

RUSSIA'S *People of Empire*



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Ivan Fedorov, *Empress Catherine II visits M. V. Lomonosov* (1884).

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Mikhail Lomonosov

(1711–1765)

MICHAEL D. GORDIN

As the old saying goes, comparisons are odious. To make sense of Mikhail Vasil'evich Lomonosov, historians have frequently resorted to comparisons more or less apt (usually less). Almost all of the comparisons emphasize his ventures in natural philosophy—the set of doctrines and practices concerning the study of nature that would, in the nineteenth century, acquire the moniker “science.” Russian historians tended to see him as akin to Antoine Lavoisier (1743–94), the French chemist and member of the Parisian Académie des Sciences credited with the discovery of oxygen and the law of the conservation of matter: matter is neither created nor destroyed, but only changes form. This comparison bolsters (by suggestion) a claim for Lomonosov’s priority for the conservation law, and also emphasizes the Russian’s position as a member of the St. Petersburg Academy of Sciences—and hence his analogous location in a complicated absolutist patronage network. Western historians have likened Lomonosov to Benjamin Franklin (1706–90), emphasizing both men’s research on electricity, folksy self-presentations, and positions as outsiders on the European stage of Enlightenment natural philosophy.¹

Both comparisons leave something rather important out of the story: Lomonosov’s pivotal role in the development of Russian verse through his promotion of iambic metrical schemes. For Lomonosov was not just a natural philosopher or a courtier—he was also arguably the greatest poet in eighteenth-century Russia (and certainly the greatest Russian poet in the first half of that century). The best comparison, then, if one must be made, might be to Francis Bacon (1561–1626), the man who served as lord chancellor for King James I of England, formulated the foundations of the experimental method in natural philosophy in works such as *The Advancement of Learning* and *The New Atlantis* (an important early scientific utopia), and pioneered the modern literary genre of the essay—reforming English prose in the process. Bacon encapsulates some of the same vigor, diversity, and eclecticism of Lomonosov. He also lived a century and a half earlier than Lavoisier and Franklin—or Lomonosov.

That chronological gap is the most important point—indeed, the only really significant point—of the Lomonosov-Bacon comparison. When analyzing a Russian life, the Westerner's tendency is to juxtapose rough contemporaries: Leo Tolstoy and Emile Zola, Lev Landau and Richard Feynman, Joseph Stalin and Adolf Hitler. This predilection for making parallels between Russian and European (or North American) developments works surprisingly well for nineteenth- and twentieth-century figures; for earlier periods, it breaks down. By the late eighteenth century, one is able to find good analogs of Russian figures in the contemporaneous West; in the seventeenth century, this is impossible (most of the best analogs, one finds, lived roughly two centuries earlier, spawning the classic argument that Russia leapt from the medieval period to the Enlightenment in the early eighteenth century, skipping the Renaissance).² One of the great lessons of Lomonosov's life is that he bridged the gap between radical incommensurability and direct comparison—that he himself is symptomatic of the “time lag” of early-eighteenth-century Russia, and instrumental in erasing the cultural division of Russia from Central and Western Europe.

Lomonosov's life was a highly unusual one, straddling not just different domains of learning and living in his adult years, but migrating across social classes (or estates) and proto-national boundaries over the course of his maturation.³ He was born in the village of Mishaninsk on November 8, 1711, near the White Sea. His father, Vasilii Dorofeevich, was a reasonably well off owner of merchant and fishing vessels, which he used in the summer to accumulate wares which were then transported over the ice to Moscow in the winter (when transport was generally much easier in Imperial Russia). The young Lomonosov thus hailed from a community that had contented itself with its nearly self-sufficient trade networks for generations and was somewhat removed from the pro- and anti-Westernizing influences from Moscow; nonetheless, he was jolted by the Petrine reforms.

What little we know about Lomonosov's early studies (admittedly drawn heavily from his own testimony, a significant means of personal mythmaking) reveals an education largely Muscovite in its orientation. Upon first learning to read—in itself not common, even among merchants, above a very rudimentary level—he had access only to Old Church Slavonic texts from the nearby monastery, and so his reading was predominantly theological. When he was about fourteen, he obtained copies of two standard textbooks of the age that could be seen as prefiguring his later development: Meletii Smotritskii's *Grammatika* and Leontii Magnitskii's *Arifmetika*, the latter being the first mathematical textbook in the Russian language. (Both works were much broader in content than their titles suggest.)

Lomonosov was nothing if not impatient, and the routine life of a northern merchant was not to his taste. At age nineteen, on December 7, 1730, he left his village by trading convoy for Moscow. He was legally a peasant, and thus proscribed from matriculating even at such meager educational institutions as then existed in the old capital. Lomonosov adopted his usual solution to such difficulties: he exaggerated, and then he lied. He applied to the Slavo-Greco-Latin Academy and represented himself as the son of a nobleman from Kholmogory (near his actual birthplace), was admit-

ted, and rapidly advanced in his studies, acquiring excellent facility in Latin as well as the foundations of Slavic grammar, arithmetic, geography, history, and catechism. He read extensively in the Academy's library, and his performance was so striking that he was not expelled when his deception was uncovered in 1734—an early indication of Lomonosov's excellent luck. That luck continued. In 1735, the new president of the decade-old Imperial Academy of Sciences in St. Petersburg, Baron Johann-Albrecht Korf, wrote to the Moscow school asking for twenty of their best students to be sent to the university attached to the fledgling Academy.⁴ This being the early eighteenth century, only twelve students of passing competence were found, and Lomonosov was the best of the lot. Thus, on January 1, 1736, Lomonosov began to study at the St. Petersburg Academy of Sciences.

This was an affiliation and an institution that would dominate the rest of his life. The first way it did so was by sending him away—to study chemistry and mining in Marburg, a significant university in the German states, in order that upon his return he might assist the Academy in its series of expeditions to explore the mineral wealth of the empire. The key to the riches of Asiatic Russia lay with the Germans. Lomonosov was sent in autumn 1736, along with Gustav Reiser and Dmitrii Vinogradov, to study science and philosophy with Christian Wolff (1679–1754), Gottfried Wilhelm Leibniz's disciple and the most significant influence—after that deceased savant—on the philosophical orientation of the Petersburg Academy. Later, the Russians were dispatched to Freiberg to learn *Bergkunde* (mining arts) at the feet of Johann Friedrich Henkel. The Russian students got on well with Wolff; less so with Henkel. The feelings were mutual; Wolff was particularly impressed with Lomonosov: “Mr. Lomonosov apparently has the brightest head among them [the Russian students]; with good diligence he could learn a great deal, having shown great eagerness and desire to learn.”⁵ That eagerness lasted; the industrious diligence did not. Throughout their stay, the Russians—gorging on newfound freedom—gambled and cavorted, racking up huge debts that were further complicated by the irregularity with which their stipend payments arrived from home. With the collapse of Lomonosov's funding, he and Henkel bickered continuously, and in May 1740 the Russian left Freiberg and wandered through the German and Dutch states looking for a Russian ambassador so he could acquire enough funds to return to Russia. He failed and returned to Marburg, where, on June 6, 1740, he married Elizabeth Zilch, daughter of a onetime city councilor. He was finally able to contact St. Petersburg and received an official recall. The prodigal northerner arrived at his new home on June 8, 1741—but without his wife, as the marriage was kept secret for some years (she was only able to join him in the summer of 1744).

This German episode is important for several reasons, beyond what it reveals about Lomonosov's impulsive, obstinate, and rather lively character. First, one notes that the directorship of the St. Petersburg Academy in its early years considered their domestic intellectual resources thoroughly inadequate without significant scholarly assistance from abroad. This pattern of sending talented Russian scientists to German universities to complete their education would be repeated many times until the latter

half of the nineteenth century.⁶ The trip abroad was clearly important for Lomonosov, who used it to learn not just the doctrines of natural philosophy but also the practices of experimentation, the manners of disputation (somewhat rougher and more passionate than present-day readers might imagine), and additional foreign languages (there remains some dispute among scholars about which languages Lomonosov actually knew, based on the materials used in his library—estimates range as high as thirty, but many of these are dialects of Russian or other Slavic languages. It was clear, however, that he could read Latin, French, German, English, Italian, Dutch, and Greek, as well as some Scandinavian tongues).⁷ Classic nationalist interpretations of Lomonosov, which laud him as a homegrown native genius, cannot hold if so much of his early formation was credited—both by himself and his contemporaries—to his time abroad. Finally, *where* and *what* he studied is important. By the middle of the eighteenth century, Wolff's brand of metaphysical idealism was both controversial and on its way to becoming outdated. Lomonosov's clear affinity for this philosophical orientation, as well as his cameralist training in mining chemistry, would shape many of his choices as an academician and public figure in mid-century St. Petersburg.⁸

Lomonosov's position at the Academy—he was made adjunct in physical science upon his return—seems secure in retrospect, but was constantly buffeted by the vertiginous politics of the post-Petrine court. He managed to keep his head down (but not too far down; he was briefly arrested and imprisoned in 1743) during the squabbles around Johann Daniel Schumacher's management of the Academy, and experienced a very productive decade in the 1740s, becoming in 1745 academician and professor of chemistry—and the first ethnically Russian member of the Academy of Sciences. (The Academy was originally—and necessarily—staffed by foreign scholars, but Russian membership grew throughout the eighteenth century. Lomonosov was a crucial trailblazer, but he was not unique.)⁹ Although he retained his chemistry post until his death, he also undertook significant research in geography, mineralogy, astronomy, and meteorology, yet none of this formed the basis for a lasting scholarly reputation in the European Enlightenment outside Russia.¹⁰ In 1748, Lomonosov had a chemical laboratory, the first in Russia, erected to his specifications; it was supposed to be devoted to pure and applied chemistry, but was mostly dedicated to the promotion of Lomonosov and his career.

Lomonosov engaged in two major spheres of political wrangling for the rest of his life: at the Academy and at court. These two dovetailed in interesting ways. He spent much of his effort in the laboratory producing colored glasses, which he used to create mosaics. He received permission in 1753 to manufacture these glasses, and built a factory staffed by peasants at Ust Ruditskii. From 1755 until his death he spent a great deal of time operating this factory. Glass was both his ticket out of the hotbed of Academy politics (by pulling him away from the capital) and a tool to gain him more favor at the court (since he produced mosaics to curry favor with powerful patrons).

No patron in the reign of Elizaveta Petrovna (1741–61) was more powerful than her lover Ivan Ivanovich Shuvalov (1727–97). Shuvalov was fascinated by

Lomonosov, as were many contemporaries at court: the academician was a witty conversationalist, an avid worker, and a truly stunning poet. It is his poetry, in fact, that was responsible for most of his reputation in Imperial Russia; at least until chemist Boris N. Menshutkin (1874–1938) unearthed his scientific writings and republicized them at the dawn of the twentieth century. Lomonosov's services to the Russian language in general, both in terms of reviving Slavonic roots and purging the language of some foreign importations, had by then long been recognized. In 1755 Lomonosov had produced the first grammar of the modern Russian language, which later went through eleven editions and was not outdone until the nineteenth century. His poetry, much more than the grammar, became canonical for Russian readers, even if it was later eclipsed by that of the titanic Alexander Pushkin (1799–1837). If Pushkin erected the edifice of modern Russian poetry in the first third of the nineteenth century, he built on the foundation laid by Lomonosov a century earlier.

This is no exaggeration. Lomonosov was instrumental, from his very first poetic effort in late 1739 (or early 1740) commemorating a Russian victory over the Turks outside the city of Khotin (a vaunting of imperial expansion appended to his criticism of the 1735 treatise on Russian versification penned by his rival and future fellow academician V. K. Trediakovskii). Lomonosov pioneered and championed the introduction of syllabo-tonic verse into Russian, as opposed to the older traditions modeled on Greek and Latin verse, which he deemed unworkable because they depended on the differing lengths of vowels, which Russian does not have. Instead, Lomonosov wrote primarily in heroic couplets and overwhelmingly in iambs (the same foot Shakespeare used, consisting of an unstressed syllable followed by a stress, as in the name "Michelle"), usually in four beats per line (iambic tetrameter).¹¹ Ninety-eight percent of Lomonosov's poetic output is in iambs, and it became the overwhelming favorite for Russian poets for the rest of the century. Even here, though, one should temper one's enthusiasm for his "universal genius," for his innovations in poetry, like his innovations in natural philosophy, were heavily derived from contemporary German efforts.¹² His poetry thus represented a characteristic of many Russian cultural forms (including science, art music, or the novel): the importation of a European mode and its adaptation and assimilation so that it acquired all the characteristics of being distinctly "Russian."

Much of Lomonosov's poetry was written to glorify some patron (such as Shuvalov) or the Russian autocrat. No matter whom he was praising, however, Lomonosov held Peter the Great in the highest of esteem, and used him as a model for proper governance. Although he has sometimes been dismissed as a casual panegyricist, Lomonosov's thoughts and images were always subtle and flexible. Consider his major poem, modestly titled "A Letter on the Utility of Glass," written in 1752 and addressed to Shuvalov. The poem, echoing the great "scientific" poems of Lucretius (*De rerum natura*) and Alexander Pope ("Essay on Man"), started with images of the simplicity of glass, comparing it to minerals from the ground, and then expanding on glass as a container for items of value, the source of mosaics, and then the lenses of instruments:

But in these enlightened days we see invention clearly.
 Poets, to adorn their own verses,
 Described punishment for imaginary sins.
 We here receive the flame of solar Glass
 And thus luxuriously imitate Prometheus.
 Cursing the baseness of that absurd nonsense,
 We smoke tobacco using sinless heavenly fire;
 And only barely do we consider, regretfully,
 Whether science has cast Prometheus down to destruction?
 Would not the ignorance of savage tribes, becoming angry at him,
 Form an incorrect impulse, not knowing of the inventions?
 Would they not observe stars then through Telescopes
 That the labor of happy Europe has now erected?
 Had he not with Glass been able to bring from the heavens
 And to inflict destruction on himself from the Barbarians
 That betrayed him to punishment, having passed over a wizard?
 How many such examples we have,
 That envy, having concealed itself beneath the robes of holiness,
 And the jealousy of rudeness with it, setting snares for truth,
 Since antiquity has battled many times,
 How much knowledge has died irreversibly!¹³

We have moved from humble glass to the glories of Prometheus—an epochal transformer through transgression like Peter the Great (and, dare we imagine, Lomonosov himself?)—and then quickly on to a discussion of the Copernican model of the universe, of all things, couched in language saturated with themes of jealousy and envy, high and low. The “Letter” encapsulates a natural-philosophical, poetic, and political agenda in a patronage tribute to Shuvalov.¹⁴

The natural-philosophical agenda was both the most explicit in the poem, and arguably the most important to Lomonosov himself. Yet while it was clearly central to him, it was pursued in a fashion somewhat outdated with respect to his contemporaries in the West, and as a result has been less widely recognized—and, even worse, when it has been analyzed, it has been granted substantially greater perspicacity than it merits. Aside from his practical interests in areas such as glass-making, which occupied a greater share of his time as he aged, Lomonosov also conducted a broad range of studies—some experimental, some theoretical—in various phenomena in the fields we would now call physics and chemistry (the boundary lines of the various disciplines have always been in flux, but were significantly more so in the eighteenth century). To the extent that there was a single unifying idea behind his diverse interests, it was the notion that all matter consisted of tiny corpuscles, and all forces were communicated through these corpuscles. This was not a precursor of today’s atomism, but instead a more thoroughgoing notion of corpuscularism akin to that of René Descartes of the seventeenth century compared to the rigorous Newtonianism or Leibnizianism of Lomonosov’s peers. Nevertheless, his research was well received, especially his most renowned

paper, “Meditations on the Cause of Heat and Cold,” read before the St. Petersburg Academy in 1745.¹⁵ This was a quite sophisticated analysis of heat as nothing more than a species of motion, an understanding validated by the kinetic theory of heat in the mid-nineteenth century, but dating back at least to Francis Bacon a century before Lomonosov.

The second reason Lomonosov’s work seemed somewhat out of pace with contemporary natural philosophy stems from *how* he delivered his theories. They were, almost without exception, delivered as orations to the public, in Russian, before the Petersburg Academy, part of the annual ritual decreed in Peter the Great’s original plan. Although they were translated into Latin in the publications of the Academy, they were presented in a popularized format and directed to an audience of the Petersburg elite, *not* principally to fellow academicians or researchers. This specifically local coloration to Lomonosov’s life and work provides the most consistent unifying feature of his many varied activities. He rose from extremely humble origins to be Shuvalov’s client, the capital’s most renowned poet, and the first Russian-born academician. He achieved all of these by focusing on local patronage networks, and it was to those networks that he remained faithful. His international reputation was, thus, rather slight compared to his huge profile in Russia, but the local profile was all that really mattered for his purposes. It was not until Russian scientists at the turn of the twentieth century retrieved Lomonosov’s original manuscripts and papers (not his orations) out of the archives and published them that a reevaluation of the significance of Lomonosov in natural philosophy emerged.

Lomonosov’s final years were studded with the same combination of diverse research, poetic writings, Academic strife, and courtly gambits—although the scholarship was now more scattered and the politicking far less successful. In 1757, Lomonosov achieved a lifelong ambition and became a member of the Academy’s chancellery, but this drew him away from active work in his laboratory and his factory. Then in 1760 he was placed in charge of the teaching functions of the Academy, a task both time consuming and unsuccessful (the pedagogical aspects of the Academy languished until being completely overhauled by the Academy’s only female director, Ekaterina Dashkova, in the 1770s).¹⁶ He never prepared the enormous treatise on a system of natural philosophy that he had planned—the very project itself had a scale of ambition characteristic of Wolff and his legacy—partly because he was ill, partly because of turmoil at the Academy, and partly because he had to pay ever more deference at court once his empress was gone and Shuvalov no longer a magic cure-all. This renewed effort of civility and courtliness was required to alleviate the debts accumulating at Ust Ruditskii. He died on April 4, 1765, early in the reign of Catherine the Great. It was during her reign that the St. Petersburg Academy of Sciences became one of the leading institutions of Europe, that Russian poetry (in Lomonosov’s favored meter) began to flourish, and the empress lavished ever greater patronage on artists and Enlightenment *philosophes*, both foreign and domestic.¹⁷ These were a patron and an age after his own heart, but he died before he could really enjoy them.

NOTES

1. W. Chapin Huntington, "Michael Lomonosov and Benjamin Franklin: Two Self-Made Men of the Eighteenth Century," *Russian Review* 18 (1959): 294–306.

2. Marc Raeff, "Seventeenth-Century Europe in Eighteenth-Century Russia?" *Slavic Review* 41 (1982): 611–19; and "On the Heterogeneity of the Eighteenth Century in Russia," in *Russia and the World of the Eighteenth Century*, ed. R. P. Bartlett, A. G. Cross, and Karen Rasmussen (Columbus, Ohio: Slavic, 1986): 666–80.

3. The following biographical details are drawn from A. V. Topicheva, N. A. F'igurovskii, and V. L. Chenakala, eds., *Letopis' zhizni i deiatel'nosti M. V. Lomonosova* (Moscow: Izd. AN SSSR, 1961); Boris N. Menshutkin, *Russia's Lomonosov: Chemist, Courtier, Physicist, Poet*, tr. Jeannette Eyre Thal and Edward J. Webster (Princeton, N.J.: Princeton University Press, 1952); A. Morozov, *Lomonosov* (Moscow: Molodaia Gvardiia, 1965); B. M. Kedrov, "Lomonosov, Mikhail Vasilievich," *Complete Dictionary of Scientific Biography* (Detroit: Charles Scribner's Sons, 2007): 8:467–72; and Henry M. Leicester, "Mikhail Vasil'evich Lomonosov, 1711–1765," in *Great Chemists*, ed. Eduard Farber (New York: Interscience Publishers, 1961): 201–10.

4. On the establishment of the early Academy and the woes of its ancillary university, see Michael D. Gordin, "The Importation of Being Earnest: The Early St. Petersburg Academy of Sciences," *Isis* 91 (2000): 1–31.

5. Christian Wolff to Baron Korf, August 3 (17), 1738, reproduced as No. 31 in G. E. Pavlova, ed., *M. V. Lomonosov v vospominaniakh i kharakteristikakh sovremennikov* (Moscow: Izd. AN SSSR, 1962), 96.

6. Michael D. Gordin, "The Heidelberg Circle: German Inflections on the Professionalization of Russian Chemistry in the 1860s," in "Intelligentsia Science," ed. Michael D. Gordin, Karl Hall, and Alexei B. Kojevnikov, special issue of *Osiris* 23 (2008): 23–49.

7. Iu. M. Lotman, "K voprosu o tom, kakimi iazykami vladel M. V. Lomonosov," *XVIII vek* 3 (1958): 460–62.

8. L. V. Pumpianskii, "Lomonosov i nemetskaia shkola razuma," *XVIII vek* 14 (1983): 3–44.

9. Ludmilla Schulze, "The Russification of the St. Petersburg Academy of Sciences and Arts in the Eighteenth Century," *British Journal for the History of Science* 18 (1985): 305–35. Schulze notes that foreign members were, however, paid more (315).

10. Although much of Lomonosov's work was neglected in the eighteenth century by his European contemporaries, twentieth-century scientists often pointed to his prescience. See, for example, A. S. Morris, "Mikhail Lomonosov and the Study of Landforms," *Transactions of the Institute of British Geographers* 41 (1967): 59–64; and L. A. Goldenberg and A. V. Postnikov, "Development of Mapping Methods in Russia in the Eighteenth Century," *Imago Mundi* 37 (1985): 63–80.

11. The typical Shakespearean line contains one more iamb—hence, iambic pentameter.

12. On Lomonosov's versification, see John Bucsele, "The Birth of Russian Syllabo-Tonic Versification," *Slavic and East European Journal* 9 (1965): 281–94; and idem, "Lomonosov's Literary Debut," *Slavic and East European Journal* 11 (1967): 405–22.

13. Lomonosov, "Pis'mo o pol'ze stekla," in M. V. Lomonosov, *Izbrannye proizvedeniia* (Moscow: Nauka, 1986), 2:239–40. Translation mine.

14. See the elegant interpretation of this poem in Kirill Ospovat, "Lomonosov i 'Pis'mo o pol'ze stekla': Poeziia i nauka pri dvore Elizavety Petrovny," *Novoe Literaturnoe Obozrenie* 87 (2007): 148–83.

15. On Lomonosov's corpuscular doctrines, see the translated documents and the analysis in Henry M. Leicester, ed. and trans., *Mikhail Vasil'evich Lomonosov on the Corpuscular Theory* (Cambridge, Mass.: Harvard University Press, 1970).

16. For a survey of Dashkova's tenure at the Academy, see Michael D. Gordin, "Arduous and Delicate Task: Ekaterina Dashkova, the Academy of Sciences, and the Taming of Natural

Philosophy," in *The Princess and the Patriot: Ekaterina Dashkova, Benjamin Franklin, and the Age of Enlightenment*, ed. Sue Ann Prince (Philadelphia: American Philosophical Society, 2006), 3–22.

17. On the growing importance of the Academy in this period, see J. Scott Carver, "A Reconsideration of Eighteenth-Century Russia's Contributions to European Science," *Canadian-American Slavic Studies* 14 (1980): 389–405.