THE HABERMASIAN PUBLIC SPHERE AND “SCIENCE IN THE ENLIGHTENMENT”

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As long as there has been a distinctive discipline of history of science, it seems, its practitioners have regarded the eighteenth century as something of a cipher. The real action in forging a new world view, we all know, took place in the sixteenth and seventeenth centuries, while the creation of distinctively “modern” scientific institutions, professions, and concepts had to wait for the nineteenth and twentieth centuries. What remains for the eighteenth century, therefore, consists largely of a process of assimilation and dissemination. According to this standard picture, during the eighteenth century the new physics of forces and subtle fluids was ramified widely throughout natural sciences and medicine. Meanwhile, popularizers of various stripes presented the new philosophy to the public and turned it to a variety of ends, ranging from Voltaire’s openly propagandistic and wickedly funny *Lettres philosophiques* to Kant’s more reflective and metaphysical *Allgemeine Naturgeschichte und Theorie des Himmels*. There are, to be sure, a few legitimate novelties ascribed by traditional historiography to the eighteenth century, the so-called “Chemical Revolution” being first among them.1 But the consensus has been that the period represents a meagre interpretive diet compared to the sumptuous possibilities offered by the eras preceding and following it.

Of course, this is not to deny that interesting things are being done by historians of science who work on eighteenth-century topics. But those of us who write about this period have done little to formulate a new vision of how it fits into the larger narrative of history of science.2 One indicator of this absence is how much remains unfulfilled from Jan Golinski’s 1986 appeal to place “science in the Enlightenment”. In a review of Thomas Hankins’s introductory survey, *Science and the Enlightenment*, Golinski pointed out that the Enlightenment as a cultural movement played virtually no role at all in Hankins’s discussion. At best, Golinski observed, certain aspects of eighteenth-century science were characterized by Hankins as exemplary of Enlightenment attitudes, but the role of the Enlightenment in shaping the scientific culture of the eighteenth century did not receive much attention in Hankins’s book. This shortcoming was certainly not unique to Hankins among historians of science, and Golinski used his
review as a platform from which to call for more focused attention to both the theoretical and empirical problems of situating science in the Enlightenment. More than a decade later, Golinski’s appeal not only remains unfulfilled, it seems to have been largely forgotten. To a certain extent, the reason for this may arise from an understandable hesitancy on the part of historians to come to grips with large and amorphous categories such as “the Enlightenment”. Where Paul Hazard and Peter Gay once confidently asserted the unifying spirit of Enlightenment culture, historians more recently have emphasized the importance of local contexts in studying the social and intellectual history of the Enlightenment. Golinski underscored the importance of such work, but he also cautioned how much it has hollowed out our understanding of the Enlightenment itself:

It used to be possible to perceive the movement as a coherent intellectual entity, and to articulate the centrality of science to it. But now we are left only with a multiplicity of specific contexts, each one constituted by numerous (local and temporary) social factors. The implication, that “the Enlightenment” as an historiographical category may have no further utility, has not been faced up to.

Such pessimism, appropriate as it was — and remains — for describing the historiography of eighteenth-century science, stands in odd contrast to the exuberance and vigour displayed by eighteenth-century cultural history beyond the history of science. Animated by the concept of the “public sphere” first articulated by Jürgen Habermas in the early 1960s, a group of American, French, and German historians have produced a vision of Enlightenment culture that both crosses national boundaries and furnishes a set of questions for detailed empirical studies in the social history of ideas. Habermas’s ideas have proven so fruitful and ubiquitous that special forums in French historical studies and Eighteenth-century studies have been devoted to a discussion of the public sphere, and a major historiographic industry has sprung up around the question of its role in the origins of the French Revolution. While all this has been happening, however, historians of science and medicine seemingly have paid little attention.

This essay will attempt to introduce the concept of the public sphere to the history of science by describing the public sphere as both an empirical phenomenon and an analytical tool. Its specific utility hinges on the way that it helps refine our understanding of the “public” for science in the period, and this in turn, I will argue, permits a clear statement about the role of the Enlightenment in the larger narrative of the history of science. To make the point briefly here, what separates “the Enlightenment” from “the Scientific Revolution” is precisely the public sphere itself. It was the evolution of the public sphere that gave to the new philosophy its widespread cultural authority in the eighteenth century, an authority that it has never surrendered. To put it another way, whereas the new science became widely influential among seventeenth-century scholars in the so-called “republic of letters”, during the eighteenth century science first
began to move beyond such circles and to become regulative in public discourse
itself.\textsuperscript{8}

Beyond merely demarcating the Enlightenment from the Scientific Revolu-
tion, however, the emergence of the public sphere also had profound conse-
quences for the subsequent history of science. Most importantly, as I will argue
below, the ways that scientific knowledge was configured in the public sphere
also allowed the articulation of a novel kind of discourse about theory and prac-
tice. I have elsewhere described the discourse of theory and practice as the de-
fining feature of modern professions such as medicine, and by tracing the history
of this discourse we can describe the evolution of professionals as expert scien-
tific practitioners.\textsuperscript{9} The legitimacy of scientific knowledge in the modern world,
it seems to me, is deeply enmeshed with such discourses and the scientific ex-
erts they empower. And as I hope to show here, the creation of such experts
depended at least in part on the evolution of the public sphere.

1. CIVIL SOCIETY AND THE PUBLIC SPHERE

Put most succinctly, the public sphere developed during the late seventeenth
and eighteenth centuries as the cultural and political expression of the self-
consciousness of members of civil society.\textsuperscript{10} Therefore in order to understand
what is contained in the concept of the public sphere, we must first unpack what
is meant by “civil society”. Civil society is usually understood by historians
and social theorists in terms of economic life. Whereas in Antiquity, according
to Habermas, the production and exchange of goods was thought of as pertaining
to a man’s (\textit{sic} — gender intended!) household, by the sixteenth and seven-
teenth centuries economic life was clearly separated from the intimacy of the
household.\textsuperscript{11} During the second half of the eighteenth century, the centrality of
economic life in the constitution of society was being remarked upon by a number
of writers. Adam Smith wrote in the \textit{Wealth of nations} (1776) that every man
lives by exchanging, or “becomes in some measure a merchant, and the society
itself grows to be what is properly called a commercial society”.\textsuperscript{12} Nearly half a
century later, G. W. F. Hegel offered an explicit definition of civil society, writ-
ing in the \textit{Philosophy of right} (1821) that

\begin{quote}
[i]n the course of the actual attainment of selfish ends ... there is formed a
system of complete interdependence, wherein the livelihood, happiness, and
legal status of one man is interwoven with the livelihood, happiness and
rights of all. On this system, individual happiness, etc., depend, and only in
this connected system are they actualized and secured.\textsuperscript{13}
\end{quote}

The theorization by Smith and Hegel of a society founded on exchange can
be taken as an explicit ideological challenge both to other forms of social legiti-
macy, such as hereditary aristocratic hierarchies, and to the growing public au-
thority of the state. This latter opposition between civil society and the state is
especially relevant for characterizations of the public sphere, because, as Dena Goodman observes, the eighteenth century was an historical moment when the relationship between “public” and “private” was assuming a new form. According to Habermas’s presentation of the shift, one that resonates widely among early modern historians, public authority during the seventeenth and eighteenth centuries increasingly came to be seen as accruing to “the state”, instead of to the person of the ruler. In this process, certain functions, such as the maintenance of order, were understood as belonging to the state, while other social functions, such as family life and economic activity, belonged to the “private sphere”. So in one respect, distinctions between public and private in this period can be taken as demarcating the limits of the state’s legitimate authority. But at the same time — and this is Habermas’s crucial insight — “public” also came to mean something else in this period, namely “the public” as the object of state power. While commerce and manufacture were private functions, the encouragement and regulation of such activities became matters of state interest. And in this latter sense “the public” was nothing other than the collection of all individuals who constitute civil society in their positions as members of civil society, in contrast to other possible roles, such as family members or penitents before God.15

“Public” understood in this latter sense, as “the public”, thus describes the members of civil society. But recall that civil society itself was defined as belonging to the private sphere, and this in turn suggests that the private sphere is bifurcated in structure. On the one hand, there is an intimate portion of the private sphere, which Habermas labelled the Binnenraum, consisting of the family and the social structures that pertain to it. On the other hand, there is civil society, the public side of the private sphere, which becomes the object of state power. Yet “the public” does not exist merely as an inert object of state control, for there arises in opposition to the state’s intervention a self-consciousness among the members of civil society of themselves as the public. And it is here, finally, in this self-consciousness, that we can locate the public sphere as the set of discursive practices and institutions by means of which the self-conscious public comes into being.

To English-speaking readers not habituated to dialectical modes of reasoning, be they Hegelian or Marxian, all this may sound unnecessarily fussy and Germanic. But Habermas’s point is an important one and worth grasping. The state does not simply manufacture civil society and dress it up as “the public” any more than does “the public” create the state. Rather, both “the state” and “the public” develop and crystallize as distinct concepts together. Seen this way, the state does indeed define “the public”, but the latter also actively defines itself, along with defining the state. Given the ready manner with which early modern historians attribute all kinds of motive force to the “absolutist state” as a concrete actor and independent variable in history, this more dialectical
perspective should inject a needed note of caution into the stories we commonly tell.16

Interesting as Habermas’s ideas may be from a social-theoretical standpoint, what has made them appealing to early modern historians is the way the idea of a public sphere ties together a number of important developments in the later seventeenth and eighteenth centuries. First, there was the emergence of what has been described as “new forms of sociability”, represented by coffee houses, salons, and masonic lodges in a variety of urban centres.17 Unlike churches, schools or street corners, these meeting places minimized the distinctions created by wealth or inherited rank, offering a space where participants met and exchanged ideas as equals, at least in theory. The second manifestation of the new public sphere can be observed in the phenomenal increase in newspapers and periodicals during the eighteenth century. These media not only presented “news” for their literate audiences; they also became vehicles for the expression of what came to be called “public opinion”, the collective voice of civil society. Finally, along with the new social institutions and the new kinds of publications, there developed a new kind of discourse, the discourse of “criticism”. Criticism assumed a variety of forms: the public discussion (in coffee houses and periodicals) of government policies and religious dogmas; the establishment of universal canons of beauty and taste in the form of literary or art criticism; and public debates over new medical and scientific theories.

Two remarks about what this notion of the public is not may help sharpen our understanding of it. First, “the public” as conceived here cannot be equated with the population at large. Habermas’s public sphere therefore describes not an eighteenth-century social or demographic reality, but instead a set of institutions that stand for an ideal. Newspapers, for example, were not read by everyone, because obviously “everyone” could not read or afford to buy a newspaper. Yet in contrast to, say, correspondence networks among scholars or collections of courtly poetry, newspapers (and periodicals too) deliberately presented themselves to a universalized readership. In principle, they excluded no one, even if in practice they excluded nearly everyone. It is entirely characteristic of the bourgeois institutions manifested in the public sphere that they assume this universalized stance. If for no other reason than this, the parallels between discourse in the public sphere and another kind of universalizing discourse, namely science, should alert us to potential links between them.18

Second, the distinctions between public and private that dialectically create an intermediate public sphere cannot be equated with the doctrine of “separate spheres” that has become prominent in women’s and family history. To a certain extent, Habermas’s presentation of the story captures one aspect of the separate spheres doctrine. The evolving distinction he posits between civil society, as space of production and exchange, and the intimate sphere of the family, as the space of reproduction, mimics the one deployed in women’s history. But the
difference is that for Habermas both the public sphere and the family belong in the private sphere, in contrast to a simple dichotomous relationship between public and private. The distinction is subtle, yet important. Thus when Joan Landes, in her influential *Women and the public sphere in the age of the French Revolution* (1988), attempted to criticize the developing public sphere in eighteenth-century France as inherently gendered, she did so by collapsing Habermas’s categories into her own. As a result, Dena Goodman points out, Landes’s critique of Habermas both missed its target and misrepresented the ways in which the French public sphere was gendered.19

Finally, to close this preliminary discussion of the Habermasian public sphere, it will be worthwhile to contrast it with the kind of public invoked recently by historians of eighteenth-century British science. One concern that has dominated this scholarship has been the avenues by which scientific knowledge acquired legitimacy in the larger social setting during the eighteenth century. Larry Stewart, for example, has presented a detailed portrait of the links that were forged between promoters of Newtonian science and sundry entrepreneurs and capitalists. Stewart discounts the idea that Newtonianism was simply an ideological shield for Whig commercial interests, and he shows instead how scientific knowledge became both a currency of exchange and a tool for technological growth. Jan Golinski too sees scientific knowledge as a kind of social currency redeemable in a number of ways, but Golinski is less concerned with the actual role of such knowledge in commercial and industrial activity than with science — particularly chemistry — as a medium for social cohesion. By examining the writings and careers of a number of prominent chemists, Golinski shows how chemistry became a means for securing patronage and mobilizing public support for the work of scientists such as Joseph Priestley and Humphry Davy. As different as they are, both books provide a wealth of empirical detail woven into the larger story of, as one well known label has it, the “birth of consumer society”.20 Most recently, Paul Wood has explicitly engaged with Habermas’s model in describing how science acquired the character of public knowledge in eighteenth-century Scotland. As Wood demonstrates, the Scottish universities were central to the expansion of science’s role in public life.21

It is significant that all of these works treat the creation of “public science” as a social phenomenon.22 That is, the stories they tell centre on how certain individuals and groups of people created a circulation of scientific ideas in society. In such a story, the obviously relevant phenomena to look at are things like establishment of lecture courses, industrial and technological projects, formation of societies for economic improvement, and cultivation by scientific entrepreneurs of socially influential patrons. However, important as such a perspective is, it can only provide half the story, because the discussion of public science as a social phenomenon cannot address the question of how science acquired its cultural authority. In his article, for example, Wood points out that
"Science came to symbolize the power of human reason. The scientific method [he continues] was seen as the key to discovering the truths of the moral and natural worlds, and the progress of humankind was widely perceived as being tied to the advancement of scientific learning". Wood’s description captures the phenomenon nicely. Yet my project here is to ask why science could acquire the symbolic power that Wood attributes to it. The widening presence of scientific knowledge in eighteenth-century society, its presentation in lecture courses and institutionalization in societies of improvement, are the circumstances attendant upon the acquisition of cultural authority by science, not an explanation for the phenomenon.

Therefore, it seems to me that the story of science in the modern world is not just about the formation of scientific communities, the evaluation of knowledge claims by members of those communities, and the institutional structures that sustain such practices; just as importantly, science is a form of discourse that regulates and structures much of what anyone can claim to know. To study how science could come to have that kind of influence requires not just a social history of truth, but also a genealogy of truth as a matter of public determination. The allusion to Foucault here is deliberate, and I will return to the implications of undertaking such a project in the conclusion. For the present, however, we can begin to understand what this project entails by examining the discursive structure of the public sphere.

2. THE IMPORTANCE OF BEING CRITICAL

More than anything else, it is criticism that characterizes the life of the public sphere, and in order to understand the public sphere we must appreciate what criticism meant as a public function in the eighteenth century. For reason of economy and my own knowledge, I will confine my discussion to German-speaking Central Europe (hereafter, “Germany”), although in the long run it will be necessary to compare the discursive structure of the public sphere in different languages and nations. The place to begin any discussion of the public sphere in Germany is with Kant, whose perch on the fringes of civilization in Königsberg in East Prussia perhaps made him all the more appreciative of what was going in the cultural world around him. In the preface to his Critique of pure reason (1781), Kant tellingly described his as an “age of criticism”, claiming that neither religious dogma nor princely autocracy could maintain their claims on public allegiance except by sustaining “the test of free and open examination”. A few years later in his famous essay “What is Enlightenment?”, Kant amplified on this point. Enlightenment, he began, is humanity’s release from its self-incurred tutelage. The conditions for such release depend on fostering an environment for free critical discussion, and while enlightenment might not follow immediately from such freedom, it would come eventually. Yet Kant was not interested in simply describing a utopian social state; he also wanted to characterize en-
lightenment as an historical process. To this end, he introduced a crucial distinc-
tion between the public and private uses of reason. Privately, reason is
employed in doing one’s work or in the fulfilment of other kinds of duty, such
as paying taxes or obeying the law. As a concrete individual living in specified
social circumstances, the private person possesses only limited freedom. As a
representative of the universal public, however, any person has the right and
indeed the duty (insofar as it advances the general cause of enlightenment) to
engage in criticism. Thus, Kant explains,

the citizen cannot refuse to pay the taxes imposed on him; indeed, an impu-
dent complaint at those levied on him can be punished as a scandal (as it
could occasion general refractoriness). But the same person nevertheless
does not act contrary to his duty as a citizen when, as a scholar, he publicly
expresses his thoughts on the inappropriateness or even the injustice of these
levies.

As this citation indicates, for Kant the distinction between public and private
uses of reason existed in part for pragmatic reasons. Free public criticism re-
quired a stable social order, and maintenance of such an order demanded obedi-
ence to the law by the members of civil society. At the same time, a mature and
just society was one in which the law-giver’s will harmonized itself with public
opinion.

It has been this aspect of the public sphere, as the locus of political dis-
course, that has been so much the centre of attention for Habermas and later
commentators. But the ways that the development of the public sphere
reconfigured cultural life extended well beyond politics. To take only one such
development, though an exceedingly important one, the eighteenth century saw
the first emergence of the literary critic and the simultaneous creation of aes-
thetics as the theoretical basis for judgements of literature, music, and visual
arts. The critic was a new kind of public figure, whose role in cultural produc-
tion was portrayed nicely by the German dramatist and critic Gotthold Ephraim
Lessing in the introduction to *Laocoön* (1766), his famous essay comparing
poetics and the visual arts. For my purposes, Lessing’s characterization presents
some key elements of criticism as a public discourse, and so it is worth pausing
to examine it and then we can see how it applies to topics more central to this
eSSAY.

The first person to liken painting to poetry, Lessing began, must have been
someone “of delicate perception”, who found that both arts produced the same
pleasing sensations. A second person then attempted to find the common source
from which such feelings flowed, and having described that source as “Beauty”,
the second person attempted to formulate its general principles. Next came a
third person, “who reflected on the value and the application of these general
rules, observed that some of them were predominant rather in painting, others
rather in poetry”. The first person, Lessing concluded, was “the amateur”; the
second, “the philosopher”; and the third, “the critic”.

Having defined what are essentially three relationships between the individual and works of art, Lessing then elaborated on the nature of the relationships. The amateur and the philosopher, he pointed out, “could not easily make false use either of their feeling or their conclusions”. Although Lessing did not spell out the reasons why this would be the case, he presumably meant that the amateur simply has feelings when interacting with art, and those feelings, although possibly based on a false apprehension of the beautiful, nevertheless are real feelings. The philosopher, meanwhile, as philosopher does not attempt to make use of general principles of the beautiful, for such instances of application do not lie within the philosopher’s brief. “But in the remarks of the critic”, Lessing observed, “everything depends on the justice of their application to the individual case”. 29

Now, Lessing’s description of the critic contains two points that deserve scrutiny. First, what defines someone as a critic is the application of theory to practice. The critic’s task, as distinct from the philosopher’s, is to take the philosopher’s general principles and put them to work in evaluating individual artistic creations. Criticism therefore is a discourse that explicitly links theory to practice. Second, criticism is a public act; it does not occur as the private judgements of the amateur. Although anyone, within the inner space of the mind, may apply the principles of aesthetics to judging individual pieces of art, such judgements do not become criticism until they are given over to the public for acceptance or rectification. And it is publicity itself that is essential if criticism is to exercise its practical function in the production of reliable judgements, be they political or aesthetic (or even scientific), for only in the public sphere can judgement be stripped of the subjectivity and bias that necessarily colours any one person’s use of it.

The ripples of critical discourse spread widely indeed, touching even the most scholastic of intellectual pursuits. In 1795, for example, the Halle medical professor Johann Christian Reil began publishing his Archiv für die Physiologie, a quarterly that presented itself as inaugurating a new science of physiology. The idea of reforming physiology was certainly not new in 1795; as long as it had existed as a distinct topic in the medical curriculum, physiology had been the focus of theoretical dispute. But what Reil brought was a new method for advancing the science of physiology, and a new medium for it — the periodical. Before the foundations for a new science of physiology could be laid, Reil claimed in the preface to the first issue, its existing methods and doctrines must be subjected to a searching critical examination. 30 Only on the basis of such criticism could the appropriate rules be determined that would put physiological theory on secure foundations. The editor led the way himself, with a series of essays that applied methods of Kantian critical philosophy to various aspects of medical theory. Other writers, including academic philosophers, pitched in as well.
The idea of using a periodical in the critical purification of physiological theory suggests Reil’s commitment to criticism as a public task. Of course, it was not the only available model of how periodicals might contribute to the advancement of science. A long line of such publications, stretching from the *Philosophical transactions* and the *Journal des sçavans* of the seventeenth century down to the *Journal der Physik*, launched in 1790 by Reil’s Halle colleague Friedrich A. C. Gren, functioned largely as nodal points in the dissemination of new discoveries. But Reil’s intentions with the *Archiv für die Physiologie* unmistakably pointed in a different direction. A science of physiology required not just the enrichment of its treasury of facts, although Reil made plenty of space available for reports on empirical research. Just as importantly, physiology required criticism, and for Reil fruitful criticism demanded the ceaseless exchange of roles between readers and writers that a periodical encouraged.31

While Reil’s intentions for the *Archiv* were noteworthy, they were certainly not unique. In fact, his idea of using a periodical in the public task of criticizing medical theory had already been anticipated by the *Journal der Erfindungen, Theorien, und Widersprüche in der Natur- und Arzneywissenschaft* (*Journal of discoveries, theories, and controversies in natural and medical science*), launched in 1792 by the Erfurt professor August Friedrich Hecker. Hecker, who did not name himself as editor but whose responsibility for the undertaking was an open secret, gave the journal the explicit task of subjecting new medical theories to critical scrutiny as they appear. Writing in the preface to the first issue and taking the collective voice of a board of editors, Hecker bemoaned the tendency of physicians in his own day to treat medicine as if it could be reduced to simple principles. It would be this modish mania for systems, this *Systemsucht*, that Hecker would make the major target of his critical efforts.32

The *Journal der Erfindungen* is interesting from several perspectives. In the first place, although the journal seems to have been almost exclusively Hecker’s product, the periodical format allowed this one person to speak as if his voice belonged to the public itself. This was made possible not only by the tissue paper of anonymity thrown over Hecker’s tirades; many of his contemporaries, after all, could peer through the tissue quite easily to see who was behind it. More fundamentally, the periodical format and its never-quite-finished-speaking voice (as opposed to the mute finality that punctuates the conclusion of an authored monograph) made it appear that the disembodied truth was continuously writing itself. Like the process of enlightenment itself as Kant had described it, the public’s grasp on truth was not all of an instant, but gradual, and the never-ending exchange of arguments created by critical discourse brought the German public ever closer to the formation of true judgements. Not by accident therefore did Hecker place as the journal’s motto, “Truth is not the daughter of respectability, but of time (*Wahrheit ist nicht die Tochter des Ansehens, sondern der Zeit*)” at the head of his inaugural issue.
But if in principle criticism provided a vehicle for the truth to write itself, in actuality criticism propagated controversy with an astounding fecundity. The *Journal der Erfindungen* typified this. Already in the third issue, Hecker found himself forced to defend his undertaking against attacks that he was attempting to exercise a “dictatorship (Diktatur)” over medical theory. The attacks were published, not surprisingly, in another periodical, the *Allgemeine Literatur-Zeitung*, the leading German literary review. The ALZ itself was a true offspring of the public sphere. Its reviews spanned the entire world of German letters, from the dramas of Schiller and the poems of Klopstock to the latest tracts on political economy and mathematics. Unlike an earlier generation of reviews, such as the *Allgemeine deutsche Bibliothek*, a leading organ of the Berlin Enlightenment, the ALZ was published with the frequency of a daily newspaper (six to eight times a week, depending on the year) but with the pretensions of a serious literary review. More significantly, the ALZ also inaugurated a daily *Intelligenzblatt* (news sheet) that contained announcements of forthcoming books and journals, death notices and news of professional advancement, and published letters that became the method of choice for carrying on controversies. The aims of criticism thus merged nicely with the pursuit of profit, because, as tabloid journalists of our own time know full well, controversy sells.

The dispute that broke out between the *Journal der Erfindungen* and the *Allgemeine Literatur-Zeitung* illustrates another aspect of the public sphere that is important for our purposes, and that is its inclusiveness, meant here in the sense of comprehending a single “public”. Although the *Journal der Erfindungen* and related publications such as Reil’s Archiv were produced for an audience consisting mainly of physicians, “physicians” were not understood as a readership uniquely partitioned off from other potential audiences. Rather, the readers of the more specialized journals constituted a subset of the larger “public” embraced by the ALZ. This is what made it possible for controversies to reverberate back and forth between the ALZ and smaller publications like the *Journal der Erfindungen*. According to the practices of critical discourse in the public sphere, no topic that could legitimately become an object of knowledge could be locked away from the public’s scrutiny.

### 3. BATTERING DOWN THE WALLS OF PROFESSIONAL AUTHORITY

This all sounds wonderfully democratic and rational — if also at times vituperative — especially if one ignores the way the ideology of the public sphere implicitly excluded women and others who did not (and do not) fit easily into the standard model of civil society. And it is precisely the democratic possibilities suggested by the ideal of an authentic public sphere, along with the frankly romantic belief that something resembling an authentic public sphere once existed in the eighteenth century, that launched Habermas on his quest to resurrect it in the modern world. But powerful as the ideology of “the public”
evidently became in the eighteenth century, we have good reason for supposing that it would not always have been welcomed by everyone who might otherwise partake in it. Members of the professions, whose university degrees authenticated their possession of particular domains of knowledge, would most obviously be affected by a public sphere based on the supposition — fictive, to be sure, but powerful nonetheless — that every speaker was equally entitled to participate. As we shall see in a moment, this point is well illustrated by a dispute over medicine that broke out toward the end of the century.

Before beginning that account, however, a preliminary word or two about the distinctive situation in which eighteenth-century German physicians found themselves is called for. There is now beginning to emerge the clear understanding by historians that physicians of the early modern era neither were, nor did they seek to become, the scientific experts that we know today. That is, university-educated physicians did not regard themselves primarily as healers whose technical and scientifically validated knowledge found its regular application at the bedside, but instead as a social caste of learned gentlemen whose education allowed them to advise their patrons and clients in matters of how to live well, and act as supervisors of the health care provided to members of their communities. This is not to say that physicians did not take care of sick people — a good portion of their incomes depended on bedside healing. But in contrast to the physicians of today, whose identities revolve almost entirely around their work as healers and the social rewards pertaining to such work, the physicians of the early modern world possessed a more complex identity, of which healing formed only one part.36

While they might not have been scientific experts, physicians did regard themselves as the most informed arbiters of medical truth. Given the effort and riches they needed to expend in acquiring their education, we could hardly have expected otherwise. Their role as arbiters was reinforced by the attempts made by various German states over the course of the eighteenth century to impose more stringent examination requirements on the multitude of people who were legally entitled to practise some form of healing: physicians, surgeons, bathkeepers, midwives, and apothecaries, to name only the most prominent groups. These regulatory powers were vested in new medical boards organized in Bavaria, Brandenburg-Prussia, and other states, and physicians were given the most influential role on these boards. However, these developments introduced an element of ambiguity into physicians’ professional lives, for if regulation of health care was undeniably a state function, healing itself was not. Thus physicians found themselves in the awkward position of acting as agents of state authority in some respects, while in others they carried on their professional lives as private practitioners.

Given their place straddling the fault line that divides public (here meaning state authority) and private, the evolution of the public sphere both advanced
physicians’ interests while making their situation more precarious still. “The weighty business of Enlightenment”, to borrow Klaus Berghahn’s apt phrase, gave physicians an opportunity to present themselves to the public as advocates of rational health care and enemies of superstition. However, in contrast to the academic lecture hall, the traditional forum for learned medical discourse, the public sphere proved treacherous ground on which to maintain claims to professional authority. A vivid demonstration of this can be seen in a venomous literary dispute that broke out in 1795, a dispute that portended a more general conflict that would soon polarize German physicians into deeply antagonistic factions. It all began, appropriately enough, in a literary review, in this case Der neue teutsche Merkur, a highbrow monthly edited by the noted dramatist, poet and critic, Christoph Martin Wieland. In a considerable departure from his usual offerings, Wieland led off his issue of August 1795 with a devastating attack on the state of medical knowledge titled “Ueber die Medicin. Arkesilas an Ekdemus”. The essay was written pseudonymously by Johann Benjamin Erhard, a physician and Kantian philosopher, who had earlier that year earned a measure of public notoriety with his book on democratic revolution, Ueber das Recht des Volks zu einer Revolution (On the people’s right to a revolution). At the opening of the dialogue Erhard, taking the voice of Arkesilas, an ancient Sceptic, has just finished demonstrating the shortcomings of philosophy to a young friend, Ekdemus. Ekdemus has proposed the study and practice of medicine as an alternative to philosophy where he may accomplish useful things for humanity and find honour and reward. Arkesilas, however, will dissuade Ekdemus from these fantasies by proving that medicine accomplishes nothing useful. Medicine’s only advantage over a calling such as philosophy, Arkesilas noted sarcastically, is that it “more often makes one wealthy. But this advantage”, he added, “it shares with swindling and usury”.

Having established this dispassionate tone at the outset, Erhard focused his critique on what he labelled the uncertainty of medical knowledge and medicine’s failure to measure up to the criteria — read “Kantian” — of a philosophical science (Wissenschaft). The primary reason for this failure was doctors’ lack of a clear idea either of illness in general or of particular diseases. It was standard practice, he noted, for physicians to characterize illnesses on the basis of the symptoms observed in the patient. But when it comes to connecting those symptoms with the real changes occurring inside the body, the physician has no idea what is going on. The absence of a causal connection between symptoms and the internal condition they represent, Erhard continued, has serious consequences for medical practice, because a physician’s method of treatment depends on interpreting a patient’s symptoms, first for identifying the disease, then for determining its probable course, and finally for taking remedial action. For this to be successful, it is vital that the physician be able to distinguish between those symptoms that are expressions of the illness itself from those
that are merely accidents of the illness’s appearance in any given body. But in
the absence of a firmer understanding of the causal relationship between symp-
toms and the body’s internal state, Erhard countered, any such distinctions would
be completely arbitrary. 40

This critique of the interpretation of symptoms formed merely one portion of
Erhard’s more general attack on medical epistemology. He described the taking
of case histories, for example, as an embarrassing inquisition into patients’ past
illnesses and personal lives, the need for which depended on the fact that nei-
ther the patient nor the doctor knew what was really wrong. 41 Erhard also dis-
counted the conclusions made by physicians about the effectiveness of their
therapies. He presented a list showing how various writers had cured a single
disease with the most diverse assortment of drugs imaginable, and conversely,
how a single drug was credited with therapeutic powers over a wide variety of
ailments. As long as the nature of illness is not better understood, he concluded,
“experience fundamentally will teach nothing more than that one can ingest
certain substances without dying”.42

Such an uncompromising attack on the dignity of medical knowledge obvi-
ously could not be allowed to stand unanswered, and two months later Wieland
published a rejoinder from Christoph Wilhelm Hufeland, professor of medicine
at the University of Jena. It was one thing, Hufeland began, for a Molière to
satirize the ignorance and mindless routine into which the medicine of his own
day had fallen. But now at the end the eighteenth century, when medicine had
been so “purified and perfected”, and physicians sacrificed themselves so nobly
for the well-being of their fellows, it was quite another matter for someone
“with the air of a Kantian philosopher” to attack medical knowledge. In such a
situation, he proclaimed, “every friend of humanity and of truth becomes indig-
nant”.43

Hufeland’s first objection to the article, it turns out, was also his most sig-
ificant one: the Teutscher Merkur was not an appropriate place for such a criti-
cism of medicine to be published.

A complaint must be brought before that forum that has knowledge of the
matter. It would have been entirely appropriate in a medical journal.... But
here, where it is brought before the larger public that can only read it but
not judge it, here it can only do damage (through agitation of unresolved
doubt and erroneous opinion) but not be useful.44

So upset was Hufeland by this point that he returned to it later on, again men-
tioning the publication of this article in the Teutscher Merkur as evidence of the
author’s merely mischievous intentions.45

By first criticizing “Arkesilas’s” intentions instead of answering his argu-
ments — although he did that too — Hufeland was not simply trying to preserve
the dignity of his profession before what he feared would be a public made
suspicious of medical science. His attempt to restrict the discussion within
professional boundaries reflected as well his conception of medical knowledge. For Hufeland, medical practice must be based on knowledge that does not aim at philosophical comprehensiveness. Instead, practice must attempt to make intelligible the particularities of each individual case of illness. The interpretation of a patient’s symptoms and the choice of appropriate remedies demands that the physician synthesize an enormous number of factors, among them the patient’s age, sex, occupation, physical constitution, the patient’s and family members’ case histories, habits and idiosyncrasies, and environmental factors such as the quality of the air, clothing, and bedding. In another writing, Hufeland succinctly delineated the contours of such practical knowledge:

> For there is a great difference whether the same disease exists in this or that subject, and this has the most fundamental influence on the form, modifications, and treatment of the disease. Indeed, the fine shadings [of the disease] are determined solely through knowledge and observation of these particularities, and experience teaches us that exactly in this lies the distinguishing mark of the most talented and successful practitioner.

This kind of empirical knowledge cannot be deduced from first principles, nor can it be distilled into a set of general scientific laws. It can only be created through experience itself, and the public’s lack of such experience literally made it incompetent to judge the state of medical knowledge.

Hufeland also argued toward the same goal from the other direction, by attempting in various ways to demonstrate that his opponent could not be a physician. For example, he returned to the list presented by Arkesilas of the numerous drugs that were said to cure a single disease. Arkesilas had argued that such a variety of medicaments proves the ignorance of physicians. Hufeland, by contrast, saw no problem whatsoever, and turned the point against Arkesilas, saying it only proved his ignorance. Opposite causes could indeed bring forth the same effects, Hufeland declared, because they acted on a patient whose unique situation modified the outcome. Any attempt to isolate a single, predominating cause or to treat the processes of life mechanistically therefore could only lead to a debased sort of medical practice.

It is evident that Hufeland’s standard of medical knowledge placed the public outside the circle of competence for judging or criticizing medicine; in effect, he defined a kind of expertise that by necessity belonged solely to medical professionals. Erhard’s standards, by contrast, appealed to “reason” rather than an expert’s experience, and thus were grounded on the very ideological foundations of the public sphere. This gave him, as he told Hufeland in a rejoinder published several months later in the *Teutscher Merkur*, every right to publish his criticisms in a journal such as Wieland’s. “Since I consider medicine as a matter belonging to mankind in general and not to a particular guild, I did not need to choose any other journal than one ... that has a thinking public.” Erhard further challenged Hufeland to explain what he intended by focusing his
argument around the question of whether Arkesilas was a doctor. Characteristically, he did not parry Hufeland by claiming he too was a physician, but by contending only that Hufeland’s attack on his credentials did not pertain to the criticisms he had advanced.50

The debate between Hufeland and Erhard vividly displayed the potentially corrosive effects of critical discourse on professional authority. Indeed it might appear that Hufeland and Erhard were mainly quarrelling about professional privilege, with Hufeland defending what amounts to the “modern” position that the adjudication of medical knowledge belongs to professional experts alone. But although the debate was certainly about who should exercise regency over the domain of medical knowledge, the appearance of continuity with our contemporary understanding of expertise is misleading. Hufeland no less than Erhard was an ardent champion of Enlightenment and the creation of an enlightened society. But their disagreement began when confronted by the issue of what “Enlightenment” meant, for at that point they encountered a tension rooted in Enlightenment culture itself and in the very existence of the public sphere.

One good place to see this tension is in the special role assigned by Kant to scholars in the process of Enlightenment. In a society undergoing Enlightenment, he noted in “What is Enlightenment?”, certain individuals will take the first steps and think the daring thoughts that will eventually be taken up by the rest of society. 51 But at what point does society cease looking to its intellectual elite for guidance? When are the reins to be handed over to each person as an enlightened member of society? The answer, of course, is “never”, not because scholars like Kant were simply using the program of Enlightenment for their own selfish ends, but more fundamentally because as scholars they believed their voices were not subject to the partisanship and partiality that might befall a private person voicing his or her opinion.

Needless to say, that is powerful ground for any speaker to occupy. But the elevation of scholars to a privileged position in public discourse raises an obvious question: who exactly is entitled to speak as a scholar? In the great census of enlightened society, who should be included? Erhard’s unwillingness to identify himself as a physician in his debate with Hufeland suggests a belief that the mantle of a ‘scholar’ was one that could be shared widely indeed. But there was also a legion of university apologists, including Friedrich Schiller, Johann Gottlieb Fichte, Friedrich Wilhelm Schelling and Kant himself, who claimed that a student’s university experiences would train his character and mind to represent universal humanity. Thus while anyone potentially could represent universal humanity in the public sphere, only the young men educated at universities and especially those who were called to higher scholarship had the opportunity to cultivate those natural gifts, and therefore only they could be counted on to speak from the position of representing universal reason.

Finally, it should be noted that the debate between Hufeland and Erhard recalls
the idea of criticism being a discourse that links theory and practice. One aspect of the linkage was manifested by the occurrence of the debate itself. If medicine was to be awarded the dignity of a science, it had to withstand what Kant had described as the test of “free and open examination”. Critical discourse, as has been pointed out before, was practical. But it was no less important that the epistemological issues that lay between Hufeland and Erhard centred on the relationship of theory to practice in medicine. For Erhard, practice should be made to resemble applied theory as closely as possible, in which the particularities of a given situation are subsumed under more general categories. Erhard was no fool, and he fully appreciated that such subordination required the exercise of judgement and would not proceed frictionlessly. But he clearly believed that medical theory, as given by physiology and pathology, ought to be a more rigorous guide for bedside practice than was presently the case. Hufeland obviously rejected this idea. He too respected the importance of medical theory for the physician, but it was not clear that he would assign theory any role more important than providing an after-the-fact justification for practical measures decided upon by other means.

Erhard’s epistemological criteria for a medical science that would unify theory and practice therefore were well suited to the discursive structure of a public sphere. Hufeland was not wrong in claiming that his opponent could have chosen to present his criticisms in a more restricted medium. One can, for example, imagine the two of them trading invectives back and forth in the Latin dissertations that were still being published by physicians in the 1790s. But Erhard chose to attack medical knowledge in the Teutscher Merkur not just to make a big splash, but because he shared with Kant and others the conviction that enlightened public opinion, by virtue of its being public, offered a uniquely qualified tribunal for the establishment of truth by means of thoroughgoing criticism. In an enlightened society, or even in one still undergoing Enlightenment, there could be no higher court of appeal.

4. THE PUBLIC SPHERE AND THE GROWTH OF PROFESSIONAL EXPERTISE

Let us now return to the question posed at the outset of the essay: what is the Enlightenment’s place in the larger narrative history of science? The preceding discussion of the public sphere has suggested, I hope, how one part of that question might be answered. During the eighteenth century, the emergence of the public sphere elevated a certain kind of objective knowledge to a privileged place in élite culture. Critical discourse did not make natural philosophy per se the touchstone of anything claiming to be knowledge, but natural philosophy was taken as providing the best exemplar of such knowledge. For this reason, it was not by accident that Kant’s Critique of pure reason attempted to provide an epistemological grounding for Newtonian mechanics, while at the same time laying out a more general method of philosophical/critical inquiry.
But if the discussion of the public sphere has offered an explanation of how the new science of the seventeenth century became authoritative for the eighteenth-century public, what about the other end of the story? The discursive model at work in Reil’s *Archiv für die Physiologie*, or in Hecker’s *Journal der Erfindungen*, or in the Hufeland–Erhard debate would seem to be fairly remote from the situation that prevails today. In contrast to the openness and breadth of critical discourses in 1800, various professional groups since that time have been able to establish discursive domains that they regulate more or less by themselves. Medicine is the prime example of this: no one except a physician (and in most cases, no one except a physician working in a university or research institute) has any voice in the establishment of what is constituted as medical truth. People outside the medical profession can and do criticize it in all sorts of ways, and they can even reject the system of knowledge it represents and turn to something else. But the public has no power whatsoever directly to either establish or dispute medical truth. And medicine is but one of an ever-expanding number of professions of which the same could be said. With respect to the Enlightenment in the larger narrative of the history of science and history of medicine, therefore, we are confronted by a paradox. If a major element of the story of modern science and medicine is the authorization of scientists and physicians as specially privileged speakers of truth about the natural world, then the eighteenth-century public sphere would seem to be at best a detour and at worst an obstacle.

How then are we to understand the relationship between the public sphere and the evolution of professional expertise? Someone who knows Habermas’s work might be tempted to say that the story he tells of the decline and corruption of the public sphere after 1800, its eventual transformation into objectivized and quantified “public opinion” and the mass culture industry that we today, is how the story should go. That is, the origin of the contemporary professions is traceable to the decline of the authentic public sphere that existed, if only ephemeral, in the eighteenth century. However, I think there is a different — and from the perspective of the history of science, much more interesting — story to be told. I do not dispute that the manipulations of the market and the incentive for profit have corrupted and debased the public sphere in the ways Habermas describes. But I also believe the expansion of professional expertise in our own time would be impossible without the retention of the ideology of the public sphere in some form. Far from being a story of the disappearance of the public sphere, therefore, the story of professionalization is crucially dependent on its enduring presence.

To understand how this can be the case, we need first to consider the kinds of scholarly and disciplinary communities that began forming in the years surrounding 1800. While periodicals offered an opportunity for “the public” to come together over matters of common interest, those same periodical genres
also opened the door to the formation of more specialized groups of readers. A number of years ago, Karl Hufbauer told the story of how the community of German chemists coalesced around the Chemisches Journal, a journal inaugurated in 1778. The same point might as well be made about Reil’s Archiv für die Physiologie. Reil’s initial intention for the journal was, as we have seen, to have it serve as an organ of critical discourse in the reform of physiological theory. But as the Archiv developed over the years, it began more and more to become a repository for the reporting of empirical research results, much like other scientific journals. This trend was reinforced when the Archiv was succeeded in 1815 by the Deutsches Archiv für die Physiologie, a journal that explicitly proclaimed itself to be the collaborative product of a community of researchers engaged in a common set of problems, and most importantly, a community of judges of each others’ work.

Yet the inauguration of the Deutsches Archiv and countless other specialized journals in the early nineteenth century did not come about as the result of those physicians’ disavowal of the public sphere. Quite to the contrary, they continued to profess the openness and universality of audience that is the mark of the periodical genre. Anyone able to participate in the public sphere was also qualified to engage in the discussions contained in the Deutsches Archiv — anyone, that is, who was willing to become familiar with the theoretical presuppositions and research techniques that engagement with physiological research entailed. The Deutsches Archiv did not need to make this condition explicit, because anyone who did not play by the rules simply would not be published. Of course, in an age of Enlightenment those who did not follow the rules of discourse in the Deutsches Archiv or other journals would not be actively silenced or suppressed. Instead, and more insidiously, by not being published such speakers in fact would have never spoken publicly in the first place.

Obviously, the discursive structures described here as typical of the Deutsches Archiv and other research periodicals is not the whole story of professionalization. A great deal more must be added to the picture. But however the history of science in the nineteenth and twentieth centuries is written, I would insist on the centrality of this discursive formation in it, because it provides the legitimacy for an endless spiral of increasingly specialized communities of researchers and practitioners.

What happens then over the course of the nineteenth and twentieth centuries is a gradual sequestration of chunks of knowledge within regions of narrowly professional discourse. At the same time, however — and this is absolutely crucial — the knowledge is not thereby given up as belonging to the secret incantations of some weird, if also practically efficacious, cult, but continues to appear before the public and other scientists as open and scientific. The consequence is that even though countless numbers of disciplines effectively began to withdraw large regions of scientific knowledge from the public sphere almost as
soon as it formed and to establish problem domains largely defined and regulated by themselves alone, the assumptions that originally motivated critical discourse in the public sphere have lost none of their prescriptive force. The public sphere may have become nothing but a hollow shell over the past couple of centuries, but the shell looks intact and solid from the outside.

The authority that scientific experts possess today derives from the quality of scientific knowledge being open and public in principle but recondite in practice. The kind of expertise we have today requires both elements. Without knowledge claimed by experts being open, it would lose much of its legitimacy because it would no longer be considered scientific. At the same time, the knowledge possessed by scientific experts must also be recondite in practice to a considerable degree, because without this condition the knowledge would cease belonging to any particular social group and become generally available. As a result of this combination, when scientific experts today tell us what to think about something like ‘teen-age alcoholism or the genetic basis of homosexuality, they speak not as prophets — a Daniel or an Isaiah inspired with a unique vision — nor as Delphic oracles. The authority of their pronouncements derives from the fact that they speak for us; that is, they speak for anyone sufficiently apprised of the facts to formulate a scientific comprehension of the matter. To be sure, there is an infinite regress here, because only “competent judges” (i.e., experts themselves) are qualified to certify when someone is “sufficiently apprised” of the facts to judge them adequately. Therefore, whenever experts attempt to ground their authority as scientific practitioners on some objective source outside of themselves, it turns out that they are the only ones who can locate that source. But what keeps the whole system going is the ideological remnant of the public sphere.

CONCLUSION: THE PUBLIC SPHERE AND THE SOCIAL HISTORY OF TRUTH

In the epilogue to *A social history of truth*, titled “The way we are now”, Steven Shapin inserts his story of science and civility in seventeenth-century England into the larger tale of truth and social change in Western history. The standard narrative, he tells us, is one of the disintegration of local patterns of trust and social recognition and in their place the creation of large, depersonalized, and anonymous social networks. Instead of the personal acquaintance and social standing that had once provided adequate surety between individuals for all kinds of social interaction, modern society exhibits what the German sociologist Niklas Luhmann described as “system trust”, embodied in a host of institutions and in new social groups, such as the credentialed expert. As Shapin points out, Robert Merton’s sociology of science ran fully along the lines of this story. Scientists are not more virtuous or more intelligent than other people, Merton claimed, but they are distinguished by working in a social subsystem in which a number of practical norms have been institutionalized in such a way that reliable
knowledge of the world is produced. The modern locus for the creation of scientific knowledge, Shapin says, referring to Merton’s theory and bowing toward Foucault at the same time, “appears not as a gentleman’s drawing room but as a great Panopticon of Truth”.57

But, Shapin says, there is another story here as well, a story of the persistence of the traditional kinds of personal trust that were present in pre-modern communities. And rather than remaining with Merton’s belief that science is uniquely characterized by its peculiar systematic structure, Shapin argues forcefully that the doing of science demands enormous quantities of personal trust between practitioners. Shapin does not offer his story of enduring patterns of personal trust as an alternative to the other story of the great transition from Gemeinschaft to Gesellschaft, but rather as one of two complementary stories. He writes:

One story about the modern condition points to anonymity and system-trust in abstract capacities, while the other identifies persisting patterns of traditional familiarity and trust in known persons. The first captures something important about our lived experience as we move away from the familiar places of work, family, and neighborhood; the second reminds us of relations within familiar places.58

As always, Shapin’s comments on these matters are thoughtful and carefully weighed. He does not, for example, merely assimilate one story to the other by claiming that “system trust” is reducible to enduring patterns of personal trust. But at times he does hint toward something like that.59

Whatever might be said about the role of “trust” between scientists in the production of scientific knowledge — and Shapin has said a great deal about it that is persuasive — I am sceptical whether it gets us very far toward understanding the awesome authority that science possesses in our society. While it is certainly true that our everyday contact with various kinds of professional experts depends on personal trust, we rely on more than those experts’ personal trustworthiness. Standing behind those experts is a larger faith in expertise, in the real possibility of a kind of social practice that applies scientifically validated theory to practice. This distinction is crucial for understanding the place of scientific knowledge in modern society. Even when members of the public start criticizing experts for their faulty practices, as for example when AIDS activists create their own underground network of information about the illness, they are not rejecting expertise itself, nor the epistemological model on which it is based.

The instrumentality of scientific knowledge represented by the concept of expertise has nowhere been characterized more acutely than by Foucault’s powerful imagery of knowledge being gridded onto the contours of power. In Foucault’s view of things, truth and power generate each other and wherever one sees truth being manufactured one can be sure that power will be found at
no great distance. Interestingly, Shapin actually cites Foucault on power in *A social history of truth*, but it seems to me he does not take Foucault very seriously. Shapin’s analytical categories are all (or mostly) actors’ categories: they are the recognitions of trustworthiness made on the basis of categories that would have been present to his historical actors. But Foucault directs our attention to the genesis of those categories themselves. His work has always made historians uncomfortable because of his insistence that we dig so deeply beneath the consciousness of our actors. Yet if we want to get at what has happened to make science so authoritative in modern culture we can only provide a satisfactory explanation by following his prescriptions to the greatest extent possible.\(^{60}\)

As I have tried to show here, the public sphere is a category that can do this kind of work. On the one hand, it has the great virtue of being a real historical phenomenon, marked by concrete events (the spread of periodical literature, the formation of masonic lodges) that can be located in a particular era. It was also marked by a certain self-consciousness among its participants, and to that extent, the public sphere is partially an actor’s category. But just as importantly, the public sphere can be seen as a system for the formation of concepts, as Foucault described such a system in *The archaeology of knowledge*.\(^{61}\) The patterns of knowledge that are created and their role in the exercise of power are not to be understood on the basis of the unity of subjective consciousness, Foucault argued, nor their logical necessity. Seen this way, the development of the public sphere in the eighteenth century manifested a new discursive formation, what I have called here the discourse of criticism, and this discourse fundamentally reconfigured the basis on which knowledge was considered authoritative. Of course, none of this invalidates the reality of judgements of trustworthiness made by Shapin’s more or less civil natural philosophers, nor would I suggest their judgements are merely epiphenomenal. But it does suggest that there is still a larger integrative social history of truth waiting to be written, one that takes account of both science and civility and the larger discursive transformation represented by the emergence of the public sphere. In such a hypothetical history, I am convinced, there will be a clear role to be played by science in the Enlightenment.

REFERENCES

2. One such an assessment, with respect to the fate of the kind of natural history practised in the sixteenth and seventeenth centuries, comes at the end of Paula Findlen’s *Possessing nature: Museums, collecting, and scientific culture in early modern Italy* (Berkeley and Los Angeles, 1994), 393–407.
4. For an excellent example of the sceptical attitude toward a trans-national European
Enlightenment that developed in the 1980s, see Roy Porter and Mikuláš Teich (eds), *The Enlightenment in national context* (Cambridge, 1981).


8. For this reason, my interpretation differs substantially from Lorraine Daston’s use of the republic of letters as a regulative ideal that shaped the practice and discourse of science in eighteenth-century Europe. I do not dispute Daston’s claim that such an ideal existed for intellectuals at that time, nor that in a general way the ideal may have guided the behaviour of those who considered themselves members of the republic. Yet there is little in Daston’s presentation of the concept that tells what was distinctive about the republic of letters during the Enlightenment. Nor does the model of a republic of letters address what is of central concern for this essay, namely the public authority of science in Enlightenment culture. See Lorraine Daston, “The ideal and reality of the republic of letters in the Enlightenment”, *Science in context*, iv (1991), 367–86. For the same reasons, the concept of the public developed here differs from the republic of letters described in Anne Goldgar’s excellent study, *Impolite learning: Conduct and community in the republic of letters, 1680–1750* (New Haven, Conn., 1995). Goldgar herself notes the differences between the republic of letters and a Habermasian “public sphere” on pp. 5–6. See also Dena Goodman, *The republic of letters: A cultural history of the French Enlightenment* (Ithaca, N.Y., 1994), for a comprehensive discussion of the normative codes underlying the eighteenth-century republic of letters.

9. Simply stated, what I am characterizing as a discourse of theory and practice is the distinctive claims made by physicians, economists, nuclear engineers, and other professionals that: (1) they possess a body of coherent and scientifically validated knowledge about some domain; and (2) this knowledge serves in a fairly direct way as the basis for the practices undertaken by professionals. Obviously not every occupation that we would call a
“profession” fits this definition; for a variety of reasons, the law is an important exception. But insofar as I am describing the cultural authority of scientific knowledge here, I am most interested in those professions that claim to possess such knowledge and deploy it in practice. See Thomas Broman, “Rethinking professionalization: Theory, practice, and professional ideology in eighteenth-century German medicine”, *Journal of modern history*, lxvii (1995), 835–72.

10. The timing of the emergence of the public sphere depends on the national setting. Habermas believed it developed first in England in the wake of the Glorious Revolution, and then later on in places like the Netherlands and France. Most historians have agreed with him; see, for example, Jacob, “The mental landscape of the public sphere” (ref. 6), 96; Steve Pincus, “Coffee politicians does create: Coffeehouses and restoration political culture”, *Journal of modern history*, lxvii (1995), 807–34, on English coffee-house political culture after 1688; and Goodman, *The republic of letters* (ref. 8), 15–52, which discusses the migration of the French republic of letters from its seat in the learned academies founded during the reign of Louis XIV to institutions such as the *Encyclopédie* and the salons of Paris by the mid-eighteenth century. The public sphere in German-speaking Central Europe is routinely thought to have formed after the Seven Years War, during the 1760s and 1770s.


13. Georg W. F. Hegel, *The philosophy of right*, transl. with notes by T. M. Knox (Oxford, 1979), 123. I certainly do not want to be understood as claiming that Hegel and Smith held identical concepts of civil society, or that they used them in similar ways. I cite both merely to demonstrate a continuity between them that includes: (1) the primacy of production and exchange in constituting society; and (2) the role of individual actors (as opposed to guilds, corporations, or feudal orders) in the social order.


16. In places, Habermas himself seems to think that the absolutist state creates civil society. “Civil society”, he writes at one point, “came into existence as the corollary of depersonalized state authority” (ibid., 19). But it might be pointed out that it also makes historical sense to suppose that “the State” is an ideological tool deployed by sovereigns and the commercial and professional middle classes in a struggle for political power against the hereditary aristocracy.


18. As Paul Wood has acutely pointed out, it is a conspicuous absence in Habermas’s account that he makes no room in his model for scientific discourse in the genesis of the public sphere, even though scientific knowledge was undoubtedly central to the culture of the Enlightenment. Paul Wood, “Science, the universities, and the public sphere in eighteenth-century Scotland”, *History of universities*, xiv (1994), 99–135, p. 120.

19. Goodman, “Public sphere and private life” (ref. 6), 14–20. See also La Vopa, “Conceiving a public” (ref. 6), 113–15.

21. Wood, “Science, the universities, and the public sphere” (ref. 18).


23. Wood, “Science, the universities, and the public sphere” (ref. 18), 122.

24. This point demands a bit of elaboration. For reasons based on the political project implied in *Structural transformation* and elaborated in his later work, Habermas presented the British public sphere as the “model” European public sphere and the French and German versions as variants. He did this despite the fact that his understanding of the public sphere owed a considerable debt to Kant. See La Vopa, “Conceiving a public” (ref. 6), 101–2. From our perspective, it makes little sense to elect one or another candidate as the “real” public sphere. Rather, there is good work to be done by paying attention to the significant differences that characterized the public sphere in different national contexts — the position of London and especially Paris as dominant cultural centres in their countries, for example, and the complete lack of an equivalent in Germany — while not ignoring the commonalities between them.


26. See Roger Chartier’s comments on Kant’s distinction between public and private in “The public sphere and public opinion” (ref. 6), 24–26.

27. Immanuel Kant, “What is enlightenment?”, in Lewis White Beck (ed.), *Kant on history* (Indianapolis, 1963), 5–6. The reference to scholars in the quote displays Kant’s belief that in a society undergoing enlightenment (as opposed to a fully enlightened society), certain individuals would serve as an intellectual vanguard by providing the example of how others can eventually free themselves from their “self-imposed tutelage”. I will return to the role of scholars in the public sphere toward the end of the essay.


31. With respect to the continual cycle of exchange between readers and writers manifested in the *Archiv*, it might be noted that Reil published in the early volumes a scattering of letters from readers, commenting on topics Reil had raised in his own writings. Reil meanwhile became a reader himself in his capacity as book reviewer. Most issues contained a section of reviews, in which Reil offered a synopsis of a book’s contents interspersed with his own critical appraisals.


34. The ALZ’s *Intelligenzblatt* was a brilliant innovation because it deflected away from the publisher some of the normal costs of producing a periodical. Whereas typically a publisher paid contributors to a periodical on the basis of the length of the contribution, the items appearing in the *Intelligenzblatt* were essentially advertisements paid for by the people who posted them. Therefore, the publishers of the ALZ made money twice from the publication of the *Intelligenzblatt*: once from the original submissions, and again from the sale of copies of the ALZ to the public, copies made all the more saleable by the spicy news one could expect to find in the *Intelligenzblatt*. For an early history of such publications, see Margot Lindemann, *Geschichte der deutschen Presse*, Teil I, “Deutsche Presse bis 1815” (Berlin, 1969), 248–55. I am currently conducting research on this and other aspects of the economics of the public sphere in eighteenth-century Germany.

35. For a perceptive critique of the gender implications in Habermas’s concept of the public sphere see Nancy Fraser, “What’s critical about critical theory? The case of Habermas and gender”, in *idem*, *Unruly practices: Power, discourse, and gender in contemporary social theory* (Minneapolis, 1989), 113–43.


39. Ibid., 340.
40. Ibid., 344–6, 352–8.
41. Ibid., 346.
42. Ibid., 358–9.
44. Ibid., 139.
45. Ibid., 145–6.
46. Variations on this list were a staple in handbooks of medical practice. For examples, see Samuel Gottlieb Vogel, *Kurze Anleitung zum gründlichen Studium der Arzneywissenschaft* (Stendal, 1791), 109; and August Friedrich Hecker, *Therapia generalis oder Handbuch der allgemeinen Heilkunde*, 2nd rev. edn (Erfurt, 1805), 153–62.
50. Ibid., 81.
51. Kant, “What is enlightenment?” (ref. 27), 4. Kant in fact does not explicitly assign the vanguard position to the individuals he labels “scholars”. But I think the overall thrust of his discussion makes this equation a reasonable one.
52. Erhard addressed the connection between theory and practice in “Über die Möglichkeit der Heilkunst”, Magazin zur Vervollkommnung der theoretischen and practischen Heilkunde, i (1799), 23–83. Quite by coincidence, Kant had written a short essay on the relationship between theory and practice only a couple of years previously. However, Kant had addressed the issue in terms of the application of his categorical imperative (a general moral principle given by the faculty of reason) to practical situations in ethics, politics, and the law. Thus he framed the issue in terms of the traditional meaning of praxis. Aside from a few passing remarks, Kant did not address theory and practice in medicine. More’s the pity, for undoubtedly he would have had interesting things to say about it. See “Über den Gemeinspruch: Das mag in der Theorie richtig seyn, taugt aber nicht für die Praxis”, in Kant’s gesammelte Schriften, viii (Berlin, 1912), 273–313.
53. On the monopolization of professional discourse by university-based departments, see Magali Sarfatti Larson, “In the matter of experts and professionals, or How impossible it is to leave nothing unsaid”, in Rolf Torstendahl and Michael Burrage (eds), The formation of professions: Knowledge, state and strategy (London, 1990), 24–50.
54. Of course, one might ask whether the public sphere in the eighteenth century was not already subject to the same “corrupting influences”. As indicated by my remarks about the Allgemeine Literatur-Zeitung above (ref. 34), I suspect it was, and indeed ineluctably so. Along the same lines, Colin Jones (ref. 7) has recently reminded historians of the public sphere that they have too readily divorced the public sphere from the history of capitalism, in spite of the prominence given by Habermas to the role of capitalism in its emergence.
58. Ibid., 415.
59. See his comments on Giddens’s concept of “access points”, ibid., 416.
60. Some readers may bridle at the admixture of Foucault in an article about Habermas’s public sphere, recalling a famous “debate” they began to have in the 1980s about the public sphere, before Foucault’s death cut it short. Let me point out here that their disagreement was over Habermas’s conviction that a communicative space like the eighteenth-century public sphere could serve as the basis for an authentic form of liberal democracy in the modern world. Foucault, who zealously criticized any such forms of philosophical foundationalism, refused to believe that critical theory, as represented by Habermas, could find an Archimedean fulcrum for mounting its liberal-democratic critique of power. Therefore, their disagreement had nothing to do with whether the public sphere might exist as a discursive structure, just over its ultimate foundations. See the numerous contributions by the two principals, along with commentaries, in Michael Kelly (ed.), Critique and power: Recasting the Foucault/Habermas debate (Cambridge, Mass., 1994).
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