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Biography as Cultural History of Science

*By Mary Terrall**

ABSTRACT

Taking off from reflections about the relation of biographical writing to fiction, this essay considers the ways in which scientific biography can explore the cultural dynamics of science. The author examines her own experience in using biography to write history of science and refers to several other examples of biographies of eighteenth-century figures that raise issues specific to the persona of the man of science and his audiences in this period.

A BIOGRAPHY, a written life, in some manner brings back to life someone from the past, known to the present only through material traces left behind, in archives, in attics, in print. Though historians do not tend to think they are in the business of resurrection, biographers do share something with novelists in this matter of bringing characters to life, or back to life. Before moving on to issues particular to scientific biography, consider this passage from a work of fiction by William Faulkner. It captures, in elegiac mode, the tenor of the task confronting the biographer.

We exhume from old trunks and boxes and drawers letters without salutation or signature, in which men and women who once lived and breathed are now merely initials or nicknames out of some now incomprehensible affection which sounds to us like Sanskrit or Chocktaw; we see dimly people, the people in whose living blood and seed we ourselves lay dormant and waiting, in this shadowy attenuation of time possessing now heroic proportions. . . . They are there, yet something is missing; they are like a chemical formula exhumed along with the letters from that forgotten chest, carefully, the paper old and faded and falling to pieces, the writing faded, almost indecipherable, yet meaningful, familiar in shape and sense, the name and presence of volatile and sentient forces; you bring them together in the proportions called for, but nothing happens; . . . just the words, the symbols, the shapes themselves, shadowy inscrutable and serene, against that turgid background of a horrible and bloody mischancing of human affairs.¹

I first came across this passage when I was in the early stages of writing a biography of a long-dead man, Pierre-Louis Moreau de Maupertuis. I was deeply invested in perusing old

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¹ William Faulkner, *Absalom, Absalom!* (New York: Modern Library, 1936), pp. 100–101.

letters and trying to get at least an intellectual grasp on the people who had written them hundreds of years ago. Though I didn't find Maupertuis's letters in an old trunk, the archives are the analogue of such trunks for historians, and it was only when I had found substantial collections of letters that I felt I could do justice to the biographical element of my study.² Still, the character of the man remained elusive, and Faulkner's evocation of the ghostly quality of the presence in the literary remains resonated with my experience. I too had unfolded pages of faded handwriting, initially indecipherable but eventually so familiar I could read it in my sleep, and wondered about the "heroic proportions" taken on by my subject and his contemporaries. Faulkner stresses the impossibility of a true and full resurrection of our predecessors, but he evokes the connection to the past, made tangible in those letters, as well as the inevitable distance from it. His novel in fact accomplishes just what he claims to be impossible, by making members of previous generations into characters in their own right, fleshing them out, allowing them to speak. What especially struck me in this passage is its suggestion that however many letters, or photographs, or notebooks, people leave behind, we in the present never have access to the complete existence of those individuals from the past. We have to recognize, even as we construct our accounts of the dead, our predecessors, that there will always be something missing. We keep at it, though, whether they are literally our ancestors, or our heroes, or the intellectual forebears of modern science.

Biography is and must be unrelentingly particular, in that biographical details belong to a single individual, and this very particularity draws readers into the story of the individual life in question. Given that our discipline has moved away from treating science as a sequential accumulation of accomplishments and attributions of priority, associated with individual names, we may well ask why historians of science should be focusing on the lives of individual scientists. It is not hard to imagine biographies of great scientists feeding back into the progressivist grand narratives of old—so much so that historians of science who attempt biographies often feel it necessary to mount a spirited defense of the form, in a tradition going back more than twenty-five years.³ The proliferation of fine scientific biographies that take seriously the many contexts of scientific practice and ideas means that we no longer have to be nervous about writing biography. But thinking about the place of biography in the discipline should lead us to think about the relation between the lives of individuals and historical arguments about culture, politics, intellectual movements, and so on. What place does a particular life occupy in the general picture, however that is framed? What can an individual life story say about larger trends or broader issues? How is science integrated into a life, as well as into society and culture? There are no simple answers to such questions, of course, but they indicate the potential of biographical writing for expanding beyond the confines of the individual.

When I started research on the scientific works of Maupertuis, many years ago, I never imagined that I would write his biography. At that point, struggling to make sense of his ideas and casting about for a way to contextualize them, I regarded biography as too restrictive and redolent of the outmoded emphasis on great men or, more especially, great minds. I wanted to widen my field of view beyond the single individual, without losing

² As it happens, when I made my first archival trip to Paris, the Academy of Sciences had just acquired a large collection of Maupertuis's papers, including extensive correspondence, that had been put on the market by the descendants of La Condamine, in whose attic (literal or not) they had lain for over two hundred years.

³ Thomas L. Hankins, "In Defence of Biography: The Use of Biography in the History of Science," *History of Science*, 1979, 17:1–16.

sight of the interesting puzzles that remained in his work. At the same time, I wanted to find a way to ground the ideas and theories I was deciphering in the life and experiences of their author. Biography now seems the obvious solution to this problem, but I resisted it for quite some time. I had imagined biographers as unfortunate souls chained indefinitely to their subjects, turning up school notebooks and laundry tickets and other such minutiae, drowning in a sea of details of no interest to anyone but the obsessed researcher. The intimate, and potentially unhealthy, relationship linking biographer to subject seemed to risk falling into either some version of hagiography or its opposite, a critique of the flaws and mistakes of the hapless (and defenseless) subject.

This is not to say that I did not come across exemplars of engaging and impressive scientific biographies even as I was thinking along these lines. Sam Westfall's masterful book about Newton comes to mind, with its careful exploration of Newton's social and institutional environment, his personal connections, and his works, published and secret. Who could deny the value of studying Newton, and all the enigmas of his personality and his predilections, in this kind of biographical detail? But I wasn't so sure that lesser lights, like Maupertuis, deserved that kind of attention, and I was leery of sinking into a mire of biography at the expense of the context for the practice of science. Eventually, I came to realize that my subject, however intriguing his particularities and idiosyncrasies, also drew from and contributed to the collective identities of the institutions and groups that defined his world and that I could use an analysis of this man's career in science and letters to situate science in the cosmopolitan Republic of Letters, while also examining the role of science in the making of his identity.⁴

I recount my own reservations about the biographical form to highlight the very real tensions between the study of individuals and the study of disciplines, institutions, cultural movements, rhetoric, and ideology, not to mention ideas and practices. I now see this tension as potentially productive, rather than nefarious. I was indeed exhuming (to use Faulkner's word) Maupertuis's remains, in order to capture his ways of thinking about nature and his mode of being in the social world. However, I meant this effort to serve my aims as a historian of science. Through this character, and his works, I set out to uncover all that was involved in doing science in the Enlightenment and, even more, to investigate how people thought about their own identities as "men of science" or "men of letters" or "philosophers" or "physicists" or "geometers." I hoped to finesse the old internal/external problem by looking closely at the place of this one man in his many contexts.

Recognizing that there were in fact many contexts, and many audiences, and even multiple identities, helped to put the biographical narrative into a cultural matrix. Without claiming that Maupertuis was representative of his peers—in fact, his idiosyncrasies in thought and action were what had interested me in the first place, and I hoped they would interest my readers as well—I wanted to write the story of his career as a story of the meaning and practice of science in this period. Not the one and only story, of course, but a coherent one nevertheless. I did not aspire to evaluate my subject's importance in some global or transhistorical sense, so much as to show how he operated, how he thought and how he related to his publics. He constructed a life in science, and a reputation, and in the end I attempted to understand his life through my own construction of a portrait of a

⁴ Richard S. Westfall, *Never at Rest: A Biography of Isaac Newton* (Cambridge/New York: Cambridge Univ. Press, 1980); and Mary Terrall, *The Man Who Flattened the Earth: Maupertuis and the Sciences in the Enlightenment* (Chicago: Univ. Chicago Press, 2002).

personality, a character, drawn from whatever clues I could find. In so doing, I had also traced a path through the literary and scientific domains of the mid-eighteenth century, by following the movements of this particular man of science.

If a biography is also to be a work of history of science, it must analyze ideas, intellectual sources, training, controversies, calculations, experiments, and so on and put these elements into the life. This is not simply a matter of exploring the “thought” of one man, though that is part of it, but, rather, of figuring out how books, ideas, and metaphysical or theoretical commitments—all the multifarious strands of scientific work—were used by this individual to make his way in science and in the world. Maupertuis expended considerable effort to make a name for himself as an enlightened man of science—to become such a person—and I tried to show how he did this. I do not mean in any way to downplay or denigrate the interest of ideas, results, phenomena, texts, rhetorical practices, theological commitments, and theories—in fact, just the opposite. All these categories came into play in the historical life and in the biographical story.

It is perhaps a truism that the nature of the sources will affect the shape and scope of the finished biographical study. On the one hand, anyone who spends years accumulating materials about a subject will end up with more than can be accommodated in a single book. On the other, there will always be questions that cannot be answered by surviving sources, and this too affects the contours of the biography. To give just one example from my own work, I found Maupertuis’s background—a recently ennobled family of Breton corsairs and merchants—key to understanding the possibilities open to him and certain aspects of his self-presentation as an adventurer and a hero. His ties to his birthplace remained strong throughout his life, as a refuge from the public life that I chronicled in some detail. I was able to discover something about his father’s work and career but very little, beyond the crudest outlines, about his mother, sister, and brother. I suspect that family relationships were deeply significant parts of his personal life, and possibly his intellectual life, but I saw only hints of this in my sources. How he felt about his family could only be imagined or in some cases construed from very circumstantial evidence. I was especially intrigued by the younger brother, who did not move in the rarefied intellectual circles of Paris and Berlin but who had some rather peculiar ideas that at times seemed reminiscent of those of Maupertuis.

Let me digress briefly to relate the little I do know about this brother’s life. Remarkably, he published two anonymous books, openly but idiosyncratically materialist and verging on the clandestine. In these works, he played with a persona even more philosophically provocative than his older brother’s, while remaining anonymous and resolutely provincial. His own biography would illuminate the production of natural knowledge in the provinces, if the sources existed to allow such a project. Known as Moreau de Saint-Elier, he was educated for the church and lived as a provincial priest in Brittany. He does not seem to have spent any time in Paris and was only rarely mentioned in Maupertuis’s correspondence, though he probably remained ensconced in elite social circles in their native Saint-Malo and must have been part of his brother’s world whenever he returned there. One anecdote, reported by a contemporary journalist, is tantalizing in its reference to natural experiments. According to this story, Moreau sought a benefice from the church and was called for an interview with the relevant bishop. The candidate presented himself dressed unconventionally “in colored woolen stockings, a grey coat, a long wig and no [clerical] collar.” In other words, he was not playing the role of priest; he flaunted his eccentricity, presumably to shock the bishop. Interrogated by his superior about his interests and oc-

cupations, the priest responded “that he lived permanently in the country, and that he occupied himself with breeding different animals, like rabbits with cats, wolves with dogs, to see if they might not give birth to remarkable species. Imagine the surprise of the bishop at this reply. He reprimanded him most vigorously, but Abbé Moreau told him that everyone has his own taste, and his was to breed animals.”⁵ As it turned out, the bishop was forced to approve the benefice under pressure from the French king, whose ambassador had been lobbied by none other than Frederick the Great of Prussia, the patron of Maupertuis. So there was a link connecting the famous brother to the provincial cleric; but it is impossible to know whether it extended to intellectual matters, whether it was tinged with resentment or guilt, or what Moreau thought of the fashionable and scientific life his brother had made for himself in the capitals of Europe.

If I had been writing fiction instead of history, I would have made something of this enigmatic figure and of the ties between the two men. But their relations, personal and intellectual, left little trace in the historical record, and this potentially fascinating personage does not appear in my biography of his older brother. Perhaps such personal matters have nothing to do with a scientific biography anyway. But here are two brothers who took utterly different paths in life, each of whom toyed with ideas about animal breeding, the metaphysics of economy in nature, the activity of matter, and the material basis of the spirit or the soul. And the biographer can do nothing with it, barring the discovery of a cache of lost papers. It might be that such papers would illuminate the provincial world of Moreau more than the cosmopolitan intellectual realm of “mainstream” science and philosophy. But the example points to the paucity of sources for documenting the pursuit of natural knowledge outside of institutions and elite correspondence networks centered on metropolitan capitals.⁶ In the case of Maupertuis’s biography, the provincial intellectual context, as well as the affective dimension of the family ties, is simply missing and can only be inferred from his frequent and lengthy visits to his hometown.

Even where correspondence survives, letters generally do not support a psychological, or existential, interpretation of eighteenth-century lives.⁷ All the characters whose correspondence I read used their letters to exchange ideas, scientific results, techniques, gossip, witticisms, and strategies for building or dismantling alliances. Illustrative anecdotes, like the encounter of the bishop with the scandalous cleric, abound. But affective states or more interior reactions to any of this were conspicuous by their absence, even in letters to close friends. Correspondents rarely shared what we today would think of as personal thoughts or feelings, and this inevitably colors biographical writing based on these letters. Of course, being human, we can take the liberty of inferring from their words the happiness, loneliness, melancholy, jealousy, affection, or bitterness of those distant subjects of our scrutiny. The net effect, though, even in private letters, is an orientation toward the outer, frequently the public, world. This may be in part because private letters often circulated in a semi-public way in the eighteenth century. But this outward orientation also indicates the characteristic way that letters became part of the various personae jockeying for position in the Republic of Letters or on the scientific stage.

⁵ Elie Fréron to d’Hémery, 20 Oct. 1753, in *Le dossier Fréron: Correspondance et documents*, ed. Jean Balcou (Geneva: Droz, 1975), p. 109.

⁶ I do not mean to imply that no such evidence exists. See, e.g., Lawrence Brockliss, *Calvet’s Web: Enlightenment and the Republic of Letters in Eighteenth-Century France* (Oxford: Oxford Univ. Press, 2002).

⁷ For a manifesto in favor of existential biography see Thomas Söderqvist, “Existential Projects and Existential Choice in Science: Science Biography as an Edifying Genre,” in *Telling Lives in Science: Essays on Scientific Biography*, ed. Michael Shortland and Richard Yeo (Cambridge: Cambridge Univ. Press, 1996), pp. 45–84.

Biography can get at how people live out their scientific ambitions, exploring the resources used in the process: print, conversation, sociability, patronage, social status, and so on. Inevitably, these will vary with time and place. It was not uncommon for people to experiment with different kinds of identity, sometimes through anonymous writing and sometimes in a nearly playful mode.⁸ Perhaps another way to say this would be that the search for an integrated self was, at least until the end of the eighteenth century, a thing of the future. The notion of self-fashioning is by now something of a cliché, but if it is treated as historically contingent it can still be a helpful tool for integrating individual lives and cultural contexts. The term was coined by the literary scholar Stephen Greenblatt in his work on Renaissance England; it was adapted by Mario Biagioli for princely court culture in Italy at the time of Galileo.⁹ By the eighteenth century, the strategies and contexts for scientific self-fashioning, or self-presentation, had changed considerably, with the shifting fortunes of rapidly multiplying kinds of science and expanding audiences for science.

Recent biographical studies in eighteenth-century science and medicine illustrate these shifts in the meaning of self-fashioning, even when they are not couched in precisely these terms. In his fine biography of Alessandro Volta, Giuliano Pancaldi frames his narrative as “the making of a natural philosopher: from amateur, to expert, to public servant.”¹⁰ Exploring in detail the cultural and practical ramifications of Volta’s various discoveries, Pancaldi deconstructs the story of the heroic inventor of the electric battery, an iconic scientific instrument, and reconfigures the tale as the struggle of an ambitious outsider to gain recognition from scientific and political authorities. The trajectory of Volta’s career leads his biographer to the dynamics of discovery and promulgation of science in a time when the status and aims of physicists and natural philosophers, not to mention electrical showmen, were evolving rapidly. Pancaldi asks what kind of natural philosopher Volta was; to answer the question he looks at the networks of specialists, patrons, and readers for whom Volta honed his scientific persona. Volta was not a scientific insider. Hailing from the Lombard region of Italy, he was largely self-taught in experimental physics, and he aspired to use his inventions and novel apparatus and electrical phenomena to make his way into the company of mainstream natural philosophers in London and Paris. Volta proved adept at playing a variety of roles—and at abandoning roles that did not work for him. Pancaldi analyzes his subject’s maneuvering for the support and patronage of various individuals and institutions to develop a full and nuanced history not only of the development of the battery but of the socially and geographically located nature of scientific investigation.

In a slightly different vein, Anita Guerrini’s biography of the fashionable physician George Cheyne explores his efforts to find a niche in the Newtonian environment of English medical practice.¹¹ A Scottish physician who spent much of his career in England,

⁸ Wahrman has argued this way for eighteenth-century England, where masquerade was a ubiquitous cultural theme and different identities could be put on and taken off quite easily. Anonymity could enable a similar fluidity of identity. See Dror Wahrman, *The Making of the Modern Self: Identity and Culture in Eighteenth-Century England* (New Haven, Conn.: Yale Univ. Press, 2004). On anonymous publication of scientific texts see Mary Terrall, “Anonymity in the Age of Reason,” in *Scientific Authorship: Credit and Intellectual Property in Science*, ed. Mario Biagioli and Peter Galison (New York: Routledge, 2002), pp. 91–112.

⁹ Stephen Greenblatt, *Renaissance Self-Fashioning: From More to Shakespeare* (Chicago: Univ. Chicago Press, 1980); and Mario Biagioli, *Galileo, Courtier: The Practice of Science in the Culture of Absolutism* (Chicago: Univ. Chicago Press, 1993).

¹⁰ Giuliano Pancaldi, *Volta: Science and Culture in the Age of Enlightenment* (Princeton, N.J.: Princeton Univ. Press, 2003), p. 7 (the quotation serves as the title for Ch. 1).

¹¹ Anita Guerrini, *Obesity and Depression in the Enlightenment: The Life and Times of George Cheyne* (Norman: Univ. Oklahoma Press, 2000).

Cheyne participated in the Newtonian culture of the early eighteenth century, when forces and ethereal fluids held out the promise of a rationalized, even mathematical, medicine. His spiritual well-being fluctuated with his professional and geographical situation, in parallel with wild fluctuations in his physical bulk and his overall health. Cheyne transformed himself several times, in body and spirit, while he fine-tuned his professional medical identity in response to demand from the hypochondriacal and hysterical classes, using relentless examination of his own foibles and failings as an object lesson in unhealthy living. Autobiography became part of his carefully managed public image, diffused throughout his writings, and this gives his biographer some insight into the way he saw his own person, as part of an ongoing project of enlightened self-management. As a medical man offering himself up as a case study for the edification of his patients, Cheyne made his reflections part of his public performance. He oriented his character toward his audiences, and even introspection served the purpose of adapting the persona to the demands of reputation.

Although Cheyne was not exactly a man of science, he drew on the contemporary cachet of natural philosophy to enhance the status of medicine. Attention to the persona of the man of science, arguably a figure that did not exist as such before the eighteenth century, leads to an examination of the public, or the various and sometimes overlapping publics, on the receiving end of the poses and rhetorical gambits that were part and parcel of science. Electricians, chemists, natural philosophers, physicians, mathematicians, and naturalists all articulated identities with respect to their peers at home and abroad, as well as to their patrons and lay readers and auditors. Practitioners and would-be practitioners of science self-consciously addressed what they called “the public” and in doing so offered up themselves as well as their work. The public, in this broad sense, was made up of different constituencies with varying interests and motivations, and these constituencies, some more specialized than others, helped to define the place of science in Enlightenment culture. Read with this in mind, the published and unpublished writings that constitute the biographer’s raw material speak to the ways that people lived their lives in front of a public. This tells us something important about science in this period, when it was shifting ground and becoming integrated into commercial ventures, government projects, and long-distance exploration, as well as entertainment and private edification. The audiences for natural knowledge were multiplying as well, feeding the increasing cultural authority of science. No longer tied to the interests and whims of individual princes, the practice of scientific investigation of all sorts was diversifying, and in the long run this led to a mutually beneficial relationship with nation-states. This does not mean that as it gained audiences science was more open to the participation of outsiders. Rather, as practitioners of the experimental and mathematical sciences cultivated public interest, they were also promoting themselves as arbiters of increasingly specialized knowledge.¹²

Terms like “persona,” with its theatrical overtones, and “identity” point to an element of self-consciousness in the choices made by individuals as they shaped their lives. These analytic categories give us some purchase on the dynamic between the individual subject and his social, intellectual, and cultural surroundings. Just as there is more than one way to write a biography, there was (and still is) more than one way to be a scientist, to define

¹² Mary Terrall, “Metaphysics, Mathematics, and the Gendering of Science in the Eighteenth Century,” in *The Sciences in Enlightened Europe*, ed. William Clark, Jan Golinski, and Simon Schaffer (Chicago: Univ. Chicago Press, 1999), pp. 246–271.

the meaning of “scientist” or its historically appropriate cognates. One of the powerful and useful features of biography is that it can chart specifically how people live out these ways of being in the world, which is certainly a crucial element of the practices of science and of its cultural location. For Enlightenment Europe the role and meaning of the public was crucial to the development and practice of science. My study of Maupertuis was also a study of the audiences for science, philosophy, and *belles-lettres*, all areas in which he aspired to make a name for himself. Pancaldi’s book on Volta opens up similar topics for a different cultural and political context. George Cheyne, as presented in Guerrini’s “life-and-times” narrative, was also vitally engaged with his audiences, though the medical marketplace where he operated is not strictly analogous to the scientific developments that have been my primary concern here. The shifting significance of the public, noticed by all writers in the eighteenth century, made reputation a crucial matter for anyone making a career in science or philosophy or medicine. In my own biographical writing, I exposed the relations between writer and public that played out in the context of the multiple hierarchies of old-regime culture. This led me to consider the fluidity of scientific reputation derived from published works and the many kinds of strategies that might lead to visibility and fame for men of science vitally concerned with the public’s approbation.¹³

I have strayed far from Faulkner’s evocation of the play of figures in the “shadowy attenuation of time.” The historian conjures figures from these shadows, though not in the same way, or using the same techniques, as the novelist. Writing lives of individuals, retrieved and reconstructed from material evidence, also means writing about science itself, through the lived experience of its practitioners. Unfolding those faded letters and searching for the “volatile and sentient forces” driving our subjects, we are led into the worlds of readers, spectators, institutions, collaborations, disputes, and all the other interactions that make up the life of science.

¹³ For a fuller treatment of the multiple and overlapping audiences for science see Terrall, *Man Who Flattened the Earth* (cit. n. 4), pp. 364–369.