

CHAPTER 1

A Classical Voice for American Science

Your natural science itself, your mathematics, and other studies which you reckoned as belonging peculiarly to the rest of the arts, do indeed pertain to the knowledge of their professors, yet if anyone should wish by speaking to put these same arts in their full light, it is to oratorical skill that he must run for help.

—Crassus in Cicero, *De Oratore*, Book I, Chapter XIV

At the turn of the nineteenth century in America, the exemplary man of science viewed knowledge as an organic whole from which he could freely draw useful substance. Disciplinary divisions between special subjects were not barriers at all, and knowledge, from history and politics to medicine and biology, was a matter of public consensus characterized by fluid interconnectivity. There were no professional scientists, but instead any well-educated man might dabble with botanical experiments or astrophysical observations in his own backyard. European science, particularly in Germany and France, began earlier than its counterpart in America to move toward modernity as instrumentation, scientific publication, and above all government patronage encouraged a new organization of empirical science and the foundations of professionalism. But in America, science was still best represented by an individual in the cast of a Franklin or a Jefferson, someone with not only an amateur's curiosity about physics or natural history, but also a high political profile and public influence in the development of America's infrastructure.

Not only was America preoccupied with developing infrastructure, but also with the staggering work of expanding across a vast and uncivilized wilderness. Trade, agriculture, transport of goods, control of disease, invention of new technology—these were among the practical applications of science needed to make the nation grow and prosper. These practical developments, dubbed “internal improvements” in the political discourse of the day, were the popular fuel for public sup-

port of science policy in the federal government. Pure or theoretical science still seemed, to the American mind, too far removed from the pressing needs at hand. For these reasons, at the turn of the century, the well-rounded democratic statesman was more important than either the laboratory scientist or the paradigm-shifting theorist for the development of American science. No seat of deeply productive scientific research would exist in America without the blessings of a forward-thinking government ready to strengthen and extend the links between scientific knowledge and national prosperity. Yet, at the same time, the spokesmen for this progressive government needed to speak to the people, and even to each other, in the idiom of a much older tradition of statecraft.

America in the early nineteenth century still depended on an elite cadre of well-rounded statesmen, ones who could steer a provincial, agrarian citizenry at the edge of a sprawling frontier toward national coherence and international respectability. In the aftermath of the Revolution and during this formative period for American identity, classical modes of education provided the model for this type of statesman—the statesman orator. As Americans imagined Greek democracy and Roman republicanism to be a kind of golden age, the statecraft and political practices of this idealized past became civilizing icons to steer the sometimes-chaotic business of nation building. Largely Ciceronian by tradition, the model statesman orator was a person conversant in all areas of the arts and sciences, who was at the same time committed to civic virtue. He was, in principle at least, unfettered by party politics but not powerless in the political fray. He represented unswerving identification with his cause, which was always for the public good. In his highest offices, he was an architect of society, making laws, building institutions, investing his nation with a set of driving principles. But above all, the statesman orator was a master of the art of eloquence. In fact, the ideal of the statesman orator itself came from the classical teachings of one of the seven liberal arts, namely rhetoric, the infamous art of public persuasion that had been at the same time a deeply influential core of education in Western civilization.¹

America at the turn of the nineteenth century, as historians of rhetoric Gregory Clark and S. Michael Halloran have aptly put it, was still an oratorical culture.² The New England colleges of this period designed their curricula so that the older norms of seventeenth- and eighteenth-century European education for the cultured man of action became the rule of formation for American lawyers, politicians, and clergymen—the presumed leaders of the country as it developed and turned toward internal improvements as the way to mature nation-

hood. It was in this tradition that science would gain any sanctioning or support from the federal government—the tradition of members of Philadelphia’s National Academy of Sciences, of Thomas Jefferson, John Adams, and others who championed the arts and sciences as essential for the future flourishing of the new republic. In his seminal work on the subject fifty years ago, A. Hunter Dupree argued that the development of institutional science in America depended as much on the cultural and political climate as the discoveries of individual practitioners of science.³ In perhaps the greatest age of oratorical culture in American history, it would be a great oversight to underestimate the importance of rhetorical conventions on the initiation and advancement of science policy.

Early nineteenth-century America, however, was not entirely ready to lend national resources to the progress of science, particularly where it had no immediate promise of material gain. Even the patent office, a regulatory agent of science and technology that was specifically sanctioned in the Constitution, was not assigned its own full-time staff or a permanent physical location until 1836, when a commissioner of patents was established to examine the usefulness and originality of inventions. Although this task was practical and increasingly necessary, it required the expert application of scientific principles by a staff of examiners.⁴ Only a decade earlier, John Quincy Adams’s efforts to establish such an office and staff had seemed to most Americans dangerously close to overcentralized government. The prospect of a national research university, a government body like Britain’s Royal Society, or a national observatory seemed far removed from large-scale plans and expenses involved in building banks and railroads, digging canals, and transforming a swampy collection of boarding houses into a modern nation’s capitol. But the century progressed, and Andrew Jackson’s presidency, beginning in 1829, ushered in a period of rapid growth in the conditions that would demand a simultaneous furtherance of scientific investigation. Science in Europe exploded in an accumulation of knowledge acquired experimentally and through observation, and specialization became increasingly necessary. America, with her republican principles of limited powers of government, and without funds from aristocratically entrenched sources, seemed hopelessly unable to catch up to the new standards of modernity. Furthermore, America was still rooted in the oratorical culture of the founding fathers: important public knowledge was still assumed in many circles to be a matter of existing consensus, even though the Founding Fathers had indicated the need for central support of an increase in knowledge to facilitate the growing nation. Ironically, plans

for research and the diffusion of knowledge that were a priority for George Washington in his inaugural address, such as the founding of a national university, had grown disconnected from the mainstream of Constitutional interpretations. The time was ripe for a public servant who was rooted in Constitutional foundations but had an eye on the inevitable progress of science, a statesman orator who could labor for strong involvement of federal government in the human impulse toward science, both in Congress and in grassroots public forums, without a vested interest in personal gain or historical accolades.

As the son of one of the nation's leading families, John Quincy Adams was groomed from boyhood to be both a tireless statesman orator and a promoter of advancements in science and learning. From the time he graduated from Harvard in 1787 until literally the moment of his death in his seat in Congress in 1848, Adams held public and elected offices. The list of positions he held is a record of influence and tireless public service: ambassador to the Netherlands, to England, and the first minister to Russia, secretary of state, U.S. senator, sixth president of the United States, and nine terms in the House of Representatives. Efforts to explain the lasting effects of his policy-making, however, have led historians to reexamine the contributions of Adams's public life across the boundaries of offices he held, tracing his influence widely in such spheres as human rights and foreign policy. While his presidency was less than successful in many ways, the causes he supported, from Westward expansion and internal improvements to America's presence and conduct in foreign policy, spanned his long career and developed throughout his life, fuelling some of the most compelling biographical—and autobiographical—narrative in American history. The private Adams has also garnered significant attention in recent scholarly writing.⁵ What remains to be explored, however, are John Quincy Adams's contributions to the intellectual foundations and academic life of the United States in the formative period of nationhood in which he lived. Adams was a scholar in his youth and a scholar in public service, and he never ceased to keep a humanist's motives and priorities alive in his mind—before, during, and after his tenure as president (some might even say in spite of his tenure as president). Largely because of his early submersion in works of classical literature and statecraft, he developed a lifelong habit of looking for opportunities to cultivate intellectual and moral conditions in the republic as it took its first steps toward modernization. This book is concerned in particular with Adams as a promoter of science—one of his most efficacious yet underexamined roles.

In his wish to shepherd a pragmatic people toward advancement in both arts and sciences, Adams was an orator in the Ciceronian tradition. His letters and diary document meticulous and self-conscious formation as a “good orator,” both in the sense of being skilled and wise in public speaking and in the sense of moral discipline and habit. This is unsurprisingly similar to his father’s education before him, but Adams’s devotion to rhetoric in the philosophical tradition surpassed his father’s general respect for the subject. Before his careers as senator and president, the younger Adams was briefly the first Boylston Professor of Rhetoric and Oratory at Harvard. Fulfilling his lifelong dream of being a scholar, he wrote the first complete rhetorical theory produced in the United States. Not only does his *Lectures on Rhetoric and Oratory* represent an important glimpse into conventions of public speaking during the first half of the nineteenth century, it also documents the model of the oratorical statesman that Adams conscientiously used in his career as secretary of state, president, and promoter of arts and sciences.

Neoclassical rhetoric and Ciceronian ideals were at the core of Adams’s strategies to promote science for both government and public audiences. As he employed the classical system of rhetoric to develop arguments, he aimed at transplanting Cicero’s ideal of statecraft and leadership, the *orator perfectus*, to American soil. At the same time, he was a passionate supporter of empirical sciences and discovery. In his statecraft and in his international policy, Adams can be described as having one foot in the eighteenth century and one in the nineteenth, and this is equally true in his promotion of science. Among the orations and rhetorical productions that fall into this category are his State of the Union addresses and other speeches calling for a national university and development of the arts and sciences; his research and report on weights and measures; his statements of support for a United States Naval Academy; and an influential speaking campaign on astronomy to promote the founding of observatories in the United States. Perhaps his most important contribution to government-funded science came in the last years of his career. In 1838, Adams’s hopes for science in America were put to the test when the United States inherited a large sum of money from British nobleman James Smithson, to be used “for the increase and diffusion of knowledge among men.” Seeing Smithson’s motive as providentially aligned with his own, Adams appointed himself rhetorical guardian and visionary of the bequest’s purpose when he was newly elected to the House of Representatives. For ten years he shepherded this debate through Congress, which resulted in the founding of America’s own scientific society in the Enlightenment tradition—

the Smithsonian Institution. He has also been called the father of the United States Naval Observatory. These and other rhetorical campaigns demonstrate that Adams was uniquely equipped to speak for scientific progress in the language and character of the Founding Fathers, even at a time when Americans lacked European sophistication in learning and were skeptical of expenditures for anything not immediately practical.

The combination of classical modes of communication with Enlightenment scientific ideals was not unique to the Adamses. One of the benefits of studying John Quincy Adams's oratory and persuasive writings in support of scientific research is that he provides a prominent example of the role that neoclassical forms of rhetoric played in the advancement of empirical science in general. Others who spoke for and against scientific research used Ciceronian methods and rhetorical norms to communicate their ideas in such cases as the Smithsonian debate, or for the public promotion of astronomy, or to make arguments about a national university. This is an indication not only of the speaker's bases of thought, but also of the audiences of the period and their readiness for change and, ultimately, progress. This should be of interest as an untapped but essential interdisciplinary development in the history of science. Historians of rhetoric such as Richard Rorty, Herbert Simons, Alan Gross, and Randy Allen Harris have lately drawn attention to the role of rhetoric in shaping the public's perception of science.⁶ In addition to stressing rhetoric's place in promoting science, these scholars have shown its influence even in the discourse and development of hard sciences as disciplines. Adams was no scientist, but the governmental funding of science and its public support are arguably inseparable from the course that scientists steer in discovery. In short, this book attempts to reexamine Adams in his role as a conscientious statesman orator with a long-held passion for the inclusion of science in democratic government. Adams was one of the most important early American promoters of science policy, and the primary tool of his trade was an explicitly developed, sometimes anachronistically classical theory of public speaking and persuasion.

Of course Adams's generation did not initiate the combination of classical persuasive reasoning with Baconian empirical ideas of scientific knowledge. The European combination was two hundred years older. Bacon himself showed inclinations toward this division of mental labor in his *Advancement of Learning*. By defining rhetoric as "the application of reason to the imagination for the better moving of the will," Bacon had not turned entirely from the classical tradition of rhetoric, but only limited its scope to promotion and persuasion rather than creation of arguments. The philosophies of both Aristotle and

Bacon contributed to the foundations of nineteenth-century American intellectual life, but they pulled audiences in two different directions. The conscious combination of ideological traditions in Adams's thought and writing makes him a prominent example of the transitions that were representative of his age in America. Moreover, Adams is unique in the combination of high political office and deliberate rhetorical theorizing for academic audiences. No other American has had such broad experience across multiple offices of state, including the presidency, and also incidentally taught the subject of rhetoric as a Harvard professor. Nor was Adams's interest in rhetorical theory and principles limited to the classroom. He continued to follow his own carefully developed neoclassical ideas of the art in every political office he held when public speaking or leadership through democratic persuasion were involved. More broadly, therefore, I am proposing that Adams's neoclassical theory of rhetoric as it is described in his *Lectures on Rhetoric and Oratory* was more influential than historians have assumed, because Adams's prolific statecraft and moral leadership bore the stamp of his well-defined theory in its every act.

In order to understand the argumentative strategies that Adams and others used in public debates about science, it is necessary to draw on influential rhetorical theories of the day, in addition to Adams's own theory. Familiarity with these schools of thought can add to the history of science a new dimension of the cultural context during the conception and formation of scientific institutions.

In the early nineteenth century, the classical discipline of rhetoric was still an essential part of liberal education. Traditional forms of public speaking, which had been the norm since the Revolutionary period, self-consciously followed the models of Roman rhetoric, especially in the speeches and teaching of Cicero and Quintilian. John Quincy Adams's theory and teaching of rhetoric closely adhered to this classical ideal. Moreover, in his practice of eloquence, he predictably began with the classical assumption that moral authority resides in public consensus of the community. In this tradition of rhetoric, as it was taught in Harvard and other early American colleges, students learned that persuasion was an art not only of expression and style, but also of invention. Thoroughly developed heuristics were taught to students so that they would be able to find general lines of practical reasoning and apply them to any issue they might encounter in any academic, legal, or political forum. Rhetoric was taught as a practical art that worked hand-in-hand with logic and ethics. The orator was an important indicator of moral virtues to the public at large, and this role was taken as a serious responsibility for the young perspective public

leaders who studied these ideas. In America's particular oratorical culture, Christian and deist conceptions of what it meant to be a good citizen naturally colored the ethical tone of classical rhetoric.

New nineteenth-century practices of rhetoric, however, were beginning to uproot the classical ideal in American colleges and public forums and were replacing it with a discourse that secularized and further democratized the forum. In these new theories, authority resided not in public consensus, but in compromise between individuals with different convictions. Enlightenment thinkers who valued scientific observation, faculty psychology, and the "natural laws" of taste influenced this breed of rhetoric. In addition, the new theories of rhetoric de-emphasized classical methods of practical reasoning and rhetorical invention and favored the romantic ideal of personal genius. Yet, classical rhetoric was not abandoned by the new rhetoricians, who retained its emphasis on moral responsibility and stressed the need for careful consideration of the audience. My discussion of Adams's promotion of science draws on both classical and nineteenth-century studies of rhetoric that would have been familiar to him and to his opponents.

What I aim to describe is how John Quincy Adams contributed to a rhetoric of the American scientific establishment. Because there was no significant scientific community when he began work in this area, the cumulative effects of his and others' rhetorical efforts to promote such a motive are important for a clear a picture of how a "scientific establishment" came to be. Just as Adams played an important role in laying the foundations of our concepts of civil rights (in the Amistad case), government-supported infrastructure, expansionism, and foreign policy, so he set in place significant groundwork that would later support the development of strong relations between federal government and science. It was already apparent that the government needed to play a strong role in securing and encouraging technology for military and agricultural needs, but without John Quincy Adams, the American public and her new federal government may have taken much longer to develop an understanding of a modern democratic government's role in fostering pure scientific research, in other words, pursuit of knowledge that was beyond the immediately practical and economically profitable. Adams had a paternalistic attitude about propagating knowledge in a new nation, so he used his rhetorical skills to locate authority in an ethos of scientific discovery. This was, and continues to be, a kind of knowledge that needed institutional support and expensive apparatus for instrumentation and observation. Not that Adams believed that the efforts of private citizens toward scientific discovery were unimportant in the overall advancement of knowledge—quite the opposite was true.

A good comparison is Adam Smith's understanding of the relationship of commerce to the federal government: he believed that certain standards and guides must be established as institutional in order for any private freedom and advancement to occur across the broader structure of society.

It is important to note here that, like Aristotle in his *Art of Rhetoric*, Adams did not see the point of rhetoric as winning the election, winning the debate, or otherwise having power over his opponent or audience. Influence was inevitable and necessary in the cultural context, but it was not the only point of his employing the art of rhetoric. In his treatise on rhetoric, Aristotle explains that, just as a doctor may practice every means of preserving life on a patient and still the patient may die, so an orator may find and use all the means of persuasion at his disposal, yet fail to persuade. Such an orator is nonetheless still practicing the art of rhetoric, and through cumulative efforts, the art will have a shaping influence on the cultural climate, perhaps even for posterity. My approach to Adams's use of rhetoric is similar. It is not my aim to prove that Adams's use of classical rhetoric caused the founding of the Smithsonian or the U.S. Naval Observatory, but rather to show rhetoric at work in the course of human events. In other words, this study is praxis centered rather than outcome centered. In particular, my focus is on certain persuasive acts and debates that were key to the development of science policy in America, and their immediate rhetorical contexts. These are most applicable to showing the use of classical rhetorical theory in the oratory for promoting science and will serve as good case studies with which to draw comparisons across the history of science and statecraft in this period.

The chapters that follow examine Adams's theory of rhetoric in relation to his speeches, diary entries, and correspondence during the invention and composition process of his various works promoting science and learning. Chapter 2 presents the rhetorical theories that I use later to examine persuasive texts in support of science. It should also serve as a general introduction to the formal art of rhetoric for readers who are unfamiliar with this tradition. I begin with the lectures Adams wrote for his Harvard students in 1801. In a close explication of these lectures, especially those pertaining to political oratory and argumentation, I highlight those teachings that seem to direct his later practice of the art of rhetoric in the promotion of science. I look especially at Adams's attention to the role of the orator as described by his hero Cicero, since the moralism and ideals of his rhetorical practice come directly from his formation in this tradition. I discuss Adams's placement in the history of rhetoric, especially in comparison to contemporaneous Enlightenment

approaches to rhetoric, which were increasingly influential in America as the nineteenth century progressed. Lastly, the chapter discusses the twentieth-century rhetorical theories I use in analyzing the debate as a whole, including schematic ways to describe the interaction of arguments over time and the development of whole bodies of established knowledge.

Chapter 3 explores the development of Adams's early appreciation of hard science as a young man and his work in promoting scientific learning until 1829, roughly the end of his presidency. In addition to his father's promotion of scientific discovery and involvement in early scientific societies, I describe other influences on Adams's thinking about the advancement of hard science. Scientific societies such as the British Royal Society and the French Jardin de Plantes were important in Europe during these years, a state of affairs that left its impression on the young Adams during his travels abroad and his ambassadorship to Russia. Education was also evolving to more closely resemble its modern forms, as the German thrust for empirical research took hold and began to expand into curriculums across the continent. The main purpose of chapter 3 is to discuss the effects of these experiences and institutions on Adams's writing and speaking about science during his years as secretary of state and then president. In the course of these sections, I examine his idea of a national university, support of a naval academy, and the Report on Weights and Measures in light of his carefully applied rhetorical principles and methodology. Each of these early efforts to promote science helped to accumulate Adams's wealth of invention for later arguments that would be more efficacious in establishing the relationship between federal government and science.

Chapter 4 covers background issues that influenced all of the speakers and debaters during arguments over the Smithsonian bequest to found an institution for the "increase of knowledge," Adams chief among them. The chapter begins with a brief discussion of the conditions of the bequest and James Smithson's life and scientific preferences, then provides a brief survey of other institutions in Europe that were considered as models for the Smithsonian and therefore important as sources for rhetorical invention. Close readings of key speeches, letters, and other documents of the debate confirm that Adams practiced carefully the same rhetorical principles he taught at Harvard. I examine the formative effect of Adams's rhetoric on the beginning of the debate. For example, Adams's self-appointed role as a patriarchal guardian of the Smithsonian trust can be traced to his Ciceronian ideals and to classical rhetorical principles. The entire debate may, in a sense, be read intertextually as one organic whole, with Adams's first speeches serving

as an introduction to those made during the following eight years. Throughout the course of the debate, Adams and his opponents assess their audience in terms of the probable reception of various proposals, and then use their rhetorical skills accordingly. Adams's emphasis throughout is on a serious moral obligation to honor the will of the testator and block individual congressmen's attempts to use the fund for personal gain.

In chapter 5, I examine the inventive and compositional stages Adams underwent while developing his arguments for a particular type of Smithsonian. Here is the heart of the debate. Adams believed scientific research and discovery to be Smithson's sole intent in specifying an institution "for the increase and diffusion of knowledge among men." He began by promoting scientific research and introducing several proposals that would use the interest on the fund first to found a national observatory, then later to initiate a series of other projects that were equally aligned to scientific discovery and observation. Throughout the debate, Adams gave speeches steadfastly opposing the use of Smithson's money for any kind of school or university. His resistance was based on the nineteenth-century definition of a university, which excluded scientific research and discovery. In the course of my examination of Adams's efforts to rule out an educational interpretation of Smithson's will, chapter 5 treats Senator Asher Robbins's popular plan to found a national university, also informed by classical theory. Adams's speech refuting Robbins's proposal was a pivotal event in the debate. Other opponents whose speeches I include in the analysis of the debate are Joel Poinsetts's effort to place the Smithsonian under the care of the newly organized National Institute for the Promotion of Sciences, Benjamin Tappan's vision of a natural history museum, Rufus Choate's argument for a national public library, and Robert Dale Owen's successful efforts at compromise for the Smithsonian bill—all variously influenced by classical, Enlightenment, and nineteenth-century socialist ideas and rhetorical strategies. Adams publicly refuted or approved each of these proposals in turn. I conclude my discussion of the Smithsonian debate in chapter 5 with some comments on what form the institution finally took when it came into being, and how Adams's Ciceronian rhetoric, after a lifelong struggle, finally contributed to the material existence of institutional science in America.

Chapter 6 discusses Adams's speaking crusade for the promotion of astronomy in the United States. The chapter first looks back to Adams's initial proposals for an observatory during the Smithsonian debate, since these were the seeds that grew into a broader promotion of the science of astronomy to the general public. During two separate

tours, through Ohio and Massachusetts, he gave speeches on the importance of research using astrophysical observatories. These scientific instruments were then numerous in Europe, where new discoveries were being made in an expansion of the discipline. In the United States, however, freestanding observatories were nonexistent. Adams knew that in order to stand with the independent and economically viable nations in the Western world, America would have to invest in knowledge of space for the future. Although he included the growth of pure research science in astronomy under his failed presidential attempts at “internal improvements,” the need for this kind of advancement was really more than domestic sophistication. Navigation for trade and for the military were dependent on knowledge of the stars, and agricultural acumen was linked to such knowledge in many nineteenth-century minds. Moreover, Adams’s rhetoric promoting astronomy shows that it is not only the immediately practical that he aimed to enhance. Being a true scholar and a humanist, he nourished the drive to know mankind’s place in the universe, and the desire for mankind to learn more about our environment beyond the planet. Although the Smithsonian would not have its own observatory until the twentieth century, Adams’s role in the founding of the U.S. Naval Observatory (1842) is also considered as an effect of his rhetorical efforts in promoting astronomy and government-supported science in general.

I end with a chapter on the legacy of classical thought that Adams left in and through his eloquence in the service of science. His diary and letters plainly document the painstaking efforts he took in applying neoclassical rhetorical theory to inventing and delivering speeches for both public and political audiences. The minds of men and women in nineteenth-century America were opening to the modern age of science ahead, and Adams was able to contribute to this change by speaking to audiences in the language of their existing values and traditions. In orations and persuasive writing throughout Adams’s long career, classical rhetoric is bound up with the history of American science, particularly federally funded research. In this period of cultural transition, Adams is a prime example of the role that the statesman orator played in creating a cultural environment where science could be practiced as a discipline integral to modern life.