's diaries, including of a visit to Hales's home in Teddington in October of 1733.

[51] Keith Thomas, "Numeracy in Early Modern England," *Transactions of the Royal Historical Society* 37 (1987): 109; John Arbuthnot, *An Essay on the Usefulness of Mathematical Learning* (Oxford, 1701), 50.

[52] Linnell, *Diaries of Thomas Wilson*, 14 December 1750; Isaac Maddox, *Epistle to the Right Honourable the Lord-Mayor, Aldermen and Common-Council, of the City of London, and Governors of the Several Hospitals*, 2nd ed. (London, 1751), 6.

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have been ill served by an excess of pedantry. To that extent, too, the distillers, all presumably old hands at "shop-Arithmetique" (Graunt's lovely phrase) should have been able to hold their own against the reformers. This assumes, of course, that the battle was to be won or lost on the ability to perform simple calculations of profits and loss. What was notable about the reformers' approach was that they did not simply use economic and fiscal data: they also used demographic data in the form of the London bills of mortality. As for where they acquired this flexibility in working with different types of data, the likeliest candidates are two identified by Joanna Innes: the Church of England and the SPCK. Both had a history of collecting, collating, and publishing data,[53] and, to restate the facts, all of our quantifiers were clerics, and all had ties to the SPCK. The Royal Society was another likely training ground, at least for Hales: of its mid-eighteenth-century fellows, William Maitland had extensive experience in working with the bills of mortality, and it was his historical data Hales would later use in his own "Collection of Some Observations on Bills of Mortality & Parish Registers" (compiled in 1742 but never published).[54]

Since the subject is data, it makes sense to start by looking at what was out there and what actually got used. Both sides were, of course, perfectly capable of making up numbers, almost all of them suspiciously round: of the "several thousands" of gin sellers "that infest this City and Suburbs, not a hundred and fifty can write their Names"; "throughout the *Bills of Mortality*. . . . poor Housekeepers have not a quarter of Household goods they used to have"; the country had either 40,000 gin shops or 120,000; the person "who is addicted to the Drinking of Spirits cannot eat above *one Third* so much as the *healthy*, *strong*, *sober*, *laborious* Man or Woman who drinks none"; and so on.[55] But the numbers that carried the greatest weight came from three known and generally trusted sources: the Excise Office, the published bills of mortality, and the counts of gin sellers that were undertaken by individual jurisdictions and then posted in the newspapers and referenced in petitions to Parliament.[56]

The Excise Office, as one might expect, was the single most important source of data. Excises on beer, spirits, hops, and malt were of obvious value in estimating the fiscal impact of new taxes, but they also served two other ends: they were reasonably good proxies for consumption, and they allowed reformers to bring the viability of the brewery into the discussion. Of these four variables, the excise on malt was the least meaningful, as the accounts kept by the Excise Office failed

[53] Innes, "Power and Happiness," 121, 123–24.

[54] Jeffrey M. N. Boss, "A Collection of Some Observations on Bills of Mortality & Parish Registers: An Unpublished Manuscript by Stephen Hales, F.R.S. (1677–1761)," *Notes and Records of the Royal Society of London* 32, no. 2 (1978): 133.

[55] *A Dissertation upon Drunkenness* (London, 1727), 8; "Considerations on Distilling, Husbandry, Trade, & c.," as quoted in *Gentleman's Magazine*, February 1732, 603; *Gentleman's Magazine*, October 1736, 594; *Daily Gazetteer*, 18 September 1736, 2; Thomas Wilson, *Distilled Spirituous Liquors the Bane of the Nation*, 2nd ed. (London, 1736), 16.

[56] In 1736, e.g., the justices of Middlesex arranged for their report to be published in the *Daily Advertiser* and the *London Evening News*, as noted in their sessions books for that January. Several other periodicals then ran the report, including the *Norwich Mercury*, the *Daily Gazetteer*, *Read's Weekly Journal*, the *Old Whig*, and the *London Magazine*.

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to distinguish between the brewers, distillers, and vinegar makers who all purchased malt in bulk.[57]

The real challenge in working with excise data lay in getting hold of it in the first place. Accounts that the commissioners of excise might share with Parliament were not, as a rule, made available to the industries they monitored,[58] and on this score the reformers who sat in Parliament enjoyed a significant advantage. Jekyll, as already noted, was a longtime MP, serving until his death in 1738, while Wilson's father and Maddox sat in the House of Lords by virtue of being bishops. In principle, then, someone in the reform camp would have been on hand each time the commissioners of excise were summoned before Parliament and asked to share what they knew about the distillery. This happened in 1736, at Walpole's request, and then again in 1738, 1746, 1747, 1750, and 1751.[59] The reformers also had a friend in James Vernon, a commissioner of excise from 1710 to 1726 and then again from 1728 to 1756.[60] We know, thanks to Wilson's diary, that Vernon vetted "a copy of my *Gin Book* in MSS" and that it had "his entire approbation."[61] The distillers, by contrast, made no headway the four times (in 1729, 1736, 1747, and 1751) they are known to have asked the commissioners to intervene on their behalf.[62] They did, however, succeed in getting hold of the Excise Office's figures for beer and distilled spirits, though the idea of using them only seems to have occurred to them after Wilson came out with his pamphlet.

Both sides would have had ready access to the printed bills of mortality. Wilson referenced them in an offhand manner in his 1736 pamphlet, claiming, without providing any hard numbers, that burials had in recent years come to surpass births and that gin was the cause. He also made the wonderfully lazy claim that he had in his possession "last Year's Accounts of *Births* and *Burials* from the City of *Paris*, and from many other Cities of Note" and that in each case the "*first* exceed the *latter* by some Hundreds."[63] The bills were not used in earnest until the 1751 campaign, and here all the reformers had to do was to extract the totals printed in the annual bills of mortality.

In relying first on excise figures and later on the bills of mortality, the reformers were relying on other people's fieldwork, and where their provincial counterparts were busily collecting reams of data and acting the part of model citizens in the republic of letters, theirs was an exercise in armchair statistics, driven not by the urge to make new discoveries but by the need to find new (and preferably expeditious) ways to prove old truths. Sources that were close at hand and that

[57] Peter Mathias, *The Brewing Industry in England, 1700-1830* (Cambridge, 1959), 357, 373.

[58] Brewer, *Sinews of Power*, 226; Innes, "Power and Happiness," 129.

[59] William Cobbett, ed. *The Parliamentary History of England, from the Earliest Period to the Year 1803* (London, 1811), 9:1043; Historical Manuscripts Commission, *Diary of the First Earl of Egmont (Viscount Percival)* (London, 1923), 2:257; *Journals of the House of Commons* (London, 1803), 23:158; *Journals of the House of Lords*, 26:211–12; *Gentleman's Magazine*, November 1743, 563; *Journals of the House of Commons* (London, 1803), 25:322; National Archives, CUST 48/14 (1751–59), 354; General Out-Letters of the Treasury (1751–59), T 27/27, 9; *Read's Weekly Journal*, 16 March 1751, 4.

[60] Brewer, *Sinews of Power*, 81.

[61] Linnell, *Diaries of Thomas Wilson*, 16 January 1736; 20 January 1736.

[62] London Metropolitan Archives, *Journal of the Court of the London Company of Distillers*, 30 May 1729, 1 November 1736, 7 April 1747; *London Evening-Post*, 16–19 March 1751, 1.

[63] Wilson, *Distilled Spirituous Liquors the Bane of the Nation*, 44.

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might, with a little digging, have been sampled and compared, were simply passed over. The claim that the demand for hops had dropped might easily have been demonstrated by canvassing London's hops traders.[64] The claim that there were more poor people than ever in the capital might have been corroborated by going to representative parishes and combing through the past accounts of the churchwardens and overseers of the poor. This would have been a laborious but by no means impossible task. Maitland managed it in his *History and Survey of London* (1739), providing in the process snapshots of local poor rates.[65] A parliamentary committee had gone through the records of the parish of St. Martin-in-the-Fields in 1715.[66] Industrial lobbies also had a history of arguing from the poor rates when their interests were threatened.[67] The claim that London had become a more dangerous city might have been substantiated by going through the published *Proceedings at the Sessions of Peace, Oyer and Terminer, for the City of London and County of Middlesex*, or by prevailing on sympathetic magistrates to produce breakdowns of the people they had convicted over the past several years. It may be countered that the justices of the peace were erratic record keepers at best,[68] but this did not keep their more ambitious colleagues from providing newspapers with running tallies of the people they convicted under the Gin Act of 1736.[69]

The only real attempts at fieldwork were the sporadic counts made of known gin sellers. The actual work was done by beadles in the City proper and by constables in Westminster and Middlesex. Neither group would appear to have approached the assignment with much alacrity, especially as the charge of identifying unlicensed sellers placed would-be counters in the impossible position of incriminating neighbors and, in many instances, themselves. The justices of Middlesex, having added up the returns submitted in January of 1736, were sure that the actual number of gin sellers was much higher, and how could it have been otherwise when "near half of those employed in this Enquiry are Retailers of these Liquors themselves"?[70] How else to account for the precipitous drop in the number of retailers in one ward, from ninety-nine in 1726 to just twenty-two ten years later if not for the fact that the counter "is himself a retailer"?[71] No such complaints

[64] This is the observation of the anonymous author of *An Impartial Enquiry into the Present State of the British Distillery*, 39.

[65] William Maitland, *The History and Survey of London from its Foundation to the Present Time*, 3rd ed., vol. 2 (London, 1760), bk. 3.

[66] Ruth K. McClure, *Coram's Children: The London Foundling Hospital in the Eighteenth Century* (New Haven, CT, 1981), 13.

[67] Brewer, *Sinews of Power*, 244.

[68] Elizabeth Crittall, ed., *The Justicing Book of William Hunt, 1744–1749* (Stoke-on-Trent, 1982), 2; Norma Landau, *The Justices of the Peace, 1679–1760* (Berkeley, 1986), 209.

[69] Most notably the notorious trading justice Thomas De Veil, who for two years, from 1736 until 1738, plied London's newspapers with the names of the gin sellers he convicted.

[70] This is consistent with a sharp falling off in the social standing of the metropolis's constables, as noted by John Beattie in *Policing and Punishment in London, 1660–1750: Urban Crime and the Limits of Terror* (Oxford, 2001), 149–50. Alehouse keepers were allowed to serve as constables up until 1823, for which see Peter Clark, *The English Alehouse: A Social History, 1200–1830* (New York, 1983), 259. Additional background is available in Robert Shoemaker, *Prosecution and Punishment: Petty Crime and the Law in London and Rural Middlesex, c. 1660–1725* (Cambridge, 1991), 221–23.

[71] London Metropolitan Archives, Middlesex Sessions Books & Orders of Court Calendar (1735–38), 5.

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were made of the City's beadles, but their distaste for the assignment may be inferred from the repeated requests that they complete it.[72]

THE 1736 CAMPAIGN

The 1736 campaign was positively dominated by Wilson's *Distilled Spirituous Liquors the Bane of the Nation*. Wilson was a quick worker. His diaries show that he began work in December of 1735; by the middle of January he had a working draft (the one he presented to Vernon at a meeting of the SPCK), and by the end of the month it was being rushed into print. This last step was subsidized by Jekyll, who put up £20 to have 1,000 copies printed, but his real contribution came in the form of advice that the pamphlet's "Moral Reflections might be kept to the last and not intermixt in the Body of the Treatise."[73] Jekyll has been accused of being "an impracticable old fellow of four score, with no great natural perspicuity of understanding,"[74] but in this particular case events would bear out his advice, for in keeping the focus on numbers Wilson forced his opponents to respond in kind. Whether he knew that numbers were their weak suit is unclear, but thanks to the many people who helped him he was able to draw on a much wider range of expertise than would have been available to the average distiller. One of his helpers was Vernon, but there was also "a *Worthy Gentleman* who has had the Care of a large Estate," along with an unspecified number of "*Eminent Farmers* in different Parts of the Kingdom."[75] Hales was almost certainly another of Wilson's consultants, stepping him through the medical writings that were most critical of distilled spirits.[76]

Wilson's was the most statistically ambitious of all the pamphlets written for and against gin, and neither his opponents in the industry nor his successors among the reformers ever quite equaled his achievement. So what did he do? He started, after a few introductory remarks, with a claim meant to cut the legs out from under his opponents. Where they argue from their own narrow financial interests, he has only "the public good at heart beyond any other point of view," so much so that he is prepared to sacrifice the "*Properties*, and even the *Lives*, of a *Few*" for the "*Health, Utility, Safety*, and *Welfare* of the *whole* Community."[77] Wilson's foray into political arithmetic comes in the next and most important section of the pamphlet: his direct appeal to Parliament. Here he starts by quoting one of the giants of the discipline, Charles Davenant. The passage comes from *An Essay on Ways and Means* (first published in 1695), and it makes two points that Wilson will hammer home in his own pamphlet: that prohibitive excises can and should be laid on commodities that are "pernicious to the Interest of the nation, or prejudicial to the Health of the

[72] This is based on complaints in the City's repertories (in the London Metropolitan Archives) for 1735, 28–83, 313–14.

[73] Linnell, *Diaries of Thomas Wilson*, 19 January 1736.

[74] Croker, *Memoirs of the Reign of King George II*, 1:373–74.

[75] Thomas Wilson, preface to *Distilled Spirituous Liquors the Bane of the Nation*.

[76] The most notable being George Cheyne's hugely popular *Essay of Health and Long Life* (London, 1724). Background is provided in Roy Porter, "The Drinking Man's Disease: The 'Pre-history' of Alcoholism in Georgian Britain," *British Journal of Addiction* 80, no. 4 (1985): 385–96.

[77] Wilson, *Distilled Spirituous Liquors the Bane of the Nation*, x.

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People" and that cheap spirits are one such commodity.[78] Later on, in the midst of his calculations, Wilson quotes another of the discipline's greats, William Petty, once again placing himself on the side of the angels.

Wilson's numbers are tailored to the landed interest, for that was the audience he needed to win over. The reasons for this are obvious enough: the growth of the home distillery had created a new market for surplus grain, and it was the landed interest that dominated Parliament. And so Wilson's most important task was to persuade landowners that their income would not suffer if this market were eliminated. He starts with a series of freestanding appeals to their self-interest. If London's population falls, which it must if gin continues to be freely sold and drunk, the land tax will have to be raised to make good losses in excise revenues. If the population grows, which it must if gin is eliminated, the cost of labor will go down and the demand for food will go up. For those who are still not persuaded, Wilson has an even more powerful argument: a "*Demonstration* of the manifest and apparent Loss of the *Landed Interest*." He lays the foundation by attaching a monetary value of 6 pence to the average laborer's diet, a figure he reaches by assuming that the laborer who is active and healthy eats twice as much as the person who is sedentary, gouty, and "past the Meridian of Life." This last benchmark he takes from one of George Cheyne's popular books (the 1722 *Essay of the True Nature and Due Method of Treating the Gout*), but where he comes up with 6 pence he never says. His next step is to determine how many laborers are drinking cheap spirits and thus not spending their full 6 pence a day on cheap foodstuffs, and it is here that his calculations become increasingly unstable.

Wilson's basic problem was the same one that dogged every other quantifier: he did not have reliable population figures. And so he was forced to improvise. From one questionable claim, that there were 10,000 gin-shops "within the Bills of Mortality, and twenty Miles round," Wilson moved to a bald assertion that each was frequented by forty customers a day, and from there to the conclusion that there were 400,000 dram drinkers in the greater London area, making gin the preferred beverage of roughly two-thirds of the capital's residents.[79] Every tangible loss Wilson attributes to gin teeters on this one wobbly number—the cheese, meat, and offal that go uneaten, the beer and milk that go undrunk, the coarse woolens that go unsold.

What masks these mathematical elisions is the drab specificity of all the other numbers Wilson brings into play. The effect is cumulative: the more stacked multiplications that end in precise numbers and the occasional fraction, the greater the reader's confidence that the author has done his homework and is therefore to be trusted. The total annual loss to the butchers came to exactly £380,208. Every day the demand for wheat was exactly 8,333 1/3 bushels less than it should

[78] Charles Davenant, *An Essay on Ways and Means of Supplying the War*, 3rd ed. (London, 1701), 133–34.

[79] Wilson, *Distilled Spirituous Liquors the Bane of the Nation*, 15–16, 21. In the preface to the second edition, Wilson conceded, if only obliquely, that the actual number may have been half as much. The original number of 400,000 nonetheless repeats in the body of the text. The fraction of two-thirds is based on E. Anthony Wrigley's estimate that greater London had approximately 675,000 inhabitants by 1750 (from "A Simple Model of London's Importance in Changing English Society and Economy 1650–1750," in *Towns in Societies: Essays in Economic History and Historical Sociology*, ed. Philip Abrams and E. Anthony Wrigley [Cambridge, 1978], 215).

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have been. The combined loss to farmers in bread and meat came to exactly £646,293 a year. But the pièce de resistance is a one-page "Estimate of the Malt Distiller's Account, and Expence; ballanced with the Common Brewer's." Here Wilson's goal is to show that the brewers pay more in excises and make a larger economic contribution in the form of employment and capital outlays, and the format he has chosen, a variant of the balance sheet, has him dutifully calculating expenditures down to the last farthing.[80]

Note the many things Wilson has done to gain the reader's trust. He has aligned himself with Davenant and Petty. He has invoked the public good. He has provided numbers that are so precise that they must be right. And when he is finished with his arithmetical proofs, he will tack on a little primer on the physiological effects of distilled spirits ("drawn from Experiments and Opinions of the most Eminent Physicians") and follow this with a copy of the report filed by the Middlesex justices (these, it will be recalled, included counts of local gin sellers). But is Wilson to be trusted? Mathematical elisions and dubious suppositions aside, there are also at least two instances where Wilson is simply making up his numbers. The most egregious is the claim that "There is distilled in *London*, from all Grain, Fruit, &c. as it has been lately computed, Twelve Millions of Gall' of all sorts of Spirits drawn from Grain, &c." The excise figures to which Wilson had access place the total for the entire country at roughly half that amount,[81] and one is left to wonder why Vernon, who should have known better, did not catch the error when he vetted the original manuscript. Wilson's second mistake was to lowball the price of a bushel of wheat, putting it at 3s. 6d. a bushel when it had been well above 5s. for the past three years.[82]

Wilson had given his critics any number of openings, but were they capable of exploiting them? I have mentioned the distillers' two best efforts at a rebuttal—*An Impartial Enquiry into the Present State of the British Distillery* and *A Supplement to the Impartial Enquiry*, the latter coming on the heels of the second edition of Wilson's pamphlet. To his credit, their anonymous author did succeed in exposing many of Wilson's most glaring errors. It is he, and not Wilson, who gives a plausible figure for how many gallons of spirits the nation produced each year (the Excise Office's figure of 6,240,000); he who gives the right price for a bushel of wheat; he who goes back to Cheyne's *Essay of Health* and shows that Wilson has been quoting it out of context; he who lays out the excise revenues produced by beer and spirits and proves that the first source, while not growing, has nonetheless been holding steady. But where he really excels is in exposing the lapses in Wilson's reasoning. Why does Wilson assume that gin is the only form of alcohol with harmful effects? Does he even know how much gin the average person drinks, and if not, can he really say that all gin drinkers are "Fire-Eaters"? And is the good reverend not leaping from *post hoc* to *propter hoc* when he claims that "more Children dye under three years old since the use of Spirituous Liquors than before—And therefore those Liquors must be the cause? He might with equal cer-

[80] Wilson, *Distilled Spirituous Liquors the Bane of the Nation*, 21.

[81] This is from the excise revenue accounts tabulated by T. S. Ashton, *An Economic History of England: The 18th Century* (London, 1961), 243.

[82] This is from the Windsor series tabulated by T. S. Ashton, *Economic Fluctuations in England, 1700–1800* (Oxford, 1959), 181.

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tainty have said, that such an Increase of Deaths happen'd since the use of Narrow Brim'd Hats, which therefore was the Cause."[83]

But our anonymous author has difficulties of his own, the very first being the disastrous bookkeeping of the London Company of Distillers. Thanks to this, he is unable to say exactly how much wheat the company uses in any given year, and so he falls back on the suspiciously round guesstimate of 400,000 quarters. Worse, in the first pamphlet there are gaping blanks where he had meant to specify how many gallons of spirits the entire British distillery produced each year and how much it paid in excises (in the *Supplement* he does provide these figures). The company's inability to keep track of its members comes back to haunt him when he tries to attach a monetary value to their capital equipment. Here he must make do with the roughest of numbers—"about Three Hundred" members of the Company plus "about Twelve Hundred" other distillers who do not belong, "not accounting obscure or disorderly persons who. . . . pretend to be Distillers."[84] His real millstone, however, is that Wilson has successfully laid claim to the moral high ground. This was clearly a sore point. "Slender proofs, or indeed bare assertions, will serve your purpose," he complains on the very first page of his *Supplement*, and a few pages after that he will accuse Wilson of using an "affected tenderness for Mankind" and a "concern for Religion" to "bespeak the credibility of your Arguments, and insinuate yourself to the belief of your Reader."[85]

THE 1751 CAMPAIGN

The key figures in the 1751 campaign were Maddox, Hales, and Tucker. Each wrote a pamphlet that included a statistical supplement, but unlike Wilson, who had scattered his numbers over some sixty pages, they erred on the side of brevity. The longest proof they offered came to just ten pages, the shortest to only four. And with the exception of Tucker, whose pamphlet was little more than a reprise of Wilson's, they were much less concerned with demonstrating the hidden fiscal and economic costs of cheap gin. Wilson's obsession with these two variables had largely been dictated by the need to persuade the landed interest that any short-term losses it might suffer would more than be made up for in the long term. But it had also reflected the fact that the Excise Crisis of 1733 was still a recent memory. By 1751, the political climate had changed entirely: the nation had just fought a major war, the War of Austrian Succession, and while peace had come three years earlier, in 1748 no one seriously believed it would last. To the great question of the day—would the nation have enough sailors and soldiers to fight the next war?[86]—the reformers had a simple answer: not as long as gin was allowed to flow freely. And to prove this they turned to the demographic data that were closest at hand: the London bills of mortality.

Hales was the expert. As already noted, sometime around 1742 he had put

[83] Anonymous, *Impartial Enquiry into the Present State of the British Distillery*, 44.

[84] Ibid., 7–8.

[85] Anonymous, *Supplement to the Impartial Enquiry* (London, 1736), 3, 5.

[86] This is variously noted by Donna T. Andrew, *Philanthropy and Police: London Charity in the Eighteenth Century* (Princeton, NJ, 1989), 54–55; Langford, *Polite and Commercial People*, chap. 3; and Harris, *Politics and the Nation*, chap. 3.

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together a "Collection of Some Observations" based on several different parish registers, some English and some foreign, and among his sources were the *General Bills of Mortality* for 1741. For his historical statistics, he relied on Maitland's *History and Survey of London*, the first edition of which had come out just a few years earlier in 1739.[87] For whatever reason, Hales seems to have made no attempt to publish his "Collection," but in 1751, when the SPCK sponsored a new edition of his *Friendly Admonition to the Drinkers of Brandy, and Other Distilled Spirituous Liquors*, he tacked on a four-page appendix based on the bills of mortality. In it he took three series—christenings, burials, and burials of all children under the age of five—and compared their averages from the last decade (1740–50) to the levels reached at the turn of the century. Hales undertook this exercise secure in the knowledge that he would find that births had declined relative to deaths, and having found what he was looking for, he just as quickly found a culprit: gin.

Hales may have had help, and if so, the likeliest candidates are Maitland and Corbyn Morris. Maitland, who is cited in the *Friendly Admonition*, shared Hales's abhorrence of gin,[88] and like Hales, he was a Fellow of the Royal Society. Morris was not yet a fellow (he would be elected in 1757), but in 1750 he was hard at work on a master table of all christenings and burials in the capital since 1601. This was the genesis of his *Observations on the Past Growth and Present State of the City of London*, whose publication, early in 1751, coincided with the introduction of the new bill against gin. Morris took the opportunity to express his support for the bill, and, just as importantly, his belief that the fight should be led by the "*Clergy* of the Realm."[89] Morris, in short, had two good reasons to share what he knew with Hales: he believed in the cause, and Hales, as a fellow of the Royal Society, was in a position to help advance his career.

Hales was the right man to comb through the bills of mortality, but Maddox, who was a popular preacher, was the better man to communicate the results. That opportunity came at the end of 1750, when the lord mayor and aldermen of London asked Maddox to publish the sermon he had delivered before them the previous April. The subject had been gin, and the object the urgency of their doing something about it, and in preparing the manuscript for publication Hales, Wilson, and Tucker helped Maddox put together a five-page appendix based on "those authentic Accounts annually published, by the Company of Parish-Clerks."[90] The appendix was duly published in Maddox's *The Expediency of Preventive Wisdom* (1750), and all it did was to take two variables, christenings and burials, and compare their averages from three separate series: 1723–25, 1731–33, and 1748–50. All three segments are from after 1722, the year Maddox gives as the unofficial start of the gin craze.

[87] Jeffrey M. N. Boss, "A Collection of Some Observations on Bills of Mortality & Parish Registers: An Unpublished Manuscript by Stephen Hales, F. R. S. (1677–1761)," *Notes and Records of the Royal Society of London* 32, no. 2 (1978): 131–47.

[88] Maitland's abhorrence of gin is on display in his *History and Survey of London*, most notably when he writes about the year 1736: "At this Time the drinking of Spirituous Liquors was become so excessive among the inferior Sort of People in this City and Suburbs, that many thereof not only destroyed themselves thereby, but the Constitution and Health of others were so debilitated, as to endanger the Loss of a great Part of the Human Species" (1:567).

[89] Corbyn Morris, *Observations on the Past Growth and Present State of the City of London* (London, 1751), 25.

[90] Linnell, *Diaries of Thomas Wilson*, 14 December 1750.

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The inference, predictably enough, was that gin, if left unchecked, would in time "burn up the Human Race."[91]

In February 1751, Maddox published a new edition of his sermon under the title *An Epistle to the Right Honourable the Lord-Mayor, Aldermen and Common-Council, of the City of London*. In it he makes an interesting trade-off: he abridges the original sermon, prefaces it with an epistle where he talks about need to "restore and strengthen the *Sinews of War*," and reinforces this message in the statistical appendix, which has now grown from five pages to ten. Here the reader is now asked to worry about the "*late War*" and the "Necessity of employing every proper Method to *repair* the Loss of People *then* sustained"; to marvel that the recent demobilization has had no effect whatsoever on birthrates; and to ponder the implications of the fact that Paris, "that populous Place," has more christenings than burials (here his source is Hales, who gives figures from Paris in his own appendix, without, however, hammering home their ominous meaning).[92]

The goal of the new pamphlet was that of Maddox's original sermon: to goad the common council into petitioning Parliament. Free copies were distributed to all of its members, while copies were made available to the public at the discounted rate of a half-guinea for twenty-five copies.[93] This had the desired effect. On 8 February, the council unanimously voted to petition Parliament, and on 21 February, the petition was duly presented.[94] Once the common council had taken the initiative, seconding petitions started to pour in—from individual parishes in Westminster; from the justices of Middlesex; from householders in Southwark; from the towns of Manchester, Norwich, and Bristol; and even from the London Company of Bakers.[95] What Maddox had done, in effect, was to set off a chain reaction, and he had done so not by appealing directly to Parliament, but rather by appealing to the group whose petition was likeliest to carry the greatest weight and attract the most attention.

Tucker's contribution, ten pages in all, was to perform the sorts of calculations that had worked so well for him in *A Brief Essay on the Advantages and Disadvantages, which Respectively Attend France and Great Britain*. But the result, *An Impartial Inquiry into the Benefits and Damages Arising from the Present Very Great Use of Low-Priced Spirituous Liquors* (1751), cannot be called his best work. Much of it he lifts wholesale from Wilson's pamphlet, including, most notably, the claim that there were 400,000 dram drinkers in and around London.[96] This was sloppy, but what made it sloppier still was that Tucker was writing fifteen years after Wilson—and when the Excise Office's figures clearly showed that the output of distilled spirits had peaked back in 1743. Tucker's estimates of gin's benefits

[91] Isaac Maddox, *The Expediency of Preventive Wisdom* (London, 1750), xxviii.

[92] Maddox, *Epistle to the Right Honourable the Lord-Mayor*, 9, 26.

[93] *London Magazine*, February 1751, 91. It was also sold at a discount (of a half-guinea for twenty-five copies, as noted in Harris, *Politics and the Nation*, 297–98.

[94] *London Magazine*, February 1751, 92.

[95] *Journals of the House of Commons*, 26:55, 77, 84–85, 106–7, 117; London Metropolitan Archives, *Calendar of Sessions Books*, nos. 1049–1090, and *Orders of Court*, January 1747–48 to December 1751, 137–38; W. E. Minchinton, ed., *Politics and the Port of Bristol in the Eighteenth Century: The Petitions of the Society of Merchant Venturers, 1698–1803* (Bristol, 1963), 77–78; Norfolk Record Office, *Folio Book of Proceedings of the Municipal Assembly, 1745–77*, folio 40, recto.

[96] Josiah Tucker, *An Impartial Inquiry into the Benefits and Damages Arising from the Present Very Great Use of Low-Priced Spirituous Liquors* (London, 1751), 27.

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and damages rest on this dubious figure, but he goes beyond Wilson by attaching a value (2 shillings a week per head, or £2,085,714, 5s., 8 6/7d. a year) to the combined social cost of drinking—premature deaths, crime, reduced birthrates, and the added burdens on the poor rates. He then adds in a figure for all the food and manufactures dram drinkers forgo, and for fairness's sake he allows for an annual profit from gin, calculated at 4 pence a day per head. The point, of course, is to show that this one profit is more than offset by all the losses associated with gin, and here the reader is left to ponder a number that manages to be both large and niggling: £3,997,619, 0s., 11 1/7d.

Line up all three publications, Hales's, Maddox's, and Tucker's, and it is hard not to be struck by just how lazy and cursory the numbers are. This was in part a function of length—the most ambitious efforts, Tucker's and Maddox's, were only ten pages long—but page length by itself cannot explain why the reformers based their averages on only a handful of years. Or why times series from the bills of mortality were never explicitly matched to any other series, the most obvious being the Excise Office's annual tallies of distilled spirits. Nor did the quantifiers attempt to exploit the public's fears over crime by adding crime statistics to the mix, for to have done so would have required actual fieldwork on their part.[97]

There is the footprint of haste in all this, and under the circumstances, it comes as no surprise that the reformers were less than scrupulous with the little data they did use. The defects of the bills of mortality were widely known at the time, the most glaring being their failure to record the births and deaths of non-Anglicans.[98] Hales, who had read both Graunt and Maitland,[99] had to have known that the bills were deeply flawed, and in fairness, he does acknowledge that the bills underreport christenings and burials. But the first problem he simply ignores, while the second he uses to his advantage, saying, in effect, that mortality from gin drinking is even worse than the numbers show.[100] For his part, Maddox starts by admitting that the registers are "not *exactly* accurate." But what he can say in their defense was that they are internally consistent—"yet, when compared with *themselves*, one Year with another, [they] must be supposed *equally* just." Any lingering doubts he attempts to dispel with the claim that his conclusions are based on proportions only, though it is clear that he is also out to create an impression by filling his pages with large and alarming numbers and by highlighting those

[97] For the midcentury crime wave, see Douglas Hay, "War, Dearth and Theft in the Eighteenth Century: The Record of the English Courts," *Past and Present*, no. 95 (1982): 117–60; John M. Beattie, *Crime and the Courts in England, 1660–1800* (Princeton, NJ, 1986), 213–30; Nicholas Rogers, "Confronting the Crime Wave: The Debate over Social Reform and Regulation, 1749–1753," in Innes and Styles, *Stilling the Grumbling Hive*, 77–98; also see Joanna Innes and John Styles, "The Crime Wave: Recent Writing on Crime and Criminal Justice in Eighteenth-Century England," in *Rethinking Social History: English Society, 1570–1920, and Its Interpretation*, ed. Adrian Wilson (Manchester, 1993), 211–13; and Peter King, "War as a Judicial Resource: Press Gangs and Prosecution Rates, 1740–1830," in *Law, Crime and English Society*, ed. Norma Landau (Cambridge, 2002), 97–116.

[98] David V. Glass, *Numbering the People: The Eighteenth-Century Population Controversy and the Development of Census and Vital Statistics in Britain* (Farnborough, 1973), 16; Anders Hald, *A History of Probability and Statistics and Their Application before 1750* (New York, 2003), 89; Innes, "Power and Happiness," 138.

[99] Boss, "Collection of Some Observations."

[100] Issac Maddox, *Friendly Admonition to the Drinkers of Brandy, and Other Distilled Spirituous Liquors*, 4th ed. (London, 1751), 43.

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that best met both criteria. And like Hales, Maddox turns one of the registers' weaknesses (the underreporting of burials) into a strength, arguing that the actual number of deaths attributable to gin must have been much higher, all the more so since a "very great Number" of corpses "are now annually removed to Places near and remote, these not being entered with the Company of Parish Clerks."[101]

COMPARISONS AND CONCLUSIONS

The last two paragraphs go far toward answering the question of standards. They were not very high, and this was especially true of the literature produced in 1751. The degree of effort reformers put into their work was in part a function of just how much opposition they could expect—in 1736, the London Company of Distillers was still a force to be reckoned with; by 1751, it was not (its members were so dispirited that they refused to participate in a committee formed to oppose the new bill, and after the bill was passed into law, they discovered that bribes meant for Parliament's doorkeepers had been pocketed by their solicitor).[102] But it would also appear to have been a function of the political climate. Wilson, who was engaged in an uphill struggle, had to take care with his numbers, and as it was, the Gin Act of 1736 came very close to being tabled.[103] The Gin Act of 1751, by contrast, encountered no opposition to speak of, partly because the London Company of Distillers had no fight left in it and partly because Parliament had become more receptive to the idea of social legislation. The target audience also affected how much work the reformers put into their numbers. Wilson was writing for members of Parliament, all of whom would have been exposed to the ledgers and accounts submitted by the Excise and Customs Offices. They were also hardened veterans of the Excise Crisis (those, that is, who had managed to survive it). Maddox, by contrast, was writing for the members of the common council, and he had a much less ambitious goal: to get the City to take the lead in petitioning Parliament for a new gin act. Once the City had done so and other jurisdictions and groups, "excited by the most laudable Example of the Lord Mayor, Aldermen and Common-Council," started deluging Parliament with their own petitions,[104] statistics became all but incidental to the debate, and the only number Parliament seems to have paid any attention to was the excise revenue the nation stood to lose.[105]

The surprise, then, is that political arithmetic was better when it was supposed to have been at its worst and worse when it was supposed to have been improving. But the reasons for this were very much rooted in specific circumstances, and as such they cannot be taken as a serious challenge to the conventional periodization of political arithmetic in the eighteenth century. By the same token, they bear out

[101] Maddox, *Epistle to the Right Honourable the Lord-Mayor*, 24.

[102] London Metropolitan Archives, *Journal of the Court of the London Company of Distillers*, 29 May 1751, 9 July 1751.

[103] Hoppit, *Failed Legislation*, 324.

[104] *Norwich Mercury*, 16–23 February 1751, 1.

[105] *General Advertiser*, 28 February 1751, 1; *Gentleman's Magazine*, February 1751, 89; *Read's Weekly Journal*, 2 March 1751, 3; *Norwich Mercury*, 23 February to 2 March 1751, 1, 2–9 March, 2; *Old England*, 9 March 1751, 2.

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Julian Hoppit's observation about the quintessentially ad hoc nature of political arithmetic. The two campaigns also support the claim that moral and religious concerns were much closer to the surface at mid-century than they had been under Walpole. Wilson, it will be recalled, had been well advised to keep any "Moral Reflections. . . . to the last and not intermixt in the Body of the Treatise," but when Maddox attempted to reignite the fight against gin, he started with a rousing sermon. Numbers were an afterthought, presented in the form of a five-page appendix to the printed version of the sermon. The *Epistle*, it is true, reshuffles these pieces, placing the epistle first, an expanded statistical appendix next, and extracts from the sermon dead last, but the epistle itself is perhaps most notable for its principled refusal to draw any hard-and-fast lines between moral duty and economic self-interest; "But besides the signal blessings, which every Christian that engages in so pious, humane, and compassionate a Work, may expect from Him, *who came not to destroy Mens Lives but to save them*; there is great Reason to apprehend, that an ample Compensation for *some* Loss in this one Duty [the excise on distilled spirits], would certainly arise. . . . from the encreased Labour and Consumptions of a growing, instead of the present declining Number of sober, orderly, industrious Labourers, Manufacturers and Artificers."[106]

It is also clear that the numbers the reformers used derived much of their authority from the intangibles of reputation, social standing, and, in the case of Maddox, pulpit eloquence. The (anonymous) author of *A Supplement to the Impartial Enquiry into the Present State of the British Distillery* could rail at Wilson; he could accuse him of hiding behind his cassock, but at the end of the day he could do nothing to level the playing field—not when "you are of too much Consequence, your labours are too precious to be drawn into a Vindication of your Argument by Facts, and rather expect to be credited, *in Verbum Sacerdotis*, an authority not generally received in this age, especially in a Controversy of this nature."[107] This reliance on personal reputation was a departure from the modus operandi of most quantifiers, which was to publish anonymously and stake everything on the persuasiveness of their arguments,[108] but it is also a marker of just how distant the reformers were from the modern science of statistics, where, in principle at least, "A highly disciplined discourse helps to produce knowledge independent of the particular people who make it."[109]

The reformers' equivocal relationship with numbers is also evident in the fact that none of their pamphlets relied on numerical reasoning alone. Indeed, if pages alone are the measure, political arithmetic constituted only a small part of their overall strategy. Put otherwise, numbers were a means and not an end. Shocking stories (typically involving women and children), jeremiads, physicians' warnings—all these devices and more were used to vilify gin and the people who drank it. The strategy, of employing multiple rhetorical devices in the hope that one might stick, was in many ways akin to that used by the temperance crusaders of the nineteenth and early twentieth centuries. Here one finds the same alternation

[106] Maddox, *Epistle to the Right Honourable the Lord-Mayor*, 8.

[107] Anonymous, *A Supplement to the Impartial Enquiry into the Present State of the British Distillery*, 4.

[108] This was noted by Hoppit in "Contexts and Contours," 95–96.

[109] Theodore Porter, *Trust in Numbers: The Pursuit of Objectivity in Science and Public Life* (Princeton, NJ, 1995), ix.

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of devices, of appeals to the heart mixed in with appeals to the head. Jonathan Kittredge, preaching to the citizens of Lyme, New Hampshire, in 1828, harangued them with every possible reason why they should desist from drinking distilled spirits—including one based on a crude estimate of how many gallons (6,000) they were drinking each year. That amounted to three gallons for every man, woman, and child in the town, which "at the low price of fifty cents per gallon, will be three thousand dollars, which will pay all your town, county, and state taxes three years."[110]

How much weight numbers carried must remain an open question. They arguably mattered more in 1736, if only because the hill was twice as steep: not only was Parliament reluctant to pass social legislation, it was, as Walpole himself observed, even more reluctant to "engage in any thing that looks like an excise."[111] That said, Walpole's recent setbacks—and the prospect of weakening him still further—were probably the two largest factors behind the passage of the Gin Act of 1736. The prominent role played by the City and Middlesex supports this view. Obviously, both jurisdictions were at the epicenter of the gin craze. But they were also overwhelmingly hostile to Walpole,[112] and in supporting the reformers they were not only attempting to clean up their own backyard but also backing a plan Walpole was on record as opposing. There is one other political intangible to consider, and that is the fact that Queen Caroline, who was acting as regent at the time, was very much in favor of the measure. In 1751, the reformers once again owed the better part of their success to circumstances beyond their control: the return of peace meant that Parliament could now accept a shortfall in excises on distilled spirits, while rising demand for grain (in the form of a growing population) meant that landowners could sacrifice the distillers without having to make sacrifices of their own.[113] Numbers, in other words, helped set the terms of the debate, but the outcome of that debate depended very much on the political circumstances of the moment.

To conclude: the reformers' use of statistics was nothing if not expeditious. They ignored data that would have taken time to collect and analyze and instead used the data that were closest at hand. Once they had amassed enough data to make their points, they desisted. These are not the actions of scientifically curious men: they are the actions of politically motivated men. And they won the debate for all the wrong reasons. Their social standing made them more credible than their opponents and gave them access to people in a position of power, they had more numbers at their disposal, and they were more industrious, though not by much.

[110] Jonathan Kittredge, *Address on the Effects of Ardent Spirits: Originally Delivered in Lyme, New Hampshire, 1828* (New York, 1850[?]), 7.

[111] Cobbett, ed., *Parliamentary History of England*, 9:254.

[112] Lucy Sutherland, "The City of London in Eighteenth-Century Politics," in *Essays Presented to Sir Lewis Namier*, ed. Richard Pares and A. J. P. Taylor (London, 1956), 49–74; Nicholas Rogers, "The Urban Opposition to Whig Oligarchy, 1720–60," in *The Origins of Anglo-American Radicalism*, ed. Margaret Jacob and James Jacob (London, 1984), 132–48, and *Whigs and Cities: Popular Politics in the Age of Walpole and Pitt* (Oxford, 1989).

[113] Ashton, *Economic Fluctuations*, 181.

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