AMERICAN SCIENCE AND THE PURSUIT OF “USEFUL KNOWLEDGE” IN THE
POLITE EIGHTEENTH CENTURY, 1750–1806

A Dissertation

Submitted to the Graduate School
of the University of Notre Dame
in Partial Fulfillment of the Requirements
for the Degree of

Doctor of Philosophy

by

Elizabeth E. Webster

Christopher Hamlin, Director

Graduate Program in History and Philosophy of Science
Notre Dame, Indiana
April 2010
In this thesis, I will examine the promotion of science, or “useful knowledge,” in the polite eighteenth century. Historians of England and America have identified the concept of “politeness” as a key component for understanding eighteenth-century culture. At the same time, the term “useful knowledge” is also acknowledged to be a central concept for understanding the development of the early American scientific community. My dissertation looks at how these two ideas, “useful knowledge” and “polite character,” informed each other. I explore the way Americans promoted “useful knowledge” in the formative years between 1775 and 1806 by drawing on and rejecting certain aspects of the ideal of politeness. Particularly, I explore the writings of three central figures in the early years of the American Philosophical Society, David Rittenhouse, Charles Willson Peale, and Benjamin Rush, to see how they variously used the language and ideals of politeness to argue for the promotion of useful knowledge in America. Then I turn to a New Engander, Thomas Green Fessenden, who identified and caricatured a certain type of man of science and satirized the late-eighteenth-century culture of useful knowledge.
He criticized what he saw as a certain culture of useful knowledge by turning to the polite ideals of benevolence and open conversation.
For Timothy.
CONTENTS

Acknowledgements.................................................................................................................................v

Chapter One: The History of “Useful Knowledge” in America
  1.1 Introduction.................................................................................................................................1
  1.2 The Historiography of American Science
      and the Problem of “Useful Knowledge” ..................................................................................5
  1.3 British “Politeness” and American “Usefulness”.......................................................................10
  1.4 Chapter Overview......................................................................................................................22

Chapter Two: David Rittenhouse’s Useful Astronomy
  2.1 Introduction...............................................................................................................................29
  2.2 The Scientific Community in Philadelphia................................................................................32
  2.3 David Rittenhouse: Revolutionary Astronomer ........................................................................38
  2.4 David Rittenhouse and the Transit of Venus ..............................................................................45
  2.5 A “Useful” Orrery......................................................................................................................52
  2.6 Rittenhouse’s Vision for American Astronomy..........................................................................60
  2.7 “Science David is Thy Line”:
      Problems for Useful Knowledge in America...........................................................................80
  2.8 Conclusion................................................................................................................................89

Chapter Three: The Polite Patriotism of Charles Willson Peale
  3.1 Introduction...............................................................................................................................92
  3.2 The American Philosophical Society
      and the Demarcation of Useful Knowledge..............................................................................95
  3.3 The Historiography of Charles Willson Peale’s Museum.........................................................104
  3.4 Peale’s Portrait Painting and Radical Politics............................................................................108
  3.5 Peale’s Civic Self-Promotion.....................................................................................................119
  3.6 Polite Patriotism on Display: Peale’s Natural History Museum.............................................127
  3.7 The Limits of Polite Patriotism:
      Peale’s Quest for Government Support....................................................................................137
  3.8 Conclusion................................................................................................................................144

Chapter Four: Benjamin Rush and the Republic of Knowledge and Virtue
  4.1 Introduction...............................................................................................................................146
  4.2 History and Historiography of Benjamin Rush.........................................................................148
  4.3 Rush’s Pathological View of Humanity....................................................................................154
ACKNOWLEDGMENTS

I would like to acknowledge all the assistance I have received in the long years I have spent conceiving, researching, and writing this dissertation. First, I consider myself honored to have received a research grant from the American Philosophical Society to research in their library during the summer of 2004. Any student of early American history gains intangible benefits from spending time in this wonderful library.

I am endlessly thankful for my unfailingly patient, encouraging, and insightful advisor, Christopher Hamlin. His support and comments on all of my work have benefited me immeasurably. Two members of my dissertation committee, Jim Turner and Gail Bederman, have been patient and offered very helpful commentary and criticism from the first to the last drafts. I have had the pleasure of participating in and listening to many discussions about history with them throughout my tenure as a graduate student and they are always enlightening, rewarding, and entertaining, to boot. Special thanks to Don Howard for coming onto the committee at a later time. As Director of Graduate Studies for the HPS program and in classes and private discussions, Don has been a constant and encouraging presence for me and I am grateful to have been able to work with him. I would also like to thank Thomas Slaughter for his commentary on an early draft. Discussions with David Waldstreicher during his time at Notre Dame and through early research for this dissertation were inspirational and invaluable.
All of the faculty at Notre Dame, both in the program in the History and Philosophy of Science and in other departments offered encouragement and intellectual stimulation. In particular, I would like to thank Michael Crowe, Phillip Sloan, Janet Kourany, Sophie White, Doris Bergen and David Harley for giving me support and encouragement at crucial times.

I would not have enjoyed this long journey nearly as much without the company and conversation of my fellow graduate students. Ryan Macpherson and Keith Lafortune were my compatriots in studying the history of science in America. Margaret Abruzzo and Jonathan Den Hartog provided many wonderful hours of conversation about American political, social, and cultural history. Benjamin Cohen convinced me that I was not the only person who cared about obscure American scientific satire. J. P. Shortall and Daniel Gates were entertaining conversationalists in the Hesburgh Library. Lara Karenko, Jennifer Gorsky, Sophie Lachapelle, Rebecca Stangl, Patrick Slaney, and Holly VandeWall were wonderful friends. I especially need to thank Jen Gorsky for the green notebook.

Most of all, I have to thank my family: my mother and my father, Stephen and Sandra Hayes, encouraged me to learn history and to pursue a graduate education; my sister, Shannon, who also loves history, makes being a history geek seem cool; my sons, Sebastian Byron Athanasius and Augustine Ambrose Joseph, who delayed the completion of this dissertation by a few years, but who made those years a lot more fun and full of love. Finally, I must acknowledge my endless gratitude to my long-suffering husband Timothy. I could not have finished this without him.
CHAPTER ONE:

THE HISTORY OF “USEFUL KNOWLEDGE” IN AMERICA

1.1 Introduction

In the late eighteenth century, many Americans who gave themselves to scientific pursuits believed the practice and study of science could and would contribute to the formation of individual character. Furthermore, they believed the development of individual character was necessary for a functioning and healthy republican body politic, and that, therefore, there was an important place for science within their new nation. This dissertation looks at the writings of four Americans — David Rittenhouse, Charles Willson Peale, Benjamin Rush, and Thomas Green Fessenden — who were interested in the intersection of science, character, and the new nation. In other words, eighteenth century men of science were not simply pursuing knowledge for material benefits or practical purposes. When these men used the word “useful knowledge” they meant that such knowledge was useful in helping to buttress those elements of character. Each of these people was intensely concerned with the role the pursuit of science would play as an essential part of America’s national character and also the individual characters of Americans. Character was the chief concern of the eighteenth-century “culture of politeness.”
In this dissertation, I argue that to better understand public discussions of what was referred to as "useful knowledge" in the late eighteenth century — and thus Americans’ visions for their scientific enterprise — one must look at them in the context of what British historians have called the eighteenth-century "culture of politeness." To summarize briefly, politeness was a style of conversation that reflected an inward character of agreeability and benevolence. In using the word "character" to discuss the eighteenth century, I mean the idea of a constellation or aggregate of qualities that contributed to the nature of an individual or a nation. This is in contrast to the nineteenth century idea of character as something that was formed through habitual repetition of virtuous activities - although, for Benjamin Rush, at least, the idea of the importance of habit in forming virtue is definitely present. Instead, in the eighteenth century, character was not the result of a process but a collection of traits or costumes that one put on to form a public face.¹ For some, a nation full of men with polite traits was a marker of civilization or societal advance and could signify the relative level of civilization of a given nation. Eighteenth century "politeness" was distinguished from "politeness" that came before and after by the insistence of some of its most prominent promoters on a visible and reliable relationship between inward character and outward actions. However,  

¹ The distinction between the idea of character as the result of a process and the idea of character as a display of qualities was suggested to me by Jim Turner. This fits with a theory put forth by T. Carlos Jacques who argues that the key change in "ways of thinking" between the eighteenth and nineteenth centuries was from classification to development as the model for explanations about the natural world. T. Carlos Jacques, “From Savages to Barbarians to Primitives: Africa, Social Typologies, and History in Eighteenth-Century French Philosophy,” *History and Theory*, Vol. 36, No. 2 (May 1997), 190-215.
as I also hope to show, “useful knowledge” and the practice thereof did not always fit nicely within the “culture of politeness.”

To explore the meanings of “useful knowledge” within the “culture of politeness,” I look at the public writing of three men who wrote explicitly about the public practice of “science” and argued that individual Americans and America itself should be known for its support of science. The fourth subject of the dissertation provided a critique of the wholesale embrace of eighteenth century scientific practice. The first three men, David Rittenhouse, Charles Willson Peale, and Benjamin Rush, were all well-known and respected members of the American Philosophical Society. Each in his own way helped establish a vibrant and thriving community of like-minded learned men in eighteenth- and nineteenth-century Philadelphia. Yet each saw differently the connection between the development of moral character and scientific practice and had different ideas for how to make sure useful knowledge was pursued for the benefit of the new American nation. I contrast this Philadelphian view with that of an outsider, New Englander Thomas Green Fessenden. He was well known to his contemporaries around the turn of the nineteenth century as a polemical anti-Jeffersonian satirist and, in the 1820s and ‘30s, as the editor of a popular agricultural publication. Fessenden was part of a tradition that refused to casually grant moral authority to what he and others referred to, often derogatorily, as “philosophers,” just because of what they studied and the authority they claimed flowed

---

2 An early suggestion for promoting “useful knowledge” in eighteenth-century America came from Benjamin Franklin, who laid out his view in A Proposal for Promoting Useful Knowledge Among the Plantations of America, (Philadelphia: Benjamin Franklin, 1743). In the 1770s the American Philosophical Society adopted the phrase “promoting useful knowledge” to describe the purpose of their society. American Philosophical Society, Preface to Transactions of the American Philosophical Society (Jan. 1, 1769 – Jan. 1, 1771), Vol. 1, i. I give a close discussion of these in the first part of chapter one.
from it. Fessenden derided the term “usefulness” and the activities of the “philosophers” on both sides of the Atlantic by questioning the characters of well known men of science. All four of these men had a view of human nature influenced, if not dictated, by the constellation of ideas surrounding “politeness,” which included outward manners and style and their relationship to “virtue” and the nature of inward character and the relationship of both of those to the character of a nation.

While other histories of science have discussed the relationship between character and the formation of scientific communities, my dissertation approaches this question from a different angle. Most historians who examine the link between character and scientific practice have been interested in how claims about character justified or lent authority to scientific study and discovered truths. Instead of tracing the development from the authority of character to the authority of scientific truths, my dissertation takes the character of scientists as the central theme of late-eighteenth-century discussions about the development of American scientific community. 3 Further, by looking at four different writers, in four different fields, I give a glimpse of the broader culture of American science in the late eighteenth century — a time period understudied by historians of science.

In this introduction, I will discuss the problem of the phrase “useful knowledge” and of terminology to describe eighteenth-century “science” in general. I will discuss

---

how and why historians were led by anachronistic concerns to misunderstand the phrase and thus give too narrow an understanding of eighteenth-century American science. Then I will discuss the myriad meanings of “culture of politeness” and discuss how this concept is crucial for understanding more fully the cultural and social meanings of scientific activity in America and also the phrase “useful knowledge.” Following on this I will look at how British historians of science, often pioneers in discussing the “culture of politeness,” have fruitfully used this concept to show the cultural meanings of seventeenth- and eighteenth-century British science. Finally I will give a synopsis of my dissertation to suggest how introducing the “culture of politeness” to the study of eighteenth century science can lead to a fuller understanding of the meaning of “useful knowledge” and thus to the social and cultural impetus behind the formation of scientific endeavors in late-eighteenth-century America.

1.2 The Historiography of American Science and the Problem of “Useful Knowledge

“Science,” when used to describe eighteenth century “scientific” endeavors, is anachronistic. In the eighteenth century the word “science” still referred more broadly to “knowledge” as in the type of knowledge to be gained in a classical liberal education. It was not until the mid-nineteenth century that “science” began to take on its modern day meaning of the study of the natural world through carefully delineated processes of observation and controlled experiment for the purpose of discovering objective knowledge. While other historians have substituted the words “useful knowledge” to discuss eighteenth- and nineteenth century scientific endeavors, such a replacement will not work for my purposes because the phrase “useful knowledge” itself is what I want to
analyze. When discussing science in the eighteenth century where it makes sense I will use instead “natural knowledge” or the study of the “natural world” or else refer to specific disciplines. However, with all awareness that it is an anachronism, I sometimes use the word “science” to describe the activities that we now call scientific.4

The question of terminology is crucial when talking about eighteenth-century American science and the historiographical tradition surrounding it. Many historians of eighteenth-century science try to avoid anachronism by substituting the phrase “useful knowledge”. But such a substitution causes its own problems. Until recently, the penchant of twentieth-century historians has been to divorce “useful knowledge” from the moral, social, and political connotations that surrounded it in the eighteenth century. Instead, the phrase “useful knowledge” has been used to contrast (and criticize) eighteenth-century Americans’ interest in “practical knowledge” at the expense of “pure research.”5 But that recognition, even if accurate, tells us nothing about what eighteenth-century Americans who promoted “useful knowledge” thought they were doing.6


6 That historians of American science have needed a more nuanced understanding of “useful knowledge” in particular, and the eighteenth century scientific endeavor specifically, has been recognized
Going hand-in-hand with the idea that “useful knowledge” for eighteenth-century Americans meant something like “applied science” or “practical knowledge” has been the dominance of the so-called “Whig interpretation” of the history of American science. The “Whig Interpretation of History” was a phrase made famous by Herbert Butterfield, though it now refers to any kind of teleological view of historical events. Historians of science picked up the phrase to describe a historiography that told the story of scientific development from the perspective of present-day knowledge. People who did not get scientific theories right were marginalized, no matter their cultural, social, or political significance. Indeed, in the mid-1970s, historian George Bates decried the fact that the “Whig interpretation of history” was alive and well in history of American science and argued that historians needed to buck this trend if an accurate picture of American science was to be had. Despite this timely warning, for the most part, historians of science continued to talk about the development of science in the early national period in terms of how the elements of a modern American scientific landscape were promoted or prevented by eighteenth-century attitudes towards “useful knowledge.” Focusing on the development of later institutions is especially ill suited to understanding the interests late-eighteenth-century scientists had in character.  

---


Charles Rosenberg argued in 1983 that, up until the 1970s, historians simply treated science as an independent entity outside of social and cultural change. Science affected culture but was not affected by it. It only impinged on cultural change as scientists discovered more and more sophisticated truths about the natural world. And, when historians of science did start to look at the interactions among science, culture, and society, they stopped looking at eighteenth-century America and turned instead to late-nineteenth- and twentieth-century science to explore the burning questions. It seemed more fruitful to look to the twentieth century to research the interactions between science and gender, science and race, and science and politics, to name a few examples. There were, however, notable exceptions to the inclination to separate science from culture. Dirk Struik, for example, in *Yankee Science in the Making*, examined the material and cultural conditions for the development of scientific activity in New England in the eighteenth and nineteenth centuries. But his was the exception rather than the rule and still lent itself to a teleological view of the development of the American scientific community. For the most part, some general assumptions about the way science was best

---


9 Dirk Struik, *Yankee Science in the Making* (Mount Laural: Cameron, 1957)
encouraged within a culture shaped the focus of studies of the eighteenth-century scientific community. Among those assumptions, the most prominent, as I have mentioned above, was that there was and is a useful distinction to be made between “pure” science and “applied” science or technology, and that a community or nation did not truly encourage science until scientists focused on “pure” research. Everything else was branded as “popularization” or “technology.” On this view, the focus on “promoting useful knowledge” looked to twentieth-century historians like a blatant admission that eighteenth-century Americans were interested only in the practical, technological, or material gains to be gleaned from scientific research.\(^\text{10}\)

Therefore, for the eighteenth and early nineteenth century, the pure versus applied distinction has foiled historians’ ability to fully understand the phrase “useful knowledge,” in terms of character, which was so important in the eighteenth century. For instance, in *Science in the Age of Jefferson*, J. C. Greene at once acknowledges and brushes aside the idea that “useful knowledge” could mean something more than the disciplines we today refer to as “science.” He argues that science was the “example par excellence of useful knowledge” since it had the most potential for yielding practical applications. Therefore, he argues, eighteenth-century Americans thought the various disciplines of science “must be cultivated to promote the interests, prosperity, and power of the rising American nation,” as well as to “prove to the world that republican

\(^{10}\text{Rosenberg, “Science in American Society,” 4-5, 11. For the marginalization of the eighteenth century in the last few decades of history of science, it is instructive to note that the collection edited by Charles Rosenberg and Ronald Numbers, which purports to describe the “scientific enterprise in America,” starts with an article about the 1820s, with no contribution that discusses the “scientific enterprise” in the colonial or revolutionary eras. Numbers and Rosenberg, eds., *The Scientific Enterprise in America: Readings from Isis.*}
institutions were as favorable to intellectual achievement as they were to liberty.” These statements are, for the most part, true but incomplete. They miss the fact that eighteenth-century Americans may have been interested in how the study of science was a key part of the national and individual character and how discussions of character were often stand-ins for discussion about morality. Further, some historians of science, like Greene, have overlooked or dismissed as merely backward the critics of “useful knowledge.”

What historians have generally missed is the broader cultural context for understanding the “pursuit of useful knowledge” in the eighteenth century. Specifically, American historians have not, in general, discussed eighteenth century science in the context of what British historians have identified as the British “culture of politeness.”

1.3 British “Politeness” and American “Usefulness”

Political and literary historians have identified and used the idea of “politeness” as an important analytical category for understanding the culture, politics, and intellectual developments of the eighteenth century. Americans inherited the British eighteenth-century culture of politeness, even as they rejected parts of their cultural inheritance as they turned to revolution. Therefore, cultural and societal developments like the growth

---


“Politeness” is a complex term. It is used in at least two different ways within the historiography, and each of those ways has multiple levels of meaning. First of all, the idea of politeness is an eighteenth-century concept, never formally defined, that permeated the writings of philosophers, cultural commentators, and political theorists. Political and intellectual historians following J. G. A. Pocock have traced in great detail how early-eighteenth-century thinkers used the concept of politeness to reconcile classical theories of republicanism with modern notions of commerce.\footnote{J. G. A. Pocock, \textit{Virtue, Commerce, and History: Essays on Political Thought and History, Chiefly in the Eighteenth Century}, (Cambridge: Cambridge University Press, 1985): Markku Peltonen, “Politeness and Whiggism, 1688–1732,” \textit{The Historical Journal}, Vol. 48, Iss. 2 (2005), 391-414, offers a corrective to what he calls the “Pocockian” thesis that politeness was a particularly post-1688 Whig political concept and suggests that most historians, including those focused on culture, have followed Pocock’s thesis with insufficient attention to the complexities of late-17th century debates. That debate is outside the scope of this dissertation.} My dissertation is not concerned with the genealogies of political and moral meanings of politeness, the topography of the debates around the idea of politeness in the eighteenth century, or the relationship between “politeness” and English Whiggism. These questions are outside the scope of this dissertation. What I am interested in is the idea of a broadly based “culture of politeness” and how Americans saw their scientific enterprise fitting in that culture. “Politeness” in this sense is used as an analytical concept by cultural historians to break down and understand cultural practices, social interactions, and any number of other
broadly based social, political, or cultural undertakings. In this section I will discuss the meanings of the eighteenth-century “culture of politeness,” as distilled by historians, and also the way those cultural historians used the idea that there is a “culture of politeness” to talk about a broad array of cultural, social, and even political activities. I give some historical and historiographical background of “politeness” to better understand how it can provide an important cultural environment for the discussion of “useful knowledge” or what we would call “science.”

“Politeness” for the late eighteenth century was a many-tiered description with several implications for understanding, on the one hand, individual human nature and, on the other hand, the political life of the Anglo-American world and the connections between them. It described, sometimes all at once, outward actions manifested in social interaction, interior character, and the collective character of a nation or people; often it implied a link between the three. Intellectual positions taken by many writers and thinkers by the end of the eighteenth century hinged on how strong the connection between interior character, outward behavior, and national character were, of what such connections consisted, or if there was any connection at all. At its most basic, for the eighteenth century, to be “polite” was to have a polite style of conversation. “Politeness in conversation meant an easy, mannerly, and agreeable style of expression in good

---

English.”¹⁵ But eighteenth-century thinkers’ concept of politeness was distinguished from early and later concepts of polite behavior in their fierce debates about the underlying theory of personal character. For many in the eighteenth century, “politeness” went beyond mere surface manners. Rather, there was a concerted and contested effort to identify “polite” actions as outward signs of internal character.¹⁶ At the same time, cultural historians point to the importance of new places for social and political interaction in creating the focus on “politeness” as a cultural imperative. These new places, like coffeehouses and tearooms, arose outside of the controlled and circumscribed “court” society and involved interactions between wider (though not all-inclusive) swaths of society.¹⁷ Therefore, as Philip Carter writes, far from mere good manners, “politeness” became a way to legitimatize the new social practices with “a pragmatic but morally grounded code befitting and derived from recent advances in urban society.”¹⁸ One of the

¹⁵ David Shields, Civil Tongues and Polite Letters in British America (Chapel Hill: University of North Carolina Press, 1997): 26; also Klein, “Politeness and the Interpretation,” 874. For the idea that this basic understanding of “politeness” as inhering in conversational agreeableness was not unique to the eighteenth century see Peltonen, “Politeness and Whiggism,” 396.


outward signs of “politeness” was taking and demonstrating “pleasure of socializing conveyed principally through, on the one hand, entertaining and informative speech and, on the other, a generous tolerance to listen to others without interruption.”

Displaying this agreeable “politeness” in conversation showed that a person was not self-centered, was concerned for the good and the feeling of fellow conversationalists, and by implication, would also have fellow feelings for all of humanity rather than a narrow self interest. At the same time, like a cultural feedback loop, the very process of engaging in sociable, polite, conversational behavior made participants increasingly polite. “It was both process and goal.” Or as the Third Earl of Shaftesbury wrote, “All politeness is owing to liberty. We polish one another and rub off our corners and rough sides by a sort of amicable collision. To restrain this is inevitably to bring rust upon men’s understandings.”

That outward polite behavior was a result of an internal character of concern for fellow humans was challenged throughout the eighteenth century. Many argued that polite behavior was the result of men putting on a display of behavior for their own social or business interests and was thus the result of self-interest and selfishness. In defense of this view, Peter Peltonen identifies Bernard Mandeville’s *Fable of the Bees* and John Gordon’s *Cato’s Tears* as the main source of the selfish explanation for politeness. In America, Benjamin Franklin followed the latter. Daniel Walker Howe attempts to show how Americans

---


20 The tendency to see links between outer behavior, expressed in certain culturally critical ways and places, and inward character is a long-standing feature of the humanist tradition. Klein writes, “this feature expressed one of the most profound tendencies in the general humanist tradition: the understanding of the relation of cultural form to moral personality.” Klein, “Liberty, Manners, and Politeness,” 591.


22 Peltonen, “Politeness and Whiggism,” 410-3. Peltonen identifies Bernard Mandeville’s *Fable of the Bees* and John Gordon’s *Cato’s Tears* as the main source of the selfish explanation for politeness. In America, Benjamin Franklin followed the latter. Daniel Walker Howe attempts to show how Americans
of the view that outward behavior truly reflected inward character, thinkers in the later
eighteenth century developed a new emphasis on “sensibility” as the foundation for
morality. In these later views, “politeness” or sociable character was based on the ability
to empathize with the feelings of others. This ability was thought to be rooted in innate
“faculties” that helped people recognize and sympathize with others’ feelings, even those
of people in vastly different social and economic circumstances. “Faculties” became
increasingly medicalized as the eighteenth century progressed. In America, Scottish
trained doctors like Benjamin Rush brought over medical and bodily understandings of
sensibility as for instance as “nerves,” “nervousness,” “sympathy,” or “sensibility,” all of
which had observable physical manifestations. Further, as Carter describes it, mid-
century politeness rooted in sensibility reflected not just the ability to sympathize with
others’ feelings, but to use that sympathy as a spur to moral action.\(^{23}\)

Further, “politeness” also had a political component. Historians have said that the
promotion of the ideal of “politeness” is best understood as an attempt by eighteenth-
century writers to move the center of culture away from the court and church into a social
realm composed, at least in theory, of a non-hierarchical body of equals bound together
by their common commitment to sociability. Therefore the very ability to be “polite”

---

\(^{23}\) Carter, “Polite ‘Persons’,” 345-6. Though Carter in some ways reports an opposition or tension
between “politeness” and “sensibility,” in the end he argues that in many ways “sensibility” was not a
break with “politeness” but more of a shift of emphasis that was supposed to mitigate the potential of
“polite” behavior to be mere surface comportment that did not reflect the underlying virtuous character. No
matter the term, “moral virtue, in short, mattered greatly to eighteenth-century advocates of social
refinement,” 348. In contrast, Sarah Knott sees “sympathy” or “sensibility” as a break with politeness,
which was described by the sensible as mere manners. Sarah Knott, Sensibility and the American
could be seen to be both a necessary criterion for political liberty and also the result of political liberty. As such, the character traits associated with “politeness” reflected not just an individual’s character but also the character of that individual’s entire nation or culture. Widespread demonstration of politeness by the people of a country was proof of the political liberty of those people. As the Third Earl of Shaftesbury wrote, “All politeness is owing to Liberty.” In America, Thomas Jefferson exemplified the polite view of politics. Jefferson felt the grand levees held by his predecessors in office had the danger of becoming monarchical; he feared they would begin functioning as a sort of American court. In contrast, Jefferson held intimate dinner parties with members of Congress where he practiced a sociable politics of personal persuasion to exert his influence over Congress.

Historians have identified multiple sources for “the culture of politeness,” the most common of whom is the Third Earl of Shaftesbury, Anthony Ashley Cooper. Lawrence Klein and Isabel Rivers, among others, argue that Shaftesbury coined a “language of politeness” that was disseminated into the broader culture. Klein argues that Shaftesbury wanted to redefine the cultural meaning of liberty. He did this by changing the manners characteristic of liberty from those defined by the classical Republican tradition — which Klein defines as “independent, frugal, martial, and public-minded” — and replaced them with another set of manners, the manners of politeness, “sociable,


conversable, urbane, decorous, and in their own way virtuous.” Likewise, Seán Patrick Donlan argues that discussions of politeness were a response to the clash of “ancients” and “moderns.” Focusing on politeness was an attempt to open up avenues of virtuous action, or self-sacrifice for the good of the country, other than the military and government. These new avenues were within the growing urban culture of commerce.²⁶ Isabel Rivers tracks the language of “reason” and “grace” in the eighteenth century and argues that what the freethinking or deistic Shaftesbury did was to provide the eighteenth century with a non-religious language of morality and ethics which was picked up even by religious moral philosophers as a new and compelling way to talk about the importance of character without referring to human sin or divine grace.²⁷ His terms and ideas were broadly disseminated into culture and also picked up, elaborated on, and modified by other philosophers, most especially, for understanding America, the moral philosophers of the Scottish Enlightenment.²⁸


²⁸ For a view of the way Scottish moral philosophy provided a pervasive language for American context See Mark Noll, “Common Sense Traditions and American Evangelical Thought,” American Quarterly, Vol. 37, No. 2 (Summer 1985), 216-38; Other American historians have traced Scottish moral philosophy to the various writings of key American intellectuals. For instance, Daniel Walker Howe, “Why the Scottish Enlightenment was Useful to the Framers’ of the American Constitution,” Comparative Studies in Society and History, Vol. 31, No. 3 (Jul., 1989), 572-87; Norman Fiering, Jonathan Edwards’ Moral Thought and Its British Context (Chapel Hill, N.C., 1981); Gary Wills, Inventing America: Jefferson’s
Other historians have identified different kinds of “politeness” associated with different philosophers but sharing key characteristics with Shaftesbury’s vision of polite society. For instance, R. H. Sweet contrasts the “gentlemanly” politeness of Shaftesbury, centered on polite sociability between elite “post-courtly” gentlemen and free and easy conversation, with the “commercial” politeness of Addison and Steele. Commercial politeness was generated by the day-to-day necessity of the urban merchant and commercial classes to conduct congenial and profitable business and recognition of the importance of maintaining civil contact with both customers and fellow businessmen. The third kind of “politeness” Sweet looks at is the “civilized” politeness of David Hume and Adam Smith. Smith and Hume judged civilizations by how much they had progressed from “barbarism” to polite urban society, where people were free to engage in pleasurable sociability. One of the areas of pleasurable sociability that became popular with the commercial middle classes was science.

Historians of science in Britain in the seventeenth and eighteenth centuries have been on the vanguard of those exploring the development of science and the “culture of politeness.” Roy Porter described eighteenth-century English culture as the realm of the gentleman practitioner promoting a civil, polite, amateur science in pursuit of a social and

---


30 R. H. Sweet, “Topographies of Politeness.”

31 Lawrence Klein cites the history of science as a particularly fruitful realm for applying the idea of “politeness” to culture, Lawrence Klein, “Politeness and the Interpretation,” 890-1.
cultural ideal of benevolent gentility. Like politeness, science came to be associated with the character traits of the gentleman. Steven Shapin and Simon Schaffer argue in *Leviathan and the Air Pump* that the development of trust in experimental results surrounding Robert Boyle and later the Royal Society of London were dependent on the development of the civil society of gentlemanly scientists who could trust one another as reliable witnesses to experimental phenomena. Through association with gentlemen practitioners, science became a cultural idiom that could be put on by those who were of lower social classes, and thus, supposedly, generate the respect and social status due a gentleman. So, in both England and America in the early nineteenth century, artisans and mechanics dabbled in learned science in hopes of bettering their social status. In the nineteenth century, as views about character changed, encouraging working and mechanics classes to study science was seen by the middle class as a way to cultivate morality, character, and thus good behavior, in lower classes. Arnold Thackray’s article on Manchester Mechanics is an early example of this view. He looked at the study of the cultural meanings of scientific character by examining British “improving” societies of the nineteenth century, such as the Manchester Literature and Philosophical Society,

---


where learning about science was seen as a way to improve the character of the industrial working classes.\footnote{Arnold Thackray, “Natural Knowledge in Cultural Context: The Manchester Model,” \textit{American Historical Review}, Vol. 79 (1974), 672-709; John Gascoigne, \textit{Joseph Banks and the English Enlightenment}. See also Jan Golinski, \textit{Science as Public Culture: Chemistry and Enlightenment in Britain, 1760–1820}, (Cambridge: Cambridge University Press, 1999); Alice N. Walters, “Conversation Pieces: Science and Politeness in Eighteenth-Century England,” \textit{History of Science}, Vol. 35. (1997), 121-54; Alan Q. Morton and Jane A. Wess, \textit{Public and Private Science: The King George III Collection} (Oxford: Oxford University Press, 1993).} There were equivalents on the American side of the Atlantic with popular lecture series and magazines directed at mechanics, farmers, and women, with an eye towards “improvement” through instruction in worthwhile subjects. These studies are concerned with trying to unpack the authority granted to “science” as it became associated with the gentlemanly character of its practitioners and how practicing or using science could help both the nation and the individual assume those characteristics and thus social acceptance and authority.\footnote{The flip side of this is how certain people were barred or discouraged from the culture of science because of their sex or social class. Most work on the gendered nature of the culture of science has been done in the nineteenth century and focuses on how that culture was seen to exclude people based on race and gender, even as those underprivileged groups exploited the cultural idiom of science to try to gain influence. See Nina E. Lerman “The Uses of Useful Knowledge: Science, Technology, and Social Boundaries in an Industrializing City,” in Sally Gregory Kohlstedt and Helen Longino, eds, \textit{Women, Gender, and Science: New Directions} (1997), 39-59; Stephanie P. Browner, “Writing American Science and Gender,” \textit{American Literary History}, Vol. 16, No. 3, (2004), 509-19; James D. Watkinson, “Useful Knowledge? Concepts, Values and Access in American Education, 1776–1840,” \textit{History of Education Quarterly}, Vol. 30, No. 3 (Autumn 1990), 351-70. Watkinson emphasizes that by the end of the eighteenth century, “useful knowledge” was very often a marker of social status and argues that until about the 1830s mechanics tried to decouple “useful knowledge” from the trappings of elite education, most notably classicism. In this, the workers of the 1830s followed a long tradition started by Franklin in 1743 of using participation in learned society to blur the distinctions of social class that put mechanics, artisans, and even some smaller merchants and tradesmen in the “lower or middling” classes.}

Two recent histories are particularly interested in dismantling the early modern scientific endeavor to call attention to what exactly constituted the truth claims of those who turned to new scientific methods. Mary Poovey’s \textit{History of the Modern Fact}, a wide-ranging look at the creation of “numerical facts” from Italian living rooms to Irish
statistics, argues that creating and imbuing cognitive authority on isolated bits of knowledge served the political, social, and cultural ends of various people through the centuries. More recently Steven Shapin’s study, *The Scientific Life*, examines the assumption of the unique virtue of the scientist in modern American society. Other studies look at the ramifications of a move towards “public” science in the eighteenth century. That is, what are the ramifications for scientific culture when scientific demonstrations, experiments, and museums were meant for consumption and collection by the broader public? L. Stewart’s *The Rise of Public Science: Rhetoric, Technology, and Natural Philosophy in Newtonian Britain* and Jan Golinski’s *Science as Public Culture*, trace different ways scientists used public demonstration to mediate and create a role for the scientist (in Golinski’s case, the chemist) in different periods of English history. And finally, many historians have identified science, primarily in the form of scientific instruments, popular books, lectures, and museums, as part of the polite culture of collection and display that was so important for defining the emerging middle class. Many of these studies demonstrate the importance of understanding that in the cultural worldview of the eighteenth century, character, social status, and political identity were part and parcel of participation in so-called “polite” society and the display of a “polite” character, and that science was enmeshed in this culture. 

---


1.4 Chapter Summary

Following these historians of science, I look at the practice and promotion of science in eighteenth-century America in the context of the “culture of politeness.” I use “politeness” as a category of analysis to understand the promotion of scientific practice in the early American Republic. To do this, I look at the phrase “useful knowledge” as an important term for understanding American science in the late-eighteenth century. Like politeness, “useful knowledge” or “usefulness” held many meanings, one or another of which could be emphasized by different people in different places. Most important is the way that “useful” provided an alternative key word to “polite” for eighteenth-century Americans promoting science.

Americans promoting scientific activity, especially those associated with the American Philosophical Society, advanced a definition of “usefulness” to describe their activities and to promote them to the rest of the nation. Like “politeness,” “usefulness” also had several levels of cultural signification. It reflected inner habits of mind or character, it denoted a set of actions deemed “useful” (in this case, engaging in the activities of studying the natural world), and a commitment to the pursuit of useful


Lawrence Klein discusses the idea of “politeness” as an analytical category and argues that it depends on understanding language as a key constituent of culture. As Klein puts it, language “mak[es] human activity meaningful.” Klein, “Politeness and the Interpretation,” 871.
knowledge was seen as a marker of a “civilized” society. In some ways, using “usefulness” to define scientific activity could have been a strategy to diffuse the common criticisms that scientific activity could be “narrow,” “academic,” or merely “curious.” Asserting that science was studying “useful knowledge” helped erase associations of science with the “merely curious” and thus luxurious. But the main task of the three Philadelphian men of science, Rittenhouse, Peale, and Rush, was to show that being a “philosopher” engaged in the pursuit of useful knowledge could be a central part of patriotic character or that it marked the flourishing of American independence and the American republic. To do this, they often praised scientific activity and men who pursued it in the language of what Klein called the classical Republican tradition of virtue — independent, frugal, and public-minded.39

On the other hand, Thomas Green Fessenden’s *The Modern Philosopher* demonstrates more forcefully the tensions inherent in placing useful knowledge within a polite society. As Saba Bahar argues in her article about Jane Marcet’s popular writings on chemistry, usefulness or utility was an important concept in attempts to create a common base of knowledge between the learned and the not-so-learned in conversations about science. Fessenden’s satire raises the question, was conversation about the natural world a suitable common, and therefore polite subject of conversation or a form of expert knowledge presided over by the learned?40 Thinkers like Rush, Rittenhouse, and Peale


40 Saba Bahar, “Jane Marcet and the Limits to Public Science;” 40.
used the idea of usefulness like Marcet, as a way to justify educating non-scientists. But, like other attempts at popularization, there were contradictions involved in educating a non-scientific public in sciences they were not meant to participate in, only appreciate. Attempts to communicate between the non-learned and the ostensible experts came up against problems pointed to by Fessenden. He showcased the arrogance of scientists who expected to dismiss popular notions on the strength of their authority alone and advocated the importance of polite standards of civil discussion about scientific disagreements.

My dissertation looks at the problems of promoting useful knowledge in a polite Republic by focusing on four Americans who thought and spoke about the potential and problems of pursuing science in America. But first, in chapter two, I examine how the most important eighteenth-century American scientist — Benjamin Franklin — provided a model for how Americans could both draw on English traditions surrounding the culture of science and politeness and also turn them to distinctly American ends. In Chapter 3, I give a brief examination of the phrase “useful” or “useful knowledge” as it was used in the public writings of the American Philosophical Society. The phrase implied many things that overlapped with “polite,” yet offered an alternative term more palatable to an American audience that, increasingly as the century wore on, disdained some, but not all, aspects of polite British civilization. Further, a commitment to “useful knowledge” became an important tool for those in the APS who wanted both to maintain a patriotic role for science in America but also maintain allegiances with the broader international scientific community. For some Americans, using “usefulness” instead of “politeness” to characterize the scientific enterprise let American practitioners of useful
knowledge partake in what they thought was good about British culture while jettisoning elements they found unsavory.

In Chapter 2, I explore how themes of politeness and usefulness played out in discussions by and about the Society’s second president, David Rittenhouse. Rittenhouse was instrumental in putting the APS and American science on the national stage as an independent and competent participant in the learned republic of letters. Individual Americans had prospered heretofore through the auspices of patrons and benefactors in England; Benjamin Franklin himself had his electrical experiments published in the Royal Society Transactions with the help of the patronage of John Fothergill and Peter Collinson. But it was the official founding of the APS and the publication of its first Transactions that signaled America’s desire to step up on the scientific stage. This publication contained reports of a rare astronomical event of importance to the worldwide community of astronomers.

David Rittenhouse was an astronomer, telescope maker, and mathematician who was by 1769 already well known in learned circles for creating a mechanical representation of the planets called an orrery. In his first contribution to the American Philosophical Society he reported his observations of the Transit of Venus. In my chapter, I examine the way Rittenhouse’s contemporaries contested the “meaning” of David Rittenhouse and used his life and career to understand the pitfalls and possibilities of a specifically American practice of useful knowledge and its contribution to American character. Key to this is the peculiarly late-Enlightenment problem of understanding how an enlightened man of science could be both politely cosmopolitan and also work patriotically for the independence of his country. I turn to Rittenhouse’s 1775 Oration to
the American Philosophical Society to show how he replaced “politeness” with
astronomy as a key component of both personal and national character.

In chapter three I turn to Charles Willson Peale, the founder and proprietor of the
first American natural history museum. Peale promoted through his projects what I am
calling a polite republicanism. For Peale, participating in his polite patriotic endeavors
was a way to participate in an American civic community that, in Peale’s mind, was open
to all classes. While other Peale scholars have made similar points, most scholars turn to
his paintings, private letters, and the material culture displayed in his museum. Instead, I
look at what were probably the most read of his writings — his advertisements for his
various museums and artistic displays. These advertisements show a continuity of
purpose between Peale’s art and his natural history, a continuity based on understanding
the potentials of both the fine art of painting and natural history as ways to display the
character of a culture. This chapter highlights some of the problems for American
revolutionaries who valued political independence and social equality afforded by
Republicanism, but nonetheless valued their participation in the culture of politeness,
where part of being polite was to be sociable, internationally inclined, and genteel. Peale
resolved the ambiguities created by this political situation, which was mirrored by his
own personal situation, by creating cultural spaces where Americans of (ostensibly) any
class could both participate in the polite seminal endeavors of the eighteenth century —
the fine arts of painting, and the learned and sociable culture of natural history — while
understanding those previously polite British cultural achievements in a useful American
way.
In chapter four, I look at Benjamin Rush’s ideas about human nature, useful knowledge, and patriotism and how those ideas influenced his proposals for education, medicine, and forming character in a specifically republican country. Benjamin Rush embraced the polite idea that manners, morals, and political systems were related and came up with ways to inculcate certain virtues into American citizens. He learned about human nature from the luminaries of the Scottish Enlightenment in Edinburgh. An early and strong adherent to independence and republicanism, he signed the Declaration of Independence, served as a doctor in George Washington’s Revolutionary Army, and was the most influential American medical doctor of the late-eighteenth century. He taught hundreds of students at the University of Pennsylvania and is most well known, though perhaps inaccurately so, for popularizing “heroic” medical intervention based on copious bleeding. He also gave public lectures on the relationship between medicine, education, moral philosophy, and republican America. He had strong ideas about the value of useful knowledge and articulated a republican moral philosophy based on a medical and physical understanding of late-eighteenth century ideas of sensibility. Rush’s theories also show the hazards of the medicalization of politeness. In his self-assured status as an expert of human nature, medicine, moral philosophy, and natural history, Rush prescribed a sometimes strict view of the role for American citizens. He famously introduced the idea that citizens of a republic should be “Republican machines.” These machines would be conditioned to vote for the good of the republic through promoting a certain kind of educational, moral, and physical upbringing. For Rush, the individual business of moral self-improvement became a concern of the state and of the expert.
In chapter five, I turn to a forgotten satirist, Thomas Green Fessenden, who wrote political satire mocking the vision of useful knowledge embodied in America by people like Benjamin Rush. Fessenden’s work, first published in England, was transatlantic in scope and placed the American scientific culture in the context of the critique of a burgeoning English “Jacobin” or Revolutionary tradition of Deist, democratic, pro-French Revolutionary scientists. For Fessenden, the views of some, like Rush, who pursued “useful knowledge,” or as he tagged it, “Modern Philosophy,” pointed to the idea that knowledge, far from just being polite, or unambiguously “useful” could be a controversial source of authority; and actions meant to better the common stock of all humanity could be detrimental to individuals.

Satirists like Fessenden turned to mockery, play, wit, and aesthetics to shine light on the hidden authoritarianism of useful knowledge within the context of American democracy. Along with other early American writers, Fessenden cautioned against the dangers of authority masked by new “polite” concerns for universal benevolence. He suggested a model for judging claims of authority from scientific practice. His model was not conditioned on, to him, discredited ideas of “useful knowledge” which were based on a concern for universal benevolence and the improvement of humanity but instead on a return to a “common sense” vision of scientific practice in which the ordinary American, relying on his own understandings and love of truth, could navigate the socially complex and dangerous pathways of the “modern philosopher” who began to claim expertise in all aspects of American cultural and political life.
2.1 Introduction

In this chapter, I discuss the way politeness informed the astronomy of David Rittenhouse. Rittenhouse was, by all accounts, the model of a polite scientist: modest, benevolent, and agreeable in conversation about his favorite natural philosophical subjects. Indeed Rittenhouse was like Benjamin Franklin, a man who gained his reputation because of his scientific acumen. From a farming family, and without the benefit of a formal liberal education, Rittenhouse became second only to Franklin as the exemplar of the American man of science. But politeness, as I discussed in the introduction, was not just a view of personal deportment but had implications for understanding an entire society. Rittenhouse explicitly promoted the idea that astronomy was a marker of civilized society, full of lessons of benevolent morality, and provided the foundation for modern commercial culture.

However, Rittenhouse’s writings, brief as they were, raised a central conundrum for the politeness of useful knowledge. Useful knowledge was meant to benefit all mankind, but it was directed and shaped only by the few who were competent to practice it. Polite conversation was supposed to be open conversation that tolerated the opinions and viewpoints of all, but adepts like Rittenhouse shut out those who wanted to turn
scientific achievements towards popular ends. In short, men who promoted useful knowledge had to draw a line demarcating the boundary between acceptable conversation and an unacceptable bending to fashionable ideas. Rittenhouse’s own pursuit of useful knowledge was challenged by the American Revolution, by his own beliefs as a working mechanic, and by conflicting ideological imperatives about science. Rittenhouse’s beliefs about the place of useful knowledge in America, his own scientific work, and his patriotic and civic duties conflicted with the ideas of his contemporaries who wanted him to fulfill his promise as a scientific prodigy.

The question of just how widespread the promotion of useful knowledge should be, and to what end, was made especially problematic by American independence in the 1770s. Historians, notably T. H. Breen, have noted the importance of British consumer goods in fostering American cultural cohesion and then becoming a focus for the colonists’ revolutionary ambitions. But they have not so far focused on the conflicted view of British polite culture that rejection of consumer goods, exemplified by the Boston Tea Party and other mass boycotts of British goods, entails. Nor have they examined how ideas about science fit into Americans’ complex feelings towards the mother country. When Americans rejected British political dominance they also rejected British goods and along with it some aspects of the polite society those goods represented. As they rejected British consumer items, Americans began to emphasize the importance of cultivating and displaying a republican character that they differentiated from the polite British character of the eighteenth century. Patriotism rooted in the virtue of self-sacrifice for country, or civic virtue, became the watchword for American Revolutionaries. Men of science in America wanted to reconcile their fields with new patriotic virtues. These men,
like David Rittenhouse and Charles Willson Peale (who is the subject of the next chapter), talked about science not only in terms of a polite style of conversation that displayed a genteel and benevolent character but also as a useful activity that displayed patriotic self-sacrifice and provided advantages for the country and fellow countrymen.

In this chapter I explore how David Rittenhouse reconciled natural philosophy and astronomy with the needs of the citizenry of the virtuous republic America was supposed to become. First, to provide context for Rittenhouse’s patriotic astronomy, I examine how Benjamin Franklin used his electrical work to gain access to polite international society and how at the end of his life he reiterated the idea that philosophical pursuits were principally to be valued because they were agreeable avenues for genteel conversation. After discussing Franklin’s example and its importance for American science, I show how Rittenhouse saw the promotion of astronomy through the lens of politeness. He argued that ideas gleaned from astronomy, and not just sociable conversation, could form the basis of true morality and benevolence that were the keys to promoting a polite society and the foundation of polite behavior. On this basis, astronomy, he argued, was rightly promoted by any true civilization. Astronomy, therefore, was a suitable patriotic endeavor for promotion in America and need not be a source for the bad habits that led to luxury and vice. His ideas are fleshed out principally in discussions of his famous Orrery — a mechanical representation of the planets — and a speech he gave on astronomy.

But pursuing useful knowledge as a patriotic endeavor sometimes clashed with other ideals about the proper role for learned men in society. I close my chapter by looking at how Thomas Jefferson and St. George Peale chastised Rittenhouse for not
holding himself aloof from politics and thus jeopardizing his chance for true greatness.

They wanted the new American nation to receive credit for Rittenhouse’s notable astronomical discoveries. Their criticisms stemmed from the fact that Rittenhouse was active in serving his country politically and practically. Rittenhouse’s contemporary critics held a view that said a man of science would be of more “use” advancing the store of knowledge than engaged in the parochial concern of acting on behalf of his country.

2.2 The Scientific Community in Philadelphia

In 1948, Whitfield Bell Jr. wrote, “no host could have invited a dozen literate Philadelphians to his table any time after the final organization of the Philosophical Society in 1769 and not found at least one who had more than a passing acquaintance with one of the sciences.”¹ Eighteenth-century Philadelphia had a thriving learned class with social and intellectual ties to England.² Philadelphia was also host to a layered community of various kinds of social clubs, groups, networks, and informal associations, the very stuff of polite society.³ Despite the long recognized vibrancy of both Philadelphia’s network of learned men and its polite culture, studies that try to understand the city’s scientific community within the context of the culture of politeness, or of its


³ David, Shields, Civil Tongues and Polite Letters, 1-5. Shields, however, explicitly draws a distinction between “projecting societies” and learned societies and those engaged in polite letters even though he opens his book with a lengthy description drawn from the pre-eminent medical man and man of science, Benjamin Rush.
social networks in general, have been few and far between. The Philadelphia learned classes were predominantly urban professionals and elites. But, “where most Americans associated on the basis of their stance toward the sacred, the urbane learned elite was organized in communities of pleasure and shared interest.”

In fact, merchants and professionals studied and talked about the natural world as a way to lay claim to gentlemanly status. As one historian notes, “equally important were attempts by the learned to construct new ‘genteel’ identity by appropriating the traditional aristocratic ideals of disinterested retirement.” In this, America’s learned were not much

---


7 Staloff, “The Learned Class,” 469. Staloff remarks that the “enlightenment cult of science” could make gentlemen out of mechanics, and even Benjamin Banneker, a free black.
different from enlightened men and women all over Europe. As Richard Sutton has argued, the philosophs who frequented Europe’s salons embraced natural philosophy, natural history, and other learned pursuits as ideal topics of conversation. Newly emerging social interactions were not based on deference and currying favor in court society but on private voluntary groups marked by the conceit, if not the reality, of equal standing.  

America’s première philosophe and participant in enlightened society was Benjamin Franklin. Franklin’s participation in experimental natural philosophy, especially electricity, gained him the widespread recognition and admiration of Europeans. Despite his provincial and artisan background, he used the associations between gentility and natural philosophy to make himself a sought after participant in European polite society. Associations between the study of the natural world and gentility first developed around Robert Boyle and the early Royal Society in England. As I discussed in the introduction, in the early modern period the efficacy of modern science was built on a criteria of believability borrowed from a widespread discourse about the honor, trustworthiness, and credibility of gentleman witnesses. Robert Boyle and his circle were able to establish a compelling argument for the truth of natural philosophy in part because everyone understood that genteel men were credible witnesses. Being associated with the genteel helped natural philosophy enter the realm of politeness in the eighteenth century. As the newly forming middle classes tried to solidify their social

status and prove they too could participate in conversations about nature, scientific
instruments and aides entered polite spaces. Genteel women and men filled their homes
with telescopes, barometers, globes, and books of natural history and attended
philosophical lectures for the general population.

According to Richard Sutton, electricity was the most polite science in the
cultural milieu of the Enlightenment. Electrical experiments were easily translated into
public lectures and demonstrations, to be attended by middle class audiences. Indeed,
Sutton argues that these “electricians” or showmen achieved most of the important
advances in electrical theory of the eighteenth century.9 In 1747, Benjamin Franklin,
Thomas Hopkinson, Ebenezer Kinnersly, and Peter Syng conducted a number of
electrical experiments that would provide a new model for understanding electricity.
Thinking within a system of Newtonian ethers, Franklin proposed that electricity should
be seen as a fluid that was ever present in the atmosphere and that could be collected by
friction. It was transferred between different objects and people depending on the nature
of the transferring substance. He offered several compelling explanations for the action of
electricity in the Leyden jar and he invented the language — negative and positive — that
is still used to describe electricity. He also suggested that lightning was not an instance
of God’s wrath but merely an electrical discharge on a larger scale. He proposed several
experiments that would prove this hypothesis, including the famous kite experiment.

9 For the ways that experiments and demonstrations transmit cultural and social ideals see Jan
Golinski, Science as Public Culture.
Benjamin Franklin’s written description of these experiments provided his entrée into European society. Reported to the Royal Society of London by Peter Collinson, they impressed his readers (one called it a “very pretty discourse”\textsuperscript{10}) and were soon published in London’s *Gentleman’s Magazine* and eventually in a stand-alone pamphlet under the guiding hand of Dr. John Fothergill, a well-connected English Quaker doctor. Franklin was a sensation in France. Soon after his work circulated, French scientists began responding to Franklin and performing his lightning experiments. The Royal Society elected Franklin a member and awarded him the prestigious Copley medal. Thus Franklin’s international public life began with his meritocratic rise (with the support of a network of Quaker and dissenter correspondence groups who had ties to the Royal Society) into the ether of electrical science.

Franklin’s international prestige and all of his political work rested on his early work in science. By successfully entering into learned correspondence with the Royal Society in a field that was the hallmark of polite participation by genteel classes, Franklin had transcended his servile beginnings and demonstrated he could participate in polite society. At the end of his career Franklin returned the notion of polite science in his correspondence by arguing that science was something that one “retreated to” as a genteel endeavor outside of political and social concerns. For instance, in a series of letters Franklin exchanged with Sir Joseph Banks, explorer and naturalist, both men

compared science with farming as a realm a polite statesman could retreat to. Banks wrote in 1783:

General Washington has we are told Cincinnatus like return’d to cultivate his garden now the emancipated States have no farther occasion for his sword. How much more pleasant would it be for you to return to your more interesting more elevated and I will say more useful pursuit of Philosophy.\textsuperscript{11}

Franklin concurred with this sentiment, and with his typical flair, ratcheted up the sentimentality with which he imagined the life of the agrarian philosopher.

Be assured that I long earnestly for a Return of those peaceful Times, when I could sit down in sweet Society with my English philosophic Friends, communicating to each other new Discoveries, and proposing Improvements of old ones; ... Much more happy should I be thus employ’d in your most desirable Company, than in that of all the Grandees of the Earth....”\textsuperscript{12}

Franklin wrote about the inherently sociable nature of science, where he could “sit down in sweet Society... communicating....” Even though Banks brings up the language of usefulness, Franklin highlights the ideal of science as polite by focusing on the conversations and sociability surrounding scientific discovery, not the discovery itself. In the correspondence of these old scientists, knowledge was usefulness and politeness entwined in a sociable conversation between men of no rank. The conversation was polite because it was useful, because it was not self-interested, and because it was not frivolous or political. Franklin popularized in America the language of usefulness to describe and justify scientific activity in polite settings.

\textsuperscript{11} Banks to Franklin, July 14, 1783, quoted in Cohen, \textit{Benjamin Franklin’s Experiments}, 8.

\textsuperscript{12} \textit{Ibid.}, 8-9.
2.3 David Rittenhouse: Revolutionary Astronomer

In many ways David Rittenhouse articulated what Franklin assumed. He suggested in his main writing, his Oration of 1775, that astronomy was a necessary cultural achievement for civilized countries, and thus it was incumbent on Americans to foster it. Further, he intimated that encouraging astronomy could counteract the dangers inherent to republics. A primary fear of the founding generation was that even if they succeeded in establishing a new republican form of government, attachment to “luxury” on the part of the body politic would cause the citizenry to degenerate and lead to the ultimate downfall of the American republic. Rittenhouse offered astronomy as a solution to that problem. As he promoted astronomy and natural philosophy as a civilized, and thus polite, pursuit, he also rejected the notion that commercial concerns should dictate philosophical pursuits; Rittenhouse rejected a view that linked his discipline with popular consumption and with luxury.

His rejection of luxury was standard for Philadelphians during the revolution. As the American Revolution loomed, and even after independence had been won, men of science struggled to define a cultural place for themselves both as Americans and as men of science participating in an international community. This was not an easy task, as the eighteenth-century culture of science was enmeshed in social networks based on

---


14 Breen, The Marketplace of Revolution.
patronage and gentlemanly sociable science. Breaking out of this model, while remaining legitimate participants in the republic of letters, was one of the cultural tasks of the revolutionary American scientist. For Americans in the 1760s and ’70s were increasingly opposed to their mother country explicitly over the issue of polite consumer goods. Further, the idea of “luxury” was a shorthand for the demise of civilization itself. How could Americans participate legitimately in an activity typically practiced as part of a polite society? David Rittenhouse rejected the strains of enlightened science that highlighted the polite realm of enjoyable social interaction driven by leisured amateurs and promoted instead the idea of useful knowledge and the self-sacrifice of learned men in the pursuit of that knowledge. Useful science could be an antidote to the corruptions of luxury that historically felled republics.

Contemporaries often explicitly and implicitly described David Rittenhouse as Franklin’s successor as a working artisan turned scientist. In popular speeches given by and for artisans in the 1790s, Franklin’s name and Rittenhouse’s are linked almost as gods in a pantheon of artisans — they are seen as those who made possible a new appreciation of artisans and their contributions to civilization. Further, like Franklin, Rittenhouse’s career is surrounded by the contradictions of a colonial artisan participating in the world of polite science. These contradictions appear in the myriad ways Rittenhouse, his patrons, and his contemporaries attempted to define Rittenhouse as an

15 For the reverential treatment of mechanics, see Andrew Adgate, A Lecture: Containing a Short History Of Mechanics, and of Useful Arts and Manufactures. (Philadelphia: J. M’Culloch, 1789). For the hagiography of Rittenhouse see the Anon., To the Memory of the Late David Rittenhouse, this Poetical Effusion of his Sincere Admirer. . . (Philadelphia: Ormrod & Conrad, [1796]).
American learned man. Just as Franklin was championed by Peter Collinson, David Rittenhouse’s patrons advanced his cause with Pennsylvania and British statesmen. A working artisan turned revolutionary, Rittenhouse flourished during one of the more turbulent eras in Pennsylvanian and American politics. He made his scientific reputation in the late 1760s just as revolutionary grumblings began to flow from the pens of America’s pamphleteers. He was a working artisan — a clockmaker — at a time when Pennsylvania’s artisans were becoming politically aware.

Despite David Rittenhouse’s active engagement in Pennsylvania politics and the Revolutionary War, scholarly work on him has been one-dimensional. The latest scholarly monograph on Rittenhouse concentrated on his scientific achievements to the exclusion of all else. The focus on Rittenhouse’s science by his modern biographers is not surprising, as even the earliest writings devoted to Rittenhouse concentrated on the

16 Gascoigne, Joseph Banks, 77-80.

17 Brooke Hindle, David Rittenhouse (Princeton, N.J.: Princeton University Press, 1964); Edward Ford, David Rittenhouse: Astronomer-Patriot, 1732-1796 (Philadelphia: Philadelphia University Press, 1946). The lack of coverage of Rittenhouse’s political activities, especially in the more recent work by Hindle, is especially unfortunate as the existence of several full-length monographs on Rittenhouse led Whitfield Bell Jr., in his recent magisterial encyclopedia of the members of the American Philosophical Society, to omit Rittenhouse. Bell appreciated the confluence of scientific and political concerns held by the members of the APS, as evinced by the title to his collection, Whitfield Bell Jr., Patriot-improvers: Biographical Sketches of Members of the American Philosophical Society, Vol. 1-2 (Philadelphia: The American Philosophical Society, 1997). There are other problems with Hindle’s biography. In his brief review of Hindle’s work, Richard Beale Davis notes that often Hindle seems to simply make assertions about Rittenhouse’s character, with no evidentiary citations. As Davis notes, this is especially true when it comes to the incisiveness Rittenhouse often displayed around the subjects of astronomy and mathematics, an incisiveness at odds with the modesty Hindle foregrounds. Also, Rittenhouse’s attitude would not have meshed well with an emphasis on fitting into a polite sociable society. See Richard Beale Davis, “Early American Science,” American Quarterly, Vol. 17, No. 1 (Spring, 1965), 145. In addition to this recent work, and the items cited below, Rittenhouse was the subject of numerous bibliographical collections in the nineteenth century, many hagiographic in nature. Just two instances are: Jared Sparks, ed., Lives of Eminent Individuals, Celebrated in American History, (Boston: Marsh, Capon, Lyon, and Webb, 1839); B. B. Edwards, Biography of Self Taught Men, (Boston: Perkins and Marvin, 1832).
meaning of his scientific and intellectual achievements. Benjamin Rush’s 1796 eulogy of
the astronomer and The Memoirs of David Rittenhouse published in 1813 by
Rittenhouse’s nephew, William Barton, focused on Rittenhouse’s practice of science and
the development of his character. For the most part, Rittenhouse’s later biographers
have followed their lead, concentrating on David Rittenhouse’s intellectual and scientific
achievements when assessing his place in American society.

The tendency to ignore Rittenhouse’s role in linking scientific practice and
patriotism is exacerbated by the fact that scholarship on science and America up until a
few decades ago had focused on American provincialism vis-à-vis Europe. This view
argued that a lack of books, instruments, papers, financial support, and like-minded
intellectuals led scientists to work in isolation and as a result they could not achieve as
much as their European contemporaries. This lament by early American scientists only
underscores the social nature of the practice of science and the importance of forming and
maintaining dense communication networks. However, even with the handicap of living

---

18 Benjamin Rush, An Eulogium, Intended To Perpetuate The Memory Of David Rittenhouse,... on
David Rittenhouse, (Philadelphia: Edward Parker, 1813).

University Press, 1959); Howard G. Rice, Jr., The Rittenhouse Orrery, Princeton’s Eighteenth-Century

20 A notable exception is Robert A. Ferguson The American Enlightenment; 1750–1820,
(Cambridge. MA: Harvard University Press, 1997), 104-110. Ferguson places Rittenhouse’s Oration on
astronomy on a level with John Dickenson’s Letters from a Farmer in importance as a revolutionary
document.
in a “backward” country, Rittenhouse showed great talent as an astronomer and mathematician in the late 1760s and early 1770s.

Rittenhouse’s commitment to the artisan’s life gained him the love of Philadelphia’s artisan class who in the 1770s had become politicized to an extent not seen in any other state. Politics in colonial Pennsylvania had been a morass of competing parties since the colony’s inception. By the 1760s, the Pennsylvania Assembly held the reigns of power in the colony, and wealthy Quaker merchants from the three Eastern counties of Bucks, Chester, and Philadelphia controlled the Assembly. A group of artisans, middle class men, and small merchants in the city of Philadelphia, along with Western Pennsylvania’s Scots-Irish and German settlers, opposed the Quakers. Because of various reapportionment statutes, the first in 1701, these groups, and especially the city of Philadelphia itself, were underrepresented in the state Assembly. The opposition party turned to crowd politics in their attempts to overturn the wealthy merchants’ hold on power. They staged group protests and used extra-legal committees of correspondence to magnify their political voice. When in the 1770s it appeared that declaring independence from England would open the way to creating a new government, the opposition marshaled pro-Independence feeling in the colony to wrest its governance from the control of the pro-British Assembly. In January 1775, moderates and radicals under the leadership of Charles Thomson, John Dickenson, and Joseph Reed called several mass conventions that overthrew the legal Assembly of the State and declared allegiance to the Continental Congress. The Assembly formally yielded power to the group that already had it, the City Committee, a 76-member body led by Benjamin Franklin, through a
series of legislative decisions, but it was already a *fait accompli*. The revolution in Pennsylvania was a coup within a coup.

In May of 1775, when Philadelphians learned of the clash between Massachusetts’s Minutemen and the British Army, 20,000 volunteers organized themselves into militia units. Once this mass military movement was underway, John Dickenson led the Assembly, now in the control of moderate and radical factions, to elect the Council of Safety, which exercised military authority and put the colony of Pennsylvania under control of the Continental Congress. Thus did Philadelphia’s mechanics, artisans, radical merchants, other professionals, and moderate politicians overthrow the wealthy merchants who had previously dominated Pennsylvania politics and who remained steadfastly loyal to England.21 It was these artisans, young merchants, and professionals who led Pennsylvania to independence. Thus in Philadelphia, revolutionary political upheavals signaled a changed relationship, not just between America and England but also between Americans of different social groups. 22

Rittenhouse was one of the radicals.23 He was elected to Benjamin Franklin’s seat in the new Assembly when Franklin was called to the Continental Congress in 1775 and 

---


23 Ties between Philadelphia’s scientific community and its radical politics are sadly beyond the scope of this dissertation. Most historians of science of the American Philosophical Society fail to mention the associations between various APS members and radical politicians. For mini-sketches of the lesser-known members of the APS in this early time period see Whitfield Bell Jr., *Patriot-Improvers*. Historians
spent the next twenty years at the center of Pennsylvania politics. As a member of that legislature he participated in creating the most radical state government. The Pennsylvania Constitution of 1775 had near universal manhood suffrage, a weak executive, and a unicameral legislature re-elected annually; all measures designed to keep the government beholden to the voting populace. He was a member of the convention that framed the state constitution when the provincial government was dissolved. He was the vice president of the 24-member Committee of Public Safety which ran the Pennsylvania government provisionally before the new state constitution could go into effect. On January 14, 1776, he was unanimously elected state treasurer and served in that capacity for thirteen years (annually re-elected, unanimously, until he declined to serve any longer). He was one of the twelve-member Committee of Public Safety that became the provisional government (seated in Lancaster) during the British occupation of Philadelphia in 1777. He also worked tirelessly to develop and manufacture gunpowder for the American militia.

of the radical movement do not recognize the scientific credentials of most of their subjects. Eric Foner in his book on Thomas Paine in revolutionary era almost offhandedly lists a half-dozen leaders of the radical Democratic Party many of whom are recognizable as members of the early American scientific community. Eric Foner, *Tom Paine and Revolutionary America* (New York: Oxford University Press, 1976).


In the early 1770s Philadelphia and the other major cities claimed to be equal members of English society. That many of them poured great efforts into encouraging arts and science showed that they desired to be fully functioning partners in the republic of letters. But as hostility between England and her colonies mounted, some, including Rittenhouse himself, began to rethink the relationship between the old world and the new. During the revolution, the colony’s leadership fell to inexperienced radicals with egalitarian ideals. These ideals embodied on a personal level the country’s vast political changes. For Rittenhouse, the practice and the study of natural knowledge held a key role in formulating a vision of how to create an American republic that encouraged a pursuit of useful knowledge that would not feed into the vices of tyranny and luxury. I explore the development of Rittenhouse’s career, his relationship with his patrons, and how his ideals sometimes reflected the problems of promoting polite useful knowledge in revolutionary America.27

2.4 David Rittenhouse and the Transit of Venus

In the beginning, David Rittenhouse’s activities in astronomy and invention and the interpretation of their significance were shaped, nurtured, and made possible through the friendship of three men: John Lukens, the Pennsylvania astronomer and surveyor; Thomas Barton, a scholar and tutor at the College of Philadelphia who became

Rittenhouse’s brother-in-law; and William Smith, the College of Philadelphia’s Provost. These three men, in the appointments they got for Rittenhouse, in their correspondence and in their expectations, followed a model of English patronage of colonial science. Although undoubtedly John Lukens’s positions as astronomer and state surveyor were instrumental in Rittenhouse’s civic work as a surveyor and practical mathematician, the correspondence surrounding this relationship is not as rich or accessible as that between Smith, Barton, and Rittenhouse. Indeed, Barton and Smith often corresponded with each other about Rittenhouse as well as with Rittenhouse directly, and therefore I will focus on their patronage and relationship with Rittenhouse.28

David Rittenhouse was born in April 1732 in Norriton, Pennsylvania, and informally educated until age twelve by an uncle interested in astronomy and mathematics. He was a precocious child: though being groomed to take over his father’s farm, he decided to become a clockmaker and taught himself, using his uncle’s tools and books, to make timepieces. He was also introduced to Newton’s *Principia*, and it was said he mastered the English translation while still a teenager.29 Eventually, in 1751, his father let him build a clockmaker’s workshop on the farm out of which Rittenhouse worked for seven years. When Rittenhouse was nineteen, the Episcopal clergymen

28 Before the war, Rittenhouse’s scientific career began by following the path typical of previous colonial working class scientists, most famously John Bartram. The correspondence between Bartram and Collinson was sometimes one of a social superior instructing and sometimes being embarrassed about a social inferior though Peter Collinson clearly respected Bartram’s naturalistic abilities. Edmund Berkeley and Susan Berkeley, eds., *The Correspondence of John Bartram, 1734–1777* (Gainesville, University Press of Florida, 1992); Thomas Slaughter, *The Natures of John and William Bartram* (New York: Knopf, 1996).

Thomas Barton, a student of Trinity College, Dublin, came to Philadelphia “destitute of fortune, but possessing a strong intellect, stored with useful and ornamental learning as well as an ardent and enterprising spirit.” 30 Thomas Barton set up a school in Norriton, the town where Rittenhouse lived, and “formed an attachment” 31 to the family, marrying Rittenhouse’s sister and taking young David under his wing. Barton taught Rittenhouse Greek, Latin, and modern science, encouraged him in a general spirit of learning, and set up a circulating library which Rittenhouse managed. Barton also introduced Rittenhouse to John Lukens, the surveyor-general of Pennsylvania, and William Smith, the Provost of the College of Pennsylvania. Barton and Smith, with ties to Thomas Penn, the proprietor of the state, would become Rittenhouse’s most important early patrons and his entry into the international world of science.

It was William Smith, supported by Thomas Barton, who orchestrated the rise of Rittenhouse’s international reputation as an astronomer by lobbying for him, writing letters for him, and, in general, promoting his merits. Encouraged by Smith, Rittenhouse accomplished the two acts that made him famous: first, he described and then built what would become the Princeton Orrery and, second, he observed the 1769 Transit of Venus from his farm in Norriton. Most scholarly work has focused on his observations of the Transit of Venus, but in terms of the culture of politeness, the correspondence surrounding the construction and sale of the Rittenhouse Orrery is more revealing.

30 Barton, Memoirs, 102.
31 Ibid.
The American Philosophical Society sponsored the observations of the Transit of Venus of 1769. The Society supported no fewer than three sets of observations of this astronomical phenomenon, but Rittenhouse’s patrons would prove key in garnering him worldwide notice from the event which was of pivotal importance for the science of astronomy. When Venus passes between the sun and the earth, an observer with a telescope can see the planet as a little black dot traveling across the sun’s surface. This event is important astronomically because it only occurs four times every 243 years. With a careful observation of the Transit of Venus, including the time Venus touches the sun and the duration of the planet’s trip across the sun, one can determine the solar parallax and thus the distance of the earth from the sun in actual, rather than relative, terms. But, for the Philadelphia man of science, and Philadelphia’s fledgling society, the cultural importance of observing the Transit of Venus may have outweighed the astronomical value. William Smith opined in his Oration before the APS in 1773, “that societies of the first reputation in Europe are not ashamed to place our labours on a footing with their own; freely acknowledging, that we have been chiefly instrumental in ascertaining that great desideratum in astronomy, the sun’s parallax; and consequently, the dimensions of the solar system.”

32 Hindle, David Rittenhouse, 41-2; Harry Woolf, The Transits of Venus: A Study of Eighteenth Century Science (Princeton: Princeton University Press, 1959), see especially pages 3-22 and 148-9. The solar parallax is the difference between the real and apparent location of an object viewed along two different sight lines. Parallax decreases with distance, so measuring the parallax of an object can help to determine how far away it is.

33 Barton, Memoirs, 178.
The first Transit of Venus had occurred just eight years before, in 1761. The ’61 Transit had been visible from Europe but had occurred on a cloudy day. The scientifically minded anticipated the Transit of 1769 all the more because of the disappointing results from 1761. However, in 1769 the Transit was only visible briefly from the Western edge of Europe. The world’s most prestigious astronomers organized expeditions to the far reaches of the world. England sent astronomers to North Cape in Norway, Hudson Bay in Canada, and to Tahiti, to set up observatories. But Philadelphia was lucky enough to have full view of nearly the entire Transit. Accordingly, the American Philosophical Society supported three separate observations of the event. Due to William Smith’s heavy lobbying, one of those was at Rittenhouse’s farm in Norriton. William Smith convinced Thomas Penn to donate a reflecting telescope to the Rittenhouse group but, otherwise, Rittenhouse built all of the other instruments used for the observations, including the Norriton observatory, and was responsible for calculating Venus’s path as well as establishing the longitude for his Norriton observatory.³⁴

After the observations, William Smith managed Rittenhouse’s reputation skillfully. Through correspondence with influential men in England and by acting quickly, he created the impression that the expedition spearheaded by Rittenhouse, with a team consisting of John Lukens, Smith himself, and Owen Biddle, was the only one to be trusted for scientific accuracy. Smith managed to communicate this set of observations to the Royal Society of London through the august personage of Nevyl Maskelyne — the

Astronomer Royal.\textsuperscript{35} Further, by taking care of the political promotions and maneuverings himself, Smith helped create an image of Rittenhouse as a virtuous, disinterested observer and mathematician, dedicated to the science with no thought of his own promotion.\textsuperscript{36}

Smith and Rittenhouse tried to reap the fruits of the reputation built on the Transit of Venus observations. On January 27, 1770, Smith attempted to get David Rittenhouse a public appointment as a trustee of the loan office, a patronage position that would in effect free much of Rittenhouse’s time for astronomy and help him to move up from the social status of working craftsman. The bill containing the measure was tabled by the Pennsylvania Assembly, but Smith’s and Barton’s correspondence surrounding this attempted act of patronage is a window into the political meaning of scientific activity. Patronizing science allowed political men to rise above politics and demonstrate their polite interest in science and thus their inherent fitness for politics. Smith wrote to Thomas Barton describing the support that David Rittenhouse had among members of the Assembly. When Smith proposed that the Assembly encourage Rittenhouse to move to Philadelphia by appointing him trustee, “The speaker took the proposal well, and, in short, so did every person applied to; and when the vote passed... the whole house rose

\textsuperscript{35} William Smith, et. al., “Account of the Transit of Venus Over the Sun's Disk...,” \textit{Royal Society: Philosophical Transactions} (1770), 504-7.

\textsuperscript{36} According to Brooke Hindle there was some acrimony between the members of the expedition surrounding the problems with calculating and publishing the results of the Transit observations. But he noted that, “Rittenhouse’s contemporaries had no trouble identifying him as the most important single figure in the series of astronomical observations completed in Pennsylvania during 1769 and 1770. None of the ill will generated in several quarters attached to him. He enjoyed a reputation that shone more brightly than ever.” Hindle, \textit{David Rittenhouse}, 81.
for Mr. Rittenhouse’s name.” 37 In considering this measure, the members of the Assembly, the Speaker, and the Governor himself, got a chance to display their true civic mindedness, by dint of the fact that they recognized David Rittenhouse’s value to the city and the country.

This will give you pleasure, as it shews that a good man is capable of sometimes commanding all the parties.... The governor declared (and with more frankness than usual) when I waited on him, — ‘Mr. Rittenhouse’s name shall never be an objection with me, in this or any other bill: on the contrary, I shall rejoice if the bill come to me in such a form, as that I can shew my regard for him.’”38

The patronage and recognition of a scientific genius was a chance for politicians and influential men to represent themselves as capable of support for learning. And because William Smith, and not David Rittenhouse, petitioned the legislature for this position, Rittenhouse maintained the appearance of aloofness from public affairs.

The imperatives of acting like a disinterested astronomer clashed with the realities of patronage relationships; receiving patronage in colonial America’s deferential society required a display of humility and gratitude — an acknowledgement, however private, of the dependency that the patronage relationship entailed. But, as we shall see shortly, it is not clear that David Rittenhouse himself was comfortable with the role of grateful and humble recipient of the patronage of his betters. In this instance of petitioning the legislature for the position of loan office trustee, it was Rittenhouse’s sister and brother-in-law who demonstrated the appropriate gratitude, not Rittenhouse himself. Thomas Barton wrote to William Smith:

37 Barton, Memoirs, 208.

38 Ibid., 209.
Rittenhouse, I trust, will always be sensible of the favours you have shewn him, and of the uncommon pains you have taken to serve him on this occasion... Accept then, dear sir, my most hearty thanks for your kind offices in behalf of Mr. Rittenhouse. Accept of my wife’s best thanks.... She shed tears of gratitude, when she read your letter, (for her attachment to her brother David is very great,) and declared, in a high strain of enthusiasm, that Dr. Smith was the most steady friend and obliging man that ever lived; that she should honour and respect him, while living, and should she survive him, would always revere his memory. 39

Thomas Barton’s reply to Smith thus makes clear that, despite Rittenhouse’s intellectual achievements, he was still an artisan. His sister responded to Smith’s patronage with “tears of gratitude” and promised that in return for his actions she would “revere his memory.” Rittenhouse, in all probability, shared the same gratitude towards William Smith.40 But what is notable is what did not occur after the Transit of Venus. In stark contrast to Franklin, Rittenhouse, for whatever reason, did not try to parlay his new fame into a seat at the table of polite European society.41 He did continue to work as a clockmaker, surveyor, and also on his other celebrated achievement, the Rittenhouse Orrery.

2.5 A “Useful” Orrery

An orrery is a mechanical representation of the movement of astronomical bodies which, depending on the skill of the craftsman, could be merely a fun parlor toy or a truly

39 Ibid., 212-3.

40 It seems probable but not provable that Rittenhouse was instrumental in mitigating accusations against Smith when he came under suspicion of being a British sympathizer during the Revolution. See George Sioussat, “Dr. William Smith, David Rittenhouse, and the Canal Plate September 7, 1777,” Proceedings of the American Philosophical Society, Vol. 95, No. 3 (Jun. 12, 1951), 223-31.

41 Rittenhouse at least wanted to take a trip to Europe, but was unable to for either reasons of money, lack of time, or the pressing needs of his work. Barton, Memoirs, 204, 219.
accurate scale model of the relationship between the movements of the different planets. Rittenhouse was a skilled clockmaker with a deep appreciation of Newton’s *Principia* and he determined to turn this knowledge into an accurate representation of the movement of the planets of the solar system. The discussions that Rittenhouse had with his patrons while creating his orrery highlight Rittenhouse’s desire to rise above his artisan background and to move in the world of disinterested science. They also show he was cognizant of the pitfalls of placing science within the context of polite sociability. During the construction of his Orrery, he found it necessary to define his projected “useful” orrery against other orreries which, like the barometer, had become part of a popular landscape of conversable objects in the world of polite eighteenth-century consumers. He envisioned a different purchaser for his instrument, not the socially aware genteel woman nor the amateur dilettante but, instead, the “serious” philosopher as patronized by institutes of higher learning and even the state. He wanted his orrery to be used for study and learned discussion, not for mere consumption. For Rittenhouse, a scientific device such as an orrery should not be used as what Alice Waters has called a “conversation piece” for the polite classes but instead should be what he called a “really useful” instrument used by the scientific practitioner. In discussions of his Orrery, Rittenhouse was clearly opposed to the view of “philosophical” instruments that Waters

documents which had these devices occupying “the domestic space of a “Family of Distinction,” inspiring conversations that promote pleasure, elegance and reason...”

In a letter of January 28, 1767, Rittenhouse explained the orrery to his brother-in-law. Rittenhouse conveyed to Thomas Barton his desire to impress the elite of the scientific world, “the skilful and curious” astronomer. His orrery would provide, “A most accurate correspondence between the situations and motions of our little representatives of the heavenly bodies, and the situations and motions of those bodies, themselves.” His desire was not to make a “conversation piece.” Rittenhouse said he wanted to make a “really useful” orrery, one that accurately depicted the movements of the heavens, and which could better aid not the consuming class but rather would be used by astronomers and natural philosophers in their work. “I would have my Orrery really useful, by making it capable of informing us, truly, of the astronomical phaenomena for any particular point of time; which, I do not find that any Orrery yet made, can do.” His orrery would not be only scientifically and mechanically demanding to build, but his vision also went against popular notions about the proper cultural space for an orrery. Rittenhouse agonized over his decision to buck cultural conventions. “But perhaps it may be necessary to comply

---


with the prevailing taste: If so my plan must be entirely altered.”47 Here Rittenhouse contrasts “prevailing taste” with the possibility for a “really useful” orrery and acknowledges that though the world of scientific instruments and experiments, like barometers, electrical experiments, and even previous orreries, were often markers of polite consumption. But his desire is to occupy a different social world, that of the scientist who rises above “prevailing taste” and speaks to the community, not of the socially genteel but of the intellectual elite.

Thomas Barton encouraged Rittenhouse’s upward scientific and social mobility by urging him to ignore short-term popularity and think about long-term achievement.

I would have you pursue your Orrery in your own way, without any regard to an ignorant or prevailing taste. All you have to study is truth, and to display the glorious system of Copernicus in a proper manner; — and to make your machine as original as possible.48

With these words, Barton encouraged Rittenhouse to be a disinterested man of science, above the “ignorant” tastes of the consuming public who demanded scientific paraphernalia to demonstrate their own social status and to serve as conversable objects. Smith affirmed Rittenhouse’s desire to aspire to an entirely different social community, one marked not by gentlemanly “politeness” but instead by adherence to a body of knowledge. This social community was likewise populated not by genteel shoppers who entertained in parlor rooms but by the great astronomers who had gone before.

47 Barton, Memoirs, 194-5.
48 Ibid., 196.
Copernicus was to be the judge of Rittenhouse’s orrery, not a mere living person swayed by the dictates of fashion.

Thomas Barton also showed that he understood the difficulties that beset a working artisan. Though he encouraged Rittenhouse to take up this work in a disinterested spirit, Barton knew that Rittenhouse was not and could not be a truly disinterested gentleman. Rittenhouse, because of his social status, had to think about money. Barton protected Rittenhouse’s ability to enter into a disinterested world by telling him he already had plans for selling the projected orrery, and so Rittenhouse should not worry about financial expenditures. To assure Rittenhouse that he would recoup his investment, Barton called on his connections to the political and social elite of the colony. Barton urged Rittenhouse not to delay because of doubts and asked Rittenhouse for the orrery blueprint. “My letter to the Propretor [Thomas Penn] is delayed, till I can send him the account of your design.”

In his letter, Barton outlined the social path to becoming a participant in the disinterested Republic of Letters in colonial America, even as he circumscribed it within the bounds of his and William Smith’s patronage. On the one side was a commitment to “truth” exemplified by the historical pantheon of already famous scientists like Copernicus and, on the other, a commitment to the patronage system in which that reputation would be achieved, topped, in this case, by Thomas Penn. Finally, the admonition to not consider the “ignorant masses” rejected the lure of creating a popular and potentially lucrative trinket, while his assurance that he had already made

49 Ibid., 197.
arrangements to sell the orrery acknowledged that Rittenhouse was, in fact, dependent. Indeed, it was only through the buffer of his patrons who acted on his behalf that Rittenhouse could even hope to act like a disinterested scientist, unconcerned with the fruits of his labors except as they contributed to the great intellectual tradition he worked in.

William Smith read Rittenhouse’s description for the orrery before the American Philosophical Society and it was later published in the Society’s first Transactions. By even contemplating building such an orrery, Rittenhouse demonstrated that he was capable of the most challenging of technical feats, one that required not only a high degree of practical skill but also a thorough knowledge of celestial mechanics and astronomy. His friends recognized that this project would command respect among the scientifically learned and made sure that well-placed gentlemen knew about him. And, indeed, the orrery put Rittenhouse’s name on the map and sparked inter-colonial competition about who should have the honor of buying and displaying the orrery, as we shall see later.

When Rittenhouse sold his orrery to the College of New Jersey, instead of Philadelphia, it demonstrated that Rittenhouse understood his relationship with Smith differently than Smith himself did. In 1770, Rittenhouse moved to Philadelphia, leaving the Norriton farm and setting up his clockmaker’s shop in the city. Accompanying him was his now completed orrery. Smith had expected that Rittenhouse would sell the orrery to the College of Pennsylvania, where Smith was Provost, but the final purchaser was John Witherspoon of the College of New Jersey. Smith’s letter to Thomas Barton shows
Smith wrestling with the notion that Rittenhouse might not have been the perfectly biddable recipient of patronage that Smith thought he was.

I never met with greater mortification, than to find Mr. Rittenhouse had, in my absence, made a sort of agreement to let his Orrery go to the Jersey College. I think Mr. Rittenhouse was never so little himself, as to suffer himself to be taken off his guard on this occasion."

The stakes of this decision went beyond the question of personal loyalty. For Smith, when Rittenhouse betrayed the patronage relationship, he also impugned the entire province of Pennsylvania. To add insult to injury, Rittenhouse had not even discussed it with Smith; Smith, like everyone else had found out about it in a newspaper ad.

The province is willing to honour him [Rittenhouse] as her own; and believe me, many of his friends wondered at the newspaper article [announcing the sale of the orrery to Princeton]; and regretted that he should think so little of his noble invention, as to consent to let it go to a village... for if he would wish to be known by this work — and introduced to the best business and commissions for instruments, from all parts of the continent, — his Orrery being placed in our College, where so many strangers would have an opportunity of seeing it, was the sure way to be serviceable to Himself.

Rittenhouse managed to gain Smith’s pardon, though; “he was convinced,” Smith wrote, “before I saw him, that he had gone too far.” Rittenhouse even suggested that he would make a second orrery, just like the first, for the College of Philadelphia. Rittenhouse revealed his thoughts on selling the orrery to Philadelphia in a letter to Thomas Barton. He confided to his brother-in-law that while he certainly did not plan it that way, he would be “greatly mistaken if this matter does not, in the end, turn out to my advantage,”

50 Ibid., 215-6.
51 Ibid., 216.
52 Ibid.
and consequently, to your satisfaction.” He would “begin another immediately, and finish it expeditiously, for the College of Philadelphia.” He assured his relative that this would be easy to make and “who knows, but that the rest of the colonies may catch the contagion.” Rittenhouse spoke as a craftsman assessing a potential market. By placing the Orrery with a college, and signaling his desire to make several for every colony, Rittenhouse attempted to rise above the whims of the ignorant public to whom craftsman were usually obliged to market their creations.54

The discussion about who would possess which Orrery demonstrated the status symbol that Rittenhouse’s Orrery had become. According to Smith’s letter to Barton in 1771

the Governor says, the Orrery shall not go: he would rather pay for it, himself. He has ordered a meeting of the Trustees on Tuesday next; and declares it as his opinion, that we ought to have the first Orrery, and not the second, — even if the second should be the best.55

Smith went so far as to raise 300£ from the Pennsylvania Assembly. In the end, the first stayed at the College of New Jersey and the second went to the College of Philadelphia. During British occupation of Princeton, British soldiers looking for souvenirs dismantled the Orrery, but the second one remained intact and remains in the University of

53 Ibid., 215.


55 Barton, Memoirs, 217.
Pennsylvania. It appeared for some time as part of the seal of the Provosts of the University of Pennsylvania.56

Smith and Barton’s tireless efforts on behalf of David Rittenhouse exemplified a colonial mode of scientific patronage. Like Benjamin Franklin and John Bartram’s relationship with Peter Collinson before, scientific success in the colonies of England depended on patronage relationships in which genteel, well-educated men with ties to royalty sponsored working class men like Rittenhouse, thus helping them enter into the world of polite gentlemen. With such an auspicious beginning, Rittenhouse’s contemporaries had expectations that he would try to emulate, as much as he could, a genteel scientist whose foremost concern should be contributing to the stores of scientific knowledge. In the next section I look at Rittenhouse’s vision for promoting astronomy in the new Republic. In the final section I explore the view that Rittenhouse’s contemporaries had of his science and his civil service and I show that by taking part in the Revolution to the neglect of cultivating his reputation as a disinterested genteel scientist, he implicitly challenged the polite social and political assumptions, that Franklin had used to such good effect, upon which colonial American scientific practice had been based.

2.6 Rittenhouse’s Vision for American Astronomy

Rittenhouse’s experiences translated into a vision for understanding the potential for astronomy and other useful knowledge to guard a republican society. He believed

astronomy did not have to be the sole province of the elite or just a subject of polite conversation. He argued that the pursuit of astronomy in and of itself could be a marker of character. As participation in polite conversation for Shaftesburian adherents to philosophical politeness, astronomy could both reflect a good character and instill it. It was in a talk in 1775, innocuously called *An Oration Before the American Philosophical Society*, that David Rittenhouse articulated his view of astronomy as an alternative to politeness. He gave this talk before an audience consisting of the members of the American Philosophical Society, the Pennsylvania Assembly, and the Governor of Pennsylvania. This talk, it seems possible, was meant to garner support for the creation of the position of public astronomer and to fund a public observatory.\(^57\) As such, the subtext of the talk was that astronomy benefited the common good.

But Rittenhouse, at least, had his eye on the upcoming American Revolution. He dedicated his *Oration* “To the Delegates of the Thirteen Colonies, assembled in Congress at Philadelphia, to whom the future liberties, and consequently the virtue, improvement in science and happiness in America are entrusted.”\(^58\) The avowed purpose of the speech was the promotion of astronomy, to “contribute something towards the improvement of Science in general, and particularly of Astronomy, in this my native country.”\(^59\) A successful speech would presumably encourage state-sponsored astronomy in


\(^{59}\) Rittenhouse, *An Oration*, 5.
Pennsylvania. But, in making this speech, before this audience, at the time he did, with the explicit dedication to the Continental Congress, he went further. He showed how commitment to astronomy could provide the leverage to shield Americans from European and English “tyranny and luxury,” two keywords in the late eighteenth century revolutionary rhetoric.

Rittenhouse’s understanding of astronomy held that not only could it replace “politeness” as a social marker of character but it also could be constitutive of character, much as Shaftesbury thought participation in polite conversation added to character. That is, for Rittenhouse, astronomy was an intrinsically good pursuit and, thus, one could trust an astronomer to be a man of good character. Like Shaftesburian politeness (which I discussed in the introduction), successful participation in astronomy could be both a result of having good character and also as a generator of good character. But unlike engaging in “polite” behavior, pursuing astronomy would mitigate, rather than exacerbate, a desire for luxury. As I discussed earlier, luxury especially was one of the pitfalls of participation in polite society, especially when politeness was centered on consumption and the necessity of fitting into a certain social network. As we saw, Rittenhouse well knew that even astronomical instruments, like his orrery, were in danger of being pressed into polite service in the parlors of sociable ladies instead of fulfilling their proper roles as useful philosophical items.

60 Klein, “Liberty, Manners, and Politeness,” 603 for a discussion of the pitfalls of politeness.

61 For the American discussions of the danger of luxury coming from participation in sociability, see Breen’s *The Marketplace of Revolution*, chapter 2.
Rittenhouse makes a case for the politeness of astronomy by emphasizing its historical importance and its moral worth. He begins by situating astronomy within history. The historical placement of astronomy showed how it advanced along with the civilization of nations, from its obscure origins in antiquity among the Egyptians, Babylonians, and Chaldeans, through the improvements of the Greeks, up to “the celebrated Copernicus,” Rittenhouse suggests that all advanced nations supported astronomy. After describing this achievement, Rittenhouse changed modes and began to show that astronomy had been a source of moral truths. He explicitly equated astronomy to Christianity, saying that “astronomy, like the Christian religion... has a much greater influence on our knowledge in general, and perhaps on our manners too, than is commonly imagined.” Not only did astronomy provide “a correct view” of what the universe looked like but “the indefatigable industry of astronomers,” who set up rules for predicting eclipses “must have proved of singular service to emancipate mankind from a thousand superstitious fears and notions, which juggling imposters... would not fail to turn to their advantage.” Here Rittenhouse articulated a typical dichotomy between science and superstition, between truth-telling astronomers who unveiled nature’s secrets for the good of all and “juggling imposters” who would use natural phenomena to their own advantage. But more importantly, in raising this dichotomy, he showed how astronomy laid the groundwork for equality among all men. With astronomy established as an objective discipline, regular people had a guidepost for distinguishing truth from

---


fiction in the rhetoric of “juggling imposters” who might try to dupe them by appealing to superstitions about the heavens. After the widespread dissemination of astronomy, a charlatan who claimed magical powers over the sun, when in reality he was merely predicting an eclipse, would fool no one.\textsuperscript{64}

In addition to pointing out how the diffusion of astronomy laid the groundwork for social equality, Rittenhouse showed that astronomy was a cooperative endeavor that required habits of industry and perseverance. Great discoveries made by eminent men like Tycho Brahe, Kepler, and Galileo, were possible only by building on the groundwork laid by thousands of unsung workers. Drawing on a popular analogy demonstrating the cohesiveness and equality of society, he compared astronomy to a building which required all levels of social class to build. “Thus we have seen the materials collected, which were to compose the magnificent edifice of astronomical Philosophy.” When working on such a grand achievement, even the weak human nature of the lowest class was inspired to work hard, “with infinite labour and industry... in the service of human knowledge, and with an ardour not to be abated by the weaknesses of human nature, or the threatened loss of sight....” Astronomers of all times, no matter their country or the age the lived in, were thus self-sacrificing contributors to the advancement of the human race, toiling without regard to their bodily health, and working only for a love of knowledge. In other words, encouraging astronomy in Philadelphia would be of benefit to the city because at the same time that men built up the edifice of astronomy, adherence to

\textsuperscript{64} Ibid., 9.
astronomy would build up the character of these men.\textsuperscript{65} In addition, like wearing homespun was a visible sign of patriotism, dedication to astronomy could be a visible marker of good character.

Rittenhouse also argued that the progress of astronomy was evidence of God’s Providence. For instance, he asked if it was mere chance that Isaac Newton was born at a time when thousands of years of astronomical observations came together in the work of Kepler and Brahe to make the field of astronomy ripe for great mathematical synthesis. “I make no doubt,” Rittenhouse asserted, Newton appeared when he did, “by a particular appointment of Providence.”\textsuperscript{66} Rittenhouse’s speech gave the impression that God sent Newton to show the world the truth of God’s creation. Rittenhouse contrasted Newton’s mathematical system with other “systems of Philosophy” which were “spun out of the fertile brain of some great genius or other.”\textsuperscript{67} Instead, Newton’s system was grounded in natural observations. Unlike other systems, Newton did not conceal weaknesses “under the veil of unintelligible terms.”\textsuperscript{68} Newton’s philosophy did not use such subterfuges, “because it pretends not to be of nature’s privy council, or to have free access to her most inscrutable mysteries.” Instead Newton advanced, “by slow and sure steps towards the great First Cause of all things.”\textsuperscript{69} And others had followed Newton in elucidating the truth of the universe. Rittenhouse waxed eloquent about the myriad small steps that

\textsuperscript{65} Ibid., 14.  
\textsuperscript{66} Ibid.  
\textsuperscript{67} Ibid.  
\textsuperscript{68} Ibid., 15.  
\textsuperscript{69} Ibid.
countless astronomers made to complete Newton’s system: how instruments were made, how irregularities in Newton’s system were explained, how light was studied, and how the distances between planets were calculated. As Shapin notes in The Scientific Life, this is precursor to the idea that science is “materially necessary.” The material necessity of science was, according to Shapin, one of the foundations of the idea that scientists are “morally equivalent” to other men. But here in Rittenhouse’s discourse, the material necessity of science, i.e. the necessity of certain scientific discoveries for the progress of the world, is linked inexorably to God’s providence.

Rittenhouse suggests that God uses the scientists’ humble and regular work to change the world and further God’s plan.70 Astronomy, for Rittenhouse, fit into a Franklinian view of morality which Franklin “placed almost exclusive emphasis on slow, incremental modification of external behavior.”71 Habits, for moralists like Franklin, were useful because they made people enjoy things they had to do over and over again. Says Fiering, “the implication of this principle, if it is true, is that outward acts can cause inward change, alter then inclinations, and transform whatever begins as merely the mechanical practice of virtue into the love of virtue.”72

The first half of Rittenhouse’s speech established that astronomy was built on the foundations of observation, hard work, and God’s Providence. The second half was about

70 Shapin, The Scientific Life, 57-60.


72 Fiering, “Franklin and the Way to Virtue,” 212. Also, Reid-Maroney, Philadelphia’s Enlightenment.
the lessons learned from the discoveries made by astronomers and about the possibilities of future discoveries. These two final points combined to make an argument for actively supporting astronomy in America as a moral foundation that was compatible with religion. Rittenhouse showed through elaborate examples how astronomy’s physical truths led to moral truths and, thus, that a person, or a nation for that matter, educated in astronomy would come inexorably to learn foundational moral principles. The habits of industry, hard work, and self-sacrifice inculcated through the practice of astronomy and, one surmises, other branches of useful knowledge could be a foundation for the formation of ideal republican citizens.

Just one example of the moral lessons provided by astronomy had to do with the otherworldly perspective Rittenhouse thought studying the stars afforded. Knowing the earth was not the only body in the universe, and not even the most central one, taught men humility.

Wanting in [astronomy’s] instruction, we should infallibly have supposed the earth by far the most important body in the universe, both for magnitude and use. The sun and moon would have been thought two little bodies nearly equal in size... creating solely for the purpose of enlightening the earth....

The rapacious monarch and the greedy miser, thinking themselves, like earth, the center of the universe, believe their possessions and power worth dying and killing for. However, knowing that the earth is merely one planet among many would put things into perspective — literally. “Take the miser from the earth... and remove him to the planet Mars... persuade the ambitious Monarch to join him....” And what would they see?

73 Rittenhouse, An Oration, 17.
Would they still lose sleep and sacrifice lives for the small plot of land on a planet barely visible? “Would they not turn away their disgusted sight from it, as not thinking it worth their smallest attention, and look for consolation in the gloomy regions of Mars?” Seeing things from the perspectives provided by astronomy was a corrective for greed and pride.74

Considering other planets also shed light on the specific moral situation of Americans on the eve of the Revolution. For Rittenhouse, the doctrine of the plurality of worlds (that there was life on other planets) was “inseparable from the principles of Astronomy.”75 And, indeed, these hypothetical lives on other planets provided an important thought experiment for earthly politics and governments. Rittenhouse hoped that other planets were, “peaceful seats of innocence and bliss: where neither natural nor moral evil has ever yet intruded; where to enjoy with gratitude and adoration the creator’s bounty, is the business of existence.” He envisioned a world of beings who were able to govern by their reason “in a manner as to consult their own and each other’s true happiness, on all occasions,” not a Hobbesian world where social contracts were necessary to guarantee safety and human flourishing. But, even if they needed governments, he hoped that they were more skillful in creating them than those on earth.

74 Ibid., 17-8.

75 Ibid., 19. Unlike Thomas Paine, Rittenhouse held that the doctrine of the plurality of worlds was compatible with Christianity. “Our religion teaches us what philosophy could not have taught.... but neither religion nor philosophy forbids us to believe that infinite wisdom and power, prompted by infinite goodness, may throughout the vast extent of creation and duration, have frequently interposed in a manner quite incomprehensible to us, when it became necessary to the happiness of created beings of some other rank or degree.” For an overview of the idea of the Plurality of Worlds, as well as discussions of Thomas Paine’s and David Rittenhouse’s specific use of the concept, see Michael Crowe, The Extraterrestrial Life Debate, 1750–1900 (Minneola, NY: Dover Publications, 1999).
“We will hope that their statesmen are patriots, and that their kings, if that order of beings has found admittance there, have the feelings of humanity.”

Discussions about the feelings of humanity between men of different social stations held a special resonance in the context of astronomy because in the eighteenth century the natural affections that attracted men to one another were often analogized to gravity.

Rittenhouse’s reminiscence about the flourishing happiness of people on other planets culminated in a prayer that illuminated several commonly held themes about the nature of mankind and the relationship between America and Britain, and that set the stage for his final discussion of how astronomy could be the key to understanding how America could shed the vices of Europe. Their distance from Earth, he suggested, protected the happiness of the imagined community of aliens. “Happy people! And perhaps more happy still, that all communication with us is denied. We have neither corrupted you with our vices, nor injured you by violence.”

As he continued to enumerate the blessings that the aliens enjoyed because of a lack of communication with Earth, he created an analogy between the distance separating aliens from Earth and that separating America from Europe. He did this by first bemoaning the evil of slavery. Although he seems to admit American culpability for American slavery by highlighting the difference between the skin of African slaves and the skin of European Americans. “None of your sons and daughters,” he writes of the hypothetical inhabitants of other

---


planets, “degraded from their native dignity, have been doomed to endless slavery by us in America, merely because their bodies may be disposed to reflect or absorb the rays of lights, in a way different from ours.” But ultimately he laid the blame for the crime of slavery squarely on the shoulders of Europeans.

Even you, inhabitants of the moon, situated in our very neighborhood, are effectually secured, alike from the rapacious hand of the haughty Spaniard, and of the unfeeling British nabob. Even British thunder impelled by British thirst of gain, cannot reach you....

Led by the thoughts of the insurmountable distance between the earth and the other planets, Rittenhouse then pondered what it meant for America that it was possible to cross the oceans. He wanted to figure out how to channel communications between America and Europe so that only good things, like cultural refinement and intellectual advances, and not bad things, like luxury, slavery, and degeneration of morals, could cross. In wishing for “the happiness of the whole human race,” Rittenhouse was forced to concede that communication between distant lands did not lead only to slavery and exploitation. “How much I admire that disposition of lands and seas, which affords a communication between different regions and a mutual exchange of benefits,” including those benefits of his beloved astronomy. “How I delight in a participation of the discoveries made from time to time in nature’s works, by our Philosophic brethren in Europe.” However, these benefits were not without cost and, in a powerful indictment

79 Ibid., 19-20.
80 Ibid., 20.
81 Ibid.
of European and British civilization, he cried out in the quintessential republican language against luxury and tyranny.

But when I consider, that luxury and her constant follower tyranny, who have long since laid in the dust, never to rise again, the glories of Asia, are now advancing like a torrent irresistible, whose weight no human force can stem, and have nearly completed their conquest of Europe.82

In decrying luxury and tyranny, Rittenhouse even criticized the patronage system that had been the backbone of the arts and sciences. Drawn to its logical conclusion, the lament suggested that only America, divorced from monarchy, could profitably conduct science; even science would be destroyed in a corrupt setting. “Luxury and tyranny, who by a vile affection of virtues they know not, pretend first to be the patrons of science and philosophy, but at length fail not effectually to destroy them.” So distraught by the thought of America and its scientific potential becoming corrupted, Rittenhouse imagined a rupture of Biblical proportions to separate Europe from still-innocent America. “Agitated I say by these reflections, I am ready to wish — vain wish! That nature would raise her everlasting bars between the new and old world; and make a voyage to Europe as impracticable as one to the moon.”83

In a denouement to this revolutionary aside, Rittenhouse acknowledged that America had already benefited from its association from Europe. He pointed again to the probability that scientific progress was a measure of God’s intervention. “I confess indeed, that by our connections with Europe we have made most surprising, I had almost

82 Ibid.
83 Ibid.
said unnatural, advances towards the meridian of glory.” But he knew, as did every good student of republicanism, that corruption and decay inevitably followed the glorious crowning of any civilization — and an unnaturally swift rise was sure to mark an unnaturally swift fall: “but by those connections too,” he acknowledged, “in all probability, our fall will be premature.” He concluded with a little prayer against the inevitable: “May the God of knowledge inspire us with wisdom to prevent it: let our harbours, our doors, our hearts, be shut against luxury.” After this, Rittenhouse returned to his subject with no fanfare, he referred to his rousing lamentation as “melancholy thoughts” and promised not to “indulge” them any more.84

However, what follows in the Oration is an implicit answer to the problem posed by the inevitability of luxury in polite civilizations that Rittenhouse decried. First, he reaffirmed that astronomy was not just the study of nature but was really the study of God. Second, he reminded his audience, that however all pervasive the evil of luxury and tyranny may seem, God was also everywhere and most visible through science and scientific progress. Rittenhouse seems to be gesturing to the idea that moral graces are “infused” into man by God. Studying God’s nature is one path towards the infusion of Grace. For Rittenhouse, studying and being so close to the mind of God is like studying the Bible. Interestingly, he illustrated this with a contrast of the telescope to the microscope. In Rittenhouse’s view, microscopy did not have the same moral relevance that astronomy did. This might be because the field of microscopy had not yielded any great world-changing theories that codified so easily the idea of God’s existence the way

84 Ibid.
that Newton’s had. So, although microscopy was the study of God’s creation in the same way that astronomy was the study of God’s heavenly creation, it had not demonstrated the fruitfulness of astronomy. “Some have observed, that the wonderful discoveries of the microscope ought to go hand in hand with those of the telescope.” These people, said Rittenhouse, worried that talking about astronomy and the heavens that it studied as the realm of Providence, implied that earthly things were not also in the sight of God lest whilst we contemplate the many instances of the wisdom and power of divine Providence, displayed in the great works of creation, we should be tempted to conclude that man, and other less important beings of this lower world, did not claim its attention.

Rittenhouse was not alone in preferring the telescope to the microscope. To cite an early example, Leibniz wrote: “Nothing better corroborates the incomparable wisdom of God than the structure of the works of nature, particularly the structure which appears when we study them closely with a microscope.” However, even Leibniz argued that looking at fleas and other “less important beings of the lower world” could not show, as astronomy did, that God was present everywhere. “Nothing can better demonstrate the immediate presence of the Deity in every part of space, whether vacant or occupied by matter, than astronomy does.” Even the microscopists themselves, Swammerdamm, Malphigi, and Hooke, suffered self-doubt about the morality of studying insects so

---

85 Ibid.

86 Ibid.

minutely. It has been argued that the microscope did not prove itself scientifically useful — that is, it did not produce evidence that strongly supported a unifying theory in the way that astronomy had achieved with Newton — until the mid-nineteenth century.

Rittenhouse would have seen the microscope as an instrument that yielded not a single grand edifice, like astronomy, but many single observations that did not so strongly support the idea of a God’s Providence in nature as astronomy did. Using language that suggested without stating outright a contrast between the “lower” world of the microscope and the light-filled heaven described by Newton’s laws of motion, Rittenhouse reminded his audience that

It was from an astronomer St. Paul quoted that exalted expression, so often since repeated; ‘In God we live, and move, and have our being.’ His divine energy supports that universal substratum on which all corporeal substances subsist, that the laws of motion are derived from, and that wings light with angelic swiftness.

Rittenhouse continued to describe the merits of astronomy in terms of its relationship to morality. He began to argue that astronomy could replace religion as a universal discourse for yielding moral truths. Indeed, for Rittenhouse, astronomy was the antithesis of the “cobweb Philosophy” that “skeptical writers” were so fond of extolling (he later identified Berkeley and Hume). Astronomy could “combat superstition and bigotry” and he showed this by arguing that the racism upon which New World slavery

---


was built was merely an effect of the sun. Astronomy could “dilate the heart with universal benevolence” without

Propagating a single point of doctrine contrary to common sense, or the most cultivated reason. It flatters no fashionable princely vice, or national depravity. It encourages not the libertine by relaxing any of the precepts of morality; nor does it attempt to undermine the foundations of religion.

Further, astronomy was not pessimistic about God: “It denies none of those attributes, which the wisest and best of mankind, have in all ages ascribed to the Deity.” Nor was it pessimistic about mankind: “Nor does it degrade the human mind from the dignity, which is ever necessary to make it contemplate itself with complacency.”

Rittenhouse concluded his speech by urging his audience to support the practice of astronomy in America. Of course, Rittenhouse had a personal stake in the support of astronomy, as the American Philosophical Society had just proposed that the Pennsylvania Assembly create a post of public astronomer. But the stratified society upon which such acts of patronage rested was on the verge of being overthrown. The patronage that had supported Rittenhouse’s career rested upon assumptions of American provincialism. There was a definite ladder that scientists who lived in the British colonies could climb, and the top of that ladder was not the American Philosophical Society but was the Royal Society of London, and perhaps, a royal post. For Rittenhouse, the arguments for supporting astronomy in America were also answers to the problem of cultivating civilization without inviting luxury and corruption. American revolutionaries faced this problem as they contemplated breaking with England.

Rittenhouse told Americans that, instead of looking to England for the pinnacle of achievements, they should look to the ever-growing future of science. There was plenty left to do in astronomy, and America was well situated in terms of geography and climate to make many great discoveries. Nor would America “be wanting men of genius, to arise in this new world, whose talents may be particularly adapted to astronomical enquiries.”

He then detailed several areas that were ripe for study: the science of Comets, the orbits and characteristics of the primary planets, not to mention the “optical defects” that could be removed by the creation of better telescopes. The truly glorious possibilities would occur when the science of astronomy, because of some technological or intellectual innovation, was able to approach the realm of the so-called “fixed stars.” Likening astronomical discoveries to those that would be made in the afterlife, Rittenhouse rapturously proclaimed the new possibilities for human knowledge.

But if all higher and more sublime discoveries are not reserved for us in a future and more perfect state; if Astronomy shall again break those limits that now seem to confine it, and expatiate freely in the superior celestial fields; what amazing discoveries may yet be made among the fixed stars!”

Rittenhouse waxed ecstatic about the possibilities of a creation full of life and organization at every level, from the smallest cell to the highest orders of the heavens.

[W]hen we consider this great variety so obvious on our globe, and ever connected by some degree of uniformity, we shall find sufficient reason to conclude, that the visible creation, consisting of revolving worlds and central suns, even including all those that are beyond the reach of human eye and telescope, is but an inconsiderable part of the whole... and all yonder stars

---

91 Ibid., 22.
92 Ibid., 25.
innumerable... may perhaps compose but the leaf of a flower in the Creator’s garden, or a single pillar in the immense building of the Divine Architect.  

The contemplation of an infinite world to discover became for Rittenhouse an antidote for the greed and pride that he attributed to the miser and the monarch. “Here is ample provision made for the all-grasping mind of man!” Rittenhouse seemed to suggest that it was this “all-grasping” mind of man that caused the problems of tyranny and luxury that he had railed against earlier in the oration. Turning that mind towards the “unlimited regions of space” could be an antidote to the dissipation, corruption, and luxury that had heretofore accompanied human achievement. Rittenhouse explicitly says science, because of its potential for unlimited progress, is an intellectual realm that fulfills the same human cravings for fashion, luxury, gambling, etc. Astronomy was fully compatible with self-sacrificial public virtue which, according to David Shields, was “defined as a private morality of self-sacrifice, discipline, and maturity.”

Rittenhouse concludes with a stirring discussion of astronomy as the path to knowing God. “Let us not complain of the vanity of this world, that there is nothing in it capable of satisfying us: happy in those wants, happy in those restless desires, forever in succession to be gratified; happy in a continual approach to the Deity.” Astronomy, in its potential for inexhaustible new realms of knowledge was similar to one other commonly noted source for American virtue — the landscape. For Rittenhouse’s oration, Rittenhouse uses the idea that astronomy is a natural resource much like the natural

93 Ibid., 26.

94 Shields, Civil Tongues and Polite Letters, xxviii.

95 Rittenhouse, An Oration, 26.
landscape — an inexhaustible supply to be explored and domesticated by Americans, who, through their efforts, would develop and support the important characteristics of American citizenship. Thus, for Rittenhouse, at least, American contributions to astronomy could be as much emblematic of American potential as American land and for the same reasons.96

Astronomy, in Rittenhouse’s *Oration*, was thus no less than the solution to the central moral and cultural problems of Revolutionary America. For him, astronomy rivaled Christianity in moral power, and all the more because it did not contradict it. Astronomy offered a different perspective on the human condition. It was this otherworldly perspective that allowed him to ideologically separate the new and old worlds (which were analogized to literal worlds in his speech). This made the sin of slavery the result of the bigotry and greed and placed the onus squarely on European shoulders. With an imaginary barrier between the old world and the new, Rittenhouse was free to perform a thought experiment: What would America be like if she were to be cut off, today, from Europe? No longer influenced by the tyranny of the monarchical British, no longer forced to accept slaves into American society, could Americans fight off the passions, greed, vanity, and pride that led inevitably to the fall of nations? The answer could be yes, if Americans focused their minds not on recreating a polite society centered around sociable consumption but instead on virtuous pursuits of astronomy. The promise of the study of the stars for engaging man’s mind in the infinitude of

astronomical knowledge was a possible guard against moral decay, one which politeness did not offer.

Rittenhouse understood the advancement of scientific knowledge as part of the achievement of man’s selfless devotion to God’s creation. Astronomy could be embraced by all varieties of people who believed in a Creator God, Christians and Deists alike. His triumphant astronomy was still one that glorified God above all, and that derived its merit from its potential for virtuous character development. It worked well within a republican vision of human virtue and a republican vision of history. Rittenhouse, along with others of his period, thought that achievement in arts and sciences both proclaimed and justified the greatness of a particular nation while at the same time occasioning the luxury that would usher in the moral decline and fall of the nation. He, like other Americans, both longed for the fame that came from civilization and deplored the corruption that accompanied it. He offered astronomy as an antidote to this paradox, and one that was available to those who did not have access to a formal liberal arts education, as his own history proved. Astronomy had the added benefit of providing its practitioner not only with virtue but also with skills that could be turned to profit. But most importantly in the context of 1775, Rittenhouse’s Oration laid claim, for Philadelphia, Pennsylvania, and America, to a prestigious history that was freed from national constraints. Through practicing astronomy, America could both shed its ties to England’s politics and maintain their ties to England’s geniuses, Newton, Herschel, Maskelyne, who were after all themselves part of a larger, longer, and more prestigious lineage.

By envisioning America as a nation of scientists and mechanics who worshipped God the architect and glorified him through a continual study of his works, Rittenhouse
(and others) provided America with an alternative history and a providential future. Rather than being the latest of a long line of nations that were caught in a cycle of growth, glory, decline, decay, and death, from Ancient Greece up through England, Americans could see themselves as the inheritors of an unending triumphant history of technological and scientific progress. The separation of the history of America from cyclical history through the lever of scientific and technological achievement replaced a specifically Christian Providence with a technological and scientific Providence; the latter saw the future of mankind as the eternal study of an endlessly expanding body of knowledge. Thus, scientific Providence could rescue Americans from the decline of nations by fortifying the human character through the spread of the study of participation astronomy.

In the years following the speech, Rittenhouse immersed himself in the revolutionary cause though he still found time to do an occasional observation with William Smith. At least two of his countrymen thought this revolutionary politics was a waste of his talents and chastised him for it. Thomas Jefferson and St. George Peale turned to a different understanding of the place of the man of science, one that ultimately conflicted with Rittenhouse’s vision. To do so they turned to the language of eternal fame and the idea that men of science were to be held to different standards than other Americans.

2.7 “Science David is Thy Line”: Problems for Useful Knowledge in America

Despite his early promise in astronomy, mathematics, and Newtonian natural philosophy, Rittenhouse spent most of the latter part of his life serving his country and
state in a variety of official positions that put his mathematical and engineering expertise to practical use. He was a surveyor of state lines in the 1770s and ’80s, a trustee of the Pennsylvania Loan Office from 1780 to 1790, commissioner of the First Bank of the United States, and Director of the Mint from 1792 to 1795 (appointed by President Washington), to name just a few of his contributions to the early republic.97 All of Rittenhouse’s biographers, and many of his contemporaries, lamented the fact that he did not live the life of polite gentility that would have given him more time to devote to purely scientific pursuits.98 The American Philosophical Society elected him President after Benjamin Franklin’s death, and he attended regularly despite rapidly ailing health. He served from 1790 to 1796 and contributed many papers, but none of the importance as the work as he did in the 1760s on the Transit of Venus and building his Orrery.99 But it

97 Rittenhouse surveyed the boundaries of almost the entire state. His first line was the boundary between Delaware and Pennsylvania, around the city of Newcastle, which would become part of the Mason-Dixon line. Mason and Dixon judged this line to be so accurate they did not re-measure it when they came from Britain to measure their famous boundary and let it stand. Other boundary lines Rittenhouse surveyed included the Virginia/Pennsylvania line between 1779 and 1784, the New York/Pennsylvania line in 1786, and a line between Massachusetts and New York in 1787. In addition to his work for the state and the state government, he also had ties to the University of Pennsylvania, no doubt through William Smith. William D. Carrell lists him as a Professor of Astronomy at the College of Philadelphia from 1779, though it is unclear how long or how formal this position was. William D. Carrell, “Biographical List of American College Professors to 1800,” History of Education Quarterly, Vol. 8, No. 3 (Autumn, 1968), 368. In 1767 the college had granted him an honorary Master’s degree, and in 1770, he was named as one of the “twelve eminent citizens” on the 24-member Board of Trustees of the University of Pennsylvania, along with Benjamin Franklin, William Shippen, and Timothy Matlack. Edward Potts Cheney, History of the University of Pennsylvania: 1740–1940 (Philadelphia: University of Pennsylvania Press, 1940), 12. He was also the Treasurer of the State of Pennsylvania, served for one term on the State legislature, and was active in the ad hoc wartime government of Pennsylvania that formed when the British captured Philadelphia.

98 For an example, see Lives of Eminent Individuals, Sparks, ed., 74.

99 This is notwithstanding the two mathematical articles that were published in the transactions shortly before and shortly after his death. For Rittenhouse’s contributions to early American mathematics, see Homann, Frederick A., “David Rittenhouse: Logarithms and Leisure.” Rittenhouse also provided the astronomical calculations for innumerable North American Almanacs, and Evans, the bibliographer originally responsible for the Early American Imprint series, attributed the calculations for many
is the very fact of his political activism that makes Rittenhouse’s life, his few writings, and his contemporaries’ opinions about him especially interesting. His patrons managed his early scientific work with an eye towards getting him a permanent position within the colonial structure where England was the center of scientific achievement and engaging with other learned men in agreeable conversation about science was the key to advancement. But Rittenhouse himself joined early with the radical artisans of Pennsylvania to promote a more egalitarian Pennsylvania and the American Revolution. At the same time, he articulated a view of the practice of astronomy particularly suited to a republican form of government and the egalitarian society he and his fellow artisans envisioned. But others in the Republic thought the practice of science was above the revolutionary cause and that was more compatible with the polite view that cosmopolitanism and universal benevolence were more important than narrow-minded patriotism or provincialism. They articulated this view in the language of fame.

The connection between fame and scientific activity was derived from Francis Bacon. Bacon had charted out the ladder of fame in his _Essays_; ranking at the top of the ladder were “founders of states and commonwealths.” But later, in his _Advancement of Learning_ in 1605, he added a higher level — those men who used “the Divine gift of

anonymously penned almanacs to him. Examples are, Abraham Weatherwise, _Father Abraham’s Almanac, for the year of our Lord 1774_ (Philadelphia: John Dunlap, 1773); which explicitly cited Rittenhouse as the creator of the astronomical calculations, and the pseudonymous Anthony Sharp, _The Continental Pocket Almanack for the year 1781_. (Philadelphia: Francis Bailey, 1781).

Reason to the use and benefit of mankind."¹⁰¹ Bacon’s “philosopher-inventors,” as Douglass Adair calls them in his essay “Fame and the Founding Fathers,” were privileged over statesmen for two reasons. First, their achievements benefited every age “like the benefits of the sun, permanent and universal,” and were not, like those of statesmen, confined to one era. Second, scientific and technological achievement had “the true character of the Divine presence, as coming without tumult and noise,” while legislators and generals’ deeds were “mixed with strife and contention.”¹⁰² For his contemporaries, David Rittenhouse was one of the extraordinary types that Bacon hailed, a philosopher-inventor, and, as we shall see below, his countrymen did not hesitate to tell him so.

As American revolutionaries began to reject politeness, some Americans drew on other cultural ideals about science and about men who engaged in science, namely ideas laid about by Francis Bacon about the where great men ranked in the hierarchy of fame. Whereas a polite scientist’s sociable participation in polite society centered on enjoyable pursuit of the observation of nature, and useful knowledge was centered on material and cultural goods for the country, fame meant the names of the learned would be transmitted down to posterity and gain the notice and admiration of contemporaries.¹⁰³ As John

¹⁰¹ Ibid., 16.
¹⁰² Ibid., 17.
Adams said of the American Philosophical Society after a visit to Philadelphia in 1776, it “excites a scientific emulation, and propagates their fame.”

The imperatives of fame conflicted with the virtues of sociability. As Klein has argued, Shaftesbury and others minted a new view of virtue wherein self-interest could be seen as compatible with virtue. In the world of commerce, self-interest could be pursued for the benefit of country. But as I discussed above, for revolutionaries like David Rittenhouse, luxury was a constant danger. One of the paradoxes of commerce was that it seemed inevitably to lead to its own decline. As people worked harder and contributed more to the benefit of the nation, they became wealthier and thus had the resources to pursue ends such as fashion, finery, and indulging in fine food and wine and theatre that seemed to lead to self-dissipation and eventually personal ruin. Americans most often held up self-sacrificial virtue as the ideal, especially self-sacrifice lived through military virtue or service to the state.

But when it came to fitting participation in science within the ideal of self-sacrificial virtue, there was a problem. On the one hand, self-sacrifice for country was seen as a good but, on the other hand, participation in the polite realm of the international republic of letters invoked the polite hostility towards narrow provincialism, in this case, patriotism, in favor of a larger viewpoint. Even though prominent Americans like Thomas Jefferson were committed to the American Revolution, they still acknowledged the imperatives of the polite hierarchy of international over provincial concerns and they

fully believed in the Baconian hierarchy of the man of science being above the military hero and the statesman in the ranks of the famous. Conflicting views about the relative place of self-interest within character were delineated in the difference between Fame-with-a-capital-“F” and “ambition.”

Sometime in the thick of the Revolutionary War, Rittenhouse, reviewing St. George Peale’s account books of war expenditures from Maryland, would have come across the poem below. In it, St. George Peale (who was one of Charles Willson Peale’s brothers) admonished Rittenhouse to cease the very public political work in which he was engaged. Peale’s warning to Rittenhouse articulated a belief in the Baconian hierarchy of virtuous activity shared by many in revolutionary America, a hierarchy that was topped not by the achievements, however noble, of political and military endeavors, but by scientific genius. He also argued that scientific genius was so far above any other human pursuit that politics and country should be neglected to serve it. Peale pulls no punches:

Labour not in state affairs
Keep acquaintance with the stars
For there thy genius lies
Science David is thy line
War’s not Nature’s great design
If thou to Fame would’st rise

Then follow learned Newton still
Trust no mischievous Machiavel
Thoult find a dreary Cost
Where Damp’d the Philosphic Fire
Neglected Genius will retire
And all thy Fame be lost

Politics will spoil the man!
Form’d for a more exalted plan
Great nature bid thee rise
‘to pour fair science on our Age
to shine amidst the historic page,
and half unfold the skies.’
But if thou crush this vast design
And in the politicians line,
With wild ambition soar
Oblivion shall entomb they name
And from the rolls of future fame
Thou’ll fall to rise no more.

Fidelia

This poem illustrates the difference between “fame” and ambition. Ambition is worldly, scheming, self-serving, and leads to an obscure death. Ambition is grasped by the individual. However, future “fame” is exalted; it is a secular reward bestowed upon the life lived to the benefit of all men through the secular pursuit of science. Rittenhouse would be guaranteed future “fame” and thus a place among the pantheon of great scientists only if he sacrificed his political ambitions and followed his inborn genius. This is especially interesting as applied to Rittenhouse because he was not politically ambitious in the sense of craving political power. He exemplified not the ambitions of a tyrant or a self-serving self-promoter but instead a patriot who sacrificed and worked incessantly for the good of the American Revolution and early Republic. He put the cause of patriotism and the new country before his own. But even Thomas Jefferson, whom of all people appreciated the universal social and political importance of both the American Revolution and later the French Revolution, made no bones about his view that Rittenhouse should not be spending his time on the mundane pursuits of running a state, even in such a crucial time as during the American Revolution.

Jefferson wrote candidly to Rittenhouse in 1778, enjoining him not to forget his philosophic pursuits. Rittenhouse had been engaged in two years of civil service as a member of the Committee of Public Safety, an interim government that ran Philadelphia during the British occupation. “Your time for two years past has, I believe, been principally employed in the civil government of your country.” Jefferson beseeched Rittenhouse to quit these activities, arguing that the astronomer’s powers were “intended for the erudition of the world” not the “commonplace drudgery of governing a single state.” In Jefferson’s view, Rittenhouse’s talents made him a different order of man, subject to different rules than ordinary men. As Jefferson wrote, “Yet I am also satisfied that there is an order of geniuses above that obligation, and therefore exempted from it. No body can conceive that nature ever intended to throw away a Newton upon the occupations of a crown....” Referring to Rittenhouse’s orrery, the mechanical depiction of the heavens that Rittenhouse built and became famous for, Jefferson repeals the Second Commandment for Rittenhouse.

Without having ascended mount Sina [sic] for inspiration, I can pronounce that the precept... that they shall not make to themselves ‘the likeness of any thing that is in the heavens above’ is reversed for you, and that you will fulfill the very purposes of your creation by employing yourself in the breach of that inhibition.

Jefferson excused his candor by appealing to his zeal “as a true Whig in science” which came from “a desire of promoting the diffusion of knowledge and of your fame....” But if Jefferson exalted Rittenhouse’s mechanical and philosophical ingenuity far above the

station of a mere craftsman, in the same letter he also implicitly reinforced Rittenhouse’s artisan status. The purpose of the letter was to ask Rittenhouse to make him a timepiece.

Indeed, in these writings St. George Peale and Jefferson seem to reject what English historians have said was the purpose of the seventeenth-century theory of politeness. As I discussed in the introduction, one of the marks of Shaftesburian politeness was to reconcile self-interest with civic duty, such that those involved in commerce could be seen to be part of polite society and imbued with the virtuous character of such society. As such, Rittenhouse and his patrons and contemporaries should have seemed exemplary. But Jefferson and St. George Peale all harkened to the idea of selfless actions committed for the good of mankind, denying that self-interest could yield any kind of good character. Like Franklin before him, only by demonstrating his ability to rise above monetary concerns of his artisan status did Rittenhouse gain access to the learned community.\textsuperscript{107} Despite exhortations of his patrons and admirers, Rittenhouse spent the majority of his life engaged in the workaday pursuits of treasurer and surveyor, legislator and committee officer; he devoted himself constantly and consistently to the civic offices that Jefferson and St. George Peale begged him to abandon. Though he kept his reputation as a virtuous and brilliant mathematician and astronomer, he never devoted himself full-time to his scientific pursuits. His fellow

\textsuperscript{107} Andrew Shankman’s book refers to Philadelphia’s political climate as the “Crucible of American Democracy.” That is, the place where capitalism and Republicanism clashed and forged a new direction for the ideology of democracy. Andrew Shankman, \textit{Crucible of American Democracy}.  

88
countrymen were more jealous of his status as the heir to Newton and Franklin than he appears to have been.\textsuperscript{108}

2.8 Conclusion

David Rittenhouse followed in the footsteps of Benjamin Franklin. By his actions and through his very existence as a working artisan with an international scientific reputation, Rittenhouse challenged the assumptions behind the desirability of participating in a polite genteel science that favored sociability over usefulness at the same time that he and his artisan colleagues sought entry into a previously genteel political world. Practically, he did this by not adhering to the norms and assumptions of the patronage system that assumed that any colonial scientist reached the pinnacle of success by achieving recognition and patronage from England. Even as his patrons tried to get him sponsorship from the colonial government through a post of official astronomer, he undermined them by giving a revolutionary speech. Even as his contemporaries demanded that he reach for future fame by acting as a disinterested scientist, he articulated a different vision of scientific life by devoting himself to egalitarian politics and civil service.

And so while Rittenhouse’s scientific reputation was stellar, he never did become a full-time astronomer. Instead he eked out a living doing various civil service jobs,

\textsuperscript{108} The tradition of arguing that a scientist must be aloof from worldly pursuit continues down into the twentieth century, see also Stephen Shapin’s discussion of Irving Langmuir’s brother’s injunction to his brother not to go to a research laboratory “You will betray your true self if you devote your life selfishly to private enterprises and personal acquisition. And the minute you allow yourself to deviate from the path of pure science, you will lose something in character.” The Scientific Life, 58.
keeping accounts as a treasurer and surveying state lines as well as making clocks and watches, all while his admirers admonished him to look to the stars and to pay attention to his immortal “fame.” But despite this, or perhaps because of it, for many American revolutionaries, the model man of science was David Rittenhouse. By all evidence, he lived a life dedicated to his family, to his patriotic duty, and to philosophical truth, all for which his peers and compatriots uniformly praised him and admired him. Unlike Franklin, who reasserted the disinterested narrative of polite science when he entered the international community, Rittenhouse, politicized in the “crucible of American democracy,” attempted to rewrite the relationship between America, the international community and the culture of politeness. He shared America’s distrust of pursuit of luxury and material goods and offered the pursuit of astronomy as an antidote, so long as it was seen as useful and not made to entertain polite society.

In this chapter, I explored the problems American practitioners of useful knowledge like David Rittenhouse had with framing science within the culture of politeness. He saw politeness, sociability, and consumption as fostering characteristics that valued pursuing luxury. His own career as a man of science exemplified for his contemporaries the potential to instead find self-sacrifice through science. Classical ideas about the lasting nature of immortal fame were secondary to David Rittenhouse as he pursued his scientific and civic objectives. In his *Oration*, he detailed the ways that he thought that astronomy, encouraged by the new republic, could be used to encourage the character necessary for republican citizens. Indeed, Rittenhouse exemplified that very character by ordering his life with an eye to the fate of the republic first, not an eye to his own immortal fame as a Newtonian astronomer and master craftsman of delicate
astronomical equipment. Like Benjamin Franklin, he turned the respect and prestige he got from his scientific achievements into vehicles for furthering the cause of the nascent American republic. But unlike Franklin, he disdained the polite society and the luxury he thought went hand in hand with it. Instead, he proposed astronomy as an antidote to the dissipation caused by luxury.

In the next chapter, we will see how one of Rittenhouse’s friends, Charles Wilson Peale, moved away from his career as a portrait artist to create a public venue for natural history. He thought that the proper display of natural history in a public museum could be effective in building the character of a wide swath of citizens in a Republic. However, without men of letters patronizing him, the problem of the relationship between civic and scientific disinterestedness and the imperatives of belonging to the working class were alive in Peale’s life and writings in a way that they were not in Rittenhouse’s. As he tried to make a living educating the public through his museum, he argued that citizens of a republic had a duty to support endeavors like art and natural history that would contribute to the flourishing of their republic. However, we also begin to see how the claims for this virtue of scientific activity were contested in the new nation depending on the specific political and cultural circumstances in which they were made.
3.1 Introduction

In this chapter I discuss Charles Willson Peale, the founder and proprietor of the first American natural history museum. I argue that Peale’s work as a portrait painter, portrait museum proprietor, and natural history museum proprietor all promoted what I call “polite patriotism.” He believed viewing his public works could teach people about the proper characteristics of a good citizen of a republic. Through his portraiture and his natural history collection, he wanted to teach the virtues of patriotic self-sacrifice in a polite setting. For Peale, participating in the consumption of his polite patriotic endeavors was a road to participation in an American civic community that was open to all classes. While other Peale scholars have made similar points, most scholars turn to his paintings, private letters, and the material culture displayed in his museum and have looked at these as separate endeavors. Instead, I look at what were probably the most read of his writings — his advertisements for his various museums and artistic displays. These advertisements show a continuity of purpose between Peale’s art and his natural history, a continuity based on understanding the potentials of both the fine art of painting and natural history as polite and patriotic.
Peale switched from painting and portraiture to natural history as a way to negotiate the problem he had as a member of the artisan class. He wanted to participate in the higher culture of polite gentility with his patrons but found his commitments to radical politics caused problems for those social relationships. I suggest that Peale created a new genteel vocation, museum proprietor, and advertised and promoted his museum to attract polite patrons. But he argued that his museum displays taught people about the qualities of character needed by republican citizens. Through his museum, he created cultural spaces where Americans of (ostensibly) any class could both participate in polite endeavors of the eighteenth century — the fine arts of painting and the learned and sociable culture of natural history — while organizing those previously British cultural achievements in an way that highlighted the uniqueness of America and the values of a republic. He tried to promote his museum as both an object suitable for polite consumption and a patriotic exercise that demonstrated his own self-sacrificial character. But, as he learned when he attempted to secure government funding for the museum, these two arguments were often at cross-purposes.

Understanding Peale’s work in terms of the culture of politeness brings new clarity to his various enterprises. Charles Willson Peale was unparalleled in his attempts to make the study of useful knowledge, in this case, natural history, a polite endeavor open to all Americans. As I discussed in the Introduction, politeness was understood as a marker of character, demonstrated by the ability to participate in society through engaging in agreeable conversation. Further, politeness was a desired characteristic not just of individuals, but also of nations. Peale invited both practitioners of useful knowledge and the public at large to come together to create a public polite space for
conversation about natural history. Like others who ascribed to the culture of politeness, Peale championed the idea that the widespread demonstration of politeness by a citizenry was a marker of a politically free civilization. He asked citizens to show commitment to America by coming to his museums.

Peale displayed the natural history of the American landscape and adorned his museum’s walls with portraits of great Americans. As such, he turned a visit to his museum into a polite experience that was unique to America and that, he argued, would teach about the kind of character needed for a republic. Further, he invited all the citizens of America to become the patrons of American natural history by subsidizing the museum through buying tickets, memberships, and supporting tax breaks for Peale. Peale’s endeavors were innovative. He championed American natural history as a patriotic endeavor, but other promoters of science emphasized that America’s learned were still committed to participation in the international republic of letters, despite declaring political independence from England. Peale created polite social spaces, open to the public, for viewing material objects that reflected American greatness, while others highlighted the importance of polite conversation and correspondence between fellow men of science.

In this chapter, I explore the polite meanings of the useful knowledge promoted by Peale’s museum through his advertisements. First, for contrast, I look at how the American Philosophical Society talked about the promotion of useful knowledge in America. Second, I discuss the historiography of Peale’s museum. Third, I describe Peale’s development as a politically active American and as a portrait painter. Fourth, I look at the development of his natural history museums, illuminating the continuity of
purpose from his portrait painting and his natural history endeavors. In both cases, he wanted to demonstrate that republican principles could also be polite and that polite ideas could also be American. I also look at Peale’s politics, his desire for social standing, and the arguments he used to promote his museum. Peale had two goals in writing about his museum. One was to attract a broad paying public to support him and his family, but the second goal was to establish the museum as a nationally funded and controlled institution for republican education and science. His various bids for governmental support were never more than partially successful and in the end they failed. Paradoxically, Peale’s attempts to gain government support may have failed because of the success of his ability to attract paying customers to his museum using the language of patriotic politeness.

3.2 The American Philosophical Society and the Demarcation of Useful Knowledge

As I reviewed in the introduction, historians of science in America rightly focused on the phrase “useful knowledge” as a key for understanding how Americans thought about scientific activity. However, by not taking into account the cultural context of politeness, they overemphasized one meaning of “useful” — that it means practical, providing material benefits, or technological progress. It is not surprising that they focused on these as the seminal texts of the most important early American scientific society also seem to focus on material, commercial, and technological progress. However, by taking the words of Franklin and other members of the APS at face value, historians have missed the context for understanding useful knowledge. I would argue that instead of an outright definition of useful knowledge, the following examples of the phase are an exercise in early “boundary work.” That is, members of the American
Philosophical Society, when they discussed the activities of that society, wanted to draw a line of demarcation around their activities. The APS, they argued, was not just another social club; instead, the learned men of the APS were engaged in “useful knowledge.” However, looking at their actions and reading other discussions shows that they thought activities that produced “useful knowledge” could also be “polite.” To place Peale’s promotion of his natural history museum as an institution that was both useful and polite, I look at a few other examples of how members of the APS spoke about useful knowledge.¹

The idea for the American Philosophical Society was published in 1753 with Benjamin Franklin’s Proposal for Promoting Useful Knowledge among the British Plantations of America. In this one-page broadside Franklin writes that “Promoting Useful Knowledge” is something the leading men and the learned in the British colonies can do which will bind them together through a series of intellectual, social, and cultural networks and thus contribute to the material and economic good of the British Empire.

The first Drudgery of Settling new Colonies, which confines the Attention of People to mere Necessaries, is now pretty well over; and there are many in every Province [colony] in Circumstances that set them at Ease, and afford Leisure to cultivate the finer Arts and improve the common Stock of Knowledge. To such of these who are Men of Speculation, many Hints must from time to time arise, many Observations occur, which if well-examined, pursued and improved, might produce Discoveries to the Advantage of some or all of the British Plantations, or to the Benefit of Mankind in general.²


² Franklin, A Proposal.
Franklin imagined a web of communication, centered in Philadelphia, engaged in for the good of unifying what he called “Men of Speculation” of the British colonies around the collection and study of the American natural world. He spoke of knowledge in the terms that “speculation” or natural knowledge was, like the fine arts, a product of the progress of civilization. In this broadside, Franklin not only defines “useful knowledge,” but also the kind of men — “Men of Speculation” — who would engage in its promotion. As useful knowledge contributed to the common good, both of the colonies and the greater British Empire, so also would the men who promoted it. Later writers for the American Philosophical Society followed Franklin’s vision and language for the study of the natural world.3

The American Philosophical Society was not “officially” founded until 1769 when two smaller societies were folded together to create The American Philosophical Society, Held in Philadelphia, for the Diffusion of Useful Knowledge. Both societies claimed Franklin as the president. The newly joined American Philosophical Society continued to use the phrase “useful knowledge” in the 1769–1771 *Transactions of the American Philosophical Society*. In the preface to this volume the purpose of the society

3 No American society was formed immediately from Franklin’s proposal, but the London-based “Royal Society of Arts” was organized in 1756 and directly and explicitly modeled after Franklin’s proposal. The primary purpose of this society was to encourage experimentation and development of potentially commercial enterprises in Britain and in the colonies. When Franklin lived in London from 1757 to 1762, while involved in political negotiations on behalf of the colony of Pennsylvania, he was an active participant in this society and served as a Chairman on the Committee on Colonies and Trade. Both he and another American contributed financially to the Royal Society of Arts, which encouraged endeavors by offering “premiums” or monetary prizes, for the development of innovations in various enterprises, for instance, methods of cultivating silkworms in America. In the 1770s, as America contemplated revolution, Franklin soured on the idea of the premiums, saying they were nothing more than inducements “to quit a Business profitable to ourselves [Americans] and engage in one as shall be profitable to you [British].” See D.G.C. Allen, “‘Dear and Serviceable to Each Other’: Benjamin Franklin and the Royal Society of Arts,” in *Proceedings of the American Philosophical Society*, Vol. 144, No. 3 (Sep. 2000), 260.
and the meaning of “useful knowledge” was clarified. By the 1770s, the writers felt the need to contextualize a word Franklin had used unapologetically — “speculation”:

Knowledge is of little use, when confined to mere speculation: But when speculative truths are reduced to practice, when theories, grounded upon experiments, are applied to the common purposes of life: and when, by these, agriculture is improved, trade enlarged, the arts of living made more easy and comfortable, and, of course, the increase and happiness of mankind promoted: knowledge then becomes really useful. That this Society, therefore, may, in some degree answer the ends of its institution, the members propose to confine their disquisitions, principally, to such subjects as tend to the improvement of their country, and advancement of its interest and prosperity.4

Here the APS felt the need to move beyond the idea that “speculation” in and of itself was useful. Speculation is rooted in conversation, and was coming to be associated with the hazardous “speculative philosophy” which was often a sort of code word for materialism, Deism, and atheism deplored by Christian apologists. The “useful knowledge” they promoted instead would lead to material and perhaps measurable improvements and provide for the “increase and happiness of mankind.” The men of the APS drew a line around “useful knowledge” and argued it was different from other kinds of conversation.

The American Philosophical Society was not the only learned society to lean on the idea of “useful knowledge” as a new imperative for studying the natural world. John Gascoigne’s study of Joseph Banks, *Joseph Banks and the English Enlightenment: Useful

---

4 Franklin, *A Proposal*. American Philosophical Society, *Preface*, i. The question of the foundation of the APS was far from a given. As the *Transactions* also describes, in 1769 the American Philosophical Society, held in Philadelphia, for the Diffusion of Useful Knowledge, formed as a joining of two separate societies, between whose members there had been much contention, the APS was eager to erase the inter-society strife and create a sense of continuity that every member could agree on. It was important to keep Franklin as the President for the duration of his life, even though he was rarely able to preside over the society in person and in fact, was often traveling.
Knowledge and Polite Culture, shows how Banks embodied and promoted the program of “usefulness” in the British Empire. Gascoigne shows that Banks wanted to make science a part of “polite society” and a key part of that politeness was to use scientific ends to the service of benevolence and the improvement of man’s social, physical, and cultural condition. Like Banks, the APS argued that science was put to use when by its methods, “agriculture is improved, trade enlarged, the arts of living made more easy and comfortable, and, of course, the increase and happiness of mankind promoted.”

Likewise, for Americans who promoted this understanding of the good of “useful knowledge” to be what we would call a scientist was to participate and contribute to both American happiness, and also to the good of all mankind. These kinds of civilizational advances, combined with the idea that useful knowledge was ultimately serve the purpose of benevolence, placed it squarely in the framework of the culture of politeness.

Benevolence and the humanitarian aims of the APS are also hallmarks of the Enlightenment.

As John Robertson argues, while the Enlightenment is profitably studied in a national context, it is important to remember that national enlightenments were linked to an international scene through a common framework of ideas, philosophies, and ways of thinking. Americans promoted the notion that learned societies and groups of men who studied that natural world formed an international republic of letters above the political concerns of war, treaties, embargos, and the like. They also argued that the very physical

---

placement of America could help American learned men make unique contributions to the “common stock” of knowledge, if only they were trained properly to recognize and contextualize American nature.\textsuperscript{6} Their view of science in the Enlightenment Republic of Letters was at once cooperative and competitive. Those who studied natural knowledge lauded discoveries and the furthering of knowledge as benefiting all mankind while at the same time noting jealously from which country or city the advances came. Thus “useful knowledge” was not only polite, in that it was the subject of conversation among a broad spectrum of civilized men and women, but also profoundly nationalistic, in that it formed the basis for judging which countries contributed more to the shared knowledge of humanity.

The American Philosophical Society followed Franklin’s model for judging legitimate participation in the Philadelphian world of letters while maintaining the language of usefulness he had popularized. However, like Franklin himself, their actions and activities offer important clues to what cultural space the practice of useful knowledge occupied. Members of the APS made sure polite participation in their or another learned society was a key element of promoting useful knowledge. In using polite participation in the republic of letters to leverage his social status, men like Franklin and Rittenhouse tapped the egalitarian potential implicit in the culture of politeness and in the world of letters. As Lawrence Klein recalls, some eighteenth century prescriptive writers

wanted to “create an environment of sociability that would, within limits, downplay social distinctions and encourage the effect of equality.”

The learned society, especially as practiced in America and on the pages of various learned journals, was just such an environment. No contribution was excluded from the American Philosophical Society. Every kind of experience and discovery was deemed equally worthy of inclusion in the society’s pages and halls. Jefferson’s Megalonyx fossil was listed in the same transactions that had earlier printed a story about a worm living in a live horse’s eye. Historians of American science cite the “Baconian” or “Humboldtian” impulse behind such unedited inclusion of facts. By this they mean the theory that one must collect facts indiscriminately and then, through analysis of the large body collected, form a theory. However, the inclusiveness displayed by the men of the American Philosophical Society demonstrated not just a thirst for knowledge but also demonstrate the polite impulse to not exclude any willing and able participant. As Fontes De Costa argues of the Royal Society in the early part of the eighteenth century, a way of understanding the focus on curious contributions “is to consider that reports and

---

7 Lawrence Klein, “Politeness and the Interpretation,” 879.
exhibitions of extraordinary phenomena of nature enabled the exercise of civility and sociability by the Society.”

The acceptance and display of curiosities, no matter how seemingly bizarre (several types of petrified animal dung were given to the APS throughout the years), not only served as a way for members to be polite with one another, they provided a way for the Society to extend inclusion to the general public.

The men of the APS embraced the idea that science was one activity in the spectrum of “polite society” that conferred gentlemanly status on those who were able to participate. Pursuing useful knowledge was a commitment to self-improvement as much as it was to contributing to the store of common knowledge.

Further, the more men participated in the society, the more it demonstrated America’s cultural advancement. In its published writings, one constant of the APS is language that links useful knowledge, men of good character, and the political importance of fostering such endeavors.

Focusing on the benefits to all mankind helped post-war members of the APS find a place in the international republic of letters. In 1786, one could read in the American Philosophical Society’s Charter, that “nations truly civilized, however unhappily at variance on other accounts, never wage war with the arts and sciences and the common interests of humanity....”

The third volume of the American Philosophical Society’s


12 For the idea that “improvement” meant “self” improvement rather than “economic” improvement for moral philosophers and thinkers in the Scottish context see, John Dwyer, Virtuous Discourse: Sensibility and Community in Late-Eighteenth Century Scotland (Edinburgh: John Donald Publishers, 1987).

Transactions, from 1793, insisted that, “Philosophers are citizens of the world; the fruits of their labours are freely distributed among all nations.”

And Thomas Jefferson, who was then President of the Society, wrote to a correspondent in 1809, “These [learned] societies are always in peace, however their nations may be at war. Like the republic of letters, they form a great fraternity spreading over the whole earth, and their correspondence is never interrupted by any civilized nation.”

Science was the marker of polite civilization. And as the “civilized” world of Europe became increasingly martial around the turn of the century, evidence of politeness became increasingly important. The implication was clear. America as a young nation could demonstrate that she was “civilized” and thus worthy of international respect, by showing a commitment to scientific societies. Members discussed the purpose of the American Philosophical Society to define and demarcate its activities as a particular type of cultural phenomenon. They promoted their activities by touting the material and cultural benefits of studying the natural world. Like the men in the APS who argued that knowledge had to go beyond “mere speculation” and produce material benefits but still engage in a social atmosphere of egalitarian politeness, Charles Willson Peale promoted his natural history museum as both polite and useful.

---


3.3 The Historiography of Charles Willson Peale’s Museum

When David Rittenhouse first heard of his friend Charles Willson Peale’s idea for a natural history museum, he said that while it might provide Peale with amusement, “rest assured that it would be a very unprofitable labor.” The historian of early American science Brooke Hindle explains this reaction by referring to scientific snobbery but also to the notion that science in early America was simply unprofitable. “Probably Peale did not perceive that behind that answer lurked first, a feeling that an experienced painter was not likely to become a respectable scientist and second, that in his own pursuit of science Rittenhouse had never found much financial reward.” Indeed, we have seen that Rittenhouse did not make a living in the pursuit of science. In spite of Rittenhouse’s pessimism, Mr. Peale’s Natural History Museum became a national landmark. From 1786 until his death in 1827, Peale proved that the American public would pay to see American flora and fauna, artfully displayed. Unlike earlier attempts to create a museum from his art, after a few years of hard work, natural history was a profitable public entertainment.\(^\text{16}\)

Peale’s most enduring scientific legacy, his natural history museum, was built on the line between entertainment and science and thus has been hard for historians to analyze. However, Peale himself saw his museum as operating squarely within the realm of polite society, no matter what the subject matter on display. Variously housing patriotic portraits, art displays, music festivals, natural history lectures, a souvenir silhouette making machine, and preserved American wildlife, Peale’s museum was a

popular cultural institution. But Peale wanted more than to just entertain the American public; he saw his museum as a vehicle for promoting polite patriotism. From his early days as a portrait artist, Peale turned his talents to creating displays to instruct the people in American patriotism and thus inspire emulation of virtuous Americans, and in so doing to promote good Republican citizenship. He eventually found that natural history provided the perfect medium for him to pursue these goals. Through his natural history museum, he also provided an important central space for Philadelphia’s nascent natural history community, came up with new methods in taxidermy to preserve America’s natural specimens, and displayed natural history in innovative ways designed to appeal to a broad public. He served up serious natural historical work to transform the entirety of polite Philadelphian society into patrons of useful knowledge in the new republic.

Scholars of the early national period have long recognized that Charles Willson Peale’s museum was an important cultural institution. However, his status for historians of science has been ambiguous. For instance, Brooke Hindle in *The Pursuit of Science in Revolutionary America* sees Peale’s museum as a larger and more popular version of a natural history cabinet. But Hindle recognized that the museum was not what we would call a scientific institution. He locates the ambiguity of the museum in the fact that Peale charged admission. “Although he charged admission,” Hindle writes, “he always directed it with the intention of advancing science.” 17 Like all historians who followed him,

17 Hindle, *The Pursuit of Science in Revolutionary America*, 260; two good collections of articles on many aspects of Peale’s work are Lillian B. Miller and David C. Ward, *New Perspectives on Charles Willson Peale: a 250th Anniversary Celebration* (Pittsburgh: University of Pittsburgh Press, 1991), and Richardson, et. al., eds. *Charles Willson Peale in His World*. For the cultural and social importance of
Hindle thought that Peale’s museum was not something that “advanced science” but rather saw it as something that instead “improved the intellectual atmosphere.” For historians of science Peale’s museum has mostly been a way to gauge the place of science in the context of early American popular culture. Cultural historians have followed their lead, recognizing that Peale’s museum is a fascinating window into the make-up of the early American public.

The ambiguous status of Peale’s museum has led historians to ask why Peale’s museum ultimately failed as a scientific institution, or even as an institution of popular science. Once Peale died, the distinctly scientific character of his museum was lost and it faded into mere sensationalism. In fact, the famous Barnum and Bailey bought his collection of preserved flora and fauna, mostly, one surmises, for the various abnormal specimens Peale had collected. Most historians suggest that the American public was hostile or indifferent to public science, or science that could not be shown to yield a direct profit. Or they argue that the science on display in Peale’s museum — Linnaean natural history — eventually became overshadowed by more focused or specialized developments in the life sciences. However, exploring Peale’s advertisements for his museum and the way he conceived of his own role as museum proprietor shows that he saw the museum as a civic institution. He wanted to use it to create a social space where ostensibly all members of society could view natural history and public portraiture and through them learn to exhibit a “polite patriotism.” This was in contrast to the British

Museum under Joseph Banks, which also charged admission, but only opened its doors to people who had read and prepared themselves to understand the collections. Peale instead offered the museum as a place of instruction in both the natural history of America and in how to be a good citizen. Peale used two mediums to show what being a good republican citizen was, portraiture and natural history. Both were long associated with politeness and sociable conversation. By also linking these ventures with American patriotism, Peale linked the foundation of the government of the country by great leaders like George Washington with the physical foundation of the country through the exploration and cultivation of the natural bounty of the American landscape. By using portraiture and natural history to do so, he associated both with politeness. So much the better that Peale’s politeness, unlike that of the APS, was centered on material objects displayed in public. As David Shields argues, periodic repetitions of social rituals give people a chance to establish reputations — to display themselves as financially and socially in good health. But so much the better when those social rituals were shaped around a concrete object or produced a lasting result. “Writing, portrait painting, and even music supplied [more] durable registers of one’s attainments.” Whereas, “talk was incidental in conserving reputation, music, literature, and fine arts were central.”

18 Gascoigne, 117.

19 Shields, _Civil Tongues and Polite Letters_, 144. For more on science in urban society see Dierig, et. al., “Toward an Urban History of Science,” 1-19.
3.4 Peale’s Portrait Painting and Radical Politics

Peale’s early life, first as an apprentice saddler and later as a trained portrait painter, was marked by one dynamic. Charles Willson Peale was a Philadelphian political radical who wanted to remain on good terms with the genteel class who bought his paintings. Peale’s early life is a study in the clash between Peale’s political ideology and his financial dependence on a conservative establishment. Sponsored by Maryland’s elite, Peale again and again angered the friends and patrons he made from portrait painting by participating in public political protests. Charles Willson Peale was born in 1741 to a Maryland schoolmaster, Charles Peale. Charles Peale the elder was an English convict who had been sent to America as punishment for forgery. When Charles Willson Peale was nine, his father died and his mother moved the family to Annapolis where she supported them with her weaving. At the age of thirteen, Peale was apprenticed to a saddler. Seven years later, in 1761, he gained his freedom, took a loan from his former master, and set himself up in Annapolis as a saddler, a watch repairer, and, increasingly, a portrait painter. He was inspired to take up painting when he came across some bad landscape art in a hotel on a sales trip. Convinced he could do better, he taught himself to paint and began visiting with local artists, including John Hesselius, for help. Over the course of those early years, he became indebted to several wealthy men in the area. Perhaps foolishly, he also joined the Sons of Freedom, a political group. When this group

---

20 In the context of Philadelphian and Pennsylvanian politics of the revolutionary era, the word “radical” refers to those who first supported revolution from Britain, and who also supported more egalitarian or democratic structure to the state constitution. They tended to be the same, as in Pennsylvania, Independence was seen as a way to overturn the elite Quaker and wealthy merchant leadership, who opposed separation from England.
of tradesmen marched in the streets in favor of their assembly candidate, Samuel Chase, waving flags, Charles Willson Peale marched with them. These public political displays angered his creditors, who opposed Chase. They in turn threatened to call in Peale’s debts.  

In 1765, Peale so angered his creditors he was forced to ride out of town on horseback, leaving behind his wife and newborn son, his box of paints abandoned on the side of the road. He went north to Boston, and there visited John Singleton Copley’s picture room where the famous American painter lent him a miniature to copy. Also while in Boston, he participated in demonstrations against the Stamp Act. But, later that year or the next, Peale’s brother St. George (the author of the poem to David Rittenhouse explored in the previous chapter) made a deal with Peale’s creditors so he could return to Annapolis and his wife and son. After Peale’s return, John Beale Bordley, a gentleman of Maryland society and long time friend and supporter of the Peale family, saw one of Peale’s paintings and recognized the latent talent. “Something must, and shall, be done for Charles,” Bordley said. True to his word, Bordley used his influence to raise a subscription to send Peale to London to study with the American painter, Benjamin West.

---


23 Bordley had been one of Charles Peale’s students. Quoted in Sellers, Charles Willson Peale, Vol. 1, 185.
More than simple charity, as David Ward argues, sending Peale to London to learn painting was an act of patronage that was supposed to redound to the credit of the community.

By sponsoring Peale, the Marylanders confirmed their political and social standing as community leaders. They acted generously to aid the family of one of their own. While this patronage benefited a single individual, it had a psychological ripple effect among the community as its grandees were seen to act munificently and yet appropriately for their class.24

By championing Peale, Maryland’s elite created a painter who could provide portraits of their class and thus buttress their social standing by allowing them to be the kind of class that purchased and displayed portraits.

The Maryland gentry supported Peale in London for two years, where he studied with Benjamin West. Even in England, Peale expressed his political leanings, now as a staunch American patriot. He went even further by planning to turn patriotism to profit. He made a set of prints from a portrait of that Whig Parliamentary champion of the colonies, William Pitt. After he returned to America, his earliest American portraits were of colonial Whig leaders: John Beale Bordley and John Dickenson, among others.25 In these portraits he used emblematic elements to represent the pro-American stance of his subject. Peale’s fidelity to the American cause was rewarded when he was commissioned by the Continental Congress to paint a portrait of George Washington. This commission


25 For Peale’s emblematic painting, see Miller and Ward, eds., New Perspectives on Charles Willson Peale, 176-8.
expressed succinctly the ideals behind portrait painting as a national endeavor, ideals
with which Peale would have wholeheartedly agreed:

Resolve of the Supreme Executive Council to Commission a Portrait of
Do resolve, That His Excellency General Washington be requested to permit this
Council to place his Portrait in the Council Chamber, not only as a mark of the
great respect which they bear to His Excellency, but that the contemplation of it
may excite others to tread in the same glorious and disinterested steps, which lead
to public happiness and private honor.26

By encouraging “the contemplation of” portraits of great men Congress would “excite
others” to “tread in the same glorious and disinterested steps.” Congress, by
commissioning Washington’s portrait sought to promote “public happiness,” that is, the
good of the country, and “private honor,” that is, credit, fame and honor to the individual
as a reward for his or her self-sacrifice.

In 1776, Peale moved to Philadelphia in hope of finding a larger market for his
portraiture. With his characteristic enterprise, he turned a display room in his private
home into a public portrait gallery, the “Gallery of Great Men.” The portrait gallery was
the first attempt by Peale to create a national institution; by displaying for the public
prominent patriots, he hoped to both honor those men and also instruct the public in their
own duties. It was this portrait gallery that eventually turned into the natural history
museum. But though the contents changed, the aim of the museum was always the same:

to instruct the public in virtue and patriotic duty and, by doing so, to make them better citizens.27

After moving to Philadelphia in 1776, Peale continued to engage in public displays of his egalitarian politics. He was elected chairman of the Constitutional Society. This radical political group, made up of the city’s mechanics, fought for greater democratization of power, fairer market practices by the city’s merchants, and championed the radical state constitution of 1776. Other members included Timothy Matlack, Benjamin Rush, Thomas Paine, Thomas Young and David Rittenhouse — all, incidentally, members of the American Philosophical Society.28

One of the main points of contention between the Constitutional Society and their opponents, the Republican Society, was the issue of prices, price gouging, markets, and monopolies. Loyal to Thomas Paine, who was a member of the group, and the idea of egalitarian political representation, the Constitutional Society advocated a fair playing field between wealthy merchants and poorer tradesmen and artisans through price regulation. They marshaled convention-style politics, letter-writing, and crowd intimidation to secure their goals. They were bitterly opposed by the members of the Republican Society. The Republican Society, for its part, was convinced that the city and

27 “Peale’s efforts were part of a search for American national emblems, an aesthetic contribution to a process of national self-definition that involved the reinterpretation and adaptation of traditional emblems and the creation of new ones to define the emerging nation,” Miller and Ward, eds., New Perspectives on Charles Willson Peale, 177.

colony were degenerating into a “mobocracy,” and that the rule of law was under attack. Charles Willson Peale, however committed he was to egalitarian ideals, was also torn by his political activism. He had friends, creditors, and patrons among the upper classes of Philadelphia, men and women who had commissioned portraits from him, and whom he saw as the primary encouragers of the fine arts in the fledgling country. Peale often found himself acting as the voice of moderation and restraint on the crowd actions of the Constitutional Society.

As a leader in the Constitutional Society, Peale served on many “correspondence committees.” During a mass meeting in front of the state house on May 25, 1779, a correspondence committee, called the Committee of Six, was charged with dealing with the supposed mercantile abuses of Robert Morris. In 1779 Morris was accused of monopolizing goods and controlling prices. Twice in that year, his company bought large shipments of staples, one of dry goods and one of flour, and both times, instead of prices on those items falling when he sold the goods in Philadelphia, they rose. An extralegal committee (that is, one not formed by the duly elected legislature or any other branch of Pennsylvania government) was commissioned by an open town meeting to demand an explanation from Morris. In a letter of July 21, 1779, Charles Willson Peale, Timothy Matlack, David Rittenhouse, Thomas Paine, and J. B. Smith wrote to Robert Morris asking him to justify his behavior. The committee accused Morris of being unpatriotic by profiting on a transaction of goods that, they argued, should have been sold at low prices to supply the beleaguered city. As a result of the massive outcry against Morris’s

transactions, the committee itself seized the first shipment of flour by force. The second shipment of dry goods was taken over by the Continental Congress.³⁰

Confrontations between Constitutionalists and Republicans continued through the summer and fall of 1779. When Whitehead Humphrey attacked Thomas Paine anonymously on July 9 in the *Pennsylvania Evening Post*, a mob gathered at the paper’s offices to find out the identity of the author. The Constitutionalists marshaled the Continental army to try to drag Humphrey from his bed. Alerted to the possibility of dangerous mob violence, Peale became a voice of restraint for his party. Later that summer, the city’s militiamen gathered to run their opponents out of town. They targeted the wives and children of Tories who had fled the American Revolution, and then the leaders of the Republican Party. In both cases, Peale counseled restraint. The conflict came to a head with the Fort Wilson Riot when Robert Morris, James Wilson, George Clymer, and other Republican leaders were chased through the streets by a militia that had gathered to protest price gouging and other offenses. They and several others barricaded themselves in Wilson’s house where they were shot at. Several of the militia were arrested and imprisoned. The next day, Peale was instrumental in preventing the angry militia from storming the jail to forcibly free them. In October of 1779 city elections went overwhelmingly in favor of the Constitutionalists.³¹

---


The violence surrounding the class-based politics demonstrates the high feelings that coursed through Philadelphia in the 1770s, largely surrounding the controversy about the legitimacy of business interests and wealth. The Revolutionary War only exacerbated class tensions. In Philadelphia, the word “Tory” was almost synonymous with the upper classes. The British, not once, but twice, occupied the city during the war, and during the occupations upper class ladies went to balls and danced with British soldiers. A decade of enjoining the citizens of the country to boycott British goods, the general opposition to independence by members of the old, merchant-led Pennsylvania Assembly, and the growth of visible economic discrepancy between poor and rich, all heightened the notion that profit was antithetical to patriotism and thus to virtue. Profit and patriotism, in the mind of the Constitutionalists, did not mix. The lesson that concern for money could undermine patriotic effort was driven home by the traitorous actions of Benedict Arnold. Unlike Arnold, an ideal patriot would be self-sacrificing; greed and concern for personal well-being and advancement would not lead a true patriot to espionage. Upon receiving news of Arnold’s betrayal, the city of Philadelphia held a procession and bonfire for which Peale supplied the obligatory effigy to be burned. The elaborate float Peale produced showed Arnold making a deal with the devil. He was depicted in Peale’s float as selling out the revolutionary cause for the bag of gold that Beelzebub shook in front of him.32

Uprisings and Civil Authority in Eighteenth-Century America,” William and Mary Quarterly Vol. 27, No.1 (1970), 3-35.

After creating this display of Arnold’s treasonous turn, public officials turned often to Peale to create public displays celebrating events of national or local importance. In 1782 Congress commissioned Peale to create a display to celebrate the birth of the Dauphin of France and in 1783 to create a triumphal arch to celebrate American victory. But, ironically, it was working on these displays that eventually dissuaded Peale from creating civic art and civic displays directly for the public. The Grand Triumphant Arch display ended in a disaster that cost Peale a good deal of money and almost his life. The Arch was a frame upon which Peale affixed transparent paintings of Washington and allegorical representations of concepts like Peace and Victory. Peale planned an elaborate fireworks display to go off when the crowning glory of the figure of Peace ascended from the inside of the Arch to top the edifice. Lanterns would light Peace from within. On January 22, 1784, the combination of fireworks, lanterns, transparent material, and flammable paint made a disastrous end to the public celebration. A firework detonated by accident, the transparent pictures caught on fire, and the ensuing blaze injured Peale and his slave and killed several bystanders.

Peale created another display to make up for the disastrous outcome of the first. Though a subscription for a second triumphal arch was started, it never gathered enough money to compensate Peale for his second work. Thereafter, Peale cautioned his children and his friends against producing for the public good. He wrote to Thomas Mifflin on March 29, 1784, complaining, “my Brother and I have laboured four months and only

____________________________

received £160. [I]f I get any further recompense I must beg it.\textsuperscript{34} In his autobiography, he compared the problems of working for the public with working for individual clients. While it was possible to accuse an individual of ingratitude and thus shame him into paying, he said one could never shame the public as a whole. He slowly but surely left behind what some historians have called the politics of the street for the indoor politics of politeness. After the triumphal arch debacle of 1784, Peale continued to create public displays of patriotic art meant to be viewed by people from all stations, but he increasingly concentrated on showing his art in the long exhibition room in his home where he could charge admission and control the crowd.\textsuperscript{35}

At about this time Peale also left behind his formal political association with the Constitutional party and started to distance himself from radical politics. He realized that the targets of radical attacks were often members of the very class that supported his portrait-painting career, men with whom he desperately wanted to remain friendly. To repair strained relations with friends and patrons who disliked his politics, he blamed his inability to control his own reputation. To try to assuage the hostility of those his party had acted against, Peale claimed that he had been misrepresented. In this letter to Samuel

\textsuperscript{34} Ibid., 411.

Chase, written on November 23, 1784, Peale explained that, even though he had always acted with virtue and honor,

yet in more Instances than one, have I been most shamefully misrepresented and accused of a Conduct the very reverse of what I acted. Meeting with such vexatious misrepresentations, and finding the party disputes of this State intolerably disagreeable, four Years past I have laid politicks aside and persued the Brush, and have enjoyed much more peace of mind, by so doing, I have regained friends where I had lost them, and this I hope and wish to do if I have been so unfortunate as to loose your good opinion....

As an artist, being misrepresented must have been particularly galling. Peale worked hard throughout his life to solidify his social standing in Philadelphia while remaining true to his radical political ideals.\(^{37}\) Toward that end, he used the rhetoric of virtue and self-sacrifice to manage his reputation. Managing reputations was paramount in societies where social status was in flux. David Shields writes,

> In societies as dynamic (unformed) as those of the colonial port cities, the impulse to secure one’s place in a traditional order was strong but fraught with difficulties. Brandishing signs of class, rank, profession, religion, or organization membership became the task of all who had found a secure place or who aspired to a secure place in the social hierarchy.\(^{38}\)

Lacking other outwards signs of his status, Peale created what he may have hoped would be seen as a new genteel occupation, museum proprietor. When he turned to promoting his museum both as an exhibition place for his art and later, as a natural history museum, he appealed to the ideals of patriotism and self-sacrifice illustrated in his public art


displays, but he assured his audience that within the confines of his long room, patriotism, which had exploded into violence on the streets of Philadelphia, would be made polite.39

3.5 Peale’s Civic Self-Promotion

Peale ambitions for his museum were on display in the advertisements he wrote. In 1785, the Pennsylvania Packet ran an advertisement for Peale’s moving picture show. The moving picture show was set up in Peale’s long room, a room constructed with a skylight running across the entire length of the ceiling. The audience sat on bleachers and was treated to a display of transparencies made from paintings on thin cloth and illuminated by the light from the ceiling or artificial lighting. The transparencies were carried past the audience by a backstage crew in a choreographed pattern, designed to depict a reenactment of a famous battle, or of the changing of the seasons.40 At the end, the advertisement proclaimed the circumscribed area of public participation, “The first exhibition will be To-morrow, at twelve o’clock — the doors to be opened at half after eleven,” and also the price, “Admission cards, at seven shillings and six pence each


[equivalent of a dollar] to be had at the houses of Messrs. Charles and James Peale.”41 In the rest of the advertisement Peale used the language of innovation, hard work, disinterestedness, and civic pride to convince his audience that attending his exhibition was more than mere entertainment, and that Peale himself was more than a businessman. Supporting Peale, and his art, was to be read as an act of mass patronage, of polite consumption. Like the Maryland gentry who funded his painting lessons, Peale invited the Philadelphia public to bootstrap themselves up into a more polite world by paying him to create an innovative form of entertainment.

The advertisement had several characteristics that would become typical of Peale’s discussions of his public work, whether natural history or art, whether public or private. First, Peale always emphasized the self-sacrifice that went into the project. “MR. PEALE respectfully informs the public, that with great labour and expence, he has prepared a number of perspective views, with changeable effects, imitating nature in various movements.” Second, he stressed the novelty of the enterprise, and the expense of such novelty, “This manner of exhibiting pictures, imitations of choice parts of natural objects, in which motion and change is given, is entirely new, at least in this part of the world; and cannot be performed without much complicated and costly machinery.” Third, he again emphasized his own self-sacrifice and denied that he was in it for the profit. “If the expectation of profit to himself at all, excited Mr. Peale to the laborious undertaking, he assures the public, it was not the sole or principal inducement.” He denied the profit motive by appealing to a love or attention to a higher law — whether the art of the

painter, the patriotism of a citizen, the objectivity and universal goodness of science. “A painter, who loves his art, is rather studious of producing pieces that are pleasing to the world, and that give him applause, than of immediately gaining pecuniary advantages.”

Fourth and finally, Peale appealed to the patriotic virtue of the project by arguing that it enhanced the fame and prestige of the city by contributing to its reputation as a polite, and thus civilized, place to visit. He argued the museum would be agreeable, and would add to the character of the city.

He was further moved by the consideration, that as well as citizens, it might also entertain strangers, coming to the city, and add a mite to the agreeableness of it, and to their approbation of the place. — This he humbly thinks is an attention becoming every citizen, towards strangers, — and indeed tends to its emolument and character.42

After describing the nature of the display, Peale made his final sales pitch by appealing to the civic virtue of the people, which they would demonstrate in the form of “encouragement” for the art, that is, in monetary support. Their monetary support would yield both personal entertainment and also the promise of future entertainment, entertainment that would redound to the credit of the city, the country, and to the credit of the individuals living in it. Peale thus attempted to replace the patronage relationship that typically existed between artist and genteel individual with one between the artist and the public.43

Having been biased to undertake and complete the work, Mr. Peale hopes for the encouragement of the public in rewarding him for his invention and labour (which

42 Ibid.

43 Ibid.
was far beyond all ideas of it before he began) and induce further introductions of public entertainment in the city.”

Peale assured the public that he was concerned with their comfort and gentility, and that his amusement was suitable for polite people, “He has fitted up his picture gallery, with raised benches, for the ladies and gentlemen who will favour him with their company.”

Whereas before Peale brought his public art to the street, where it was subject to the vicissitudes of nature and of the unruly and non-paying crowd, with his public museum, a newly circumscribed public was invited to enter his home and be treated to a controlled display that would appeal to the viewers’ senses of their own virtue and social standing, in this case of moving pictures that depicted scenes from nature.

The moving picture exhibition was not as profitable as Peale would have liked. As Peale described his financial situation to his friends, debtors, and creditors, it becomes clear that Peale was at the lower financial limit of what we might call middle class gentility and struggled to maintain that place. To John Beale Bordley he wrote, “Altho’ the profits are not so great as I had promised myself from my Exhibition yet by the Tryal I have had find that it will at least Supply the House with Market money.”

In this letter to George Weedon, on July 13, 1785, Peale echoed his earlier lament, and illustrated just how poorly off he was.

My Exhibition is not so profitable as I expected; it pleases well but there is not a bustle anough to make the People run mad to see it. [I]f the profits is not sufficient to enable me to ride in my Coach, I can nevertheless be tolerably happy in going on foot. at any rate it will ease me in my other labours.

44 Ibid., 434.
45 Ibid.
In other words, he wanted the money from the museum to help him and his family participate in polite society. His wife and children would have “market money” to spend on shopping and perhaps buy some of the material manifestations of politeness, and if successful enough, Peale would be able to use his coach, a symbol of being in the genteel class.

When Peale corresponded with people about his finances, he always claimed that money paid to him were not profits, but allowed him to continue his public work. He identified himself as a public resource and he argued that supporting a starving artist or museum curator should come before his correspondent’s pecuniary interests. Though he also appealed to their sympathy by emphasizing his large and hungry family, he assured his creditors that supporting him was good for the city. This letter to John Swanwick asking for coal started with appeals to sympathy. “The fear of an aged mother a Wife and 7 Children & two kitchen Children suffering first induced me to ask you for Credit for some coal for 2 weeks....” But he linked this sentimental appeal with an appeal to civic-mindedness. Because Peale was an artist, he argued, supporting him supported the arts. “I believe you to be a friend to the Arts and therefore in this decline of encouragements. I hope you will assist an Artist who thanks you for past favours, and who would fondly be esteemed your friend and Humble Servt.” On his copy of this note, Peale added a line that says, “This Letter had the desired effect, and I Recd the Coal.”46 Perhaps Peale appealed to the civic benevolence of his creditors because he was wary of being seen as a beggar,

46 Ibid., 463.
that is, he was unwilling to lose his social standing. By telling his creditors that in supporting him, they supported the arts, he was able to maintain, at least in his own mind, his social position.47

Peale used this logic in a failed attempt to persuade a benevolent society to pay him to free one of his slaves. This incident brings together three of the themes I have discussed above, Peale’s self-representation as a useful benefit to his city and country, his struggle to enter genteel status, and the repercussions of his socially radical politics. Peale’s letter to the “Gentlemen of the Acting Committee to Prevent the Distress of Negroes” of July 2, 1787, asked the committee to pay for the freedom of a woman who had been with Peale’s household for some years.48 He detailed the situation at length, first affirming the honor of the committee. “Gentlemen, To relieve the distressed is generous, and the office you have undertaken in as arduous Task, but full of humanity, therefore honorable.” His need, he assured them, was great. “I would not add to your labours did not necessity compel me.” He had a slave woman whom he had been trying to raise money to free for some time. “The Mulatto Woman which I mentioned to some of your Committee I had given a Considerable time to raise the sum of £50 to purchais her

47 However, in this letter to George Washington, the monetary concerns of civic virtue are absent. Peale here solicits some dead Chinese birds from George Washington for display in the museum. As in the first public announcement, Peale’s reasons are completely civic minded: “I have lately undertaken to form a Museum and have acquired the means of preserving in the natural forms, Birds, Beasts and Fish, my Intention is to collect every thing that is curious of this Country, and to arrange them in the best manner I am able, to make the Collection amusing and In[s]tructive, thereby hoping to retain with us many things really curious which would otherwise be sent to Europe, Miller, et. al., Selected Papers, Vol. 1, 464.

48 For the letter, see Miller, et. al., Selected Papers, Vol. 1, 481-2.
freedom.” In the letter he demonstrated his own willingness to suffer financial hardship for the sake of what was right

and at the same time I gave up one of her children to the father who is to have it learnt to read & write and have a Trade to be freed at the age of 21 yrs. For the Mother I have refused £100 and for this Boy I Refused £10. I might have got 15£ for his servitude to the age of 28 yrs. 49

In addition to refusing to sell the slaves to other masters who would not be willing to free her, Peale had himself already tried to raise money to free her. “I wrote a subscription paper for Philis to carry to the good & benevolent, and I expected from the Character therein given her that she would readily have found assistance, as the act was good and amongst many wants have been very light.” But, this was not successful because other people took his own failing out on her. “She tells me that [she] found several Persons cross and Ill natured, because her master [Peale] was active in the War & Politics in the late revolution.” What was worse, Peale’s efforts to maintain his social status worked against him, “others said I was rich enough to free her myself and would not give any thing.” Peale assured the committee that not only was his financial appearance deceiving, but that if he could free her, he would. “They know little of my circumstances, and do me Injustice to suppose I could be active without an approving conscience, or that I would others to do for me what I am able to do for myself.” Then, the true motive for wanting money comes out.

In short I want to raise money to pay a debt which I owe to the Gentlemen who owns the board yard at the Corner of Spruce & 3rd Streets as well as to some others who have been very Indulgent to me, and your kind assistance with your

49 Ibid.
Society to raise the sum proposed by which the Mulatto Woman will have her freedom will very much oblige. 50

The postscript to this letter explained why he thought it was appropriate to raise a public subscription to free the slave, and why the Committee should also feel obliged to support him.

PS my losses and misfortunes by the Market Street Exhibition [the triumphal arch] have been a principle [sic] cause of my present necessities, which to explain satisfactory would far exceed the bounds of a letter and should not now be mentioned but as it is a claim on the publick. 51

It seems clear from this letter that Peale wanted to get compensated for freeing his slave so he could pay off some debts. He could have sold her to another master, but he tried to get remuneration for the virtuous act of freeing his slave by appealing to others who were also presumably interested in acting benevolently. So Peale tried to leverage money out of the relief committee by offering to free his slave if they would only pay him to do so. He continued to appeal to his civic action — the market street exhibition in celebration of the peace treaty with Great Britain three years prior — as added leverage in making a claim on the committee.

Peale claimed that because his efforts as an artist were for the benefit of the city he himself was useful and should be supported by the public. He saw himself as a polite commodity whom others in a polite society should support. But he was blind to the effect that his own political views had on those who disagreed with him and also to the fact that he made money from his museum. The themes of this letter echo through much of Peale’s

50 Ibid.
51 Ibid.
life. Peale thought that his virtuous self-sacrifice, his usefulness to the city, should be rewarded by the community, if not the state, but his arguments for his own usefulness were denied by others on account of his politics and also because he appeared to be profiting from his labor. Peale’s rhetorical struggle with the Philadelphia community about the meaning of his artistic endeavors continued to plague him as he turned his art museum into a natural history museum. Even when he appealed to science as a polite and useful activity, and thus important for the civic life of Philadelphia, his very success in creating a popular sociable institution undermined his ability to get government funding.

3.6 Polite Patriotism on Display: Peale’s Natural History Museum

Peale turned his art museum into a natural history museum because of a mastodon. In 1784, Peale was asked to draw the bones of an excavated mastodon. While he was fulfilling this commission, he put the bones on display in his art gallery. Many people came to see the bones, and one Colonel Ramsey commented to Peale, “there are many men like myself who would prefer seeing such articles of curiosity than any paintings whatever.”52 Although it took him two years to follow up on the idea, Peale slowly transformed his portrait gallery into a natural history museum. Throughout the years of 1784 and 85, Peale collected animals and game, worked out a method of preserving his specimens, solicited his scientifically inclined friends for donations, and eventually set up displays of animals, plants, shells, and minerals in the long room of his house.

He set up the natural displays underneath the portrait gallery of great men, so that visitors were treated to flora and fauna rising in Linnaean hierarchy from reptiles through birds to mammals and men. Peale advertised his museum in the Philadelphia papers, opening the museum to anyone who could afford the modest entry fee. He continually added and updated exhibits, so that repeat customers would find something new with each visit. He intended to entertain as well as instruct; but exhibits such as a preserved cow with an extra leg (modestly covered with a cloth, so that only those who wished to see could) and later a very popular silhouette machine seemed more for amusement than education. In the case of the silhouette machine, a person’s silhouette was traced with a stylus that was hooked up to a machine with a cutting implement. The implement would mimic the movement of the stylus to cut a paper that was folded into fourths. With one movement, a person was given four small silhouettes of himself, which were traded with friends and family.

For twenty years Peale’s museum was a landmark in Philadelphia, foreign visitors wrote about it in their letters and travel diaries and guidebooks mentioned it as a premiere attraction. In that way, Peale’s succeeded in adding to the character of the city, in making it a polite place to visit. But he also wanted to use science to educate his audience in patriotic principles and polite civilization. This kind of education was directed at the mechanic or artisan class as well as anyone else who wanted to solidify their genteel status by being conversant in a polite branch of knowledge. Mechanics and artisans of

53 There is evidence to suggest that the poorer people understood this to be a primarily middle and upper middle class activity, and self-excluded accordingly. See Brigham, Public Culture in the Early American Republic.
Philadelphia embraced the culture of politeness as a social bootstrapping tool. Politeness, like the working classes themselves, privileged common knowledge, disdained highly specialized languages of classical education, and rejected the pretenses of educated professions.\textsuperscript{54}

Peale saw his museum as a new form of public education that would support polite civil society, and it was on this foundation that he argued the museum should be publicly funded. To buttress the claim that his museum was educational, he improved systems of taxidermy to make more lifelike and longer-lasting displays of preserved animals, established correspondences with naturalists and scientific societies all over the world, arranged to have a catalogue of the museum published to increase its scientific value, and eventually gave public lectures in natural history. In 1810, Peale had made enough money to semi-retire to a farm outside of Philadelphia, called Bellfield, and he turned over the museum to his son Raphaelle. He lived at Bellfield, inventing, painting, and farming, until he moved back to Philadelphia, shortly before his death in 1827, to take over the museum one last time. Before he died he painted a series of self-portraits, including the famous, \textit{The Artist in His Museum}.

Peale’s use of Linnaean classification for organizing his collection of preserved animals showed that he thought of his museum in scientific terms. Natural historians used Peale’s museum as both a gathering place and a place to study Peale’s preserved representations of American species. However, even though Peale’s museum seems to

\textsuperscript{54} Hyman Kuritz, “The Popularization of Science in 19\textsuperscript{th} Century America,” \textit{History of Education Quarterly} Vol. 21, No. 3 (Autumn 1981), 261.
have served as a fruitful center for the development of American natural history, he could not parlay this kind of success into governmental sponsorship, which was what he wanted. In Peale’s arguments, the natural history museum was worthy of public support because it would teach republican principles and would provide a valuable resource for the natural historians and natural philosophers of America. It would contribute to America’s political economy and would enlighten citizens about the nature of God. Furthermore, it would not only increase the fame of American natural scientists, but also benefit the study of natural history as a whole, by providing a repository for all the species of the new world, where learned men from every country could gather and learn. In all these ways, it would contribute to the reputation of Philadelphia as a polite and thus civilized city. It was a grand vision, and one that Peale promoted ceaselessly. In the end it turned out that the American public would pay to be entertained as individuals engaging in the polite consumption of an afternoon at a natural history museum but would not be taxed to support a public natural history institution.\textsuperscript{55}

In July 1786, Peale announced the opening of his natural history museum with rhetoric that equated natural history with patriotic self-sacrifice and hence usefulness. The rhetoric resonated with the public because the creation of an American-based museum with American specimens was in fact proof of the collector’s self-sacrifice. In the late eighteenth century, collectors could make money selling American specimens to

\textsuperscript{55} Peale’s museum has rightly been the focus of numerous monographs and studies looking to it as a way to unpack the changing nature of American popular culture, American art, and American science in the Early American Republic. Though I draw on the insights from many of these, I do not explicitly engage in any of these works. My focus here is on what Peale’s rhetoric tells us about the links between science and politeness in the time period.
European naturalists and collectors. By donating the specimens to Peale’s American museum, they eschewed profit in favor of their country’s reputation.\textsuperscript{56} They, like Peale, insisted that the reputation of American natural history was worth more, and would be of greater use to the country, than the quick monetary reward of selling bones to Sweden or Germany. As I have touched on, in America, sacrificing monetary rewards had strong patriotic implications. At the same time that Peale opened his museum, he also planned to take a portrait expedition to New York to paint three militia officers who had resisted a bribe for the public good. Thomas Kean wrote him an introduction to George Clinton:

[Peale’s] visit to New York is principally to draw the pictures of Messrs. Williams &c. the three Militia men, who, in spite of all corruption, arrested and secured the person of major Andre, the Depy. Adjutant General of the British Army, acting as a Spy &c. — His view in this is to perpetuate, as far as his art will go, this virtuous Exploit, and to recommend such conduct to the friends of liberty & of mankind.”\textsuperscript{57}

In addition to civic-minded self-sacrifice, Peale used the novelty of nature and the cultural cachet of science to sell tickets to his museum as a polite entertainment. He wanted the museum to be entertaining, useful, and able to generate polite discussions by providing the genteel viewer with all the information he or she would need to converse about natural history. He described the method of labeling the specimens on display to assure the potential museumgoer there would be more than just a random collection of curiosities.

The several Articles will be classed and arranged according to their several species; and for the greater ease to the Curious, on each piece will be inscribed the

\textsuperscript{56} Miller et. al., \textit{Selected Papers}, Vol. 1, 462.

\textsuperscript{57} \textit{Ibid.}, 453.
place from whence it came, and then name of the Donor, unless forbid, with such other information as may be necessary.  

Along with the scientific ideals of classification, Peale also signaled his desire that the museum be a cooperative effort. “Mr. PEALE will most thankfully receive the Communications of Friends who will favour him with their Assistance in this Undertaking.” Peale’s museum could thus appeal to all social classes, those who wanted to join the ranks of the genteel by participating in an endeavor from which they were normally restricted, and those who wanted to display their public spiritedness by donating specimens. Fourteen days after placing his first advertisement for the natural history museum, Peale was officially elected to membership of the American Philosophical Society.

For Peale, natural history was both a window on and the key to opening up the vast landscape of America’s natural resources. Historians like Karol Peard Lawson and David Nye talk about the American landscape in the context of creating a national identity. Three years after he opened his natural history museum, in 1789, in the spirit of civic pride and the newfound nationalism brought about by the ratification of the Constitution, Peale began advertising the museum by helping customers to imagine it as a triumphant national endeavor, an America in miniature. He addressed his 1789 advertisement “To the CITIZENS of the United States of America.” In this advertisement

58 Ibid.

59 Ibid., 448-50.

he likened the history of the museum to the history of America itself. In doing so, he established the foundation for readers to imagine both America and the museum growing into greatness from small beginnings and themselves participating in that greatness.

Peale made the story of his museum the triumph of man over nature, specifically, Peale’s triumph over the decomposition of animals upon their death. With “great” labors and many disappointments, he had prevailed in creating a system of preserving animals using arsenic. “The difficulties in preserving subjects being thus overcome,” Peale went on to describe his views of the Museum as a place to study natural history. He hoped the Museum had become “an object of attention to some individuals — who, it is hoped, may gain from it information, which, with pleasing and elevated ruminations, will bring them nearer to the Great-First-Cause.” The museum, Peale argued, was not built and established for any profit motive but was in the service of the common good through advancing useful knowledge. “He is therefore the more earnestly bent on enlarging the collection with a greater variety of beasts, birds, fishes, insects, reptiles, vegetables, minerals, shells, fossils... [etc., etc.]... promising to be useful in advancing knowledge and the arts.”61 He sought items that were “likely to be beneficial, curious or entertaining to the citizens of the new world.”62

Peale then reminded his audience that this great public project, which had as its object both the discovery of “the great first cause” and also the amusement of the very

62 Ibid.
citizens to which the advertisement was addressed, was being carried out by just one person.

But, alas! In compleating the design, a collection of all animated Nature, alone... requiring an age to enlarge it to the full consideration of a national magnitude; and yet these and other subjects are to be unremittingly pursued, and far as possible obtained, by an individual of but slender circumstances.63

In citing his own “slender circumstances,” he justified the potentially problematic move of charging the public to have access to something with obvious public benefit.

When he focused on the private ownership of the museum, Peale rewrote the relationship between customer and proprietor and represented himself. As he was wont to do with his art, Peale argued that supporting him was a demonstration of the patriotism of the consumer. Citizens with civic pride and a sense of self-sacrifice would support the sciences. With language that invoked the precariousness of the life of science in the country, he implored “friends of science,” to support the “infant design” of the museum. Peale further turned public support of the museum into a pious act at the altar of religion. “A design that, whilst countenanced by the Public, may grow into a great national museum, or repository of valuable rarities, for more generally diffusing an increase of knowledge in the works of the Creator — God, alone wise!”64

Peale assured his fellow citizens, that no matter what kind of encouragement he got, his own intention was to pursue the museum as far as his limited means would allow him. “At all events, MR. PEALE intends to prosecute the design with such means are at

63 Ibid.
64 Ibid.
his power.”65 But he reminded them that such an endeavor needed to continue beyond the
abilities or even the lifespan of one man, however gifted.

Should it happily receive the smiles of the Public, the progress will be
proportionably great; whereas, if it is to depend only upon his solitary efforts, the
progress must be so slow, that the whole may fall through, not for want of men
[of] so superior abilities, but for a successor equally zealous in building up and
enlarging the noble fabric, for the emolument of mankind — a fabric which, with
due attention, musts be continually improving to the end of time.66

Like earlier advertisements for his art gallery, Peale sold the natural history
museum by appealing to his own self-sacrifice, the widespread benefits of the project, the
amusement of the people attending, and added to these the special appeal of science
itself. In doing so Peale articulated an idealized relationship between science and the
polite public, with himself as moderator. This relationship linked the prosperity of the
museum and the fate of natural history in America directly with the public’s willingness
to be consumers of scientific display, described as useful knowledge. He appealed both to
people who would come and look as well as to those who could add to the collection.
Finally, he envisioned the government stepping in, so that the museum would be a truly
national endeavor and could be guaranteed to survive as a scientifically centered
enterprise in perpetuity.

Some agreed with Peale’s vision. “A Lover of Nature” wrote to the Pennsylvania
Packet on March 27, 1790, supporting Peale’s plan. Succinctly summarizing the

65 Ibid.
66 Ibid.
relationship between natural history, American greatness, patriotism, and Peale’s museum he argued that

A fellow citizen so truly meritorious cannot fail of encouragement from a people that pride themselves on republican virtue and patriotic honor. The United States are blessed by Divine Providence with admirable treasures in all the domains of Nature discovery and improving knowledge of them will continually open new sources of ease, wealth and happiness.67

This nature lover went one step further than Peale did and attempted, as Peale had warned his children was impossible, to shame the public into supporting such an endeavor by pointing out their ingratitude. “Inattention to them is, in reality, a degree of impious ingratitude to the glorious Benefactor.” 68

“Lover of Nature” intimated that the continuing success of the nation depended on individual people learning to identify their own role as genteel benefactors in a society of equals. In order for public projects to flourish, individual citizens had to display perpetual gratitude through their pocketbooks or else their republic would never match in civilized glory the aristocracies of Europe.

In European countries, princes can, by a portion of the public treasure, promote science and useful arts: our jealousy of liberty will not permit such liberality; and indeed in our present exigencies it is not very practicable — But to make up for this, the generosity of individuals is amply sufficient.69

67 Lover of Nature, Pennsylvania Packet, and Daily Advertiser; March 27, 1790, 3.

68 Ibid.

69 Ibid. It is possible that “Lover of Nature” was Peale himself. I am inclined to think it was actually a different person for two reasons. First, the writing style of the two Lover of Nature letters is different from the rest of Peale’s published and unpublished writings. Second, Lover of Nature is attempting to shame the public as a whole. As I wrote before, Peale himself had already found this line of attack fruitless and had warned against it in his autobiography.
And, with a familiar sales pitch he wrote, “Thanks to Heaven, we are not poor; many of us can, without the least disadvantage, spare a dollar per annum; this contribution would arise from saving one farthing every day.” In the next two years, Peale continued to sell tickets to his museum, to expand his collection, and to solicit widespread support. However, over time he became more focused on securing respectable patronage and credentials for the museum as a place that would contribute to useful knowledge in order to buttress his claim on government support and to increase the appearance that the museum was a group endeavor. But in spite of his efforts and the support of people like “A Lover of Nature,” Peale could not secure government support for his museum.

3.7 The Limits of Polite Patriotism: Peale’s Quest for Government Support

In order to argue that his museum should be a national institution supported by the government Peale focused on the language of usefulness. He argued the museum would provide matchless contributions to useful knowledge, and thus to American achievement, and would solidify America’s place in the civilized world. In this advertisement in Dunlap’s Daily Advertiser on January 13, 1792, Peale hit hard on the fame of science and backed off his presentation of the museum as a place for sociable gathering: getting real patrons required a different motivating rhetoric than selling tickets. In these announcements Peale highlighted the ability of the museum to promote useful knowledge and emphasized the social connections with the “principal naturalists in Europe” that would result should the American museum become an eminent natural repository.

70 Ibid.
A Museum stored with the treasures [collected from the American continent] must indeed become one of the first in the world; the more so, as the principal naturalists in Europe, will be anxious to acquire our productions, by an exchange of whatever is most valuable in their respective countries and foreign colonies.  

And, as he explained to Daniel Delozier on March 4 of that year, “I am putting my museum under the Patronage of a Number of Gentlemen of Science, the first step towards making it a Public Establishment....”  

In the early 1790s, Peale began pushing harder for government sponsorship for him and his museum. He petitioned George Washington directly for the position of postmaster general, citing support of his museum as a public benefit that would come out of him having this post. He also solicited the patronage of distinguished gentlemen. He invited illustrious visitors to come to his museum to hear a talk on the outlines of his projected collection. Their visit was supposed to be the first step towards making the museum a national institution. In this dialogue he framed his endeavor in terms of the public cache that such a museum would have for American scientists. The desirability of “the attentions of the World” was already an implicit part of the argument. By inviting, among others, such people as naturalist Benjamin Smith Barton, Barton’s uncle David Rittenhouse, James Madison, and the doctor Caspar Wistar, Peale desired “to have your countenance and assistance as Visitors and Directors, with the hope that it may induce a more public and general notice of it....”
Another part of Peale’s vision, explained in the 1790 broadside for his prominent guests, was that the museum should become a national teaching institution, where citizens would learn, through the study of natural history, to be better citizens. Like Jefferson in his *Notes on the State of Virginia*, Peale conceived of man as an object of natural history. Peale combined his Gallery of Great Men with a natural history museum to create a seamless hierarchy of nature designed to inspire emulation. He even wanted to take this one step further and to preserve the actual bodies of great men.

Altho’ perfection of form, which the well executed painting in portrait, and sculpture can produce; yet the *actual remains* of such men as I have just described, must be highly regarded by those, who reverence the memory of such luminaries as but seldom appears.75

Peale only lamented that he did not think to mention this to Benjamin Franklin before he had died.

Peale thus saw his museum as a place to teach human beings about their own (virtuous) nature and also as a place that would make America a major player in the realm of natural history. For him, these ambitions justified national support, and he soon drafted a proposal to the Pennsylvania State Legislature trying to encourage state funding for the museum. “Lover of Nature” once again backed Peale up. In *Dunlap and Claypoole’s American Daily Advertiser*, March 27, 1794, he assured the politicians that “The Legislature will do a very popular act by granting to Mr. Peale the moderate loan he requests.” This nature lover cited compelling reasons for government support, which mirrored Peale’s reasons. First, “The general interest of science demands in all civilized

countries aid and patronage, because it exalts mankind to the dignity and felicity of her
destination.” Second,

The cultivation of natural history is in this country very important in many
respects. It brings to light our many treasures in animals, plants and minerals,
suggesting thereby new branches of manufactures and commerce, which
otherwise may lay dormant for a long time.\textsuperscript{76}

And finally, “The moral effect of the Museum is very considerable. I appeal to all who
have seen this sublime inscription in that of Mr. Peale.” The success of the museum was
directly related to the virtue of the people at large.

Numbers wish with myself, that Mr. Peale may have sufficient encouragement to
remain among us. The removal of the Museum would not only be severely felt by
the votaries of science, but also diminish that circulation of wealth which arises
from the commerce of liberal arts.\textsuperscript{77}

Failing to get the public loan, on September 19, 1794, Peale assured the public the
museum would go on. He wrote in the General Advertiser:

Mr. Peale flatters himself with a continuance of the public patronage, persuaded
that his fellow citizens are fully sensible how much science and virtue go hand in
hand; how the contemplation of the marvelous works of God exalts the soul to
him, inspires congenial goodness, and that love of order so indispensable to public
and private prosperity.\textsuperscript{78}

And he continued to try to make his museum more useful. To the Directors of the Library
Company of Philadelphia on October 5, 1795, Peale pitched a plan to put out a catalogue
of the objects of the museum, designed to enhance the reputation of American science,

\textsuperscript{76} \textit{Ibid.}, 87-8.

\textsuperscript{77} \textit{Ibid.} Linking the museum with the liberal arts Lover of Nature showed how he thought the
museum, with its art, science, and culture, supported the broad education typical of a liberal’s arts
curriculum at the university. Lover of Nature was adamant that Peale’s museum was a broadly cultural
phenomenon, not a narrowly conceived scientific endeavor.

\textsuperscript{78} \textit{Ibid.}, 98.
“whose successful cultivation has always been a characteristical mark of an advanced civilization.”\textsuperscript{79}

By mid-decade, around the time Peale solicited subscriptions for publishing the catalogue he could say “C. W. Peale deems it unnecessary to expatiate on the importance of an object as intimately connected with the advancement of his Museum, as a generous public have uniformly testified their interest in its success.”\textsuperscript{80} Peale had been supporting himself and his family on the money from the museum for almost a year.\textsuperscript{81} Public approbation rendered justifying remarks unnecessary. Peale was so confident in the prosperity of the Natural History Museum that he started to treat it like a family trade. In 1796 he looked into starting a museum in Baltimore, to be run by his sons.\textsuperscript{82} As he did so, he began to make arguments for the necessity of the permanency of the collection, which he now connected not just to the moral prosperity of his countrymen but also to the commercial prosperity of the region and the nation in general.

By the mid-1790s, Peale was trying to make his museum a major player in the international community of natural historians. He corresponded and exchanged specimens with prominent European naturalists, societies, and museums. At the same

\textsuperscript{79} \textit{Ibid.}, 127.

\textsuperscript{80} \textit{Ibid.}, Vol. 1, 128.

\textsuperscript{81} \textit{Ibid.}, 91.

\textsuperscript{82} From Peale to James Calhoun in Baltimore, June 29, 1796, soliciting advice about his sons opening a museum there. Miller, et. al., \textit{Selected Papers}, Vol. 2, 156.
time he stepped up his efforts to secure government sponsorship for his museum. The closest Peale ever got to state sponsorship was when his museum was housed in the Philadelphia State House, starting in 1802. This state of affairs was subjected to public commentary twice, in 1810 and 1816. In 1810, a proposal to transfer authority over the State House to the corporation of Philadelphia opened debate on how the transfer would affect Peale’s Museum, which would remain in the rooms it was renting. Peale wanted the state to insist that the city fund an addition to the State House as a condition of its transference. Opponents to the plan insisted that Peale’s museum was not a public institution, but was a private enterprise, which brought profit to Peale. In 1816, when Peale attempted to renegotiate his rent, public controversy erupted. If Peale’s museum was in fact a public service, then, Peale argued, he should be supported by the state in the form of lower rents. However a significant number of Philadelphians insisted that Peale was a private entrepreneur whose museum, however beneficial, was a profitable enterprise. Peale should be treated like any other businessman and charged a fair rent.

“The Corporation of Philadelphia is not rich,” wrote “E,”

nor is there any more justice in taxing the Citizens for housing Mr. Peale and his articles of trade, than there would be in buying an establishment for... any other useful citizen provided they should threaten to leave us without Fire Engines or handsome Boots, &c. &c. &c.84


84 Brigham, Public Culture in the Early American Republic, 48-9. David Brigham argues that the key distinction in who supported giving Peale a government subsidy in the form of lower rents at the State House, was whether they thought the museum was a collective or a solitary achievement. I would argue that a key piece of this is the idea of whether or not Peale profited from his museum. A collective achievement would have no one person doing all the work, but also no one person making all the profits.
The irony here is instructive, as fire engines are not private enterprises any longer, and museums, if not bootmakers, are often awarded public support. Despite Peale’s protests that the museum contributed to American society, supported useful knowledge and educated its visitors, in the eyes of many, Peale was a purveyor of polite entertainment, and as such a businessman, and a successful one at that.

Peale cultivated the rhetoric of solitary self-sacrificial hard work in writings about his public service, in countless advertisements, and in letters appealing his debt. For instance, in 1797, when Peale rented rooms from the American Philosophical Society, he appealed for relief from them on the grounds that the museum, though a public benefit, had been created by him alone. But he had also used that argument to justify charging admission. Thus, despite his claims that his work was a labor of self-sacrifice, he also reaped the social and monetary benefits of running the museum. Being a museum proprietor kept him in the genteel social class, and charging admission supported his family. Peale tried to argue he was a public servant who deserved recompense because of his hard work. But because his museum was deemed profitable the public was unwilling to subsidize his museum and lower his rents. Peale’s actions belied the image of civic self-sacrifice through useful knowledge he tried to project. Peale, who was trying to convince the public to fund a scientific institution on the grounds of his own patriotic self-sacrifice and the usefulness of natural history, ultimately undermined his own goal by profiting from his labors and by positioning his museum as a polite commercial

Profiting from the museum undermined Peale’s contention that it was a self-sacrificial, and thus truly civic, venture.

143
endeavor. Politeness stemmed from conversation taking place in socially equal spaces outside of the purview of official authority; getting his museum Federal funding would have been an intrusion on the social autonomy required of politeness. Peale discovered he could make a government institution or a polite one, but not both.

3.8 Conclusion

Though it never received public funding, Peale’s museum flourished as a place of polite public entertainment. It also nourished the nascent American natural history community. Some in the natural historical community used its excellent reproductions of birds and wildlife for study and as models for drawing. But the public was disinclined to support his museum except by buying tickets for their own individual pleasure. It was Peale’s will alone that kept up the scientific and useful aspirations of the museum. Upon his death, the collection was bought by Barnum and Bailey and joined the ranks of purely sensational entertainment of the nineteenth century. Peale’s rhetorical struggle demonstrates the problematic space that promoting himself and his museum as both useful and polite occupied in the discursive landscape of the polite late-eighteenth century.

Peale promoted his natural history museum not by appealing to the practicality of useful knowledge but instead by talking about politeness, patriotism, and national pride. People argued against public support of the museum, even if they wished Peale well, by saying Peale profited. The limits of the arguments for encouraging the American public to support useful knowledge financially were surrounded on both sides, not by practicality and theory, but by politeness and profit. Peale, using the same links between
useful knowledge and civic advancement and politeness that Rittenhouse had articulated in his *Oration* on Astronomy, argued that he deserved public support because of his endeavors, because he himself sacrificed to better the community. Peale’s detractors argued that Peale was a businessman with a profitable business and so there was no true sacrifice involved. Peale could not get his public to agree that his museum represented a useful space built on Peale’s self-sacrifice and not a business based on polite consumption. In many ways, the challenges Peale faced were the ones David Rittenhouse managed to avoid when he constructed his orrery. Knowing that learned objects and spaces were often seen as consumable objects in a social realm of polite society, Rittenhouse had had to think of a way to put his orrery outside of that realm so he could create it how he envisioned it and not according to polite taste. But Peale, driven by the need to feed his large family and support himself, had little choice but to make his museum popular and thus undermined his chance to claim that his museum should be seen as a useful endeavor the role of which was to primarily provide reputation and useful knowledge for the benefit of the nation. In this area at least, politeness and usefulness were at cross-purposes.
CHAPTER FOUR

BENJAMIN RUSH AND THE REPUBLIC OF KNOWLEDGE AND VIRTUE

4.1 Introduction

Like Rittenhouse and Peale, Benjamin Rush embraced the idea that manners, morals, and political systems were necessarily related. But in their writings, they struggle with different aspects of the problem of promoting useful knowledge within a polite culture. Rittenhouse articulated a vision of astronomy as the foundational knowledge for the American republic. It taught moral truths and undergirded the advance of society, without leading to luxury and dissipation. Promoting astronomy and other useful knowledge let mechanics, like him, rise up to be valued participants in the polite culture. Peale tried to find a way to institutionalize polite natural history in a museum funded by the government. Benjamin Rush, with a formal education in the top medical school of the eighteenth century, went beyond them both to consider how polite interactions, education, and political systems joined together to affect human nature. He believed, like Rittenhouse and Peale, that useful knowledge along with moral virtues should be a key component of every American’s education. As he wrote to Richard Price after the American Revolution, “We have changed our form of government, but it remains yet to effect a revolution in our principles, opinions, and manners so as to accommodate them to the forms of government we have adopted.... Call upon the rulers of our country to lay the
foundation of their empire in *knowledge* as well as virtue.”¹ Rush discarded the idea that virtue could be spread through polite conversation and suggested a state and doctor-driven program for inculcating the necessary habits for republican citizens. In this chapter I will show how Rush’s pathological view of human nature, together with his views of common sense and useful knowledge, led him to propose what I argue is an alternative to politeness. Rush famously introduced the idea that citizens of a republic should be “republican machines.” These republican machines would be conditioned to act for the good of the republic by their state-directed educational, moral, and physical upbringing. For Rush, voluntary polite conversations for demonstrating and enhancing an individual’s virtue became a concern of the state and of the expert.²

In his writings, Rush contended that all behavior could be explained in medical terms. Combined with his belief in progressive knowledge, and his rejection of common sense, which I will discuss below, his theories for creating virtuous republican citizens undermined Shaftesburian politeness. Shaftesburian politeness, as I discussed in the introduction, was a theory of human virtue founded in the belief that interior moral character was demonstrated and confirmed through a style of conversation. Participating in polite conversation served as a kind of feedback loop, helping to inculcate and


disseminate polite virtue both in and among those who took part. In this chapter, I first give a brief history of Rush’s development as a doctor and thinker. Second, I outline his pathological view of human nature. Third, I discuss why such a pathological view had implications for Rush’s political theories by outlining the analogy of the body politic. Fourth, I turn to Rush’s own theory of political dissent. He witnessed the political upheavals of the 1780s and ‘90s and gave them a medical classification — “anarchia.” Anarchia as a symptom of the upset of the moral faculty could not be overcome by mere politeness but required the strong hand of government and medical intervention. Finally, I examine Rush’s alternative to politeness, a unified program of state-sponsored and mandated education based in religion, useful knowledge, and republican theory.

4.2 History and Historiography of Benjamin Rush

Born in 1746 just outside Philadelphia, Benjamin Rush was a student of the Great Awakening and the Scottish Enlightenment. Taught in his early years by “awakened” leaders Gilbert Tennant, Samuel Finney, and Samuel Davies, he carried his evangelical sensibility to Edinburgh where he received his medical degree in 1768, studying medicine under William Cullen. After receiving his medical degree, he studied medicine in London and Paris where he met and became correspondents with some of the leaders

---

of the Dissenting network of physicians, John Coaksley Lettsom and John Fothergill. Rush returned to America in 1769 where he quickly became involved in American politics. A staunch republican and patriot, Rush supported separation from England long before most Americans considered it. He helped convince Thomas Paine to write the pamphlet “Common Sense” to prod Americans into declaring independence. He was a member of the first Continental Congress, signed the Declaration of Independence, and was commissioned as a doctor in the Revolutionary Army. Opinionated and impatient, Rush quit his post in frustration when he came to believe his medical superiors were both corrupt and running the camp hospitals ineffectively, causing the unnecessary deaths of soldiers from hospital-contracted illnesses. Always generous in treating Philadelphia’s poor, during the yellow fever epidemic of 1793 Rush stayed in the city ministering to the victims of the disease. He was also an early and strident advocate of abolition who supported the free black community in Philadelphia. Characteristically of the American Enlightenment, Rush was a devout Christian, but uncharacteristically he embraced evangelical revivalism.

With such a history, it is no surprise that the historiography on Rush is rich and varied. From the earliest eulogies on Rush by his adoring students to the most recent deconstructions of his work, Rush has been a polemical figure. As a student of both the Awakening and the Enlightenment, Rush has been called the thinker who best epitomizes

the Philadelphia Enlightenment. Rush’s awakened conviction in the pervasiveness of God’s Providence and the duty of individuals to reach towards salvation mixed comfortably with a faith that human reason, helped along with God’s grace, could discover truths about the natural world. Overarching all was a firm skepticism about “systems” for explaining natural events, a skepticism that made him open to casting aside old theories and trying out new ones. But, as Nina Reid-Maroney argues in her work on the Philadelphia Enlightenment, his unswerving faith in God’s direct action in the world led him to have faith in the progressive nature of human events, of which useful knowledge was the primary example, that others did not have. He believed in an end of progress when rationally derived science and God-provided revelation would come together to prove the truth of Christianity. Rush also had a fundamentally pathological view of human nature. For Rush, disease and death were manifestations of man’s fall from grace. The physician, like the preacher, had a calling to intervene in fallen nature and, with the help of God’s providence, coax health from the ultimately sickly body.

---


Benjamin Rush was the most influential physician in the early republic. As chair of chemistry at the medical school of the College of Philadelphia, and as a surgeon for 29 years at the Pennsylvania Hospital, he taught hundreds of American students. He is, perhaps unfairly, most famous as being the progenitor of “heroic treatment” in American medicine. Though early in his career he opposed the widespread practice of bloodletting, sometime in the 1790s he came to believe bleeding in mass quantities would restore balance to a system affected by fever. When he took to the streets in 1793 treating his yellow fever victims, he bled them copiously, leading William Cobbett, an English émigré who became a virulent Federalist satirist, to call him “Dr. Vampire.”

His advocacy of heroic bloodletting was derived from his theory, developed sometime in 1793 as he combated the yellow fever epidemic, that all disease could be understood as fever, or as a disease of the blood vessels. What is striking about Rush was that he included mental illnesses and even habits in this diagnosis. Therefore, madness could be treated by bloodletting to reduce the pressure of swollen blood vessels in the

---


9 In the debate about the yellow fever, Rush championed the idea that it was domestic in origin, caused by environmental factors. Opponents of this view thought the disease was carried over with the wave of mostly French and Haitian immigrants. For Rush’s account see, Benjamin Rush, A Second Address to the Citizens of Philadelphia, Containing Additional Proofs of the Domestic Origin of the Malignant Bilious, or Yellow Fever... (Philadelphia: Thomas Dobson, 1799). William Cobbett, Porcupine’s Gazette April 27, 1797; Rush [plaintiff] A Report of Action for Libel, Brought by Dr. Benjamin Rush, against William Cobbett in the Supreme Court of Pennsylvania (Philadelphia: W. W. Woodward, 1800). Reid-Maroney, Philadelphia’s Enlightenment, 115.

brain, or conversely strapping a patient to a round platform and spinning it to cause the blood to rush to the patient’s head.\textsuperscript{11} As for habits, Rush believed that environment and external stimulation could affect moral choices. He held this belief alongside a firm faith in God’s direct action in the world. For instance, he argued that the virtue of people in northern climates was greater than that of those near the equator. He also argued that people under the influence of alcohol, fatigue, or extreme hunger had different capacities for virtue. He invented a corrective punishment for criminals and the mentally ill, which, by removing all external stimulus, was supposed to equalize their moral faculties and let them start over fresh. In other words, he advocated total sensory deprivation as a correctional punishment and as a therapy. Rush’s methods are generally considered to be humane improvements over the previous treatment given to the mentally ill in insane asylums, but they rested on a pathological view of the human being. His medical views also informed his views of citizenship, government, education, and almost all aspects of culture. His pathological view of human nature influenced his suggestions for organizing both medicine and education in post-revolutionary, republican America. Like most Americans, Rush was concerned about the stability of the new system of government. He thought, with others, that the stability of the republic was based on the virtue of the people. As I mentioned above, for Rush virtue was a medical matter. By arguing that behavior was influenced by external causes and could be a result of illness and that vice could be cured or at least contained with the proper treatment, he expanded the purview

of doctors. In his “On the Duties of a Physician” he told his students they “should give a regard for all the interests of your country.”

For instance, the doctor’s role was crucial in Rush’s idea of medical jurisprudence. Medical jurisprudence was partly made up of what we might now call forensic medicine, giving the doctor the ability to determine causes and times of death. But it was also determining how the mental state affected a witness’s ability to testify or a criminal’s culpability for his crimes. The punishment for crimes, Rush argued, should be mitigated if a doctor argued that criminal behavior was caused by disease. Rush’s own testimony saved one murderer from the death penalty, which he opposed. The doctor trained in the mental faculties and operations of the mind held a special place in a republican society. In addition to areas like medical jurisprudence, Rush’s views on how the mental faculties affected health, and how the doctor could exert control over patients by manipulating the mental faculties, had wider ramifications for how he viewed political dissent and its solutions. While others have recognized Rush’s importance as a medical thinker in America as well as his disturbing tendencies towards pathologizing human behavior, none has placed Rush’s thought in the context of politeness. I argue Rush’s ideas about human nature and the imperatives of republicanism formed a challenge to some of the fundamental concepts of the culture of politeness.


4.3 Rush’s Pathological View of Humanity

Rush’s medical system and his political theories rested on a conception of human beings that was fundamentally pathological. By this I mean that Rush thought of human nature as inevitably and inextricably diseased, with the elimination of disease ultimately resting on divine providence. This view extended towards diseases of the mind. His pathological view of human nature, combined with his unique understanding of “common sense,” made politeness an untenable system for transmitting virtue in a republic. Instead, a republic required an entirely new set of institutions; education, criminal punishment, and even medicine needed to be geared towards the mental and physical health of the members of the body politic. Because so much depended on the virtue of republican citizens, Rush prescribed a cultural support system to encourage a healthy mental and physical human nature.

Rush’s theories about human nature were based on a belief that the direct action of God was the prime cause of all motion, including life itself. His views were not based on a crude mechanism, however, but instead on explanatory models from enlightenment chemistry. Rush learned chemistry from Joseph Black and from William Cullen at the University of Edinburgh. As Reid-Maroney explains, chemistry as used by the Edinburgh physicians had great explanatory power even as it remained mute on the ontological status of the things it explained. For instance, Rush rejected descriptions of heat that sought to explain what it was and instead focused on descriptions that talked about what heat did. Instead of a mechanistic explanation of heat as “a tremor or a vibration of an elastic Fluid which pervades all Bodies,” Rush argued that heat should be thought of as “a power which is capable of exciting Expansion — Fluidity — Vapour and Ignition in
Bodies.” The ontological neutrality of chemistry as practiced in Scotland expanded its explanatory power: “this kind of definition” writes Reid-Maroney, “was... an essential part of the Edinburgh physicians’ building of scientific systems — contingent explanations of observed phenomena in which questions of substance, matter, size, and shape could be left aside.” Rush’s explanation of human life was what Reid-Maroney calls a fundamentally skeptical one. For Rush, life was the result of external stimuli, the nature of which was not known. “The requisite stimuli of light and heat and air were considered to be the ‘causes’ of life, not in a mechanical sense but in a hypothetical sense, simply because, as Rush observed, life could not be present without them.” Rush’s fundamental skepticism about the ultimate material cause of life allowed for a seamless transition with his theological view of the human being. Life was not a property of matter, as the vitalists held, but was instead the “immediate act of a Supreme Being, by the instrumentality of causes which are constantly under his direction.”

For Rush, there was no meaningful division between the mental and the physical or between the soul and body, all aspects of the human being were subject to the physician’s care. “He is, in the eye of the physician, a single indivisible being, for so

14 Reid-Maroney, 121. Reid-Maroney quotes this from the Benjamin Rush manuscripts at the Archives of the College of Physicians, Philadelphia. Lectures on Chemistry, 1771, MS, 55. See also, Donald D’Elia, “Benjamin Rush, David Hartley, and the Revolutionary Uses of Psychology,” Proceedings of the American Philosophical Society Vol. 114, No. 2 (Apr. 13, 1970), 109-118, Rush also talks about his theories of heat and their influence on animal life in his Three Lectures on Animal Life (Philadelphia: Budd and Bartram, 1799); for an excellent discussion of the philosophical, theological, and medical influences on his theories of the mind, including the idea Maroney presents here, that life is a “forced state” and that it is the result of powers, like heat, that should be studied, see Eric T. Carlson, M.D., Jeffrey L. Wollock, M.A., and Patricia S. Noel, Ph.D., “Introduction” to Benjamin Rush’s Lectures on the Mind, (Philadelphia: American Philosophical Society, 1981), esp. 52-58.

intimately united are his soul and body, that one cannot be moved, without the other.”

Two complimentary lectures demonstrate how his beliefs translated into medical treatment, his “Inquiry into the Influence of Physical Causes on the Moral Faculty,” and his “On the Utility of a Knowledge of the Faculties and Operation of the Human Mind, for a Physician.”

In “An Inquiry into the Influence of Physical Causes upon the Moral Faculty,” Rush articulated his ideas about virtue within the then commonly held framework of beliefs about the existence of “moral faculties” and “passions.” In this, as Rush notes, he was deeply indebted to the theories of the mind of various Enlightenment thinkers, including Francis Hutcheson, Joseph Priestley, David Hartley, Adam Smith, and especially William Cullen. Rush’s theories were based on the idea that humans were born with innate “moral faculties” that were “hard-wired” (to use a modern term) in the mind. Rush described the moral faculty as “a power in the human mind of distinguishing and chusing good and evil; or, in other words, virtue and vice.” For Rush this was an inborn faculty, “and though it is capable of improvement by experience and


reflection, it is not derived from either of them.”  

The moral faculty — distinct from the conscience — “acts without reflection” and was “seated in the will.” It was the moral faculty that was the proper object of political study because “the state of the moral faculty is visible in actions, which affect the well-being of society.” Rush equated the moral faculty with “the ‘moral sense’ of Dr. [Francis] Hutchison — the ‘sympathy’ of Dr. Adam Smith — the ‘moral instinct’ of Rousseau — and ‘the light that lighteth every man that cometh into the world’ of St. John.” Thus, the moral faculty, for Rush, was something innate that operated instantly to choose good over evil behavior. However, Rush suggested that physical causes, like speech and language, could impair the moral faculty and so cause people to choose evil.

Rush, despite his pathological view of human nature, emphasized that he was not a physical determinist. “Nor let it be supposed, from any thing that has been said, that I entertain an idea of the necessary influence of physical causes upon the freedom of the will.” Instead, he assured the audience that, “I believe in the freedom of moral agency in man, because I conceive it to be essential to his nature as a responsible being.” However, he did think there were cases in which men were not responsible for their actions.


19 Ibid., 2.

20 Ibid., 3.

In those cases where the moral faculty is deprived of its freedom, by involuntary diseases, I conceive that man ceases as much to be a subject of moral government, as he does to be a subject of civil government, when he is deprived by involuntary diseases, of the use of his reason.\textsuperscript{22}

In other words, because disease affected the moral faculty of the brain, men suffering from those diseases should not be culpable for their crimes.

Some of the causes that Rush thought affected the moral faculties belied his firm assurance that he believed people to be responsible for their moral choices. Climate was a major factor affecting the moral character of entire nations. This included both long-term climate patterns — cold northern versus warm southern countries, for example — but also seasonal changes and short term weather patterns. “The month of November, in Great Britain, rendered gloomy by constant fog and rains, has been thought to favor the perpetration of the worst species of murder....”\textsuperscript{23} Diet was also a major factor, “for pride — cruelty — and sensuality, are as much the natural consequences of luxury [that is, too much food] as apoplexies and palsies.”\textsuperscript{24} He thought that eating meat in particular led to vice. The opposite of luxury, extreme hunger, encouraged theft and irascibility.\textsuperscript{25} Liquor also affected the moral faculty in two ways; “Fermented liquor of good quality,” and in moderation, encouraged “candor, benevolence, and generosity,” but poor liquor, or excess liquor, “seldom fail of rousing every latent spark of vice into action.” Disease

\textsuperscript{22} Rush, \textit{Enquiry Into the Influence of Physical Causes Upon the Moral Faculty}, 15.

\textsuperscript{23} Ibid., 17.

\textsuperscript{24} Ibid., 18.

\textsuperscript{25} Ibid., 19.
could affect the moral faculty, especially fevers and “madness.” He cautioned, “[I]t is in vain to attach these vices with lectures upon morality. They are only to be cured by medicine,” especially exercise, cold baths, or change in atmosphere.

Rush turned to medicine to cure diseases of the moral faculty. He adapted David Hartley’s ideas that the actions of the mind were the result of vibrations sent to the brain. Rush thought of these vibrations as the energy of God. “I only maintain,” he cautioned, “that the operations of the divine government are carried on in the moral, as in the natural world, by the instrumentality of second causes.” Speech and language were two of the most potent second causes that could be used to affect the brain. Eloquence could stimulate the passions to do good or ill, depending on the will and skill of the speaker. While eloquence could not permanently change someone’s moral character, it could, like alcohol or hot weather, incline a person to act a certain way.

The two abilities that affected moral choice, the will and the understanding, Rush said, “are most assailable, when they are attacked through the avenue of the passions.” Rush understood this explicitly in the context of pulpit preaching: using passion to speak eloquently about the moral truths of Christianity, would, if only temporarily, create a love of virtue in the listener. And, as I will discuss later, speech, especially political speech, could incite vice and even a form of madness. However, the doctor himself could and should also use the power of speech on influencing human mental faculties, including the

26 Ibid., 21.
27 Reid-Maroney, Philadelphia’s Enlightenment, 125.
28 Rush, Enquiry into the Influence of Physical Causes Upon the Moral Faculty, 25.
passions, to help the patient towards health. Rush’s lectures and writings are full of examples of doctors using speech, making suggestions, manipulating the perception of the patient, or simply being pleasant and cheerful to successfully bring their patients to health. He specifically outlines the importance of the moral faculty for doctors in one of his lectures, “On the Utility of a Knowledge of the Faculties and Operation of the Human Mind, for a Physician.”

In this lecture he writes, “The actions of the [soul] upon the [body] are numerous and important. They influence many of the functions of the body in health. They are the causes of many diseases; and if properly directed, they may easily be made to afford many useful remedies.”29 The actions of the mind could be the cause of diseases of many types, “consumptions, fevers, convulsions, disease of the stomach and bowels, visceral obstructions, apoplexy, palsy, madness, with a numerous and melancholy train of mental disease, are all frequently brought on by the undue action of the passions upon the body.”30 And they could be manipulated to effect cures. The faculties of the mind for Rush included memory, imagination, understanding, the principle of faith, will, the passions, the moral faculty, conscience, and a sense of Deity. The operations of the mind were perception, judgment, association, reasoning, and volition. Each and every one of these various operations and faculties could be manipulated by physicians to effect cures or could be affected by diseases. As I described, in theory Rush believed that people


30 Ibid., 259.
could choose to do good or evil, but in his discussion of the practice of medicine the human body and mind were like putty in a physician’s hand.\(^{31}\)

The best example of Rush’s belief in the power of the doctor to manipulate the mind towards health, and the most disturbing, is the weight he gave to terror as a therapeutic device. Rush notes in his lecture, “terror has suddenly cured convulsions and spasms in the nervous system” as well as “chronic gout, rheumatism, and palsy.” Rush often played mental tricks on his patients and was more than willing to use a placebo effect. He argued that a placebo stimulated a person’s faith and it was the action of faith on the body that affected a cure. “We exercise [faith] every time we believe any thing that we have not seen, nor heard, or that we do not know to be true. Its \(i.e.,\) faith’s effects are discovered daily in cures of disease which are made by quacks and quack medicines.”\(^{32}\) Thomas Szasz, the best known critic of modern psychiatry, notes that Rush’s belief in the curing power of the faculties could lead him to torture and terrify a patient in the name of good health. Rush developed a host of hair-raising methods to shock patients, especially those he had diagnosed as mad or mentally ill, back into health. He immobilized them by strapping them to the tranquilizing chair or a spinning platform he called the gyrator. He put them in solitary confinement. He recommended sleep deprivation through inflicting pain, pretended to drown patients, or even played cruel

\(^ {31}\) Scholars will be glad to hear that exercising the understanding was effective, according to Rush, at curing madness, headaches, and other kinds of diseases. A Mr. Ashe, for instance, according to Rush was cured of madness by being coaxed into studying mathematics. See Rush, “On the Utility of the Knowledge of the Faculties...,” 260.

\(^ {32}\) Ibid. 262.
mental tricks on patients. Rush sought to use the mind to help regulate the body. As Szasz notes, “Rush believed that to cure madness, the physician had to gain complete control over the person of the madman.”

Two short tracts further demonstrate the degree to which Rush cast all kinds of human behavior as medical. From any other writer, I would argue that these essays were satirical, but from Rush, they are perfectly in accord with the way he linked religion, reason, and medicine. These two essays, “On the Different Species of Mania” and “On the Different Species of Phobia,” classify the gamut of human behavior and human vices as madness and excessive fear. Phobias were such familiar things as “the cat phobia,” and “the dirt phobia,” but also certain kinds of political extremism. “The faction phobia,” Rush categorized as “undue fear of mobs, insurrections, and such other things that affect the stability of governments.” Or “the power phobia,” which affected people who “consider power as an evil — they abhor even the sight of an officer of government.”

Even more telling is Rush’s definition of “mania” or madness. In his tract he defines partial insanity for the purposes of his discussion as “a want of perception, or an undue perception of truth, duty, or interest.” Again, several of the categories of mania were political. The “liberty mania” he called “visionary ideas of liberty and government,” that so obsessed a person that he neglected family. Those afflicted had an unbalanced view of

34 Ibid., 146. Szasz notes that this was the common contemporary view.
government and they wanted “liberty without law — government without power —
sovereignty without a head.” Also suffering from a delusion were those with the
“republican mania.” These madmen wanted “to introduce a republican form of
government, where the people are not prepared for it by virtue and knowledge.”

That Rush classified the republican mania as a form of madness underscores the
extent to which he believed a republic depended on the character of the people. It was, in
his words, a “lack of perception of truth” to believe a republican form of government
could be successful in a society where the people lacked proper understanding and virtue.
For Rush, reason and religion were the ways to cure madness and phobia, buttressed by
medical treatments to restore the proper mental balance to a person. But doctors in the
republic acted not just for the good of the patient but also for the good of the country.
Medical control of mental and behavioral characteristics was advocated for a purpose.
Rush wanted to effect the transformation of America into a republican society filled with
proper republican citizens. And the doctor, armed with the knowledge of how the mental
faculties affected and were affected by physical health, played a key role in maintaining
the health of the republic.

Thomas Szasz argues that Rush was a key player in the creation of mental illness
as a kind of scapegoat for society. The mentally ill, Szasz argues, were not ill in a
material way but merely displayed behavior and desires that were out of the norm or did
not fit into their given society. By branding this behavior as illness and shunting those so
labeled into the confinement of an institution, society controlled the boundaries of

37 Ibid., 214.
acceptable behavior.\textsuperscript{38} However, in his view of Rush, at least, Szasz does not go far enough in appreciating the extent to which all human behavior was placed in the purview of physicians. The mental patient was merely the most extreme example of someone whose behavior, desires, and mental states needed the control of the doctor. Potentially all human behavior, for Rush, was medical, and thus almost any person could be subject to a doctor’s diagnosis and treatment. And the physician’s course of treatment could never be complete unless “he should pry into the state of his patient’s mind, and so regulate his conduct and his conversation, as to aid the operation of his physical remedies.”\textsuperscript{39} Conversation could be a medical tool in the hands of a skilful physician, or, conversely could bring a person into a state of illness.\textsuperscript{40} This was in sharp contrast to the role of conversation in a polite society where conversation was a source and signpost for virtue. For Rush, who had made virtue a medical matter, conversation was a cause or cure of disease.

\textsuperscript{38} Szasz, \textit{The Manufacture of Madness}, 137-59. Szasz’s overall argument is that the mental patient takes the place of the witch as society’s scapegoat and the new study of psychiatry takes the place of religion in policing social norms.

\textsuperscript{39} Rush, “On the Utility of the Knowledge of the Moral Faculties,” 266. Rush’s recommendations in this lecture were relatively benign. He told his students to inspire faith in the physician’s treatments by being cheerful, optimistic, and truthful. But other places his recommendations for controlling conduct and conversation were deceitful and terrifying, as discussed above. Rush thought that William Cullen was especially gifted in the art of wielding conversation as a healing device. \textit{Ibid.}, 268.

\textsuperscript{40} Only one other author that I know of has highlighted the centrality of controlling speech for Rush’s theories, though he did not place it in the context of politeness: Wade Williams, “Religion, Science, and Rhetoric in Revolutionary America: The Case of Benjamin Rush,” \textit{Rhetoric Society Quarterly}, Vol. 30, No. 3 (Summer 2000), 55-72.
4.4 Anarchia: The Disease of the Body Politic

Rush’s view that the spoken word could affect virtue and vice was not unique in the eighteenth century. Views of rhetoric, speech, and conversation gained new importance as Anglo-European thinkers dealt with revolutions, popular uprisings, the Great Awakening, and in America in the 1790s, the rise of political parties. Often they turned to theories about speech to explain or criticize widespread political disagreement. Few historians have recognized that fears about political speech signaled a challenge to the culture of politeness. Founders like Rush, John Adams, and a myriad of public speakers worried what affect uncontrolled political speech would have on the virtue of the people and thus the stability of the republic. The very virtue that should have been controlled through participation in polite conversation was destabilized by the uncontrolled participation in political life. Rush and others expressed their fears about the power of political speech by turning to the language of the body politic.

While the metaphor of the body politic has long standing historical roots, the language used to describe diseases of the body politic kept apace with cultural developments in the practice of medicine and so gained new meanings over time. In the late eighteenth century, political systems were haphazardly becoming more democratic as people who had not traditionally been thought of as part of the political process demanded representation. Coinciding with the shift in the make-up of the body politic, the practice of medicine was also changing as men from new social stations and with new political and social aims became doctors. In the English-speaking world, the mid-eighteenth century saw the rise of a network of physicians who worked outside the royally-sanctioned system of English doctors. This network of dissenter doctors marked
out a new cultural space in the medical landscape. The medical landscape had never been uniform; patients had access to various kinds of physicians and remedies based on their socio-economic level. Quacks sold nostrums on the streets; elite Oxford-trained physicians visited the sickrooms of royals. But dissenting doctors created a new space for their medical practice by creating a new kind of patient; they became doctors of the crowd. These Scots-trained physicians focused increasingly on diseases typical of dense institutional populations — that of the army, the prison, and the hospital infirmary. At the same time that the political landscape in America and England became more democratic, this new breed of doctors insisted that social and behavioral control was necessary to create healthy conditions in institutional settings.41

Christopher Lawrence notes that doctors in the eighteenth century saw the control of behavior, like cleanliness and moderation in food and drink, merging with the control of environment, circulating air in buildings, good light, clean water and spaces, as the key factors for controlling disease in large concentrated populations. As the patients of the new dissenting doctors were typically their social inferiors, these doctors had greater license to experiment and make demands on their patients’ behavior than did doctors who worked with aristocrats. Thus disease control became less about curing an individual and

more about keeping a population healthy. In keeping a population healthy, the rights of individuals were trumped by the welfare of the group. As dissenting doctors developed their ideas about the environmental and behavioral causes of disease, individuals were forced to conform to new behaviors for the sake of the health of the population as a whole.  

Benjamin Rush shared many characteristics with the new medical dissenters of England. Trained in Edinburgh like most of the doctors in this network, he became a correspondent and friend to two of its leading lights. While visiting London after receiving his medical degree from Edinburgh, Rush was entertained often by John Coaksley Lettsom and through him met and became good friends with John Fothergill with whom he maintained a lifetime correspondence. As I shall show later, Rush shared the dissenting focus on controlling population to create health, and it shaped his understanding of creating and maintaining political stability. But instead of controlling bodily habits of cleanliness to promote healthy conditions, in his prescriptions for the American republic, he focused on controlling the mind through the education of citizens.  

Rush the doctor learned a new medical language, focused on controlling the 

---


behavior and environment of populations, that resonated with Rush the founding father who had concerns about how to manage an increasingly large, diverse, and newly empowered political population.

Roy Porter in his famous essay on gout explains that the language of disease and the language of politics, especially constitutional politics, often echo and reinforce each other. In explaining why physicians called gout a “good” disease, he argued that they saw it as a “constitutional” disease. Constitutions, both bodily and governmental, were understood to be imperfect attempts to balance the effects of sin and vice, to place checks on the corrupting influence of power. Therefore, disease of some sort was seen to be inevitable. Gout was the disease of a constitutional indisposition, a disease that should be managed through a regimen, but not cured. Curing gout was thought to be impossible — the province of quackery. To cure gout would be to destroy the constitution altogether.

Reactions to attempts to offer cures for gout, argues Porter, reflect the confluence of the constitutional language of the body and politics. Attempts to cure gout were seen as radical; the discourse about gout mirrored the discourse between conservatives and radicals about the inevitability of heredity and the possibility of immediate happiness. In the 1770s and ‘80s a rash of treatises on gout argued the radical position. These treatises explicitly challenged the notion that gout was incurable because hereditary and echoed

---


arguments about the political make-up of society. These radical doctors linked gout, not to constitutions, but to vices such as laziness and the habitual behavior of over-consumption of rich foods and wine. To combat gout, they said, its largely aristocratic sufferers needed to be virtuously restrained and shed the vices of aristocracy. As Porter notes, one doctor in effect argued, “war on gout required the eradication of the disease of aristocracy itself.” Thus, the language of the constitution of the body and the constitution of the republic overlapped and paralleled each other. In the minds of many radical doctors, like Benjamin Rush, these languages were not just metaphorical, but causally related.

As Porter shows so elegantly in the case of gout, in the eighteenth century the language of disease had implications for political and constitutional theories. The primary kinds of diseases that swarmed through densely populated crowds were fevers: putrid fevers, nervous fevers, and scurvy (thought to be a kind of fever). To these illnesses the dissenting physicians turned their talents. These fevers were particularly prevalent in institutional populations where great numbers of men had to be managed: the hospital, the army barracks, the poorhouse, and even the city. American political thinkers began to discuss the political problems posed by the crowd at the same time that physicians began to see the diseases of the crowd as their particular province.

Historians like Gordon Wood and Edmund Morgan have argued that “inventing the people” as the primary seat of political power was the defining intellectual achievement of Anglo-American political theory (coming to complete fruition in the

American Constitution). But the project was not simple or without its problems. Morgan argues that a key component of instantiating popular sovereignty in England and the United States as the ruling theory of government was the process of “imagining” the people. Simply put, political theorists found ways to think of a diverse group of individuals as one coherent entity in order to argue that representatives, despite being elected locally, really represented the entire nation. In the 1790s, politics in America became particularly polemical and strained the fiction of “the people” as one coherent seat of power. However, in discussions of “the people,” political theorists and thinkers, especially though not exclusively Federalists, returned repeatedly to the idea that the source of political divisiveness was not “the people” per se, but instead the people’s wavering virtue. And they argued that demagogic leaders were leading “the people” astray. The common belief was that this problem was exacerbated when the people


47 See Drew R. McCoy, The Elusive Republic: Political Economy in Jeffersonian America (Chapel Hill: University of North Carolina Press, 1996); also John R. Howe, Jr., “Republican Thought and the Political Violence of the 1790s,” American Quarterly, Vol. 19, No. 2 (Summer 1967), 146-65. This political and social “paranoia,” which was not restricted to one party, was itself mocked by contemporaries; for instance, The Albaniad, an Epic Poem, ([New York]: 1791), 3, by an author styling himself Pilgarlic, points to the way that most political and social questions were thought of in terms of extreme dichotomies, where the future is tied up in every action of the present. His poem is a mock epic that describes the warfare over the adoption of the Constitution.

“The Constitution cause of all the flame,
Some zealous, support and some condemn.
These its great blessings to the land presage,
And think at length will come millennia age,
... But those, with length'ned phiz, far worse suppose,
And swear it is the phial fill'd with woes,
That when pour’d out the Devil’s will come forth,
And for a thousand years ransack the earth.

In this passage it becomes clear that the tendency to read doom in an opposing party’s plans is mirrored by the tendency of each to read an equal level of glory into their own proposed policies for the country.
grew less virtuous — that is, more inclined to luxury, status, and appearance — the corrupers, sensing weakness, would pounce. John Adams described the downward spiral that the people’s loss of virtue produced:

The people grow less steady, spirited, and virtuous, the seekers more numerous and more corrupt, and every day increases the circles of their dependents and expectants, until virtue, integrity, public spirit, simplicity, and frugality, become the objects of ridicule and scorn, and vanity, luxury, foppery, selfishness, meanness, and downright venality swallow up the whole society.48

One way to guard against such a downward spiral was to circumscribe the areas in which most people could affect politics. The republic was a society in which political participation by the vast majority of people was limited to their right to vote for representatives — political rights were to be exercised only at the ballot box.49 But the people could make bad decisions at the ballot box. Even limiting political participation to judging and selecting representatives required wisdom and virtue. In the ideal election, virtuous independent citizens would vote between equally virtuous candidates who would persuade the electorate using reason and their own virtuous characters. But the fear was that a demagogue would dupe the masses into voting for him, even though he was not virtuous.50 Even worse, in the 1790s it seemed the people would not remain content to trudge to the ballot box once a year to assert their will. New societies, popular uprisings, street politics and an exploding popular press seemed to be a signal of the people trying


50 Ibid., 165.
to break free. But Rush came up with a new way. Rather than circumscribing political participation, Rush instead suggested the state enact policies to make sure all citizens would be virtuous republicans. In this way the populace would be inoculated against the disease of the demagogue and the radical ideas he espoused.

Disease was often used as a way to describe the spread of radical ideas. As I will discuss in the next chapter, in an extreme example of these ideas, Federalists in the 1790s thought that Thomas Jefferson was a pawn of a conspiracy of radical French philosophers who had orchestrated the destruction of French society. They spoke of these ideas as the “French contagion” and they made two explicit medical analogies. One was that the radical philosophers carried infectious disease-like ideas that disturbed the smooth functioning of the body politic. The second was that they were like quack doctors who used pretentious credentials to foist dangerous remedies on the body politic. In this, the Federalists joined a trans-Atlantic conservative counter-assault led by Edmund Burke and the many other anti-Jacobin writers on radical politics and the problems of the French Revolution.51

The disease metaphor for French radical theories had such purchase because of the long-standing link between bodily constitutions and national constitutions. These links posited a society that was organic in nature and held that all social classes had their just place in society and that that place should be respected and full of dignity. Ebenezer Sparhawk, a Massachusetts clergyman, spelled out the nature of the body politic in no

uncertain terms in a fairly typical statement at the funeral oration for a prominent local physician in 1794. “It is fit to be observed,” he writes, “that there is a similarity between the natural and the political body. Both these must, in order of their subsistence, beauty and strength, have such particular parts and members” in order to act effectively. In such a scheme, all members of society are deemed worthy and respectable: “Not only should the... Statesman, Physician[,]... Divine..., be highly esteem[ed]... but the obscurest Husbandman and Mechanic.”52 Radical French principles of egalitarianism intruded into this organic society and disrupted the good order and smooth functioning of the body politic. They destroyed the connections that bound together the different members of society, the very connections that made the body function.53 But political diseases were transmitted through language and speech. The answer for those who were worried about the destabilizing power of radical ideas was to control speech and print. “The people” were to be inoculated with a virtuous point of view.

Coupled with the fear of the radical newspaper was the fear of the demagogue, who roused the rabble at public meetings. The demagogue was an archetypical villain of republican political theory, who, in the thundering of polemical politicians, clergy, and public writers, was surely the cause of the downfall of the republic. The demagogue was always understood to be in a dialectical relationship with the unlettered multitude, which both controlled him and were controlled by him. His powers of persuasion violated


traditional theories of oratory and could turn the virtuous “people” into an unruly mob. At the outset of the eighteenth century, it had been assumed that the possession of virtue by a speaker was a fundamental prerequisite for persuasion. In the words of Quintilian, a widely read Roman rhetorician from the first century A.D., *eum qui orator virum bonum esse oportere*: “no man can be an orator unless he is a good man.”

The relationship between the character of a speaker and the persuasive power of his speech was a recurring theme in theories of rhetoric. While in classical theories of rhetoric, character or “ethos” was marshaled for persuasion in the act of public speaking, the Christian view was that the ethos of an orator was the sum of his virtues, demonstrated by his well-lived life. Alongside the strand of thought that held that a speaker’s ethos was necessary for persuasion was a strand that feared the ability of a speaker to use the rules of rhetoric, style, and elocution to persuade an audience to do bad instead of good. In the seventeenth and eighteenth centuries, the Enlightenment obsession with naturalism and human nature freed from the fetters of outmoded authorities led to a search for a new language, one that mirrored the search for “natural” or “universal” religion. This language would create “universal recognition” and understanding; it would be universally persuasive. This universal language was understood to bypass words and reason and was concerned more with the display of feeling in the speaker. Public

---

speaking in the mid-eighteenth century became a chance for an expression of the private self, and it was through this expression of self that the speaker persuaded. A speaker trained in eloquence could appeal directly to the audience’s emotions and through those emotions affect their wills, at least for a short time. The audience listening to a speaker whose persona was a key element of his argument was thought to be persuaded, not by words or reason alone, but by his ability to manipulate the emotions of the audience.\(^\text{55}\)

These shifting paradigms of rhetoric and oratory had implications for politics. According to Jay Flagellant, in a republican setting “political authority” came to be understood as “the ability to secure consent...,” but not by logic or evidence, “not merely to persuade by rational argumentation, but to excite, animate, motivate, and impress.”\(^\text{56}\)

The orator could motivate an audience by stimulating certain emotions. Eighteenth-century thinkers like Rush, following classical theories of rhetoric, considered the emotions, or passions, to be one motivator of the will. For instance, as I discussed earlier, in his *Oration on the Influence of Physical Causes on the Moral Faculty* (1786), Rush argued that good elocution, especially religious elocution, could spur virtuous action. Rush conceived of the influence of “the eloquence of the pulpit,” in mechanical terms based on his physiological understanding of the moral faculty. But a demagogue might


use the same skills, and others spoke as though the power of the demagogue over his audience were absolute.\textsuperscript{57}

The demagogue was especially dangerous because it seemed as though he could mimic the proper virtuous emotions to stimulate his audience and turn them to his cause, all in order to gratify his own ambitions of power. Most confounding for those who were convinced that virtue was a necessary precondition for convincing oratory was that the demagogue seemed able to be persuasive without actually being virtuous. However terrifying the demagogue was to those with a mind for assuring social stability, it was only because he had somehow the power to command the mob. Unlike discerning and educated men who could be expected to see through the faulty logic, false credentials, and faked virtue of a demagogue, the mob could not. They were all the more in danger of being controlled by the orator who knew how to stimulate the appropriate emotional response. Harrison Gray Otis, an active Federalist politician in Massachusetts, referred in 1801 to “the duped and deluded mob whose hosannas and execrations are as much mechanical and responsive as the pipes of an organ.”\textsuperscript{58}

Many political thinkers feared demagogues so much because they already thought of the people as an essentially controllable medium through which to engage in political

\textsuperscript{57} The mechanical view of the relationship between a speaker, the sound of language and its affect on the will of hearers was a widespread trend in rhetoric after Descartes, Conley, \textit{Rhetoric in the European Tradition}, 171-6. Like the confidence man of the nineteenth century, the demagogue was the archetypal figure that highlighted the worries and tensions in most polite people’s understanding of human nature. In fact, he was the eighteenth-century version of the nineteenth-century confidence man. See Karen Halttunen, \textit{Confidence Men and Painted Women: Study of Middle Class Culture in America, 1830–70} (New Haven, CT: Yale University Press, 1986).

debate, and thus only an appropriate repository of political authority if “prepared” beforehand. For instance, Alexander Hamilton wrote in 1780 of “preparing” the minds of the people before a convention. “If a convention is called the minds of all the states and the people ought to be prepared to receive its determinations by sensible and popular writings, which should conform to the views of Congress.” When politicians like Hamilton and Otis talked about “preparing” the minds of the people, and referred to the people as “pipe organs” that the clever and nefarious could “play” upon, they appealed to a physical understanding of the people, both as a compound body and as individuals.

For Rush the “mobocracy” and the rule of the demagogue that so many feared in the new republic had a concrete form — the Pennsylvania Constitution of 1775. He wrote often about his opposition to the Pennsylvania Constitution, at the greatest length in his essay “Observations on the Government of Philadelphia.” The Constitution of Pennsylvania placed the legislative powers in a unicameral Assembly with no possibility of a veto from the state’s weak executive body. Under this design, he argued, the Assembly would shortly become tyrannical, jealous of power, and subject to the passions and wills of the body, just like power concentrated in the hands of a single ruler might. Benjamin Rush quoted John Adams to show how a body of men could become a mob and then a tyrant. A single Assembly, wrote Adams, was subject to the passions, just like an individual, would become avaricious. In time a unicameral assembly would vote itself

exemptions from laws and duties other citizens were not exempt from, and finally, would
grow ambitious, and “after a time will not hesitate to vote itself perpetual.”

Rush argued that human nature was a necessary element of any governmental
theory. “An inquirer after philosophical truth, should consider the passions of men in the
same light that he does the laws of matter and motion.” The problem of the people’s
virtue and their susceptibility to manipulation by the demagogue was the primary
practical problem for politicians in the early republic. Rush attributed the formation of the
Pennsylvania Constitution of 1775 and other kinds of what he thought of as political
extremism to a kind of revolutionary fervor that was a form of insanity. “The excess of
passion for liberty, inflamed by the successful issue of the war, produced, in many
people, opinions and conduct which could not be removed by reason nor restrained by
government.” He dubbed this insanity “anarchia.” For Rush, political passion, which
could not be “removed by reason,” was a disease of the body politic and required a strong
prescription. Rush’s pathological understanding of human nature, with view of a moral

62 Rush, “Influence of the American Revolution,” 333. Wade Williams cites this passage to
explain Rush’s opposition to the Pennsylvania Constitution of 1775. He characterizes the word “anarchia”
as “the political and social problems of America as medical deviations from an ideological norm.”
Williams casts this opposition as a kind of class opposition. Rush, no longer a poor outsider in
Pennsylvania society, resented the uprising of the poor and their constitution. While I agree that Rush
feared political and social instability, I disagree with Wade’s casting this into class terms. While Charles
Willson Peale explicitly abandoned politics because of his desire to be friendly with a higher social class,
Rush never shied from expressing impolitic opinions even about very influential people and very often lost
his medical clients because of it. Rush himself refutes the point: “The government of Pennsylvania
therefore has been called most improperly [my emphasis] a government for poor men. It carries in every
part of it a poison to their [i.e. the poor’s] liberties. It is impossible to form a government more suited to the
Writings, 63.
faculty particularly susceptible to outside influence, including speech, made politeness a problem. Mere politeness, which was inculcated through the means of voluntary social conversation with other polite people, could never hope to prevail over the medical causes of political insanity exacerbated by the demagogue. Instead, Rush thought the virtues necessary for a republic had to be imposed on citizens much more strongly. One of the key reasons for the importance of a strong system of education for inculcating and controlling virtue was that Rush rejected a central tenet of politeness, the idea of “common sense.” Instead, for the new country, Rush prescribed a unified system of education based in Christian virtues, patriotism, and useful knowledge.

4.5 Rush’s Rejection of Common Sense

Rush’s solution to the problem of demagogues started with a refutation of one of the linchpins of politeness, common sense. His writings on common sense show that he questioned the validity of basing a standard of virtue on what were essentially a series of cultural and social practices. And though Rush never spoke against politeness per se, his system for spreading virtue through religion and useful knowledge, which I will describe later, comes into sharp focus when it is contrasted with the views of one of his friends and fellow signers of the Declaration. James Wilson placed polite conversation at the center of his theory of republicanism. James Wilson was born in Scotland and immigrated to America in 1766 where he studied law under John Dickenson. He became a political pamphleteer, authoring a number of pamphlets in support of American independence from Britain. He helped draft the first version of the Constitution and during the debates suggested the three-fifths compromise for counting slaves during
apportionment. A prominent lawyer, his successful defense of 23 suspected English sympathizers, combined with growing class tensions surrounding high prices of goods led to a mob attack on his house in the 1780s which became known as the “Fort Wilson riots.” He and over 30 others barricaded themselves in his home while the mob took shots at those trapped inside. Due to a penchant for land speculation, he struggled with debt and destitution later in his life despite being appointed a Supreme Court Justice by George Washington.63

But for the purposes of this chapter, it is his earliest writings that are most relevant. In the 1760s, well before the ferment of the American Revolution, Wilson co-authored a series of Addisonian-style essays that Stephen Conrad argues hold the key to understanding Wilson’s eventual views of polite republicanism. In these essays, Wilson argued that politeness was the “natural and graceful expression of the social virtues,” expressed through a style of conversation.64 Wilson’s theory of politeness was rooted in his conception of “good sense” or “plain sense” derived from Thomas Reid’s Scottish Common Sense School. While Reid’s theory is too complex to address fully here, I want to focus on one aspect of his view of common sense. Reid argued against Hume’s skepticism by resurrecting the epistemological authority of human “intuitions” or “common sense.” For Reid and Wilson, who followed him, the quick and natural intuitions could be trusted as the basis for certain knowledge. As Conrad summarizes,


“these undeniable intuitions about unseen, unheard, unfelt reality are common to all men ... who are capable of a minimum degree of reflection — thus Reid’s shibboleth ‘common sense’ to describe these intuitions.”

For Wilson, common sense was a natural, quick, and trustworthy sense of truth and falsehood held by most if not all people in society. Wilson conceived of “good sense” in contrast to “reasoning,” which was a lengthy, tedious process of arriving at counterintuitive ideas. For Wilson, “the true theory of human personality and republican citizenship must appeal to an authority more fundamental then the conclusions of nicely reasoned logic.”

Because most people had this “common sense,” engaging in polite conversation was a sure way to come upon moral truths. Wilson emphasized that the stability of a republic would rest, as Conrad argues, not just on the laws and rights of individuals through the formal paths of government and representation, but also on “a routine of social conversation and personal reflection at once ‘instructive’ and ‘agreeable.’”

Wilson thought that the habit of polite conversation about political topics like choosing representatives would inculcate patriotic virtue and lead people to make the right choices:

A habit of conversing and reflecting on these subjects [i.e. politics], and of governing his actions by the result of his deliberations, would produce, in the mind of the citizen, a uniform, a strong, and a lively sensibility to the interests of his country.... By these means... pure and genuine patriotism... which consists in liberal investigations and disinterested conduct, is produced, cherished, and

---

65 Ibid., 379.
66 Ibid.
67 Ibid., 384.
strengthened in the mind: by these means...the warm and generous emotion glows and is reflected from breast to breast.\textsuperscript{68}

Wilson’s description is a concise statement of how politeness could work to internalize and spread patriotism based in “disinterested conduct” through voluntary polite conversations throughout the new country. But Benjamin Rush specifically disagreed with the definition of common sense that Wilson’s view of politeness rested on.

To understand Rush’s discussion of common sense, it is necessary to understand the transmission of common sense philosophy to America. Scottish common sense philosophy came to America mainly through universities. The “new moral philosophy” at first seemed at odds with traditional Christian morality. However, later thinkers found the common sense school a compelling intellectual answer for the problems posed by the American Revolution. According to Mark Noll, Americans wanted to reject traditional forms of authority but still maintain traditional morality. Scottish common sense philosophy provided a moral system based in a conception of universal human nature. Americans forming a new government and new society found this to be the perfect foundation on which to base their institutions. But the channels through which Americans received Scottish common sense philosophy had implications for how they understood that philosophy, especially in the 1770s and ‘80s.\textsuperscript{69}


Noll identifies John Witherspoon as the primary conduit for common sense philosophy in America, but Witherspoon was not a didactic thinker, often using rhetorical force instead of logic to convince his students of the truth of Hutcheson’s views. Further, Noll shows, Witherspoon appropriated all of his lectures of moral philosophy from Hutcheson, composed those lectures hastily in the few years before the Revolution, and did not update them. Because of this, Thomas Reid was not systematically appropriated by Americans until the 1790s, when Dugald Stewart's popularization of the common sense philosopher’s thought, *Elements of the Philosophy of the Mind*, came out. Therefore, Noll writes, in America “the principles of the Scottish Enlightenment was provided by the sentimentalist ethics of Francis Hutcheson rather than the realist epistemology of Thomas Reid.”

In addition to the formal articulation of common sense philosophy in universities, common sense ideas and language came to America through informal cultural routes. Sarah Knott notes that common sense moral philosophy, or “sensibility” became infused through the culture by booksellers and doctors (like Rush) who used the language of sensibility or innate faculties to describe personalities and diagnose illnesses. This informal, non-rigorous language emphasized the intuitive and immediate feelings or the sense impressions communicated to the body through “nerves” as the primary way virtue and vice were recognized by the sensible person. In short, Americans in the second half of the eighteenth century did not have a nuanced or even accurate understanding of the thinking of Thomas Reid. On top of all of this confusion is the fact that Benjamin Rush, 

---

himself one of the primary transmitters of common sense ideas, was not a careful philosopher and, in fact, as I discussed earlier, eschewed the need for precise understanding of the nature of underlying causes of observable phenomena. He thought observable effects should be the primary focus of scientific and medical explanation. When Rush refers to Reid’s and others’ views of “common sense” he conflates several views that are, in fact, quite different and thus simplifies or outright misunderstands the writers to whom he refers. Be that as it may, his depiction reflects the way many Americans thought about “common sense.”

Rush laid out his objection to the typical definition of “common sense” in a short essay called, “Thoughts on Common Sense.” Common sense, he wrote, was typically used to describe “a faculty or part of a faculty, a possessing and quick and universal perception of right and wrong, truth and error, and of propriety and impropriety in human affairs.” He cites a litany of philosophers to hold this view, including Shaftesbury, Locke, Hume, and Thomas Reid, whose definition he quotes. Rush lumps together a whole host of thinkers and claims that they all describe basically the same thing - that humans have an innate and intuitive moral or common sense that gives them almost immediate access to right or wrong without the necessity of labored reasoning or logic. Indeed, as I discussed earlier, James Wilson articulates a similar idea: that there is a universal human faculty through which people quickly and intuitively apprehend right


and wrong. Similarly, Samuel Johnson in his 1746 *System of Morals*, called Hutcheson’s moral sense, “a kind of quick and almost intuitive sense of right and wrong.”

According to Wilson, moral judgments made from the quick apprehension of right and wrong would be reinforced and clarified through voluntary conversation with others. But Rush disagreed that intuitive judgments of right and wrong necessarily reflected universal truths. He proposed an alternate definition of “common sense” based on his own experience traveling through other countries and observing different customs. Common sense, according to Rush, was “the perception of things as they appear to be to the greatest part of mankind.” Or “Opinions and Feelings in unison with the Opinions and Feelings of the bulk of mankind.” He went on to clarify that these opinions and feelings were not really universal or “common.” In the parlance of today, Rush thought that common sense was culturally relative. “From this definition, it is evident that common sense must necessarily differ in different ages and countries and, in both, must vary with the progress of taste, science, and religion.” In fact, he thought, the majority of what passed for common sense in a given culture would be wrong, and to that extent, that culture’s ability to be virtuous would hampered.

Rush’s rejection of “common sense” as a universal faculty for recognizing truth did not lead him into Hume’s skepticism. He fully believed that there were absolute truths and that man could know them, but the proper way to acquire these truths was not through a quick and intuitive sense clarified by speaking with and learning informally

---


74 Rush, “Thoughts on Common Sense,” 251.
from other people. Instead, Rush thought truths about morality were learned through education by experts, observation, and reason applied to a wide array of subjects. For Rush, truth and morality were given to men by God and revealed through the close observation and study of religion, human nature, and the natural world. Medicine, natural history, natural philosophy, history and theology, properly understood, all combined to teach common truths about right and wrong. With careful study of human nature using the methods of observation, collection, comparison, and experience, thinkers could learn the universal principles of human nature on which to base government systems and religious systems. Rush thought moral philosophy, like natural philosophy, and indeed theology itself, would yield new discoveries through the efforts of human reason and logic, aided by God’s guidance and revelation. In short, there would be progress in these areas as new truths of nature, morality, religion, and government were discovered.

Thus common sense, as used by James Wilson and other Americans, for Rush was no different from superstition, often a hindrance to discovering real truth. Rush’s views about common sense, however naïve, complicated the Shaftesburian project of politeness understood as being transmitted through polite informal conversation. Whereas James Wilson thought that disinterestedness in service of the country was a key virtue that would spread in polite conversation, Rush, who also agreed that this was the key virtue required of republicans, did not trust that polite conversation would spread it. The recognition of virtue (though not virtue itself) was relative to time, place, and culture. A person brought up in a different country, or taught a different set of facts about the world, ethics, and morality, might not recognize or learn the proper virtues. Rush had to come up with a different system for inculcating morals if the American Republic was to survive.
“Virtue,” Rush argued, “is the living principle of the Republic.” The only way to make a republic last, “is by disseminating the seeds of virtue and knowledge through every part of the state, by means of proper modes and places of education.” Rush thought that individual virtue was best guaranteed above all by state-sanctioned systems that inculcated virtuous habits and correct knowledge through an education in Christianity and useful knowledge. At the same time, Rush argued, because of the revolution, American education had to take new forms. “The business of education has acquired a new complexion by the independence of our country,” he wrote in 1786. “The form of government has created a new class of duties to every American.” And thus, the state now had a vested interest in creating and supporting “nurseries of wise and good men.” This state-sanctioned education should teach Christianity, patriotism, and all the branches of useful knowledge. Together these subjects would create virtuous republican citizens who would have the proper manners, morals, and knowledge to perpetuate the republic and increase the happiness of mankind.

For Rush, as for many others, Christianity was the key to virtuous behavior. But when he spoke in public, he spoke as a doctor, not a preacher. His primary concern was with the mechanism by which a Christian upbringing encouraged development of the

75 Ibid., 40.
moral faculties, and this was not a theological but a physiological problem. Though Rush had firmly-held convictions about the theology of grace, Divine Providence, and human free will in his public writings, he confined himself to understanding Christianity’s relationship to the physiology of virtue. And also for Rush, Christianity went hand in hand with useful knowledge.

Rush often described what was important about useful knowledge by contrasting it with Greek and Latin. He was a life-long opponent of teaching Latin and Greek in schools and often spoke against their inclusion in curricula. Latin and Greek were, to Rush, not just impractical, but also obstructed a student’s ability to learn “useful” subjects. He wrote of the classics, “[I]t is likewise one of the greatest obstructions that has ever been thrown in the way of propagating useful knowledge,” This “formidable enemy of human reason” wasted time, suppressed the desire to learn, and created habits of the mind unsuitable to a republican citizen. Rush maintained his animosity towards Greek and Latin well into the nineteenth century, because he had one of the more extreme views of how environment and learning could effect the formation of the character (or


79 Butterfield argues that Rush argued against Latin and Greek in schools for practical reasons, because America should be concentrating on chemistry, mineralogy and botany so best to study and develop American natural resources. Butterfield, “Benjamin Rush as a Promoter of Useful Knowledge,” 33. While this is true, it misses the point about Rush’s theory of the effect Latin and Greek have on the mind.

80 Rush, “Observations Upon the Study of the Latin and Greek Languages, as a Branch of Liberal Education,” Essays, Literary, Moral, Philosophical, 21-56. See also Reinhold, 229-30.

psychology) of individuals.⁸² To him the classics were second to none in their deleterious effect on the formation of the mind, the habits, and thus the individual character. In this way, to study ancient languages, with the emphasis on memorization, drill, and mimicry, was the polar opposite of studying the natural world, with the emphasis on observation, curiosity, forming and testing new theories, and the constant acquisition of new knowledge. Useful knowledge enlivened the mind and created habits of learning and curiosity, useless knowledge enslaved men to whatever they were taught.

James Watkinson describes the debate between classics versus useful knowledge of the 1780s and ‘90s as an expression of a social and cultural shift. Old elites, who used Latin and Greek as markers of their social status, were replaced in learned societies by new intellectual elites, such as Rittenhouse, Peale, and Rush, who were often of lower social orders.⁸³ This fact was demonstrated concretely in the lives of some famous scientists. In his Eulogium on David Rittenhouse, which Rush gave before the American Philosophical Society, he overturns the common view of the polite amateur man of science and replaces it with the man of science as mechanic. Work, he thought, made the mind vigorous. “Constant employment of any kind, even in the practice of the mechanical arts has been found, in many instances, to administer vigor of human genius. Franklin studies the laws of nature, while he handled his printing types... Herschel

⁸² Rush is often credited with being a founder of modern psychology with his essay “An Enquiry into the Influence of Physical Causes upon the Moral Faculty.” See also Butterfield, “Benjamin Rush as a Promoter of Useful Knowledge,” 26-36.

⁸³ Watkinson, “Useful Knowledge?”
conceived the great idea of a new planet, while he exercised the humble office of a musician to a marching regiment.”

For Rush, religion and useful knowledge would combine to teach republican students the virtues required of them. He believed that republics were peculiarly Christian and therefore that Christianity was the best religion for them. He believed that natural philosophy, natural history, and mechanics were the study of laws that existed in the mind of God. Finally, he held that further study would unite religion and science in a joint enterprise for creating a happy society. For Rush, all areas of knowledge — science, morals, religion, and government — were continually progressive with new truths being learned by men every day. He wrote:

A Christian cannot fail of being a Republican, the history of the creation of man, and of the relation of our species to each other by birth, which is recorded in the Old Testament, is the best refutation that can be given to the divine right of kings, and the strongest argument that can be used in favour of the original and natural equality of all mankind.

A Christian, he argued, was led by the Gospel to “humility, self-denial, and brotherly kindness, which are directly opposed to the pride of monarchy and the pageantry of the court.” A Christian was useful “for his religion teaches him that no man ‘liveth to himself.’” And finally, the golden rule ensured that Christians were “wholly inoffensive” to others. The second to last point, that Christianity taught that “no man liveth unto himself,” was particularly important for teaching young republicans. In a republic, the virtue of self-sacrifice was paramount. “Let our pupil be taught that he does not belong to

---

84 Rush, “Eulogium on David Rittenhouse,” Essays Literary, Moral, Philosophical, 337.

85 Benjamin Rush, A Plan For The Establishment Of Public Schools And The Diffusion Of Knowledge In Pennsylvania, 15-6.
himself, but that he is public property." 86 If necessary, a republican should forsake even family and friends for the welfare of the country. At the same time, he should be taught that the science of government, like all other sciences, was subject to improvement and progress. 87

By the inculcation of firm foundations in Christian morality coupled with proper amusements, physical exercise, and an insistence on obedience to families or apprenticeship until the age of 21, Rush thought it “possible to convert men into Republican machines.” Indeed, given that the republic itself was an intricate machine dependent on checks and balances between all the different parts of government and driven by the will of the people, the machination of humanity was necessary for the stability of the country. He thought that uniform education was a prerequisite for a functioning republic, that the “wills of the people... must be fitted to each other by means of education before they can be made to produce regularity and unison in government.” 88

Encouraging Christian morality would encourage virtuous habits, and teaching natural philosophy would encourage an active mind, one that was not afraid to question current theories and propose new ones, and that was best suited to discovering truth.

For Rush, the truths of both morality and nature came from the Creator and were discovered by man through observation and reason. Rush was certain that in time the discoveries of natural science and the revelations of Christianity would unite

86 Ibid., 20.
87 Ibid., 22.
88 Ibid., 27.
harmoniously to support each other. “The truths of philosophy and Christianity dwell alike in the mind of the Deity, and reason and religion are equally the offspring of this goodness. They must, therefore, stand and fall together.”89 For Rush, philosophy and Christianity were inexorably linked and would both naturally progress towards perfection and the reform of humanity. “Happy æra! — When the divine and the philosopher shall embrace each other, and unite their labors, for the reformation and happiness of mankind!”90 Rush propounded a progressivism that was widely shared by members of the republic.

All these theories combined to make Rush unabashedly optimistic about the possibility of perfection of American society. He had found a way to make the republic stable by using psychological forces to insulate the individual mind against luxury, mobocracy, and corruption and safeguard the society from decay.

From the combined and reciprocal influence of religion, liberty and learning upon the morals, manners knowledge of individuals, of these, upon government, and of government, upon individuals, it is impossible to measure the degrees of happiness and perfection to which mankind may be raised.91

In this quote Rush summarizes how the three bedrocks of his plan were united. Men and women who learned the virtues taught by Christianity and the subjects of useful knowledge in an atmosphere of political liberty would almost necessarily become good republicans. Further, the combination of these three elements would “raise” the happiness of mankind by creating the ideal setting for new discoveries about the natural world,

89 Rush, Enquiry Into the Influence of Physical Causes Upon the Moral Faculty, 27.
90 Ibid.
91 Ibid., 34.
about the best form of government, and about religion, all of which he thought contributed to progress. Rush’s view of the future of America, like Rittenhouse’s in his oration on astronomy, and Peale’s in his advertisements, was what you might call a millennial utopia based on the possibilities of promoting useful knowledge.

Rush did not just have a theoretical view of education; he had a very practical suggestion for implementing his state-controlled educational vision. In “A Plan for Establishing Schools in Pennsylvania, and for conducting education agreeably to a Republican form of Government,” of 1786 and “A Plan of Federal University” in 1788 he set forth his views.⁹² Both of these plans offer a web of colleges, schools, and universities, connected in a tier, with a university at the top. “A Plan for Establishing Schools in Pennsylvania,” argues for a state university in the capital of Philadelphia that would teach the three professions of law, medicine, and divinity, backed up by the “law of nature and nations, œconomy, etc.” This university would have professors giving lectures in the winter, who would be subsidized by the state “as will enable them to deliver their lectures at a moderate price.”⁹³ Four colleges spread throughout the state would provide a secondary education for students. Rush argued for free schools in every town or in districts of one hundred families to teach English and German and “the use of figures.” “Such of them as have parents that can afford to send them from home, and are disposed to extend their educations, may remove their children from the free schools to

---


one of the colleges.”\textsuperscript{94} This school system would tie the state together, he argued, both institutionally, and culturally, as “the same systems of grammar, oratory, and philosophy will be taught in every part of the state.” Thus Pennsylvania would be “one great, and equally enlightened family.”\textsuperscript{95}

Two years later, perhaps because the Pennsylvania legislature did not follow his suggestions, Rush proposed a “Plan for a Federal University” as a way to answer those opponents of the Constitution who felt the country was too big to be a republic. He wrote, “These declarations and predictions may be, they will certainly come to pass, unless the people are prepared for our new form of government by an education adapted to the new and peculiar situation of the country.”\textsuperscript{96} Like his plan for Pennsylvania, the federal university would bind citizens of the country together by providing a central place for all the states to send their young men who wanted to serve the government. For the federal university would only teach those subjects necessary for “public and civil life.” Those subjects were “the principles and forms of government,” especially the Constitution, history, agriculture, manufactures, commerce, practical mathematics, the practical aspects of natural philosophy and chemistry, natural history, philology, German and French, and athletics.\textsuperscript{97} Rush also had plans to keep America up to date on discoveries made in Europe by sending four “young men” to keep abreast of developments and correspond

\textsuperscript{94} Ibid., 4.

\textsuperscript{95} Ibid.

\textsuperscript{96} Rush, “Plan of a Federal University,” in Selected Writings, Runes, ed., 101.

\textsuperscript{97} Ibid., 101-3.
with the professors at the university. Two young men were to explore the United States and collect flora and fauna and send back samples to the professor of natural history. Finally, a natural history museum and a garden were to be established to help teach those subjects and to promote discoveries.

Rush wanted to mandate this education for election to office in America. “In thirty years after this university is established,” he wrote, “let an act of Congress be passed to prevent any person be chosen or appointed into power or office, who has not taken a degree in the federal university.” This was the best way to protect American liberties from “quacks in government.” With the establishment of such a university, Rush contended, America would soon outstrip Europe in learning. A “golden age of the United States” would begin. As European universities wasted their time teaching Greek and Latin, ancient history and ancient physics, American students “will be employed in acquiring those branches of knowledge which increase the conveniences of life, lessen human misery, improve our country, promote population, exalt the human understanding, and establish domestic, social, and political happiness.”98

4.6 Conclusion

Benjamin Rush argued that policy makers could shape the virtue of citizens, creating republican machines. They could thus institute civility and politeness through the combined effort of teaching useful knowledge and inculcating polite and virtuous habits, both of which would occur in a state-directed and sponsored education, mandated for the

98 Ibid. 105.
leaders and legislators of the country. For Rush, these ideas were fully compatible with a belief that God was the ultimate Creator of men’s virtue. But he also thought that God’s Providence on earth was worked out through the functions of nature, and so men of science, learning to control and manipulate those functions, could work in accordance with God’s plan, using His materials. In Philadelphia, these were not threatening ideas. A spirit of rational inquiry and religious tolerance pervaded the circles of Philadelphia’s thinkers, both scientific and religious. However, when Thomas Jefferson began to oppose Federalist policies and to create an opposition party, the enlightened sciences from which both he and Rush drew came under heightened scrutiny by their political opponents. When the Federalist and clerical opposition to Jefferson came into full force in 1795, it criticized Jeffersonian democracy and Jefferson himself as being too closely allied with French revolutionary rhetoric and skeptical ideas associated with atheism.

Rush thought the progressive nature of useful knowledge was the reason that a culturally based system of virtue could never be the foundation for a truly stable and virtuous republican nation. The progress of useful knowledge, including medicine, proved time and again that common sense was often just plain wrong. So Rush removed common sense from the equation and proposed that American citizens obtain a government-mandated education that would continually update its views of the various branches of knowledge. Such a school would produce generation after generation of students fit to become the leaders of the American republic because they were steeped in the latest knowledge as well as the principles of progress. But not everyone shared this view of useful knowledge as the radically progressive underpinning of republican society. In the next chapter I turn to a forgotten satirist, a virulent anti-Jeffersonian Federalist
whose most popular satire was not explicitly about Jefferson. Thomas Green Fessenden lambasted progressive doctors and philosophers like Rush as modern-day quacks out to dupe the common man with false authority. To combat political and philosophical quackery Fessenden returned to the possibilities for polite common sense to help average Americans tell the difference between philosophical quackery and real science.
5.1 Introduction

In this dissertation, I argue that to fully understand Americans who promoted useful knowledge in the late eighteenth century, historians must view their activities within the context of the eighteenth-century polite culture. In the first three chapters I explored the writings of three men of science active in Philadelphia through the lens of what historians have called the “culture of politeness.” David Rittenhouse, Charles Willson Peale, and Benjamin Rush all shaped their arguments about how and to what end useful knowledge should be promoted in the American republic in response to polite ideas. But Rittenhouse, Rush, and Peale, like other radical political philosophers, wanted to create institutional links between the republican government, the promotion of useful knowledge with the assumption that it would promote a good republican character. When Thomas Jefferson became president of the American Philosophical Society in 1797 and then was elected president of the United States in 1800, those institutional links seemed well on their way to being formed. Jefferson’s political opponents began to protest that what had once been a potential common language of politeness was in danger of being co-opted for self-serving political ends.
In this chapter, I argue that Thomas Green Fessenden, a Federalist satirist, attacked the link drawn by men like Peale, Rittenhouse, and especially by Benjamin Rush, between the practice of useful knowledge and polite patriotic commitment to American republicanism. Fessenden, a committed Federalist, loved technological innovation and scientific discoveries but nevertheless highlighted the problems of institutionalizing authority from those practices. Convinced still that the study of the natural world should be subsumed under polite criteria and marshaled for the good of humanity, he pointed out those “modern philosophers” whom he felt were violating the rules of both politeness and useful knowledge. Though he was a traditionalist, Fessenden was essentially optimistic about the ability of the people to choose wisely, given the right information, whether in the market of medical nostrums, or the market of ideas, or the market of politicians. However, in the marketplace of ideas, he called upon benevolent men of “real science” to expose charlatans and to make knowledge transparent to the public through the widespread dissemination of the press.

The existence of “modern philosophers” was especially dangerous given political developments in America. Fessenden thought the policies of the burgeoning Democratic-Republicans, who favored a broad voting base and more egalitarian idea of who could and should be a political representative, would create an easily gulled American citizen. He feared that the new Democrats, headed by such elites as Jefferson, would take advantage of this newly empowered and un-educated multitude by using the authority of useful knowledge and the rhetoric of benevolence to implement their own vision for reordering society. To combat these dangers, Fessenden turned to satire to “unmask” what he called “pretenders to knowledge” who tried to pull one over on “the less
enlightened part of mankind.”

1 Fessenden questioned the authority of useful knowledge by impugning the character of the “modern philosopher.” In doing so he highlighted the instability of the relationship between useful knowledge and politeness even as he argued that discussions about useful knowledge be restrained by the polite principles of benevolence and open conversation.

For Fessenden, “men of real science,” guided by benevolence and empiricism, and bound by rules of polite conversation, would help curb the treacherous tendencies of Democratic instability and social fluctuation by exposing false philosophers. Fessenden saw as one of his duties to expose Thomas Jefferson as just such a false philosopher. Jefferson claimed that the pursuit of useful knowledge would lead to the betterment of mankind, but his French and English philosophical friends (whom Fessenden discusses in the satire) promoted social theories that led to the violence of the French Revolution. Jefferson claimed to be benevolent, but he was a slaveholder and one who, Fessenden suggested in at least two places, abused his power over his female slaves.

To combat this abuse of authority, Fessenden called on a Shaftesburian view of polite conversation, where the open exchange of viewpoints was the key factor in developing both virtue and reason. Lawrence Klein describes Shaftesbury’s view of conversational speech in the following way:

Ideal conversation was a moral framework for public interchange, since its conversations embodied the norms of freedom, equality, activity, and pleasure. In allowing individuals to become more rational and more autonomous, it fit into an

1 Thomas Green Fessenden, The Modern Philosopher, or Terrible Tractoration! (Philadelphia: I. Riley and Co., 1806), xxx; See also his Democracy Unveiled: Or TYRANNY Stripped of its Garb of Patriotism (Boston: David Carlisle, 1805).
emancipatory program. At the same time it was a model of intellectually productive discourse since it provided the best conditions for the advancement of reason.

Similarly, Fessenden also thought that the polite ideal of open conversation was the best way to advance knowledge. But despite Fessenden’s turn to Shaftesburian politeness, his work also highlights the limits to politeness as a model for conversation about the natural world in the new, more politically open America dominated in the 1800s by Jefferson’s Democratic-Republican party.

As I discussed in the introduction, by the culture of politeness I mean a broad understanding of the essential linkage among individual human nature, outward forms of conversation, and modes of government. I also discussed the way that ideas about politeness evolved through the eighteenth century and how later formulations emphasized “sensibility” as the guiding principle of politeness. To reiterate, the moral code of politeness by the late-eighteenth century was, according to Philip Carter, “a system of social interaction rooted in man’s natural tendency to sympathise, and dedicated to the relief of others through the physical and practical expression of this sympathy.” Part of sensibility was the belief that, first of all, a polite gentleman (no matter his breeding) would be guided and influenced by “sympathy,” which was a “quality by which one person reproduced and came to experience the feelings of another by observation.”

---

2 Lawrence Klein, *Shaftesbury and the Culture of Politeness*, 99. As I explore further, the problem of using this model was that it was easy to cut off discussion and debate by simply excluding people from conversation. See also Paul Langford, “The Uses of Eighteenth-Century Politeness,” 315.


4 *Ibid.*, 345-6. Sympathy or sensibility was a widespread concept held with varying degrees of rigor. For a good recent discussion of how the ideas of sensibility were transmitted to America through
In his satire Fessenden turned to the polite ideals of benevolence to question the sensibility and thus the moral authority of the sort of person he called “the Modern Philosopher.” Polite ideas were the theme of many discussions of radical political theories, especially radical contentions about benevolence. Radical philosophers claimed that the social upheaval of the French Revolution were for the ultimate benefit of mankind and therefore that the violence and social upheaval were justified. But ideas of philosophical benevolence lay uneasily within a system that had emphasized that benevolence was a character trait discerned by face to face interaction and immediate sympathy with human suffering. Particularly suspect were abstract systems of benevolence purportedly founded in natural philosophies of human affairs.

The idea of universal benevolence was a key point of argument among various moral philosophers and theologians. Jonathan Edwards, earlier in the century, argued that true benevolence extended to all of mankind. In contrast, Benjamin Rush thought that it was right for individuals to have stronger feelings of sympathy with or benevolence towards family, city, state, and country. Proponents of universal sympathy or benevolence argued that it was the highest virtue and was necessary to counteract selfishness or self-centeredness. Others saw universal benevolence as a sentiment that destroyed local, filial, and patriotic affections. Someone who had sympathies for the entire world could overlook the suffering next door to him, and indeed, this was the thrust

both Scots influenced medical ideas about the “nervous body” and also through booksellers who marketed their books to a “sentimental” readership, see Sarah Knott, *Sensibility and the American Revolution*.

of Fessenden’s ironic appeal to benevolence. By appealing to benevolence and sympathy, a virtue that the philosophers Fessenden attacked claimed to serve, he attempted to show them to be hypocritical. In American politics Fessenden and his political party, the Federalists, highlighted what they saw as Jefferson’s, and by extension the Democrats’ hypocritical commitment to benevolence by pointing to Southern slaveholding. He also pointed to the problem of promoting “useful knowledge” in a way that was useful to one segment of society but detrimental to another.

The second polite ideal Fessenden adhered to was that of open conversation. In the introduction, I wrote about how the ideal of the open conversation was important in the culture of politeness for two reasons. First, the ideal open conversation took place located in new cultural and social spaces, outside of the nexus of official court power. Second, on a personal level, a “generous tolerance to listen to others without interruption” was a physical demonstration of benevolence. But in the Shaftesburian system, open conversation was also the surest path to truth. Those who participated in Shaftesburian open conversation were committed to the autonomy of all participants and

---


believed that such conversation was the ideal venue for finding truth. For Fessenden, even conversation about the achievement of useful knowledge had to be conducted by polite standards.

To flesh out Fessenden’s polite critique of radical late-eighteenth century practitioners of useful knowledge and the way he linked this to Jeffersonian Democracy, I explore the literary, intellectual, and political contexts of his forgotten satire, *The Modern Philosopher*. In the first section, I sketch the biography of Thomas Green Fessenden as a Federalist satirist. In the second section, I discuss the quack phenomena of Perkinism that was the motivation for writing the poem in the first place. Fessenden likened “modern philosophers” to quack physicians who employed the artifice of authority to dupe a buyer in the marketplace of ideas. One of his concerns was to find a way to help regular, non-learned members of society navigate the claims of philosophers and to enable them to participate equally in conversations with them. Fessenden warned his readers about the “modern philosopher” who was distinguished by his lack of two key elements of politeness: his lack of human feeling, or benevolence, towards the objects of his philosophical theories, and his unwillingness to engage others in a dialogue about the natural world when those others did not have what he saw as the right credentials. In the third section, I give a synopsis and some analysis of the poem, concentrating on Fessenden’s treatment of four of the most famous philosophers of the late eighteenth century, Thomas Beddoes, Joseph Priestley, James Hutton, and Erasmus Darwin. Finally, I look at how he brought the satire home with his section of “Columbian legislators,” whom he suggested natural philosophers would be able to manufacture and control to dupe voters and implement their own schemes.
5.2 Partisanship and Science in the Age of Jefferson

Thomas Green Fessenden was a vitriolic partisan in an age noted for its vitriol.8 Explanations of the Federalist reactions to Jeffersonian democracy have been numerous; Federalist writings warned about the dangers of French influence and the collapse of society they thought was sure to follow.9 Through their eyes events of the 1790s pointed to a dangerous turn in politics, and they worried that America would slip into an unbalanced form of government. Their fears seemed to be born out by international and domestic events, including the French Revolution, the Whiskey Rebellion, and the rise of militant deism, marked by the appearance in America of Paine’s *Age of Reason* in 1794 and Baron Paul d’Holbach’s *Christianity Unveiled* in 1795.10 The group identified by historians as the Federalist clergy, reacting to fears that the radicalism of the French Revolution would spread to America, articulated a more or less coherent vision of a


Christian republic, where the belief in Christ as a virtuous model for emulation and a future system of rewards and punishments were seen as key factors for social stability. The urgency with which they espoused this form of republic reflected the uncertainty of the 1790s. It was an urgency shared by conservatives throughout the Anglo-American world.\textsuperscript{11}

A recent study by Catherine Kaplan places Fessenden and his associates squarely in the context of politeness. She argues that Shaftesburian sensibility, or politeness, was challenged by the spread of democracy. Because the institution of democracy created a formal and legitimate way for broad swaths of society to participate in politics, it was unclear to men of letters just what role voluntary social gatherings based on friendship, politeness, fellow feeling, and wit should have. Kaplan explores three groups of men of letters, both Democrat and Federalist, who tried to define a kind of citizenship that was not wholly circumscribed by the formal political processes of campaigning, electioneering, and public politics. Thomas Green Fessenden’s friend, Joseph Dennie, cultivated a literary and social group of like-minded Federalists and marked out a particular polite literary Federalist opposition to Jeffersonian Republicanism.\textsuperscript{12}

\textsuperscript{11} Montluzin, \textit{The Anti-Jacobins, 1798–1800}.

Fessenden was a product of the bustling and growing frontier town of Walpole, Connecticut. His father, Thomas Fessenden, was the local pastor. Thomas Green Fessenden, his eldest son, was educated in music and managed enough classical literature to gain admittance to Dartmouth in 1792. While a student at Dartmouth, and later as he studied law, Fessenden found a literary niche composing ballads and poems about rural New England manners. The most famous of these, which was still included in anthologies of American literature in the 1920s, was called *Jonathan’s Courtship*. It was widely acknowledged to be a precursor to James Russell Lowell’s more famous “The Courtin’.” However, even in this ballad of rustic manners, we see the humor that he put to good use in his political satire. This poem was in effect a parody of popular sentimental poetry.

Walpole was also the gathering place for a group of young literary lawyers, none of whom are well recognized today, but most of whom were known to contemporaries. Most important of these was Joseph Dennie, who edited the *Farmer’s Weekly Museum* from 1792 until 1799, when he went to Philadelphia to start up the *Port Folio* to which Fessenden contributed. This latter magazine would become the chief literary vehicle of Federalist opposition to the Jeffersonian presidency. Kaplan highlights how Dennie’s publications, both the *Farmer’s Weekly Museum*, and the *Port Folio*, created a social “world” around shared opinions and a typical style or attitude. Kaplan writes that readers

---


of Dennie’s Museum “felt included in the highly personal political world.” His style was irascible and irreverent mockery of republican political pretensions, qualities Fessenden also displayed in his satire. Similarly, Fessenden’s satire traded on shared assumptions, key words, that for those included would not need definition or explanation and was meant to bind together like-minded people by eliciting laughter. The power of satire to create laughter bypassed logical argument to create a visceral agreement with the writer, thus solidifying the bond between all those who shared the view of Fessenden.

Fessenden’s audience, no doubt, would have been part of Dennie’s circle of readers and friends, indeed Fessenden dedicated one edition of his satire to Joseph Dennie.¹⁵

After he graduated from Dartmouth in 1796, Fessenden studied law in Rutland, Vermont. But the popular success of his poetry and ballads, especially Jonathan’s Courtship, as well as his own interest in science and inventions distracted him from law. According to Nathaniel Hawthorne, who knew him later in life and was his first biographer, Fessenden was also credulous to a fault. He became involved in an investment scheme that took him to London in 1800 and which led directly to his writing the first version of Modern Philosopher, which he called Terrible Tractoration! I will discuss this event in detail in a later section of this chapter. When Fessenden returned from London in 1804, his poem was widely heralded and lauded as an example of the new American Literature. Fessenden followed up the praise gained from Tractoration with another polemic, Democracy Unveiled; or TYRANNY stripped of the Garb of Patriotism, a direct attack on Thomas Jefferson and the Democratic-Republican Party. It

¹⁵ Kaplan, Men of Letters, 135.
contains such passages as the following, (note the phallic reference to the “steeple”) which accuses Southern politicians of literally generating a slave population that will buttress their electoral power while saving them import money:

Great men can never lack supporters
Who manufacture their own voters
Besides, tis plain as yonder steeple
They will be fathers to the people

And ’tis a decent, clever, comical
New mode of being economical,
For when a black is rais’d it follows
It saves a duty of ten dollars

In 1806, Fessenden followed up *Democracy Unveiled* with another edition of *Terrible Tractoration!*, renamed *The Modern Philosopher*. After 1806, Fessenden immersed himself even further in polemics by becoming the editor of a New York Federalist newspaper *The Weekly Inspector*. After a year, though, he gave up polemics and moved back to Vermont where he practiced law, wrote tracts on inventions, and edited a newspaper with his brother. In addition to editing and contributing to a number of smaller newspapers, he wrote another major satire, *Pills, Poetical, Political, and Philosophical* (1809), and a didactic poem about female education called *The Ladies Monitor* (1816). From 1822 until his death in 1837, Fessenden had a prolific career as an agricultural

---


writer and editor. Fessenden was an industrious worker, editing several agricultural journals and handbooks. He edited *The New England Farmer*, a weekly compendium containing abstracts of important agricultural articles, as well as small pieces of verse and writings on morals and manners. He never lost his interest in satire, and in the last years of his life he released two new editions of *Terrible Tractoration!*, which, despite their new content, were generally received as nostalgia. 18

Nathaniel Hawthorne, in his biographical sketch of Fessenden, lamented that Fessenden did not stick to writing the ballads and country verse from his early life. 19 However, it was in his critiques of Jeffersonian democracy and useful knowledge that are most instructive to us in terms of understanding the intersection of politeness, useful knowledge, and extreme partisan politics that characterized this period of American history. Like other Federalists, Fessenden believed in the necessity of creating a robust opposition press to combat what they saw as a demagogic takeover of the American Republic by Jeffersonian democracy. Federalists relentlessly tied Jefferson to the French *philosophes* they thought had led to the dissolution of all forms of authority in the French Revolution. 20

18 In a review of the 1836 edition of the poem, the *North American Review* recalled, “We are old enough to remember, when the argument for the existence of an American literature was held incomplete, without a reference to the ‘Terrible Tractoration.’” *The North American Review*, 43:1 (1836), 280. For a complete bibliography of Fessenden’s publications see McCorison’s exhaustive “Thomas Green Fessenden, 1771–1837,” 20-53.


Fessenden was one of several Federalists who attacked Jefferson and his followers for their participation in the world of natural philosophy, and especially the natural philosophy dominated by French philosophes, and those who sympathized with the French Revolution. Fessenden’s satire illustrates the strong link he held between natural philosophy, the potential for Deism and French philosophes whom Jefferson called friends. Despite Fessenden’s many references to materialism and the anti-religious stance of his targets, this should not be placed in a category of “science vs. religion.” Fessenden, like the Federalist agricultural conservatives described by Stephen Stoll in *Larding the Lean Earth*, were by no means opponents of science. Instead Fessenden opposed those who co-opted the authoritative cachet of learned credentials based on accomplishments in natural history and natural philosophy for what he saw as political and polemical purposes. As Fessenden himself notes, he tries to distinguish between good-natured jabs at those who he thought legitimately contributed to the store of useful knowledge and those he called the “modern philosopher” who pretended knowledge to dupe the unlearned. Fessenden mocked the “modern philosopher” for either his reliance on the mere authority of useful knowledge to make his reputation and those who postulated scientific work that had dangerous implications for society with insufficient grounding in empirical data. Unlike some of his fellow Federalists who retreated into a literary realm of the alienated artist, Fessenden continued in later life to advocate polite

participation in conversations about useful knowledge as a way to negotiate the crisis of authority in the new Republic.  

Fessenden was not the only or the first person to attack Jefferson by satirizing his participation in science. William Cobbett’s reaction to Jefferson’s election as president of the American Philosophical Society in 1797 exemplified such critiques. Cobbett was an émigré from England who lived in America from 1784 to 1799. While in America, he was a political conservative who wrote against Jefferson’s new party and the liberal English émigrés who supported him. Cobbett portrayed the society as, in the words of Nina Reid-Maroney “a hotbed of deism and immorality.” His description is particularly important as it reflects a notion that what had hitherto been a gathering of innocuous pursuers of natural philosophy was suddenly overtaken by materialist infidels. The staid APS, suggested Cobbett, had turned into something different with the election of Jefferson as its president.

At a late meeting of the philosophical society, the new president, produced a large bone, supposed to be the claw of some lion, which must have been twice the size of the largest lions of Africa. With this monstrous bone before him, and Volney on his right hand, and Priestley on his left, he delivered to the astonished society a very learned discourse on the size of the beast whose claw was extended. It was remarked by a member present, that when he saw the worthy president, thus supported by the wind and the air, he could not but portend some tempestuous weather to the United States. The association of these extraordinary characters exhibited a triumvirate of Atheism, Deism and Nothingism, full as curious as the lion’s paw.  


Cobbett’s tableau encapsulated the dangers that seemed to be inherent in Jefferson’s science, even above the expected assertion of the influx of “Atheism, Deism, and Nothingism.”

In this sketch Jefferson is flanked by Volney, who was in self-imposed exile from the French Republic, and Priestley, an English dissenter who had come to America as a refugee from mobs who had destroyed his home and lab equipment. They and their scientific accomplishments and concerns are characterized by Cobbett as wind and air, thus highlighting what many saw as the self-indulgent bombast of their discussions of the natural world, as well as making reference to Priestley’s pneumatic experiments.

Jefferson, bearing the lion’s claw, swoops in on the “astonished” APS with a new coterie of French and Jacobin philosophers, promising a new kind of science, one that looked to both physical and cultural environment to guide the progress of nations. Volney was a pioneer in what we might call cultural geography. His most ambitious work was a book on his travels in Syria and the East, a book noted as a seminal work in Enlightenment Orientalism. However, his most popular book was *The Ruins: or A Meditation on the Revolutions of Empires: And the Law of Nature*, a philosophical reverie about

36; Leonora Nattrass, *William Cobbett: The Politics of Style* (Cambridge: Cambridge University Press, 1995). It is hard to demonstrate whether or not Cobbett’s dramatization reflects a real change in the APS. Gilbert Chinard, a prominent historian of the society, argued against an ideological leaning in the American Philosophical Society by examining the foreign membership during the French Revolution. He concluded that relative numbers from France and England remained stable through the Society’s early history. Gilbert Chinard, “The American Philosophical Society and the World of Science,” 1-11. On the other hand, current APS librarians to whom I have spoken feel there was a definite shift of some sort. I suspect it would take a whole project to determine whether there was a real shift, or if trends already present were cast in a new light based on political events, or some combination of both.
civilizational decay, complete with a ghost guide.\textsuperscript{23} This book engendered hostility among Fessenden’s crowd for its complete antipathy to all forms of religion. Volney’s writings on the ruins of Palmyra and on the classification of civilizations pointed to a view of the world that replaced Christian morality or even a broadly universal morality with a morality based in culture and climate. Removing a timeless moral referent would lead, as Cobbett put it, to, “Atheism, Deism, and Nothingism” and ultimately societal collapse. This was “tempestuous weather” indeed for a society that had hitherto been characterized by the pious and devoted natural history and philosophy of enlightened but still Christian Philadelphia.\textsuperscript{24}

Historians following Linda Kerber have long noted the peculiar dislike Federalists had for Jefferson’s science, but it is sometimes treated as a side story. However, for Thomas Green Fessenden at least, his criticism of the legitimacy of the philosophical authority of useful knowledge was central to his criticism of the legitimacy of radical Jeffersonian politicians. Fessenden compared American politics in the 1800s to a medical marketplace where voters were like buyers choosing between different remedies. The medical marketplace in the eighteenth century was marked by those branded Quacks. He


likened radical philosophers who appealed to useful knowledge to implement their political and social philosophers as Quacks in the political sphere.\textsuperscript{25}

\section*{5.3 Quackery, Perkinism, and the Modern Philosopher}

Fessenden wrote \textit{The Modern Philosopher}, which he first called \textit{Terrible Tractoration!}, to defend Elisha Perkins from the criticisms of orthodox doctors who attacked Perkins’ Metallic Tractors. Perkins’ Metallic Tractors, as I shall discuss later, were notorious Quack devices, and the subject of widespread controversy in the late eighteenth century. Fessenden, though, turns the tables on Perkins’ critics and accuses them of being Quacks themselves. A Quack was a kind of con man, and the con man, a person who could mimic the forms of politeness for nefarious ends, was a particular problem for Shaftesburian politeness where style of conversation was supposed to reflect a virtuous inner character. Quacks and other con men were able to successfully take on the appearance of legitimacy for their own purposes.\textsuperscript{26} The poem went through several editions, and by 1806 had transformed into a conservative polemic against late-enlightenment science, politics, and social theory. In it, Fessenden questioned the moral authority of the men of science who proposed systems that could alter the entire fabric of society based on claims of esoteric knowledge. He called such a person a “modern

\textsuperscript{25} He was not alone in using quackery as an analogy for politics. “Indeed, those who denounced \textit{medical} quackery often contended (partly to establish the guilt by association) that it was but one symptom of a grand conspiracy of chicanery and delusion.... Tobias Smollett assured readers of \textit{Launcelot Greaves} that ‘we have quacks in religion, quacks in physic, quacks in law, quacks in politics, quacks in patriotism, quacks in government.’” Roy Porter, \textit{Health for Sale}, 12. See also the previous chapter where I discuss the metaphor of the body politic.

\textsuperscript{26} David Shields, \textit{Civil Tongues and Polite Letters}, 275-6.
philosopher,” and contrasted him with a “man of real science” (e.g. Perkins) who combined benevolence and a commitment to open conversation to the benefit of both the common good and truth. Through it all, he kept up the idea that the “modern philosopher” was a kind of Quack or con man, using the pretense of natural knowledge for his own nefarious ends.

As historians like Roy Porter have noted, accusing someone of being a Quack in the early nineteenth century was not a statement of fact but was rather an attempt to mark out a boundary around legitimate medicine. In The Modern Philosopher, Fessenden defends Elisha Perkins by shining a light on that very act of demarcation. Fessenden, in a move typical of medical satirists, compared the so-called Quack, Elisha Perkins, with doctors who claimed to practice “real” medicine and found the “real” doctors not so different from so-called Quacks. For Fessenden, the real marker of who was or was not a Quack was tied to polite principles of benevolence and open conversation. He thought these polite principles should guide conversations about useful knowledge.

Metallic Tractors, the Quack devices in question, were invented by Elisha Perkins, a Connecticut doctor, around 1796. These were narrow three-inch rods that

---


29 For a recent history of Perkinism, see James Delbourgo, Electricity, Experiment, and Enlightenment in Eighteenth-Century North America, (Ph. D. Diss.) Columbia University, 2003; and also
tapered to a point on one end. They were made of a patented metal blend that was said to
direct magnetic or galvanic forces through the bodily areas over which they were stroked.
Fessenden described them as working rather vaguely on “principles of Galvanism.” Luigi
Galvani, the physiologist, claimed in 1771 to have demonstrated that metals could
contain and transfer vital fluids. While dissecting frogs, Galvani had discovered that he
could cause muscular spasms in a frog’s legs when his steel scalpel brushed up against a
brass hook holding the frog in place. Perkins’ Tractors were supposed to help the “animal
electricity,” a vital fluid that was thought to run through all living matter, flush out
inflammatory diseases.\(^{30}\) Perkins had patented his device and begun marketing tractors as
instruments for curing pain and inflammatory diseases. The Connecticut Medical Society
was disturbed by Perkins’ invention and expelled him in 1797 for violating its rule
against peddling nostrums. Despite this, Perkinism spread to Copenhagen, and then to
London in 1798. Elisha Perkins’ son, Benjamin, took up the cause of the Tractors after
his father died in 1799, and he went to London where he convinced some philanthropists
to start up the Perkinistic Institution to donate tractors to the poor.\(^{31}\) In England,

---

“Common Sense, Useful Knowledge and Matters of Fact in the Late Enlightenment.” With the notable
exception of Delbourgo’s work, historians of medicine have debated the tractors as quack devices and
commented on Fessenden’s belief in their efficacy. Oliver Wendell Holmes, “Homeopathy and its Kindred

\(^{30}\) Perrin, The Life and Works of Thomas Green Fessenden, 50.

\(^{31}\) Delbourgo, Electricity, Experiment and Enlightenment in Eighteenth-Century North America, 299-302.
Benjamin Perkins sold Tractors, along with a license allowing only the owner and one family member to use them, for five guineas a pair.\textsuperscript{32}

In many ways, Fessenden was a typical Perkinist. James Delbourgo, in a recent study of Perkinism, argues that Perkinists used the language of benevolence and common sense to trump the claims of elite science. Perkins and his son advertised and sold Tractors using the personal testimony of people who had used Tractors (usually as a last resort) to treat dangerous diseases. The testimonials and the Perkinist medical men argued that because ordinary people’s bodies testified to the efficacy of Tractors, it was unnecessary that the action of Tractors be explained. Perkinists derided doctors who relied on complex medical theories to muddy the waters of common sense: a cure was a cure.\textsuperscript{33} Fessenden, however, was atypical in that he did not appeal to anti-intellectualism to defend the use of Tractors. Rather, he acknowledged science’s authority to decide the question of Tractors’ efficacy, provided that the science employed was “real” science and based on truly open conversation that admitted the legitimacy of the bodily experience of the non-credentialed.

In America, Perkinism existed as part of what Richard Lewis describes as the “democracy of facts” in the adjudication of conversations about the natural world. Lewis argues that the “democracy of facts,” like the cabinet of curiosities, opened the door to

\textsuperscript{32} Volta replicated these experiments, but he eventually concluded that they were not connected to the animal tissue at all. In fact sparks and electricity were transferred without the presence of animal tissue. Galvani maintained the metals made a circuit between the nerve and the muscle. See Marcello Pero, \textit{The Ambiguous Frog: The Galvani-Volta Controversy on Animal Electricity}, translated by Jonathan Mandelbaum (Princeton, N.J.: Princeton University Press, 1992).

participation in natural history to almost anyone who wished to join. American naturalists fought hard to stake a claim for both American nature and American natural historians when Europeans dominated the learned centers. To do so, they claimed that the facts of America’s natural world could not be subordinated to European theories because Europeans had little to no direct experience living with, observing, and collecting America’s nature. Like these American natural historians, Perkins and Perkinists sought to reframe debates about medical theories on the “facts” contained in the bodies of healed patients, facts that the theorizing doctors had no access to.34

In the introduction to the Modern Philosopher, after a short recitation of facts from his early life, Fessenden described how he came to travel to London and write the satire defending Perkins.35 In 1801, Fessenden tells us, he became an agent for a Vermont-based company that wanted to secure a London patent for “a hydraulick machine,” apparently a form of suction pump, invented by a “Mr. Langdon.” Fessenden was not just an agent, but he was also a member of this company with a financial stake in its success. While building the machine and testing it, the company discovered that “persons by stealth had made themselves master of the invention,” and wanted to patent the machine in London first.36 For fear of losing the patent, the company rushed through important steps; experiments to test the machine were “performed in a hasty manner.”


36 Fessenden, The Modern Philosopher or Terrible Tractoration!, vi.
But despite the haste it seemed that this invention could indeed perform the impossible: “water was raised in a hasty experiment through leaky tin pipes, apparently by suction or the pressure of the atmosphere alone, forty-two feet from the surface of the fountain to the bottom of the cylinders in which the pistons were worked.” These experiments, as Fessenden explains, seemed to show that “some new principle in the laws of hydraulicks was developed,” because atmospheric pressure cannot elevate water above thirty-four feet.37

However, he and his fellow investors had been deceived by the inventor as Fessenden discovered when he went to London to promote the invention. Experiments in London could not replicate the results purportedly achieved in Vermont. And Fessenden learned of a similar machine being demonstrated in France with equally bad results. Fessenden, “in this desperate situation of the adventure,” that is, confronted with the impending loss of his investment, received a letter from Vermont telling him that the company had indeed been duped by Langdon. While it is hard to say in precise physical terms how exactly Langdon pulled off his charade, Fessenden explained that the con man had secretly made a perforation in the pump box. This allowed air bubbles to get into the pipe and in effect made the water weigh less so it could be pulled higher by the vacuum than would be true of water unmixed with air. Fessenden also claimed that “a similar deception had been practiced on the academicians in Paris,” but had been revealed by a hissing sound.38

37 Ibid., vii.
38 Ibid., viii.
After being duped by Mr. Langdon, Fessenden fell prey to another investment scheme. Another ostensible inventor, a fellow American who had invented a corn grinder, approached Fessenden. This person came to Fessenden with a credible tale, a respectable appearance, and a model of his machine. Fessenden writes, “I saw no reason to disbelieve any of his statements... at length, after some hesitation and inquiry, I was prevailed on to purchase one fourth of the patent, and was sufficiently punished for my temerity.”39 The other patent holders bailed out, and Fessenden was left holding financial responsibility for the entire invention. He found new partners and they decided to build the machine “on a cheap scale” in order to promote its merits. Here Fessenden took charge of developing the machine. He assured the reader that, “I was able to develop its principles and recommended such rules as those concerned have been taught by experience to adopt.”40

Fessenden was thwarted because “I found myself connected with men who despised science, who could not even comprehend my statements, and who proceeded in spite of my remonstrances to spoil the machine.”41 It is significant that Fessenden experiences his defrauding in terms of a breakdown of communication at the most basic level. His fellow investors “could not even comprehend” his statements. His observations underline that the authority of useful knowledge rested on successful conversation. The result of his inability to communicate with his fellow investors was that Fessenden lost

39 Ibid., x.
40 Ibid.
41 Ibid., xi.
his investment, his company collapsed, and he was left practically destitute in London. Now Fessenden was approached by a third person, Benjamin Perkins, the son of Elisha Perkins, who had taken over the business of promoting Perkins’ Metallic Tractors after his father’s death. This time Fessenden struck gold, if not with an invention, with his poem. Fessenden’s story highlights the conundrum of scientific authority in a democratic society and serves as a morality tale for readers. On the one hand, it was easy for nefarious men to use the trappings of learning and familiarity with technical arcana to fool those who did not know as much. But on the other hand, it was just as bad when those who were ignorant of science did not grant authority to those who were learned.

In the rest of the introduction, Fessenden tells the reader why he wrote the poem, goes through the testimonials in support of Perkinism and argues against those who accused Perkins of Quackery. In the process he argues for the establishment of polite principles to govern discussion about science. But at the same time, the history of his financial hardships exposes the primary problem with using politeness as a guide for navigating society. Fessenden’s story suggests that neither politeness nor a commitment to the authority of useful knowledge was sufficient grounds for social trust. If a con artist could mimic the appearance of politeness to gain entrance into society, he could also pretend to be learned and dupe investors out of their money. But at the same time, the most genteel man with impeccable credentials and knowledge could not convince people who were not already convinced of the authority of that knowledge.

Fessenden wrote his poem as a kind of public service. He argued that other learned men had a duty to help keep the public from being fooled. They were especially
charged with “unmasking” intellectual pretenders. He described the job of the “men of real science” at the end of the introduction to his satire:

Were men of real science to unite in stripping the mask from ignorant and impudent pretenders to knowledge and acquirements which they do not possess, society would no longer be imposed on by empiricks, pseudo-philosophers, poetasters, and other witlings, who puff themselves into consequence with the less enlightened, but more numerous part of mankind.42

These “men of real science” were needed to make possible polite discussion between the scientific and medical elite and those who were not of that elite class. Armed with the knowledge provided by the “men of real science” the “more numerous part of mankind” would not be at the mercy of those “pretenders to knowledge.”

The pretender to knowledge was the “modern philosopher,” represented by the fictional narrator, Christopher Caustick. He could pass as an enlightened philosopher, but his theories and motives did not survive scrutiny. In the introduction Fessenden explained why the modern philosopher was so dangerous and why it was incumbent upon him as a satirist and a man of real science to expose them. These philosophers “furnish such a multitude of ‘idle things’ which they call discoveries and inventions, that [the author] need never lay his brush aside for want of proper subjects upon which to exercise skill in his vocation. “Were the mere inutility of their researches,” the only problem, claims Fessenden, they could be left alone. But, the research was “accompanied by the grossest inhumanity,” and thus, “the indignation of [his]... reflecting mind” compelled Fessenden to write. In particular he wrote about those philosophers “whose atheistical theories”

42 Ibid., xxx.
tended to “annihilate belief in an overruling Providence.”43 The modern philosopher said he wanted to improve humanity, Fessenden argued, but a close examination showed that his improvements were undertaken at the expense of real benevolence.

To unmask the modern philosopher and support “real science,” Fessenden turned to the idea that open polite conversation was an aid to reason. The real point of Fessenden’s defense of Elisha Perkins, therefore, was not to insist that the Tractors worked, though he did believe the testimonials in their favor, but rather to defend Perkins’ right to a scientific hearing and a place in conversation. Fessenden defended Perkins against claims of Quackery by pointing to his generous treatment of the poor. Perkins died treating poor yellow fever victims in New York in 1799. Because of this demonstrable benevolence, legitimate doctors therefore owed him, and his Tractors, the respect of inclusion in an open conversation. Fessenden did not insist that the Tractors were in fact a real cure just because Perkins was a benevolent man, but he did insist that doctors subject Perkinism to real empirical tests, using real patients and real Tractors, rather than resting the denial of the Tractors’ efficaciousness on theories that conveniently enforced their professional monopolies. If, through these tests, Perkinism was discovered to be wrong, so be it. But doctors misused their authority when they dismissed popular remedies on scant investigation. In doing so, they showed their contempt of the people who they claimed to want to help.

Instead of criticizing Perkins civilly and with reason, Fessenden argued, the opposition was like a band of hissing scorpions who block “every avenue to truth,” and

43 Ibid., xxvi.
“endeavor to frighten you back by their hisses, or assail you with their stings.” On the other hand, open conversation, even oppositional conversation, was a necessity for useful knowledge as well as for true politeness.

Opposition, honorably in its views, and fair in its means, to discoveries of great pretensions, is not only commendable, but almost indispensably necessary to the development of truth. Such opposition, like friction to the diamond, proves its hardness and increases its luster.

Thus truly free and open conversation would lead to truth.

Understanding the two poles of Fessenden’s moral universe, the benevolent, if possibly wrong, Perkins-like people, and the malicious scientists who abused their authority to better compete in the marketplace, provides a guide to help the ordinary person navigate through the madness of the medical marketplace and, by analogy, the crisis of authority of the new, more democratic America presaged by Jefferson’s election. It also gives us a way to decipher the satire of the Modern Philosopher. And deciphering it becomes important when we turn from the earlier versions, which restricted themselves to medical topics, to later versions, which became pro-Federalist polemics. Fessenden added satirical material about Jacobin and Deist philosophers and about Thomas Jefferson and American politics. By doing so he linked Jefferson and the Democratic-Republicans to the “modern philosopher” and undermined their claims to the authority of useful knowledge.

44 Ibid., xxvii.
45 Ibid.
5.4 The Modern Philosopher: Literary Context and Sketch

To give shape to the Modern Philosopher Fessenden used the device of the Hudibrastic hero, a mock hero whose actions often embodied the opposite of what they were supposed to be. By the 1800s Hudibras was a widely imitated work; the very choice of the Hudibrastic verse form carried a connotation inherited from the original. The poem Hudibras was written by Samuel Butler sometime between 1660 and 1680. It was a burlesque, written from the point of view of a Presbyterian soldier in Cromwell’s army. Butler himself was an avowed royalist and Anglican. Hudibras was a mock epic, where the ostensible narrator is the victim of the satire, and was widely imitated during the American Revolution. According to Bruce Granger, seventy-seven Hudibrastic imitations were written in the eighteen years between 1765 and 1783.46 Fessenden followed Hudibrastic forms fairly closely. His poem was divided into four sections, or “cantos,” each headed by a sonnet summarizing the argument to come. It consists of rhyming couplets, although Fessenden was unusual in gathering these couplets into four-line stanzas. Finally, and most significantly, his verse was accompanied by footnotes that often extend the satire of the verse, either through explaining scientific experiments and terms, identifying and quoting the men of science and the poets that are being alluded to in the verse, or by relating the verse to some modern political situation.

There are two voices in Fessenden’s poem. The first is that of the “modern philosopher,” Christopher Caustick, “M.D., A.S.S.” His credentials are too numerous to

name, but he is “fellow of the royal college of physicians, Aberdeen, and honorary member of no less than nineteen very learned societies.” Caustick is an amalgam of several late-eighteenth-century English polymaths, among them Joseph Priestley, Erasmus Darwin, Thomas Beddoes; but there are also American referents, including Dr. Samuel L. Mitchell of New York, who was introduced in a poem by Joseph Rodman Drake as a “fellow of 49 societies.” A chemist and physician, Mitchell was author of a “Doctrine of Septon,” a chemical theory about the action of “septon,” or nitrous oxide, in causing putrefaction in diseases. He actually presented his ideas about Septon to the scientific community in a poem written to noted chemical researcher Thomas Beddoes. Mitchell also co-edited, with Elihu Hubbard Smith, the *Medical Repository*, a periodical devoted to collecting scientific and medical observations.

47 The Royal College of Physicians in Aberdeen is a fictional society, but the University of Aberdeen was well known as a place where you could purchase a medical degree if you had the proper testimonials.


50 Smith was a student of Rush and his opinions on the Yellow Fever and human nature followed Rush’s influence. For a description of the larger project of the *Medical Repository* as a vehicle for
While the voice of Caustick is arrogant and audacious, that of Thomas Green Fessenden, present in some of the footnotes, is factual and straightforward. The voice of Caustick satirizes by imitating the late-Enlightenment philosopher, while the voice of Fessenden criticizes by arguing with late-Enlightenment theories. Fessenden’s footnotes are many and lengthy. Very often Fessenden uses them to explicate and marshal facts and reasons against some of the theories that he disagreed with. Christopher Caustick speaks mainly in the stanzas of the poem. When Caustick does speak in the footnotes, he tends to speak directly to the Royal College of Physicians — to whom the poem is addressed — in a haughty manner and usually deriding their intelligence or knowledge. Though at many times the voices of Caustick and Fessenden are distinct, at times they also blur together.51

Caustick embodied several stock satiric characters from English satire. He was the affected natural philosopher, the prestigious physician, the bloodthirsty surgeon, and the enterprising quack. These characters were common material for humorists as far back as the early seventeenth century.52 As Joseph Levine noted in his study of satire and natural philosophy in the seventeenth century, the natural philosopher as used by Swift and his fellow wits was ridiculed for being hopelessly out of touch with the world. The “modern philosopher,” however, was dangerously forward thinking. He was deeply involved in collecting medical and scientific observations to fight the spread of yellow fever and other diseases see Kaplan, *Men of Letters*, 87-113.

51 This itself is consonant with Fessenden’s admission to Hawthorne that he felt as though Caustick was partially based on him. Hawthorne, *The Works of Nathaniel Hawthorne*, Vol. 12, 252.

52 Levine, *Dr. Woodward’s Shield*, 117.
learned societies that were dedicated to “useful” knowledge, knowledge that could and would be used to change the shape of the economic, social, and political worlds. He did “cutting edge” research on all the socio-technical problems of the eighteenth century; he was both a technical and a social engineer. He had the confidence that he could manipulate and control both environmental nature and human nature and to turn these to better, more useful ends than traditional authorities had done.53

John Trumbull, who wrote the Hudibrastic *M’Fingal*, as well as the comedy of American social types *The Progress of Dulness*, wrote that the English satiric tradition had two aims. The first was to point out the “errors of the public taste,” and the second was to mock the “defects of authors.” Fessenden’s poem engaged in both of these. Unlike the tradition that mocked natural philosophers for ludicrous mumbo-jumbo by making them speak nonsense, Fessenden points out the defects of scientific writers by quoting eighteenth-century philosophers and men of science and showing how they contributed to errors in morality. Fessenden’s main satiric device was to have his narrator, Christopher Caustick, describe an outlandish invention with bad consequences and then show how the ideas behind the invention were based in the very real writings and theories of current philosophers. He added a level of verisimilitude that gave weight to his suggestions that the theories and words of radical philosophers like Erasmus Darwin were downright destructive.54

53 Ibid., 125.

The satire is wide-ranging and almost impossible to summarize succinctly. To provide context for the later analysis of some key figures, and to give the flavor of the poem, what follows are several excerpts and a general exposition of the four cantos.

Fessenden’s poem begins with Caustick explaining how he, a learned doctor, had come to be writing a poem. Driven out of practice by the competition from Perkins Metallic Tractors, Caustick is faced with starvation, and begins writing to try to alleviate his dire circumstances. He tries to summon a Greek muse, but is unsuccessful and so he relies instead on various chemical interventions.

Necessity, though I am no wit,
Compels me now to turn a poet;
Not, born, but made, by transmutation,
And chymick process, call’d — starvation!\(^{55}\)

In the next three stanzas, Caustick mocks the classical idiom, and especially the idea of the poetic muse or the idea of knowledge as an embodied genius. Caustick laments that the muses will not come to his aid as he tries to create poetry:

For gods and goddesses, who traffick
In cantos, odes, and lays seraphick,
Who erst Arcadian whistle blew sharp,
Or now attune Apollo’s jews-harp,

Have sworn they will not loan me, gratis,
Their jingling sing-song apparatus,
Nor teach me how, nor where to chime in
My tintinabulum of rhyming\(^{56}\)


While Caustick has no literary muse, he tells the reader that he has found a substitute and refers to Thomas Beddoes’s discovery and isolation of nitrous oxide:

> What then occurs? A lucky hit —
> I’ve found a substitute for wit;
> ...

> Beddoes (bless the good doctor) has
Sent me a bag full of his gas.  

But Beddoes’ gas also fails to provide him with inspiration and so Caustick moves on to a more prosaic muse:

> Now, since this wildering gas inflation
Is not the thing for inspiration,
I’ll take a glass of cordial gin,
Ere my sad story I begin;  

Then Caustick begins to review his marvelous accomplishments and inventions, as a physician, inventor, and philosopher. The first of his accomplishments is an optic glass — a microscope that exaggerates both size and consequence:

> With optic glass, of great utility
Could make the essence of nihility
To cut a most enormous figure,
As big as St. Paul’s church, or bigger!  

It also can be used to see the future:

> Could tell, and never be mistaken,
What future oaks were in an acorn;
And even calculate, at pleasure,
The cubick inches they would measure.  

---


In a footnote, he says that the power of this optic glass so great that with it one can see, for instance, souls. “It has been supposed,” he remarks, “by some people of little or no research, that persons... have no souls. But by taking a squint at them through our instrument, which makes nihility visible, you may perceive that each has a soul about the size of a large lobster.”\textsuperscript{61} The discussion of the chemical analysis of souls was a key factor in his objection to modern philosophy, as we shall see later in the section on Joseph Priestley.

In another section, he describes how, in concert with his optic lens, he has used another of his inventions, a small lancet, and:

\begin{verbatim}
with it oft inoculated 
(at which friend Jenner`ll be elated)
Flies, fleas, and gnats, with cow-pox matter, 
And not one soul took small-pox a`ter!\textsuperscript{62}
\end{verbatim}

Here Fessenden mocks a kind of systematic epidemiology that is based on negative evidence; a non-event is used to prove the effectiveness of the inoculation.

After a long section on the values of the optic lens, he begins to poke fun at collection and preservation. In the domain of American natural history, there was overemphasis on collection of things for the sake of their oddity or even of their typicality. Collections could be of observations or of physical things. Fessenden attacks the American Philosophical Society for its tendency to valorize collectors. Fessenden

\textsuperscript{61} Ibid., 22.
\textsuperscript{62} Ibid., 20.
highlights it by simply listing things that had been donated to the Society and recorded in its *Transactions*. Fessenden tells of reading the *Transactions* of 1799.

> [W]e found about twenty pages, filled with the names of the donors of certain curiosities, together with their invaluable present. Such for instance as ‘a ball of hair, found in the stomach of a mule;’ ‘a stone found in the stomach of a cow;’ ‘some petrifications of wood from Martinique;’ ‘a pair of Indian boy’s leggings;’ a specimen of petrified supposed buffaloe dung;’ ‘skin of an Indian taken from the side;’ &c. &c.”

The variety and oddity of these items amuses and raises questions about their place in a society committed to “useful knowledge.” In an earlier chapter I talked about how collecting curiosities was a demonstration of polite civility by learned societies. This jab at collectors exposes the pretensions of societies’ claims to be in an egalitarian conversation with any who cared to contribute a curiosity. Without a learned conversation about the meaning of objects, those collections were, Fessenden suggests, just old dung.

In a later section, Caustick discusses his accomplishments in chemistry and physics and describes how he can marshal nature’s forces to great effect:

> Profoundly vers’d in chymick science,
> I could big matter’s law defiance;
> Was up to Nature, or beyond her,
> In mimic earthquakes, rain, and thunder!

> And by a shock of electricity
> (I tell the truth without duplicity)
> I did (what won’t again be soon done)
> E’en fairly knock the man in the moon down!

---


64 *Ibid.*, 42.
Caustick also has managed to create men:

But what surpassed, you’ll admit,
All former bounds of human wit,
I form’d by chemical contrivance,
A little homo all alive once!\(^{65}\)

With this invention, he proceeds to suggest all the ways that it could be put to use — by creating heirs for aristocrats, booksellers, authors, and radical pamphleteers:

The men well paid us for the rearing,
In jacobinic pamphleteering;
Have gain’d us thousands in a season,
By peddling Tom Paine’s Age of Reason.\(^{66}\)

Caustick also tackles the theories of the earth, and suggests all kinds of ways to marshal geo-physical forces.

We’ve form’d the most tremendous plan
Which ever enter’d mind of man,
And which to nothing less aspires
Than MAKING MOONS from central fires.\(^{67}\)

With this impressive list of inventions, theories, and medical knowledge, Caustick compares himself favorably to the great thinkers of the day.

Now it appears from what I state here,
my plans for mending human nature
Entitle me to take the chair
From Rousseau, Godwin, or Voltaire.

They are of most immense utility,
All tend to man’s perfectibility;
And if pursu’d, I dare to venture ye,
He’ll be an angel in a century.\(^{68}\)

\(^{65}\) Ibid., 55.

\(^{66}\) Ibid., 64.

\(^{67}\) Ibid., 89.
He also claims to far surpass the merits of Erasmus Darwin, Richard Price and Bernardin de St. Pierre. But, despite all of this, he is

harrass’d hunted down;
Completely damn’d, the simple fact is,
By PERKINS’S METALLIC PRACTICE!\(^{69}\)

Thus the first canto, which is the longest at over a hundred pages, introduces the narrator. It gives the reader a picture of Christopher Caustick as an irascible, pompous, but nonetheless learned natural philosopher, whose wide-ranging discoveries, inventions, and theories purport to solve a host of social and intellectual problems of the turn of the century. Caustick’s inventions and discoveries are the vehicle for Fessenden to comment upon current intellectual and political topics in the Anglo-American learned circles.

In the second canto, Caustick turns to the ostensible purpose of the poem by calling on the Royal College of Physicians to persecute Perkins. Caustick cites as precedents for such professional persecution the case of Dr. Francis Anthony who practiced medicine without a license in late-sixteenth-century London and was jailed. From this case we learn “the absolute necessity of a still more rigorous prosecution of those disturbers of society, who have the impudence to \textit{cure} their patients without YOUR LICENSE.” Doctors could be too zealous in policing their professional boundaries. He suggests they have lost focus of the purpose of medicine which is to cure patients not to enforce licensing.\(^{70}\)

\(^{68}\) \textit{Ibid.}, 48.

\(^{69}\) \textit{Ibid.}, 54.

\(^{70}\) \textit{Ibid.}, 67.
Dr. John Haygarth, renowned for his experiments against the Metallic Tractors, is held up as the epitome of the anti-Perkins medical establishment. Fessenden has Christopher Caustick appeal to Haygarth thus signaling that the reader is supposed to distrust him. Haygarth wanted to show that Tractors were placebos by performing experiments with wooden tractors, instead of the metal ones. He found that people were “cured” with the wooden tractors, even though the metallic properties that were the supposed reason for the cure were absent. The point, as Fessenden explains in a footnote, was to:

induce an inference on the part of the public, that if, by any means whatsoever, effects can be produced on the mind of a poor bedridden patient, whether such effect be favorable or unfavourable (as the latter was often the case in Haygarth’s experiments) ergo, Perkins’s Tractors cure diseases by acting on the mind also, whether on a human or brute subject.

The point here is to accuse doctors of being more enamored of their status and their control of medicine than concerned for helping people. Caustick closes the second canto by suggesting that Perkins could be “pop[ped] off” in a duel.

The third canto, entitled Manifesto, questions the motives of doctors who are against the tractors. In this section, the voice of the poem changes, and we find Fessenden (rather than Caustick) reiterating many of the same arguments for and against the Tractors that he anticipates in the introduction. Fessenden argues that, if, in fact, people are claiming to be cured, they are cured, even if the effect is as a placebo, and no harm is

---


72 Fessenden, Modern Philosopher, 85-6.

73 Ibid., 88.
done by allowing the use of the Tractors. He also gets in a swipe at Bishop George Berkeley’s theory that all reality is simply the idea.

That though imagination cures
With the aid of pair of patent skewers
still such relief cannot be real
For pain itself is all ideal.\(^4\)

He goes on to ask why doctors should not marshal imagination to alleviate pain:

What though they say, why to be sure,

if we by Fancy’s aid can cure;
then why not use Imagination,
A cheap and simple operation?\(^5\)

But doctors have an answer that backs up their monopoly power over therapeutics:

SAY NATURE THROUGH HER WORKS INTENDS
ALL THINGS TO ANSWER SOME GREAT ENDS:
THUS SHE FORM’D DRUGS TO PURGE AND SHAKE,
THEN MAN, OF COURSE, THOSE DRUGS TO TAKE.\(^6\)

This paragraph inverts the normal understanding of the order of nature by arguing, in essence, that man’s fundamental nature is one of sickness, to be treated by doctors and their drugs. The view Fessenden mocks reflects a view of humanity similar to the view Benjamin Rush held, that human nature was essentially diseased and required the physician, with the help of God, to bring him to health. In a footnote to the above stanza, this pro-Perkins position comes out:

A great hue and cry has been raised by the Perkineans, by which some less penetrating part of the profession have been awed into silence, respecting the duty

\(^4\) Ibid., 97-8.

\(^5\) Ibid., 101.

\(^6\) Ibid., 101-2.
of medical practitioners. They say that it is the duty of a Medical Man to employ only such means as will cure his patient in the most **safe, cheap, and expeditious** manner.\(^77\)

Fessenden underscores the idea that Perkinism is safe and easy, and that doctors are the dangerous ones in the final stanza. He ends his mock epic poem with a heroic battle where the physicians’ instruments become dealers of death instead of life. In this, he also follows a long tradition. Throughout the Enlightenment, satirists and pundits used the imagery of the bloodthirsty barber-surgeon.\(^78\) Fessenden draws on a long history of medical and scientific satire by escalating the bloodthirstiness of physicians into full out war. In the fourth canto, he describes the bloody battle he claims will ensue between Perkinists, wielding their pointy Tractors as weapons, and the regular physicians, led by “Great Doctor Lettsom”, another London doctor (and a friend of Haygarth and Benjamin Rush) who was outspoken in his criticism of the Tractors.\(^79\) Most of the canto is spent describing how doctors will use their arsenal of drugs and equipment as weapons.

And now make at ’em like Mendozas
With forceps pinch and pull their noses,
With tourniquet and dire tooth-drawers,
first gird their necks, then break both jaws.\(^80\)

---

\(^77\) *Ibid.*, 103.

\(^78\) Marie Mulvey Roberts, ““A Physic Against Death”: Eternal Life And The Enlightenment — Gender And Gerontology,” in Roberts and Porter, eds, *Literature and Medicine During the Eighteenth Century* (New York: Routledge, 1993), 153. In his article on doctors in Hogarth’s work, Peter Wagner discusses the way that literary characters, like the natural philosophers, the bloodthirsty surgeon, and the antiquary, become “self-propelling” traditions upon which artists and authors draw on time and again. Peter Wagner, “The Satire On Doctors In Hogarth’s Graphic Works,” 200.


By focusing graphically on the purgatives, diuretics, and lancets that doctors regularly employed, Fessenden called attention to the hypocrisy of doctors who employed physically extreme measures, like the heroic purging and bleeding advocated by Benjamin Rush. On the other hand, Perkins’ Tractors, which could not be explained, seemed to work, or if not, at least they did no harm. Bleeding and purging were heavily theorized, and often “worked,” in the sense that they had an observable affect on the body yet were also often followed by death. In other words, doctors judged the efficacy of their cures not on how successfully they relieved the patient’s suffering but rather on what notable physical affect it had on the body.\(^8^1\) The familiar trope of the bloodthirsty physician was rooted in a kernel of truth.

Caustick also enlists drugs against the Perkinsians in warfare:

```
And now, with desperate trocar;
Urge on the dreadful ‘tug of war;’
And, when you’ve stuck them in the crop, say
You meant to tap them for the dropsy.

With burning lapid infernalis
Convince them human nature frail is;
And taunting, tell them they’re afflicted,
Because they are to sin addicted
```

\(^8^1\) Charles Rosenberg described the views that doctors and patients had about medicines well into the middle of the nineteenth century. Bodily sickness was seen as a problem of an imbalance in the bodily processes. Therapeutics — drugs, bleeding, purging — were meant to restore equilibrium to the body and with it health. The typical remedy employed by the regular physician was relied on by doctors and patients alike because it had visible effects, whether blood, vomiting, sweating, or urination, that the doctor, the patient, and the patient’s family could all see. Like public scientific experiments, the patient’s body thus became the site of shared witnessing, of a virtuoso performance by the doctor to his audience, which were the patient and family. Even if the patient died, no one could deny that the doctor’s therapies had “worked”: something had happened, and the doctors had a good theoretical explanation for the phenomena witnessed. Patients themselves were often more insistent that aggressive remedies be pursued than doctors were. In contrast, Tractors had no such visible evidence; the only testimony for their efficacy could be provided by the patient himself. They succeeded on the same faith in the tractability of a vital force that was underwriting the popularity of Mesmerism. Charles E. Rosenberg, “The Therapeutic Revolution,” 3-25.
With scalprum scrape off epidermis
And cuticle (I think the term is);
And all the nerves and muscles various,
Because, say you, their bones are carious

With antinomials make ’em sweat away;
Cram each snout full of assafoetida:
then tell them, if they’ll not be vicious,
you’ll give them castor oil, delicious.82

Fessenden thus contrasts the usual violence of typical heroic medicine with the ease and painlessness of the Tractors. Caustick concludes his plea to the Royal College of Physicians,

Now, Sirs, consent to my PETITION
And send these varlets to perdition;
So for your weal and welfare, post hic,
Will ever pray — CHRISTOPHER CAUSTIC.83

Having given this overview, I will now turn to four specific targets to explore the specific nature of Fessenden’s critiques of Enlightenment science.

5.5 Fessenden’s Polite Critique of the Enlightenment Run Amok

In his satire, Fessenden cut a swath through experimental philosophy of the late eighteenth century. He lampooned in one way or another hundreds of figures but offered sustained critiques of several major enlightenment men. In the next sections I look at four of these and the particular problem for knowledge, authority, and social morality that Fessenden highlights. In general, he characterizes the modern philosopher as someone

82 Fessenden, The Modern Philosopher, 177-82.
83 Ibid., 186.
who engaged in wild speculation covered by the veneer of authority and unchecked by polite benevolence. These four men and the problems they present are: Thomas Beddoes and the problem of the credibility of observers in creating natural philosophical knowledge; Joseph Priestley and the theory of the materiality of the soul; James Hutton and his cyclical theories of the continual generation and break down of the earth; and finally Erasmus Darwin and the mechanization of nature. All of these men made major claims about natural philosophy or natural history and all of them were associated with political radicalism. In each section, I give a brief introduction to the main accomplishments of these men and then discuss Fessenden’s commentary with particular emphasis on its implications for politeness.

5.6 Thomas Beddoes

Practically the first modern philosopher Fessenden refers to in his poem is Dr. Thomas Beddoes. Beddoes, educated at Oxford and trained in medicine and chemistry at Edinburgh, held, like Benjamin Rush and most other doctors at the time, the understanding that environment and social habits could be the predisposing causes of disease. He also supported the French Revolution and became an early friend of romantic poets Samuel Taylor Coleridge and Robert Southey (whom Fessenden also satirizes in his

---

poem). Beddoes’ medical, social, and chemical theories coalesced in the foundation of the Pneumatic Institute (later renamed the Preventive Medical Institution for the Sick and Drooping Poor). Beddoes thought late-eighteenth century medical theory and practice was failing and founded the Institute to provide medicine in a new way.85

Thomas Beddoes was a vocal critic of medicine at the turn of the nineteenth century. He criticized the medical marketplace of eighteenth-century England, arguing, like Fessenden, that there was no substantive difference between quacks and regulars. Yet Beddoes’ solution to the problem was far different from Fessenden’s. Fessenden argued that “men of real science” had a duty to expose the falsehoods of peddlers of all kinds of pseudo-science so people could make good choices. Some historians have seen his arguments against quackery as ironic, given his support of Perkins Metallic Tractors. On the other hand, Beddoes’ recommendation for improving the medical marketplace was that physicians had to remove themselves entirely from the marketplace and eliminate competition by creating a model of legitimate credentialing through institutions with rigorous degrees.

Beddoes believed that a rigorous training for physicians in human physiology, chemistry, and natural philosophy would give them the epistemological superiority

needed to propose a working human ethics based on real, physical, human nature. Like Rush, he was a medical reductionist who thought that almost all human phenomena fell under the purview of the physician. In 1799, Beddoes’ *Contributions to Physical and Medical Knowledge, Principally from the West of England* declared, “Physiology therefore — or, more strictly, biology — by which I mean the doctrine of the living system in all its states, appears to be the foundation of ethics and pneumatology.” In fact, like Benjamin Rush, Beddoes thought that a properly trained doctor was epistemologically privileged because he had the most accurate and complete understanding of human physiology, and thus of human morality. However, Beddoes thought that medical schools in their current incarnations were woefully ill suited to the task of creating an independent professional body steeped in recent natural philosophical knowledge. Beddoes blamed the “factory”-style medical education at Edinburgh University, where graduates were churned out in just three years. Beddoes instead wanted to institute a rigorous medical degree that would restore the dignity of the profession. To achieve this end Beddoes created a series of independent associations of like-minded men to study natural philosophy and advance medical knowledge. First, in 1798, was the Pneumatic Institute of Bristol, specifically dedicated to studying the properties of airs and gases and their effect and efficacy in treatment. Second was the Therapeutic Institute, dedicated to studying and disseminating treatments themselves.

86 Porter, “Plutus or Hygeia?,” 86.
Among the more notorious activities conducted under the auspices of the Pneumatic Institute were experiments with nitrous oxide. Experimenters inhaled the gas and then wrote down their experience of having changed perceptions. These experiments were recorded in detail by Humphry Davy. Humphry Davy was a chemist who became best known for his brilliant public lectures on chemistry, complete with demonstrations, at the Royal Institution founded in 1800. It is telling that in Fessenden’s attacks on nitrous oxide and Thomas Beddoes, Davy gets off lightly, perhaps because he was not a political radical.

In the sketch of the *Modern Philosopher* I gave in the last section, we saw that near the beginning of the poem, Christopher Caustick claims to have used Thomas Beddoes’ nitrous oxide gas for an artistic muse:

What then occurs? A lucky hit —
I’ve found a substitute for wit;
...

Beddoes (bless the good doctor) has
Sent me a bag full of his gas.

Here Fessenden refers to the ideal of the lone researcher or writer calling on his muse to enlighten his mind. Fessenden draws a parallel between the chemically induced state and the state of inspiration that authors invoked in appeals to a personified Genius or Muse. Not unlike opium, which some Romantic-era authors took, invoking Genius or imbibing nitrous oxide could induce a state of authorial madness, which would bring the author

---

88 Golinski, Science As Public Culture.

89 Fessenden, The Modern Philosopher, 3-4.
closer to Truth-with-a-capital-T even as it made him more incomprehensible to other humans.  

Fessenden refers in a footnote to the madness of authors, “Indeed, this furor mentis, so necessary an ingredient in the composition of the genuine poet, sometimes terminates in real madness.” By calling Beddoes’ gas a substitute for divine inspiration, or poetic genius, Fessenden suggested the authority of knowledge so derived, no matter its claim to science, should not be trusted.

Beddoes’ gas, in the poem, was the physical manifestation of poetic and philosophical thought. In the ten stanzas describing Caustick’s nitrous oxide inebriation, Fessenden referred at length in his footnotes to Humphrey Davy’s account of experiencing nitrous oxide inhalation. Like Davy, Caustick experiences himself as larger than life, and his thoughts detached from his body.

I’m larger grown from head to tail
Than mammoth, elephant, or whale! —
Now feel a ‘tangible extention’
Or semi-infinite dimension! —

In this stanza, and in the following footnote Fessenden quoted Davy’s account of the nitrous oxide experience:

Much in the same way was Mr. Davy affected in consequence of respiring the soul-elevating gas, he informs us, that after having been shut up in a breathing-

---

90 Bonnie G. Smith writes about opium use in her chapter on “narchohistory.” The point of opium use for the dreamer was the way that it invoked a sense of enhanced vision like that described by Humphry Davy and Thomas Beddoes in their nitrous oxide researches — this enhanced vision was often personified. “Accompanied and aided by his authority or genius [often a women, as De Stael’s Corrine], the opium dreamer thus saw himself touring, seeing, stretching closer to truths that seemed beyond his grasp or his capacity to endure.” Bonnie G. Smith, *The Gender of History: Men, Women, and Historical Practice* (Cambridge and London: Harvard University Press, 1998), 23.

91 Fessenden, *The Modern Philosopher*, 4-5.

box [where nitrous oxide was pumped in] for an hour and a quarter, ‘...I felt a
tangible extension, highly pleasurable in every limb; my visible impressions were
dazzling, and apparently magnified.’

Caustick goes on to describe his larger than life experiences of mounting a comet’s tale
and standing astride the earth. But soon his nitrous oxide high deflates:

From heaven, where thron’d, like Jove I sat
I’m fall’n! fall’n! fall’n! down, flat! flat! flat!

Through Caustick’s forceful mocking of this image of the opium-dreamer-author, he
made it clear that while the dreamer may stretch to the bounds of his senses, the
knowledge he brought back with him — like that of Davy’s reports on nitrous oxide use
— were far from authoritative and far from credible. Knowledge generated by the
Pneumatic Institute, and indeed any knowledge communicated through the medium of
poetic madness, where access to a literary sensibility rendered empirical questions mute,
remained questionable. This was despite the fact that there were often shared visions and
that a community of observers met and agreed on the experience and meaning of their
experiences.

The Enlightenment sociability epitomized by Beddoes’ pneumatic community
also makes a mockery of the ideal of credentialed or experienced witnessing. The ideal
community of equals sharing knowledge about reality, society, and humanity is seen by
Fessenden to be based on impermissible evidence and fanciful theories drawn from
literary flights of fancy and narcotic dreams. This discussion of Beddoes’ experimental


community was a critique of the community of enlightened philosophers. Beddoes assured the public that doctors’ privileged knowledge of the nature of human bodies gave them unequaled knowledge about human nature. However, Fessenden criticized this view of the privileged knowledge of doctors by suggesting that the experimental community could be like the community of drug takers. Only those people who took the drugs were privy to the knowledge garnered in the drugged state. Fessenden’s view of the limited nature of this kind of experiential knowledge has implications for the possibilities of certain kinds of science as a subject for truly open polite conversation. When experiential knowledge was the basis for theories about the natural world, conversation about it could not be open to polite society. It was limited to those who practiced it. Other people had to take assertions about the meaning and experience of their experiences on faith.

5.7 Joseph Priestley

Joseph Priestley is known today because he discovered oxygen. His important scientific works were The History and Present State of Electricity with Original Experiments (1767) and his later work on the different kinds of air, especially “Observations on Different Kinds of Air” (1772) for which he was awarded the prestigious Copley Medal from the Royal Society. He also wrote a series of pamphlets, Experiments and Observations on Different Kinds of Air (1774, 1775, 1777) and Experiments and Observations Relating to Various Branches of Natural Philosophy, (1779), that were greeted with eagerness by contemporary experimental chemists. Though he is credited with discovering oxygen, to the end of his life he rejected the system of Lavoisier and published numerous rebuttals. Priestley continued to believe in
the theory of phlogiston long after the rest of the chemical world had adopted Lavoisier’s theory and language.95

But it was not Priestley as a discoverer of oxygen that drove Fessenden’s attacks. Priestley was a central and controversial figure in all aspects of the English Enlightenment, most importantly theology. When coming across a reference to Priestley in Fessenden’s satire, the Federalist American reader would have most likely had a mixed reaction. Americans felt friendly towards Priestley for supporting America politically and respected him as a friend of Benjamin Franklin. They would have appreciated his stance as a religious dissenter who wrote against state religions and argued for the rational basis of Christianity even if they did not agree completely with his theology. What was most problematic about Priestley was his materialism, especially the idea that the soul was material. In his most popular and controversial essay *Disquisitions on Matter and Spirit* he denied body-spirit duality, and argued for a materiality of the soul, a belief usually accompanied by atheism. But Priestley was no atheist and his materialism was, as Richard Schofield argues, different from philosophical materialism of the seventeenth and early eighteenth centuries. In fact, his materialism was linked to a conception of matter that, while based in physiology and mechanism, was important to Priestley for theological reasons. But for Fessenden’s audience, Priestley’s materialism, approvingly cited by atheists, would have put him in the wrong camp. “His real crime,” Schofield

argues, “was to have taken the step...that provided materialists with a mechanism for
directly relating material phenomena with mental activity.” If even mental activity could
be explained by material causes, then it could undermine a belief in God and the religious
traditions that Federalists like Fessenden felt should be the basis for a stable society.96

Priestley’s theological and political pamphleteering earned him such enmity in
political circles that, with the tacit acceptance of the authorities, a mob ransacked and
destroyed his home in 1791 in the Birmingham riots. He was not the only philosopher to
be targeted. By that time support for the French Revolution had become a hallmark of
radical politics and thus went hand in hand with criticism of the English crown. When the
mob destroyed his home and his philosophical apparatus, and his papers, Priestley had
already fled for his life and eventually immigrated to Pennsylvania in 1794. He was
welcomed by some Americans but also attacked by Federalists like Fessenden and fellow
émigré William Cobbett.97

Fessenden criticized Joseph Priestley in concert with Thomas Beddoes, and also
with Erasmus Darwin, for the idea that humans had a material soul that could be
chemically analyzed and that was subject to the same organic processes as the human
body. He links Beddoes’ gas with the theory of materialism.

This precious gas, sirs, is the pink
Of pure philosophy, — the link
With which great metaphysicians bind
_To worlds of matter, worlds of mind._

96 Schofield, _The Enlightened Joseph Priestley_, 56.

97 Durey, “Thomas Paine’s Apostles,” Jenny Graham, “Revolutionary in Exile: The Emigration of
Joseph Priestley to America 1794–1804,” _Transactions of the American Philosophical Society_, New Series,
The chymick basis of an *ens,*  
*A demi-animus,* or *mens*  
A non-descript, terrene-etherial,  
But like *some people’s souls, material.*[^98]

The footnote to this stanza refers explicitly to Joseph Priestly, whose theories about the materiality of the soul Fessenden simply quotes. He goes on to suggest that if a material soul is constituted from the gases of the body, then Beddoes’ gas is surely the manifestation of Mind.

So Beddoes’ gas, Sirs, I’m inclin’d  
To think we’ll burnish into mind,  
By dint of chymical gradations  
And Doctor Darwin’s fine filtrations.[^99]

Caustick shared some of his successes with creating souls and human beings. In these sections, he referred to pneumatic experiments of Joseph Priestly and the doctrine of the soul’s materiality. Joseph Priestley, like Rush and Rittenhouse, believed that scientific progress was evidence of God’s direct and specific Providence in the world of man.

Fessenden refers to Priestley’s ideas about souls, in the first canto, where Caustick writes that he:

Made a machine of monstrous merits,  
And brew’d therein a world of spirits,  
*Divine, botanic, human, beastly,*  
The *souls* of Darwin and of Priestley.[^100]


[^99]: In the footnote to this stanza, Fessenden refers to Erasmus Darwin’s poetic rendering of the idea that organic evolution began with the mud of the Nile. Darwin says here that unlike animal reproduction, “the products of natural chymistry are only enlarged by *accretion,* or purified, by *filtration.*” Fessenden, *The Modern Philosopher,* 10.

[^100]: Fessenden, *The Modern Philosopher,* 43.
Our process, Sirs, approaches nigh
To making whiskey out of rye.
A sort of *spiritual* creation,
From *matter*, put in distillation.101

Fessenden suggests that enlightened discussions of the soul, those that take it out of a
countext of theological tradition, exactly as Priestley did, treat it as though it were or could
be a chemical substance. If the soul were a chemical substance, then one should be able
to analyze it, isolate it or replicate it, just as chemists could isolate many different kinds
of air. Further, it stood to reason that a talented chemist should be able to isolate the soul
from the body. Theories that treated humans and their constituent parts as chemical
elements to be analyzed encouraged a kind of thinking that had, for Fessenden, dangerous
consequences. If human beings were thought of as only so much organic matter and not
more than the sum of their parts, then who was to say that someone was not worth more
dead than alive? Analyzing souls as constituent parts of human beings was the first step
down the path to a materialistic natural world and a distorted theory of morality. But most
problematic was that such an analytical view of humanity also undermined sympathy.

Sympathy fostered fellow feeling and encouraged the polite or “sentimental”
person to put herself in the place of other people and spurred her to help relieve distress
because of common humanity. The doctor’s or scientists’ view, Fessenden suggested,
was to analyze a human being and act, not to relieve the suffering of the individual, but to
promote some previously defined “universal good.” As I shall discuss in the section on
Erasmus Darwin, Fessenden pointed to the problem of the mechanization of human

---

101 Ibid., 44-5.
beings, as he proposed satirically to use Priestley’s theories of the material soul along with Darwin’s views of a mechanized nature to create human beings. By mechanizing nature and humanity, materialism removed the grounding for politeness. Through the scientific and technological view of mechanizing or analyzing the role of humans, it removed them from the realm of sympathy and fellow feeling.  

5.8 James Hutton

James Hutton, an eighteenth-century Scottish doctor-philosopher-geologist published his treatise on the earth, “Theories of the Earth,” in the Transactions of the Royal Society of Edinburgh in 1788 and published a larger treatise in 1795. Today he is seen as an early proponent of uniformitarian ideas, in other words, that the earth’s geographical features were formed over a long span of time by forces still acting on the surface. However, at the time, critics, including Fessenden, lambasted him for his ideas about heat being the central cause of geological change. He was also a Deist, and his theories of a self-moving cycle of transformation on the earth’s surface was in line with the idea of the earth as a self-motivating machine. This was in contrast to the idea that massive catastrophic events had created the present shape of the earth’s surface in a relatively short period of time. Hutton studied medicine but never practiced, instead, he grew rich through part ownership of a plant that manufactured ammonium chloride from chimney soot. Hutton’s geology came under harsh criticism from various quarters, but

102 Maureen McNeil, Under the Banner of Science: Erasmus Darwin and His Age (Manchester, UK: Manchester University Press, 1987).
mostly from geologists like Richard Kirwan and J. A. Deluc who saw it as incompatible with a Biblically informed geology and with any robust understanding of God’s direct involvement in the creation and formation of the earth.103

Though Hutton’s theory was incompatible with a Biblical timeline, the point that bothered his critics most was his theory of heat. Hutton’s key innovation in theories of geology was the idea that a kind of heat, not one caused by fire, was the force behind geological change. Further, critics read Hutton as saying that this heat waxed and waned for no apparent reason. As Patsy A. Gerstner argues, it was the nature of Huttonian heat, and not the uniformitarian interpretation of his theory, that most bothered critics. Hence Fessenden’s satire of Hutton revolves around postulating that he can harness this new kind of Huttonian heat.104 The plans all involve the exaggeration of the capabilities of modern philosophers who understand the root chemical and material causes of geological forces.

We’ve formed the most tremendous plan
Which ever enter’d mind of man,
And which to nothing less aspires
Than MAKING MOONS from central spires.

For, if the theory of Hutton
Is worth the essence of a button,


And doctor Darwin has not blunder’d,
We’ll make you new moons by the hundred. 105

Caustick refers to the Huttonian theory that the earth had a super-hot core; in the footnote he shows that he thinks that the whole Huttonian system rests on pure speculation. “You will obligingly take it for granted,” he explains, “or run the risk of spoiling the Huttonian Theory, that the center of the globe is a stupendous furnace, a million times hotter than that of Nebuchadnezzar.”106 As Patsy Gerstner points out, Hutton’s view of heat was the focus of contemporary criticisms of his geology. Hutton’s forces were ambiguously ad hoc; they had no apparent cause and they worked to cause just the effects that Hutton wanted, and no more. Fessenden’s satirical critique mirrors more serious reviews of the Huttonian theory, a theory that was popularized by John Playfair in a series of illustrations.107 For instance, an anonymous reviewer in Edinburgh Review wrote that “the supposition of a perpetual central heat” was one that “we cannot admit to exist merely because such a supposition would enable us to account for certain appearances.”108 Fessenden continues to list the assumptions that Hutton’s theory of the earth rests upon, and goes on to add his own speculations about marshaling Hutton’s forces:

We mean to bore us, at a venture
Some auger holes through Hutton’s center,

105 Fessenden, The Modern Philosopher, 89.
106 Ibid.
Thus give an *unexpected* vent,
To Hutton’s fires in prison pent.

... 

Each orifice will then give birth
To grand satellites for earth,

One potential problem with Hutton’s earth was that it had no beginning. Again, according
to Gerstner, Hutton saw the creation of earth’s continents and mountains and rock
structures as part of a process of perpetual expansion and retraction caused by two
inversely proportionate forces. The forces were part of the self-regulation of a
mechanized earth created by a Deist God. Fessenden himself pointed to this unending
cycle of world creation and destruction in this stanza:

> Could tell what time, on Hutton’s notion,
> Would “duck” the earth beneath the ocean;
> And when and how would be unfurl’d,
> A new edition of the world.  

But the real problem with Hutton was not necessarily that it implied an endless cycle of
world creation and destruction but that it conveyed pure speculation as rigorous thinking.
For Fessenden, his theories of the earth were based upon *ad hoc* assumptions and
rampant speculation presented as reason. For Fessenden and others who criticized the
radical tendencies of useful knowledge, Hutton’s theory of the earth came to epitomize
explanations based on ad hoc assumptions, even though Hutton himself was not an active
political radical like Priestley.

---

110 Ibid., 96-7.
5.9 Erasmus Darwin

For Fessenden the “modern philosopher” with whom he most eagerly engaged was Erasmus Darwin, a well-known poet, naturalist, and physician in the 1780s and 90s. Much of Caustick’s diatribe is a parody of Darwin’s late-Enlightenment/pre-Romantic joining of natural history, natural philosophy, and poetry. His blend of poetry and science received widespread critical acclaim and influenced the next generation of romantic poets even as they repudiated its style. It is precisely the blending of metaphor and fact that Fessenden satirized by showing what happened when metaphorical language was read seriously. Darwin’s first major poem was *The Botanic Garden*. This long epic was made of three parts, released in different years. *The Loves of the Plants*, first published anonymously in 1789, turned Linnaeus’s classification system of plants, which was based on the reproductive parts of plants — stamens and pistils — into a vegetative romance, a personification of the different relationships between plants with different kinds of reproductive systems. *The Economy of Vegetation*, was released in 1791, and describes the self-regulating and self-sustaining reciprocity of nature’s functions and relationships. In *Temple of Nature*, an evolutionary poem published posthumously in 1803, Darwin gives full voice to his proto-Romantic evolutionary vision of nature created by chemical and electrical processes and his proto-Malthusian understanding of the competition of and adaptation by living things. In these works Darwin was clear about his evolutionary

stance, turning even Linnaeus’s static conception of fixed species into a developmental model of mutation, blending, and creation of new species through the romantic life of plants.112

Fessenden’s critique followed a number of responses to Darwin’s Loves of the Plants, which was first published in 1789. As Desmond King-Hele points out, Darwin, and his friend and fellow physician and natural philosopher Thomas Beddoes, were “irritating to the establishment” because of their pro-French Revolutionary sentiments. However, Darwin’s poetic philosophy was not generally thought of as radical until the late 1790s when a group of anti-French Revolution writers attempted to link him with pro-French sentiment. Others too had sought to undermine Darwin by parodying his poems. Best known is the Loves of the Triangles published by George Canning and John Hookham Frere in 1798, which mocked Darwin’s Loves of the Plants.113

Fessenden’s mockery of Erasmus Darwin centered on his mechanized naturalism. Maureen McNeil in her work on Darwin and other members of the Lunar Society discusses how the celebration and control of mechanized nature was a key theme in their work. “Manufactories” set up by Josiah Wedgwood, the famous pottery manufacturer, as well as by people like Hutton, who manufactured chemicals, were a prominent element of

112 Uglow, The Lunar Men, 266-74; 384-9; 423-9.

the mental and physical landscape of many of the key figures Fessenden satirizes. The mechanization of nature worked in the poetry of Darwin to erase the very real physical labor of the working poor that his friends depended on.

Fessenden suggested that mechanizing nature undermined the benevolence and feelings of humanity towards the poor. In The Economy of Vegetation, Darwin continually supplants the man as laborer, making production of material goods a generative process, taking place directly between the inventor and the product with the use of magical or mythical forces. “In his description of pottery production,” notes Maureen McNeil, “the labour is attributed to ‘gnomes’ who magically perform the work required. This focuses attention on Wedgwood, the manager of the production facility, as the person who assembled these magical forces.”114 For instance Darwin celebrates Wedgwood’s achievements in The Economy of Vegetation,

GNOMES! As you now dissect with hammers fine
The granite-rock, the nodul’d flint clacine;
Grind with strong arm, the circling chertz betwixt,
Your pure Ka-o-lins and Pe-tun-tses mixt;
O’er each red saggers burning cave preside
The keen-eyed Fire-Nymphs blazing by your side;
And pleased on WEDGWOOD ray your partial smile,
A new Etruria decks Britannia’s isle. — 115

Likening human activity to a magical, mythical, or natural process removes the humanity from the workers themselves; they are instead compelled to follow their nature or their production manager. Like Rush’s republican machines whose actions and choices were

114 McNeil, Under the Banner of Science, 20.

directed by outside forces set in place by doctors, politicians, and teachers, Darwin’s gnomes had no self-direction but instead acted on the directions of their factory foreman. In his satire Dr. Caustick, like Darwin and Wedgwood, also directs and controls workers, workers that he invented out of wood and clay. Instead of replacing industrial laborers, though, Caustick invents and creates men who would replace the radicals of society — booksellers and authors, philosophers and senators. Thus, Fessenden turns the notion of the replaceable nature of the worker on its head and suggests that modern idea makers like Darwin himself are as easily replaceable.

In Caustick’s most ambitious invention, he tells how he created a human being out of chemical processes, and then he proposes a myriad of ways that such people, sprung from nothing, could be put to use in society.

But what surpasses, you’ll admit,  
All former bounds of human wit,  
I form’d by chemical contrivance,  
A little homo all alive once!116

This leads to a discussion of all of the different kinds of people that Caustick would create using different processes. Out of wood, for instance, he would make wooden booksellers.

We hew’d a hard, brain-sucking brood  
Of BOOKSELLERS from pepridge wood,  
And shap’d the gnarled cross-grain’d splinters  
To notable newspaper printers.

These my fine fellows know full well  
That books are merely made to sell,
That half the world will only prize
The print, the paper, and the size: — 117

Next Caustick manufactures a group of authors

To set our people up in trade
We next a set of authors made
Whom you might reasonably hire
To soil white paper by the quire.118

Then Caustick creates a set of radicals and likened them to a mob machine carefully engineered to overturn governments. These people are “knowing” like booksellers, and formidable, like Napoleon, but heartless. Thinking only of each other, they are designed to foment destruction. In this section, Fessenden implies that political radicals like Thomas Paine are, like factory workers, enslaved to the forces that created them, acting out a radical script, not swayed by reason and incapable of free will.

We likewise set machines a going
As booksellers, who’re wondrous knowing,
And made them heads like Buonopart’s,
But then forgot to give them hearts.
...

The men well paid us for the rearing.
In jacobin pamphleteering;
Have gain’d us thousands in a season
By peddling Tom Paine’s Age of Reason.

With such machines, on mischief bent
We can o’erturn a government,
Root up society’s foundations
And kindle war among all nations.119

117 Ibid., 58.
118 Ibid., 62.
119 Ibid., 64.
These radicals, mechanized by modern philosophers undermined the polite potential for the American Republic. Fessenden saw the Democratic-Republican Party and the radical local societies that cropped up to support it as the result of radical pamphleteering. The mechanization of voters under a radical philosophy undermined the very essence of the culture of politeness. Mechanized voters could not participate in an agreeable, genteel, voluntary conversation about politics envisioned by such founders as James Wilson.

The modern philosopher, therefore, operated under a hypocritical stance. He claimed to be motivated by providing useful theories for the benefit of mankind, but in practice, Fessenden argued, his views mechanized humanity. Fessenden claimed that the “modern philosopher” was hypocritical, corrupt and tyrannical. Throughout his poem he then linked the “modern philosopher” to American politics under Jefferson’s Democratic Republicans. When Caustic describes the various people he constructed, one kind is a “Columbian legislator.” By likening American legislators to homunculus, he eviscerates the idea that these “legislators” are “representative men.” Instead he suggests “modern philosophers” like Thomas Jefferson have manipulated Americans into making bad choices at the ballot box.

Could make Columbian legislators
More easily than raise potatoes.\textsuperscript{120}

The long footnote to these lines elaborates the characteristics that a legislator must have to be elected in America. These characteristics equated American trends towards

\textsuperscript{120} Ibid., 71.
democracy with demagoguery and the politics of the lowest common denominator. It also outlines succinctly just how easy it is to manufacture a façade. Fessenden challenges the very basis of the polite paradigm, that outward actions reflect internal character and thus are a good guideline for ascertaining virtue. For a man to become a “Columbian legislator” first he

Must make great pretensions to patriotism and an extraordinary degree of friendship for the common people. The truth of these pretensions is always to be tested by his defrauding them, whenever it is practicable, either in a public or a private capacity.121

Next, it helped if a man hoping to get elected had a history of criminal activity, as that would assure that he was not going to be part of a “natural aristocracy” touted by proponents of Republicanism:

The more crimes a man has committed... the purer his patriotism and the greater his claims to office of any kind... for any attempt to preserve a good moral character is an essay to introduce into a free government the aristocracy of nature, and leads to a kind of distinction, which is absolutely incompatible with the ‘rights of man.’122

Finally, it helped if he was of a low class and thus more susceptible to being led by others:

For the minds of the legislators of this description, can never be distracted by the elevation of extent of their views, and they will of consequence devote themselves entirely... to the pecuniary interests of their constituents. They will likewise be more apt to be subservient to the wishes and views of two or three cunning men....123

121 Ibid.
122 Ibid., 72.
123 Ibid.
Fessenden paints a picture of “cunning men”, manipulating and controlling his manufactured “Columbian legislators,” to the detriment of the interests of the citizens who elected them. These cunning men were the “modern philosophers” who wielded the authority of useful knowledge falsely, represented by his satirical portrayal of Christopher Caustick.

5.10 Conclusion

Fessenden’s satire, written in a dying genre, gives an important glimpse of an alternative discussion about the social and political place of science at the end of the polite eighteenth century. The poem suffered from the paradoxes of its presentation. It mocked the intellectual pretensions of the elite by satirizing them, thus making those intellectual pretentions a necessary prerequisite for understanding and appreciating the satire. Fessenden ridicules the paradox of appealing to the authority of science. In order for science to be authoritative it has to educate people in science so they can understand enough to grant authority to those who knew more. But in the end, Fessenden recognized the need for mediation between the self-proclaimed authorities and those they wanted to convince with their theories. The authority of useful knowledge as well as the possibilities for science as polite conversation required a substratum of society that, though it did not practice science, was well educated enough to judge it.

Fessenden wanted to base the new republican political discourse on polite ideals. He had a passion for common sense science and thought it could be the basis for an egalitarian conversation about the natural world, but he decried its “modern” associations with materialism and atheism. He saw his own role as that of someone who could help
undermine those “scribblers” he attacked in his poem and thus be of service to society.\textsuperscript{124}

In this he acted as a “man of real science,” playing a mediating role between the masses and the speculative philosophers who tried to shut them out of conversation with a focus on credentials and complicated theories. However, in the mediating role, he argued that the man of real science should not pit authority against authority, but should use a modified appeal to common sense. Given the right tools, the common man, thought Fessenden, could distinguish between a fraudulent “modern philosopher” and a trustworthy “man of real science,” or, indeed, could judge between competing theories by himself. Fessenden articulated a return to a polite view of science that emphasized that common sense empiricism, benevolence, and a commitment to open conversation led to truth.

\textsuperscript{124} \textit{Ibid}, xxx.
CHAPTER SIX

SCIENCE, POLITENESS, AND THE AMERICAN REVOLUTION

“All politeness is owing to liberty. We polish one another and rub off our corners and rough sides by a sort of amicable collision. To restrain this is inevitably to bring rust upon men’s’ understandings.”

— Shaftesbury

6.1 Introduction

In the Early American Republic “useful knowledge” was understood and envisioned from within the culture of politeness. In this dissertation, I have explored the implications for understanding the character of republican science by looking at the way four men talked about the promotion of science in America. David Rittenhouse, Charles Willson Peale, Benjamin Rush, and Thomas Green Fessenden all tried to articulate a view of polite science within a culture being consciously reshaped through revolution and republicanism. Polite science needed to be reworked for America’s new political circumstances. In this conclusion I will reiterate what I see as the key elements of the culture of politeness, summarize how each of the four men I examined positioned their arguments for science within those elements, and, finally, suggest how understanding eighteenth-century science from within the culture of politeness might raise new possibilities for understanding the history of science in America. Specifically, I look at how the issues surrounding politeness raise questions for understanding the character of scientists and also popularization of science. Developments in the social and institutional
spaces science was practiced and the cultural meanings science had for Americans in the
tenineteenth century reflected the tensions born of the challenges politeness posed for
usefulness in the eighteenth. A progressive belief in useful knowledge posed for the
possibilities about polite conversation about science.

6.2 Chapter Summary

A key feature of the eighteenth-century culture of politeness was the insistence of
its adherents that internal character, outward actions, and forms of government were
fundamentally and inevitably connected. A second key feature of the culture of politeness
was that “polite” activities, especially conversation, would both demonstrate and form
character at the same time. The converse was also true; undesirable behavior, however
defined, also demonstrated and contributed to bad character. Conversation and other
social activities were seen to be the ideal model for ordering society. Because polite
color character was formed in conversation with others, the actions of individuals had
implications beyond the shaping of their own internal character: they defined the
character of the nation as a whole. All politeness may have been owing to liberty, as
Shaftesbury said, but at the same time, in the polite view, liberty required that citizens be
polite.¹

¹ “All politeness is owing to liberty. We polish one another and rub off our corners and rough
sides by a sort of amicable collision. To restrain this is inevitably to bring rust upon mens’ understandings.”
Anthony Ashbey Cooper, Third Earl of Shaftesbury, “Sensus Communis,” Characteristics of Men,
Manners, Opinions, Times (Whitefish, MT: Kesinger Publishing, 2004), 43-94.
Historians studying the eighteenth-century culture of politeness have painted a rich picture of what politeness and polite activities looked like in the day-to-day. Eighteenth-century politeness was centered on conversation and the display of character created through sociable interactions. Polite conversation came to be identified with the collection of material culture and with frequenting certain typical sites of sociability, each with its distinctive style of conversation. Historians have focused on certain places — the coffeehouse, the tea table, and the parlor — and certain styles of conversation, such as those surrounding sentimental friendship. Polite society was made manifest both in social gatherings and also in print culture; it was written not just in actions but also in surroundings, collected objects, and in the cultural places one chose to frequent. Polite character in the eighteenth century was an achievement, something carefully cultivated, put on, and displayed. For eighteenth-century polite men and women, politeness could be read on someone’s face and in his manner, and different styles of politeness were often compared and contrasted or juxtaposed against the impolite.

The culture of politeness shaped how Americans thought of the relationship between internal characteristics, outward displays, and their meanings for American citizenship and civility. During and after the American Revolution, the idioms and modes of politeness were marshaled to articulate a new national character. Those who promoted useful knowledge used the practice, the societies, and the writing of science to work out a distinctly American scientific character. Useful knowledge, they argued, was not just a polite idiom to be used and displayed in conversation, it was necessary for America to take its place among civilized nations and for building American character. As William Barton wrote of his uncle, David Rittenhouse, in 1813, “The truths promulgated by
means of a natural and sublime philosophy — corresponding as this does with the dignity of an enlightened spirit — must ever emanate from a virtuous heart as well as an expanded intellect. Hence, the real philosopher, but not a “modern” philosopher, “can scarcely fail to be a good man.”2

But if useful knowledge and politeness seemed a natural fit in some ways, in others ways fitting science into a polite understanding of human nature did not work. To explore the fitness and fissures of these two concepts, I have looked at the writings of four prominent men in the crucial period of just before the American Revolution to the first years of the nineteenth century. David Rittenhouse, Charles Willson Peale, Benjamin Rush, and Thomas Green Fessenden all discussed the character of the man of science or the promoter of useful knowledge from within the context of the culture of politeness. It has been my goal to show how these four men contributed to a changing discussion on the American character of polite science. They discussed how the practice of useful knowledge could be used to contribute to the American character, both individually and collectively. But in their theorizing about the character of the American scientist, these men also hinted that polite interactions could not always serve the needs of useful knowledge.

In chapter two, I explored the way David Rittenhouse thought astronomy could contribute to the character of America and how Rittenhouse himself became an example for his contemporaries of the natural genius of America. William Smith and Thomas

Barton, with ties to Pennsylvania’s legislative and intellectual elite, brought Rittenhouse into the notice of the international “Republic of Letters.” In turn, Rittenhouse’s scientific ability was supposed to demonstrate the good character of the city of Philadelphia, thus contributing to its polite status. At the same time, though, David Rittenhouse was engaged in radical political activity that roiled Pennsylvania before and after the American Revolution. His mechanic’s background highlighted autonomy and put politeness on a different footing. When discussing his orrery with his patrons he emphasized his desire to be the autonomous creator of his device, free from the dictates of fashion. He sees himself as an independent artisan who can dispose of his work as he sees fit. But while Thomas Barton supported his desire to build his orrery in his own way and not worry about making it marketable, William Smith showed him in no uncertain terms that his patronage limited Rittenhouse’s freedom. During the revolution, Philadelphia’s mechanics and artisans attempted to upend this kind of colonial patronage relationship that limited their freedoms. They argued for greater political representation at home at the same time that the colonies argued for greater political representation from England. David Rittenhouse’s status as an artisan turned man of science, coupled with his unswerving commitment to republicanism and revolution, was a model for a kind of revolutionary politeness. His politeness was founded on a kind of mechanic class sensibility where demonstrated competence was the bedrock for participation. As I shall show later in the conclusion, Rittenhouse harshly rebuffed those who attempted to converse about math and astronomy with inadequate knowledge.

Rittenhouse himself provided a model for the character of a polite revolutionary, and he also argued that astronomy in particular should be cultivated in America because
it cultivated the three levels of character held to be linked in the culture of politeness. First, the practice of astronomy provided the external behavior that demonstrated internal character in individuals. Second, Rittenhouse focused on the self-sacrificial virtue needed for citizens of a republic and also the spirit of benevolence and human fellow feeling that he thought was antithetical to miserliness and monarchy. Third, achievements in astronomy had the potential to make America an equal among civilizations of the past, present, and future.

In chapter three I discussed how Charles Willson Peale promoted a polite patriotism through the display of both portraiture and natural history. He sought to teach and encourage the political virtues necessary in a republic while at the same time cultivating an appearance of gentility through offering displays of the national character, both its great faces and its flora and fauna. Peale, active in the same radical politics that stirred Rittenhouse at the beginning of his adult life, turned to portraiture both to make a living and to express revolutionary ideals. However, he had a hard time making a living as a working portrait artist, and he also found his radical politics caused his patrons and some of his more genteel friends to ostracize him. So Peale moved away from painting and started up a natural history museum where he could serve his radical republicanism by serving it up under the banner of polite natural history. Peale attempted to marshal the language of patriotic self-sacrifice to elicit support for his various endeavors. However, once his museum began to show a profit, the public was more and more unwilling to accept that he was sacrificing anything for the good of the republic, even though his museum was a highly regarded polite fixture in the Philadelphia landscape. Peale
expected polite republicanism to pay; he was offended when the public failed to recognize and reward the public good he produced.

The democratization of politics that both Peale and Rittenhouse agitated for led to a new emphasis on the need for virtue in the republic. As concerns about the dominance of crowds whose behavior was unpredictable grew, discussions about politeness and character began to focus on the control of behavior, through the manipulation of the moral faculties or senses over which science was now extending its domain. These faculties and the behavior they produced, the internal character and outward behaviors that were the very stuff of politeness, were susceptible to analysis and manipulation through natural science, especially medicine. New political problems associated with democracies led to a greater concern with controlling the behavior of the people. In chapter four I discuss how Benjamin Rush, drawing on Scottish nervous-system-based medicine, suggested that an apparent lack of polite character was a medical problem susceptible to a medical solution. Neither Rush, nor those who agreed with him, could assume that all people would be able to participate politely in politics, so he looked for ways to produce and enforce good behavior. Accordingly, he suggested educational and correctional systems for monitoring and cultivating people’s virtue and thus their behavior. By contrasting Rush with his friend James Wilson, the Supreme Court Justice, I show how Rush rejected one of the core principles of politeness, that casual, voluntary social conversation guided by “common sense” was adequate for instilling republic character.

Finally in chapter five I look at what happened when politeness and useful knowledge were overwhelmed by party politics. Thomas Green Fessenden perceived that
science in the hands of what he thought of as radical Enlightenment thinkers, thinkers he
termed the “modern philosopher,” violated the dictates of politeness. He wanted to place
useful knowledge back on a firm foundation of politeness that concentrated on open
conversation and benevolence. He criticized pretenders to useful knowledge in a satire
that sought to show that the practice of science was not a guarantor of moral rectitude in
its practitioners unless it was guided by politeness. Federalist polemicists like Thomas
Green Fessenden argued that enlightened scientists’ theories undermined the stability of
the republic. They used satire, pamphlets, and sermons to suggest that there was a
conspiracy of like-minded men to foist a new set of beliefs upon an unsuspecting
populace using the authority of useful knowledge as their leverage. Federalist polemics
on scientific activity in the Early Republic quickly identified philosophers and literati as
part of a “Jacobin” or “Revolutionary” or “Paineite” group determined to overthrow all
social order. In *The Modern Philosopher*, Fessenden applies guidelines for judging
scientific activity; and those guidelines were benevolence and empiricism, two standards
against which he thought Enlightenment scientists fell short.

Fessenden’s view inverted the relationship between useful knowledge and
politeness created by the Philadelphia men I discussed. For Rittenhouse, participation in
astronomy took the place of politeness in a program to develop a moral republican
character. For Peale attending his museums, displays, and lectures about natural history
would help men and women of society to learn their duties as polite republican citizens.
And for Rush, to follow his state-run gamut of education centered on religious morals,
useful knowledge, and hard work would help create “republican machines.” All three
shared a faith that knowledge uncovered by those studying the natural world was true and
thus a reliable source of not just natural but moral education. They wanted to take control of politeness and dictate the authority of knowledge by which it would be conducted. All three linked the study of the natural world to the study of God’s creation, most strongly in Rush’s case. But Fessenden thought discussing useful knowledge in a polite manner was the surest way to uncover truth.

The crux of the issue was the second part of Shaftesbury’s most famous quote with which I opened this chapter. Polite conversation was supposed to rub off the rough edges of men’s characters. To restrain polite interactions was to “bring rust on men’s understandings.” The question the American men of science I have studied asked was whether this comment referred to understandings of the natural world, the moral world, or both. Rittenhouse, Peale, and Rush held to the idea that some men’s understandings of the natural world are better than others. These men limited the liberty of certain people to participate in conversations about science. Circumscribing scientific conversations began a cultural transformation from the ideal of the polite man of science of the eighteenth century to the irascible alienated scientist of the twentieth.

6.3 The Alienated Scientist and American Backwardness

One strain of “science studies” literature has explored of popular and personal ideas about the character of scientists. Many historians have explored how issues of character tie into the social and political place of scientists in various cultures and also how the construction of scientific character is linked with the believability of scientific practice. In recent rhetorical studies of science, scholars have discussed the importance of the scientific “ethos” or, as S. Michael Halloran defines it, “a characteristic manner of
holding and expressing ideas, rooted in a distinctive understanding of the scientific enterprise.” Rhetorical studies of science suggest the ethos of a scientific community is not just a gloss, or outward form of behaving, but is constitutive of that community. Understanding polite culture and its relationship to science is necessary to understand the development of eighteenth- and early-nineteenth-century scientists and the way they positioned themselves in American culture. Historians of American science have been especially interested in the transition from the eighteenth-century practice of science to the formation of more modern forms of science in the late-nineteenth and twentieth century. I have suggested that the late-eighteenth-century man of science embraced the pursuit of “useful knowledge” as a key constituent of the scientific ethos or character and that “useful knowledge” was developed in tandem with the key characteristics of politeness. When politeness waned as a compelling cultural idiom, or was perhaps rejected by scientists themselves, then scientists also had to rework how to understand their characters.³

In the late eighteenth century, far from pursuing merely a pragmatic enterprise, men of science attempted to weave the activities they loved into the character of the American nation, using the idea of “sensibility.” As Philip Carter has argued, “sensibility” was a key development in defining the characteristics of a polite character. Sarah Knott, examining the relationship between “sensibility” and the American Revolution, writes that in part, sensibility was a “contrarian pose” where likeminded

groups of friends imagined a cold hard unfeeling and autonomous world of reason surrounded their small coteries of warmth and fellow feeling. The creation of the “cold, cruel, world,” she suggests, became part of the cultural landscape of the rugged individualist America of the nineteenth century. Two aspects of Knott’s argument suggest interesting avenues of future research for understanding the character of the nineteenth-century scientist. The first is that the contrarian pose was essential for demarcating the culture of politeness as the eighteenth century moved into the nineteenth. Politeness was given shape by setting it up against an outside world that was not at all polite. The second point is, while literary and cultural historians have sometimes suggested it, scientific or learned societies were not necessarily a world of cold hard reason. For men of science, “cold, hard reason” and the facts of the natural world were the stuff of warm and friendly social intercourse. In between the late eighteenth and the early nineteenth centuries, men of science took their facts and figures and set themselves apart culturally as an alienated circle.4

All of the men of science I examined valorized what might be thought of as the warm light of reason, which bound together the polite scientist in the conviviality of conversation about the natural world. In the eighteenth century writings of Rittenhouse, Rush, and Peale, there was hope that the language of useful knowledge might be adopted to guide the development of a universal American culture. This is especially striking with

4 Knott, Sensibility in the American Revolution, defines sensibility in opposition to politeness, but Philip Carter in “Polite ‘Persons’,” argues that the later emphasis on sensibility or sympathy should be seen as belonging within the polite eighteenth century. The shift in terms to identify the desirable behaviors of the polite culture was just the latest response to the perennial criticisms that politeness was too easy to mimic and therefore could not be trusted as a guide to character.
Rush, who proposed a country-wide educational system for anyone who wanted to participate in American government. But by the nineteenth century, as historians of science have long noted, the American scientist sent up a universal lament of being stranded in a backwards country. The lack of books, lack of interest, lack of supplies, and lack of learned correspondence in comparison with Europe was bemoaned again and again by American scientists in correspondence to one another. Americans could only be made to see the material gains of useful knowledge, they said. This, far from being a statement of fact about the material or institutional conditions supporting the development of American science, as most historians read it, was a moral indictment cast from within an culturally alienated circle of the learned against the “cold, cruel, world” insensible to the virtues of science.

6.4 The Impolite Scientist

The American scientists of the late nineteenth and early twentieth century, having alienated themselves from popular culture, were often stereotypically seen as boors. Unable or, more likely, unwilling to participate gracefully in social situations, the later American scientist held himself aloof from mere society. At best this figure was merely uninterested in the frippery of mere day-to-day living or self-righteously impatient at those who were ignorant of science; at worse he looked down on society as he contemplated how best to control it. This stereotype of the alienated or inept “real” scientist grew apace with a thriving popular culture that embraced and valorized amateur scientific practices. As I will highlight in an incident from David Rittenhouse’s life, the irascible scientist in reality could have been a response to the very dictates of polite open
conversation. While men like Rittenhouse encouraged a broad-based education in subjects like astronomy, they still wanted the authority to control the conversation.

The historiography of popularization and the separation of amateur and professional science long noted by historians could benefit from an explicit examination of its roots in polite culture. In fact, as I discussed in the introduction, a few seminal studies of what might be called science popularization were in the foreground of developing the historiography of politeness. Science popularization has been an important area of research in the history of science, with historians struggling to understand the reasons for popularizations in different cultures, the line of demarcation between actual scientific writings and popularizations, and the ways in which the imperatives of popularization or public science are far different from the imperatives of the scientific community. Politeness has already proven a key feature in understanding such nineteenth century phenomena as mechanics institutes, popular lecture series, and other brands of public science. But, as I suggested in the chapter on Fessenden, one interesting avenue of research is to explore how the practice of studying the natural world threw two of the central tenets of politeness into tension with one another. Even as

---

scientists drew on the culture of politeness to promote themselves and their character, in another way, science also demonstrates the limits of politeness to constrain conflict without an agreed upon authority.

To have a truly easy and open conversation, authority had to be accepted, understood, and agreed upon, or name-calling quickly could ensue. Even David Rittenhouse was not immune to this. In 1776, Rittenhouse wrote to a newspaper to condemn a writer who tried to criticize the metaphysics of Newton. To do so, Rittenhouse closed the open door of conversation in the face of those who did not have the accepted training. Rittenhouse’s reply, succinct and to the point, both refuted the technical point the correspondent had made and also impugned his intelligence, and more importantly called into question the ability of non-mathematicians to understand math. Rittenhouse wrote that, of all the criticisms of Newton he had read, “the attempts to controvert that philosophy, which I have met with, amount to nothing more than so many proofs that those who made them did not understand it.” The writer had, among other things, found fault with the doctrine of infinities. At the end of his rebuttal, Rittenhouse wrote, rather acidly,

I wish the gentleman [the Newtonian critic] would be more cautious for the future; as well on his own account, as for the sake of your readers, some whom may be misled by the weakest reasoning, on a subject which they do not understand. And I will venture to assure him, that the whole doctrine of infinities, which he is pleased to call a sophism, will not produce one contradiction in a mathematical head. Those of another cast need not meddle with it; since there are a sufficient variety of literary subjects to engage every man according to the bent of his genius.6

Without the proper knowledge and understanding of Newtonian mathematics, Rittenhouse asserted, the correspondent simply could not even take part in a conversation about Newton.

Rittenhouse recognized the limits that surrounded polite conversation about useful knowledge and the power of its authority to end conversation. As proven by the address he gave just the year before on astronomy, Rittenhouse disagreed with this author and another who had written before on their metaphysical interpretation of Newton. The critics of Newton were Cartesians and drew metaphysical and theological conclusions from their understandings of Newton. Rittenhouse firmly believed in a Christian God and was sympathetic with the common interpretation of Newtonian gravity, that gravity was a sort of mathematical metaphor for the active Will of God affecting the world. But he did not engage Newtonian critics as metaphysicians but instead turned the debate into a debate about mathematics. In doing so, he unequivocally shut non-mathematicians out of the conversation about the real meaning of Newton. He could do this because he was recognized as the American authority on math, physics, and astronomy at that time.

Expertise and authority posed a problem for politeness. Saba Bahar recognized this in her article “Jane Marcet and the Limits of Public Science,” where she shows how “usefulness” was used by elite intellectuals in Geneva as way to motivate the popularization of science and use science as a stand-in for moral and political authority.\textsuperscript{7}

\textsuperscript{7} Saba Bahar, “Jane Marcet and the Limits to Public Science.”
But to allow amateurs who were not fully versed in the traditions and accepted truths of a given science raised a problem for anyone committed to politeness. When amateurs commented on the meanings of scientific work in unaccepted ways it gave rise to an endless need for “boundary work,” or disputes like Rittenhouse’s, about what was and was not science and who was and who was not allowed to participate. Shutting people out of conversation is hardly the stuff of a brand of politeness that valorized an open conversation as the way to truth. Rittenhouse’s answer to the problem was, like Rush’s and Peale’s, to draw more people into the scientific fold and thus expand the boundaries of who could partake in legitimate conversations. But Fessenden, to the contrary, insisted that expert conversations be opened to non-experts so those who claimed the authority of useful knowledge could not use seemingly expert discussions to smuggle in moral viewpoints. By insisting on polite ideals, he rejected the idea that science stands in as a moral and political authority by insisting on polite ideals. Historians of science have long struggled with the way scientists use scientific conversations as a stand-in for debating political and moral issues. I would suggest that it might not be a coincidence that the rise of science, in America at least, in the twentieth century occurred after the decline of the culture of politeness. At the very least, historians who want to truly understand the development of the nineteenth-century American scientific community and its ambiguous relationship with spread of amateur science must also take into account the assumptions behind the culture of politeness.
6.5 Conclusion

It is notable that all of the prescriptions for promoting science as central efforts in a polite republican society were in some way failures. David Rittenhouse’s view of a national patriotic astronomy was not pursued. As late as the mid-nineteenth century, John Quincy Adams was still trying and failing to convince most of his countrymen to support astronomy. Charles Willson Peale’s vision for a national natural history museum to teach the characteristics of politeness as part of the natural history of the American flora and fauna died with him. Benjamin Rush’s plan for a unified public education system and a national Federal University never even received serious debate. And Thomas Green Fessenden’s satiric critique was one of the last examples of the genre. But in some ways, it was his vision, partially, that prevailed. As Fessenden’s America turned into a Jacksonian democracy, there was a rise of a kind of populism that rejected theoretical concerns but valorized empiricism and benevolence.

The sociability surrounding useful knowledge flourished in the eighteenth and nineteenth centuries in public lectures, botanizing circles, and the inclusion of various branches of useful knowledge in ever-broader school curricula. But this kind of sociability was different than that of a conversation. Lectures and public education were one-way, controlled by the lecturer and the teacher, who presumably acquiesced in the authority of the professionals to declare the meaning of science. On the other hand, other social avenues for science were folded into amusements that had the bare veneer of learning on them, or, even worse, became pure spectacle. For instance, in a strikingly concrete example, Barnum and Bailey eventually purchased Peale’s exhibits after his death. But the widespread popularization of American science, divorced from the polite
conversation, brought its own set of problems for American scientists who increasingly wanted to call themselves professional. Professional men of science, who insisted upon the authority of their disciplines for arbitrating and guiding disputes, and amateurs, who turned to scientific pursuits to improve their characters, became increasingly separated worlds. Useful knowledge in a democratic America, it seemed, could be polite or seek truth, but not both.

---

BIBLIOGRAPHY


Adgate, Andrew. *A Lecture: containing a short history of mechanics, and of useful arts and manufactures. Reverently dedicated to the respectable supporters of liberty and property, the mechanics of Philadelphia, by their faithful servant and fellow labourer, Absalom Aimwell, esq. By these we support our families and enrich our country*. Philadelphia: J. M’Culloch, 1789.


______. *To the Memory of the Late David Rittenhouse, this Poetical Effusion of his Sincere Admirer....* Philadelphia: Ormrod & Conrad. 1796.


Cobbett, William, Porcupine’s Gazette (April 27, 1797).

Cohen, Benjamin R. Notes From the Ground: Science and Agricultural Improvement in the Early American Republic (Ph.D. Diss.). Virginia Polytechnic Institute and State University, 2005.


_____.

_____.


_____.

_____.


_____.


_____.


_____.


_____.


_____.


_____.


_____.


_____.


Quintilian, Institutio Oratoria XII Chap. 1, 3


_____. *A Plan For The Establishment Of Public Schools And The Diffusion Of Knowledge In Pennsylvania; To Which Are Added Thoughts Upon The Mode Of Education, Proper In A Republic*. Philadelphia: Thomas Dobson, 1786.


*Sixteen Introductory Lectures to the Courses of Lectures Upon the Institutes and Practices of Medicine.* Philadelphia: Bradford and Innskeep, 1811.


*Three Lectures on Animal Life.* Philadelphia: Budd and Bartram, 1799.


Sorrenson, Richard. “The State’s Demand for Accurate Astronomical and Navigational Instruments in Eighteenth-Century Britain.” In The Consumption of Culture,


Weatherwise, Abraham. *Father Abraham’s Almanac, for the year of our Lord 1774.* Philadelphia, John Dunlap, 1773.


