

On the occasion of the Meeting “Memory becomes future”, between the Academia delle Scienze dell’Istituto di Bologna and the Russian Academy of Natural Sciences, held in Bologna 25th-26th October 2016, the ceremony took place for the nomination of Professor Alexandre P. Lobodanov as Foreign Member of the Academia delle Scienze dell’Istituto di Bologna. The fundamental aim of this Meeting was directed at establishing and consolidating the scientific collaboration between these two Academies and confirming the importance of the Sciences as the synergy of the Natural and Social Sciences, in relation to the different themes of environmental safety and the protection and valorization of cultural heritage. In a significant way, it represented the two keywords on which this Journal is founded, namely, interdisciplinarity and internationalization.

These are emblematically also the conceptual terms expressed by Professor Lobodanov in his presentation on the occasion of this Meeting regarding the figure and activity of Michail Vasil’evic Lomonosov, “a genius in the history of human culture”. At the same time, the significant message inherent in this intervention, testifies to the laudable work carried out by Professor Lobadonov with his teaching and as Dean of the Faculty of Arts and Director of the Department of Semeiotics and Basic Theory of Fine Arts, at Lomonosov Moscow State University.

In fact, he highlights the importance of the history which establishes the identities born of the past, as well as underlining the need for experimentation for the numerous and problematic issues in the sector of the protection and valorization of cultural and environmental heritage.

Editor-in-Chief

THE VERSATILE FIGURE OF MICHAIL VASIL'EVICH LOMONOSOV

Aleksandre P. Lobodanov*

*Department of Semiotics and Basic Theory of Fine Arts, Faculty of Arts
Lomonosov State University Moscow, Russia*

Keywords: genius, interdisciplinarity, internationalization

“Speaking about Lomonosov gives pleasure, a pleasure that comes from communicating with one of the original geniuses in the history of human culture” wrote the great Russian philosopher, Sergei Vavilov [1]. Today, speaking about Lomonosov is difficult, because it is difficult to find something new to say about Lomonosov’s life and scientific activities, as they have been the subject of scrupulous study for more than 250 years. His enormous influence on the development of Russian culture, the human sciences and nature, education, language and literature, has been universally acknowledged.

It is customary to define characters of this caliber “men who made an era”. Lomonosov anticipated, by a long time, many of his contemporaries in scientific, philosophical and humanistic maturity. His European grounding, along with his talent for seeing and being open to new things, gave him the opportunity to become what he is for Russia today – Russia’s first world-class scientist.

A Russian philosopher of the twentieth century, Vasily Rozanov, wrote that “Lomonosov’s genius, together with all his activities, contained *an entire method*, even though he neither mentioned it, nor built a theory from it [2].” Today, we turn to Lomonosov’s multi-faceted figure in this evocative Bolognese environment not only to remember that this remarkable scientist and humanist, was called to become a member of the Academy in 1764. We recall Lomonosov’s scientific legacy in order to highlight the method that consolidated the foundation for all his scientific and artistic creation, and that has come to fruition in current study and research: *interdisciplinarity*.

The interdisciplinarity that characterized all Lomonosov’s research, also determined his perception of the world and reflected his ideas on its unity. In his opinion, different fields of knowledge describe different aspects of a single world. In an encomiastic song, in honor of Empress Elizabeth, the daughter of Peter the Great, Lomonosov shows his own perception of this unity in poetic form:

Astronomy opens up to us the universe created by God, physics shows us all the visible world, while geography presents the vastness of the *orbit terrarum* to human reason, history and poetry serve to describe the historical acts of humans, philosophy holds the human intellect, medicine cares for people’s health, while knowledge of the intrinsic structure of things gives us chemistry, and mechanics shows us the means to build and use different machines and apparatus; with all

* Corresponding author: alobodanov@inbox.ru

this, concludes Lomonosov, all the sciences are held together by the precise and cautious Mathematics¹.

Lomonosov was born at the height of Peter I's reforms, when Russian culture received a decisive impetus, pushing it in the direction of European art and science. It was at this time that the discovery of man's personality came about, reflecting itself in philosophical and civilian ideas, in literature and art. For example, it was at the time of Peter the Great, alongside the secular tradition of the iconographic representation of Saints, that in Russian art portraiture began to spread.

The discovery of this personality started with recognizing his value simply as a man, without considering his origin, faith, and social condition. Lomonosov himself confirms this. Prior to Peter I's reforms, a man's role was defined by society and the authorities, according to his belonging to the nobility, while personal qualities (intelligence, education) were hardly even taken into account; in the early eighteenth century, the opposite was true, his role was increasingly defined in relation to what he had learned and what he could do. Thus, after years of working at the Academy of Sciences in St. Petersburg, Lomonosov, the son of a peasant, received hereditary nobility.

The concept of person, understood as an individual with an independent position in each field, involving great commitment of their intelligence and spirit, became a conquest for the culture of the New Russia, and Lomonosov contributed extraordinarily to its development.

Lomonosov's life embraces the first half and middle period of the eighteenth century: he was born into a peasant family (his father was a fisherman) on the northern banks of the White Sea in 1711 and died in 1765 in St. Petersburg. Driven by an inexhaustible impulse to study Latin (the language of science at that time) and nature in all its forms, the young nineteen-year-old, on a cold winter night, secretly left his paternal home on foot, to follow a caravan of fishermen with its load of goods, from his native village to Moscow.

He reached the ancient Russian capital in 1731 and began to attend the Slavic Greek Latin Academy. Lomonosov, who belonged neither to the nobility nor ecclesiastical circle, did not really have the right to study at this academy. He even passed himself off, at times, as the son of a nobleman, and other times as a priest. It was disastrous when the truth came to light: it meant the prospect of being enlisted (which at that time meant being a soldier for life) or exile in Siberia. Lomonosov escaped this fate thanks to his extraordinary skills in arithmetic, ancient Slavic grammar and the Sacred Scripture, subjects he had learned alone with the books given to him by the village parish priest. The person who personally examined him, was an eminent ecclesiastical official of the time, Feofan Procopovich, curator of the Academy. Distinguishing himself in his studies, in 1735 he was invited to continue his education at the Academy of Sciences in St. Petersburg and in 1736 from there he was sent to study chemistry, metallurgy and mining in Germany. He was in Marburg at the time Kristian Wolf taught there and it was he who formed the scientific ideas and the enlightening vision of the future scientist.

When he returned to St. Petersburg in 1741, Lomonosov began his scientific career as an "adjunct" in physics, an academic assistant at the Department of Physical Sciences. In 1745 he was promoted to professor of chemistry at the Academy of Sciences of St. Petersburg, which at that period in time meant he had been appointed as an academic.



Figure 1. Mikhail Lomonosov. E. Fassard from the original by A.K. Wortmann. Burin engraving on paper, 1757 (private collection).

Lomonosov's thoughts possessed a rare power of synthesis: he could make interdisciplinary connections and draw together phenomena that generally seemed unrelated. He had his own original solution for each scientific question, however new for him and always introduced some additional idea of his own.

The core discipline of Lomonosov's natural sciences was physics, which defined his conception of the world as a scientist. He greatly contributed to the formulation of a kinetic-molecular theory on heat. The theory is directly connected to the atomic-molecular concept of matter, in opposition to the materialistic atomism of Descartes and Newton.

At the same time, he laid the foundations for a kinetic theory on gases, primarily of the air. In his research he was active in several fields of physics: he studied the liquid, solid and gaseous state of bodies, working on thermometry. His experiments in electricity, continued by Franklin, led him to an interesting hypothesis on the nature of the electric load in clouds; for this purpose, he designed and built a kind of lightning rod which he called the "thunder machine." He also studied the origin of light according to a new theory of colors, the cause of heat and cold, the movement of air observed in mines, atmospheric effects caused by electric forces. He also studied the aurora borealis and eclipses.

In the field of chemistry, a science that was almost in its primordial stages at the time, Lomonosov had investigated the generation of metals resulting from the earth's movements, the coloration of metals, solids and liquids in general, the action of chemical solutions.

In the field of astronomy, it was he who made the discovery of Venus's atmosphere. Observing in 1761 a rare phenomenon (the passage of Venus in front of the Sun), he noticed the deformation and blurry appearance of the margins of the planet's disk and was the first to infer that Venus must have an atmosphere. The same demonstration was carried out 121 years later, when Venus again passed in front of the Sun.



Figure 2. View of the Academy of Science of St. Petersburg. Engraving by G.A. Kačalov and E.G. Vinogradov after the drawing by M.I. Mahaev. Paper, etching, burin engraving, watercolor, 1753 (Hermitage Museum, St. Petersburg, Russia).

Lomonosov's most important achievement was the experimental demonstration of the principle of conservation of mass. In 1756 he performed a classic experiment, demonstrating that in a hermetically sealed phial the mass of metals do not vary through the action of heat; the experiment was repeated seventeen years later by Lavoisier.

In the field of human sciences Lomonosov excelled no less than in nature. During his stay in Germany he had acquired a vast humanistic culture, which led him to deal with poetry, philology, Russian and Slavic grammar, dramaturgy. As a student in Freiburg, Lomonosov sent the Academy his *Letter on the rules of Russian versification* written to justify the tonic verses introduced in his *Ode to the victory of Chotin*, which accompanied the afore-mentioned letter. The *Ode* was an exceptional success at the Russian Court, contrasting syllabic versification for good. The preface to *The usefulness of ecclesiastical books in the Russian language* of 1757, "can be said to be the first on Russian style, owing to the application of the three styles of classical theory (high, middle and low) both in language and literature."

The subject matter in much of the poetic work written by the poet-scientist can be described as an explanation of the sciences of nature and the exaltation of the greatness of God the creator. "And in describing the Nordic phenomenon of the meteor as a scientist, but contemplating it as a poet", Pietro Cazzola writes, "he also recognizes the immeasurable greatness of God, then humbly invokes:

"O Creatore! a me chiuso dalla tenebra
dona la luce della saggezza
e quanto dinanzi a Te è buono
insegnami ognora a creare,
e guardando alla Tua creatura,
a lodarti, o Re immortale [3]."

With a long tradition of dealing with the history of Russian antiquities from an ecclesiastical point of view, Lomonosov was the first to write a secular history of Russia. Of his authorship is a fundamental work, *Russian history*, posthumous and unfinished, of which only the first volume appeared in 1766, followed immediately by the German and French versions. During the life of the scientist, in the years 1760-1761, three consecutive editions of the *Short Russian Chronicle* were published, which was immediately translated into German and English. It chronologically lists all the Russian princes and tsars, with a brief description of the main events of their reign. In the following decades, this book served as a Russian history textbook for young people: written in the form of an explanatory drawing, the book presented events and historical episodes that were consecutively connected to each other, in order to facilitate its memorization.

I would also like to recall Lomonosov's work on Voltaire's manuscript *Histoire de l'Empire russe sous Pierre le Grand*, given to him by Count Šuvalov, his protector, on whose initiative the French philosopher had begun to compose this work. Lomonosov commented the first eight chapters of the manuscript, accompanying the text with detailed notes. In addition to Voltaire's work, the Russian historian drafted a rough copy about the *strel'cy* revolts (the Russian Musketeers) at the time of Zarina Sophia, Peter's older sister. A comparative analysis of the two texts shows that the French philosopher has incorporated Lomonosov's comments to a large extent in his work: in the fourth chapter Voltaire narrates the story of the rebellions according to the Russian text, and in the fifth chapter describes the story of the government of Sofia, reproducing Lomonosov's work almost word for word. It was in this way, thanks to the translations of Lomonosov's historical works and to the publication of Voltaire's book, that European intellectuals were able to learn about Russian history [4].

Even Lomonosov's historical research reveal his interdisciplinary method: history as the basis of art. Thus, the *Short Russian Chronicle* became the basis for developing and creating a series of commemorative medals of Russian princes and tsars. The *recto* of each medal portrayed the bust of a prince or a tsar, with a circular pattern of writing containing his name and title. On the *verso* appeared a quotation from the text of the *Short Russian Chronicle*, which summarized the main events of the reign of the person depicted. Lomonosov himself designed the *recto* of the medal *At the founding of the fleet*, representing a half-figure of Peter I dressed in armor and holding Neptune's trident. Up to 1776, 57 medals were produced, starting from Rjurikfino and up to the Empress Elizabeth. Throughout the nineteenth century, this series of medals was among the most popular educational material found in almost every high school.

Lomonosov conceived these medals as a historical 'monument'. The representation of the old Russian princes on the *recto* of the medals was, inevitably, conventional because no authentic representations of them existed. It should be noted that long before the creation of the series of historic medals, Lomonosov had turned to the Academy of Sciences with the initiative (October 18, 1760) which involved sending painters of the Academy of Fine Arts to the capitals of the ancient Russian principalities to copy the oldest ecclesiastical images of the princes reproduced in icons, frescoes, and graves. In addition to making these copies, the painters had to collect the genealogical data preserved in the ecclesiastical iconography: "Moreover ... in all the churches where the princes' tombs are found ... correctly copy the inscriptions from the lapidary," he wrote.

Lomonosov attributed great importance to iconography in the study of history: he repeatedly turned to figures from historical events in the figurative arts. The idea of interdisciplinarity is quite evident here: chemistry and history considered as the foundation for art.

When I think of Lomonosov's pictorial work, I see an evocative phenomenon in the history of Russian art. The mosaic pictures produced by Lomonosov together with his chemistry associates, played an innovative role in 18th-century Russian culture by reviving the art of mosaic composition, which had been lost in Russia after the 19th century.

In the field of figurative arts, his talent as a chemist joined that of a painter's mastery: the recipe for enamel and the technology for its production and that of the welding solution, which he elaborated in his chemistry laboratory, enabled him to create in his workshop of mosaics, original works of art.

The famous chemistry laboratory he founded in St. Petersburg was the first Russian establishment of its kind for scientific and pedagogical purposes in this field. Lomonosov considered chemistry his main profession. As a true scientist, he combined the thinker with the experimenter; in the study of nature, just like Leonardo he preferred experience. His chemistry experiments were useful and necessary not only for the progress of science, but also for "the growth of the arts," as he wrote in his memo addressed to the Russian Academy.

The methods used by Lomonosov in the field of mosaic art were different from the methods and the characteristic objectives of the Roman mosaic masters of the 17th and 18th century, who used colored enamels to make copies of oil paintings.

The work produced in Lomonosov's workshop was distinguished by a concise and vivid execution of the artistic idea, the generalization of the whole composition and the expressiveness of the individual shapes, the intensity and saturation of the chromatic contrasts. In short, all the objects were distinguished by the decorative style of their execution. In transferring oil works to mosaic, Lomonosov provided for their long-distance visual perception, which influenced the exalted and grandiose style of his mosaics, consistent with the goals of monumental painting.

Most of his mosaics were created in the genre of the portrait. Among the mosaics, two made by Lomonosov himself have been preserved: the *Salvatore Acheropita* (1753, preserved in the Historical Museum of Moscow) and the *Portrait of Peter the Great* reproduced from the original by G. Tanhauer (1754, housed in the Hermitage Museum). Of the forty mosaic works carried out in the workshop he directed, twenty-three of them have been preserved [5].



Figure 3. Portrait of Peter the Great, from the original by G. Tanhauer. 1754 (Hermitage Museum, St. Petersburg, Russia).

The world-renowned masterpiece by Lomonosov's workshop is in fact the *Battle of Poltava* (1762-1764, the Academy of Sciences building in St. Petersburg), the first Russian mosaic of great dimensions with a historical theme. A majestic idea, created in a decorative style, which corresponded to Lomonosov's main objective: to glorify Peter I and his memorable victories.

The concept of interdisciplinarity laid the foundations for the first Russian university, created by Lomonosov (and after whom the University of Moscow is rightly named, for having promoted its institution in 1755). Although the capital of the Russian Empire was St. Petersburg, the ancient capital of Moscow was chosen as the location of Lomonosov's project, as it represented the center of Russia's historical and cultural heritage. Lomonosov, moreover, in his *Russian Grammar*, had taken Moscow's spoken language as a model for literary language; a model that was not only intermediate due to its geographical location, wrote Lomonosov, but also central by virtue of Moscow's historic importance.



Figure 4. *Battle of Poltava*, 1762-1764, mosaic, Academy of the Sciences of St. Petersburg, Russia.

The University of Moscow today carries Lomonosov's name and is not merely a tribute; the University continues the work of its founder, namely the education of Russia, the affirmation of the priority of scientific knowledge, the development and enrichment of Russian culture and art. The University of Moscow is the source and interpreter of the genius of the Russian nation and its people, the personification of Russia's history and future destiny. In the same way the creation of the Kremlin architectural complex in Moscow marks the end of the process of creating a united Russian state, the foundation of the Moscow University marks the beginning of the rise of Russian science. Lomonosov not only founded a university, but was himself, as our great poet Puškin said, a university with life.

Lomonosov was not well-known in the European scientific community of the 1800s and 1900s, and even today it cannot be said that he is better known. Thus, a chemistry

historian, the Frenchman F. Hofer, curiously wrote in 1860: «*Parmi les chimistes russes qui se sont fait connaître comme chimistes, nous citerons Michel Lomonossov, qu'il ne faut pas confondre avec le poète de ce nom*». Even during Lomonosov's life, moreover, his scientific research was not understood by the Imperial Court officials: he was appreciated first and foremost as a poet. For an encomiastic song, in honor of the Empress Elizabeth, Lomonosov received two thousand rubles from the sovereign - a sum that exceeded three times the annuity of his academic salary. Puškin, who had understood Lomonosov's character very well, wrote in 1834 that, "Lomonosov personally did not think much of his own poems and paid much more attention to his chemical experiments."

Nevertheless, Lomonosov became Russia's first world-renowned scientist and did the same for Russian history and culture as Leonardo da Vinci and Galilei had done for Italy, Leibnitz and Goethe for Germany, Descartes and Voltaire for France.

Lomonosov nourished unlimited faith in the power of science. This belief implied the idea of progress in general and the conviction of its usefulness for Russia's development. He was convinced that the scientific knowledge of science could serve as a powerful means to transform society. Thanks to Lomonosov's scientific activity, statesmen began to understand the importance of developing the natural sciences for the growth of Russia, its industry and culture.

The definition of science formulated by Lomonosov is significant: "Science is ... clear cognition of the truth." It is science that transforms an individual into a person. This perception of the role of science in shaping one's personality was also envisaged by Peter the Great, to whom the following words are ascribed: "A man outside the sphere of learning cannot be said to be a man, since nobody knows who he is". Lomonosov dedicated himself entirely to the service of science: "I have the firm and unwavering intent not to spare my temporary well-being, but to invest it in the welfare of the sciences in Russia," he wrote.

Today, Lomonosov's research in the field of the natural sciences is part of the history of natural sciences. On the other hand, Lomonosov is still alive in the Russian language, which he transformed into an instrument of scientific and artistic expression in the Russian literature he created. In the successive centuries, it gave us Puškin and Gogol¹, Dostoevsky and Čekhov; in art and in culture, they all followed his moral and civil principles which Lomonosov referred to as being essential. The ever-increasing distance that separates us from Lomonosov's era, makes us feel the unity of his method of interdisciplinarity even more deeply. Every new generation of Russians conceives the figure of Lomonosov in their own way, together with his contribution to Russian science and literature, Russian language and art. It can rightly be said, without exaggerating, that for people today, his figure seems to be moving closer and closer, his presence and contemporaneity is felt, and the numerous re-editions of his works make his creative production true best-sellers.

Notes

¹ All translation of the pieces from Lomonosov's works are by the Author in *Polnoje sobranie soci-nenij M.V. Lomonosova* [Complete works by M.V. Lomonosov], in vol. XI, Moscow, 1950- 1983].

References

- [1] Vavilov, S.I. (2011). *Zakon Lomonosova* [La legge di Lomonosov] // Per 300^{mo} anniversario della nascita di M.V. Lomonosov. Moskva, p. 165.
- [2] Rozanov, V.V. (2011). *Lomonosov. Ego ličnost' i sud'ba* [Lomonosov. La sua personalità e il suo destino] // Per 300^{mo} anniversario della nascita di M.V. Lomonosov. Moskva, p. 135.
- [3] Cazzola, P. (1982). *Michail Lomonosov, membro corrispondente dell'Accademia delle Scienze di Bologna* // Atti della Accademia delle Scienze dell'Istituto di Bologna. Classe di Scienze Morali. Anno 76° Memorie. Vol. LXXXII. Bologna, p. 12.
- [4] L'Apothéose de Pierre le Grand: Trois écrits historiques inconnues, présumés de M.V. Lomonosov, destinés à Voltaire. Editions de l'Académie Tchèque des sciences: Prague, 1964.
- [5] Nekrasova, E.A (1988). *Lomonosov-chudojnik* [Lomonosov-artist]. Moskva.

Biographical Notes

Aleksandre Lobodanov was born in Moscow on September 7, 1950. He graduated in 1973 in Romance linguistics at the Faculty of Humanities at Moscow State University (Lomonosov). He is professor of history of the Italian language (1997), chair of semiotics and general theory of art at the same university (2003), founder and currently dean of the Faculty of Arts (2001). He is author of 16 monographs on problems relating to Romance, Slavic-romance linguistics, history and theory of art, art semiotics. He has published more than 100 articles in various languages in Italy, Germany, Belgium, the USA, China, Lebanon. He is a member of the Association for the History of the Italian Language (1998, Florence) and has given lectures on issues relating to grammar, art history and art semiotics in various universities in Rome, Florence, Bologna, Pisa, Berlin, New York, Prague, Belgrade, Beijing, Beirut and other countries.

Summary

The figure and work of Michail Vasil'evic Lomonosov are significantly and emblematically synonymous with interdisciplinarity and internationalization in one personality. It is evident from what has been described and noted in the various bibliographic sources that have been consulted, highlighting Lomonosov's extreme versatility and, at the same time, his intense activity and interest in the various humanities and experimental sciences.

Riassunto

La figura e l'opera di Michail Vasil'evic Lomonosov, sono significativamente ed emblematicamente sinonimo di interdisciplinarietà e internazionalizzazione in una stessa personalità. È quanto viene descritto e rilevato dalle diverse fonti bibliografiche consultate, evidenziando l'estrema versatilità e, ad un tempo, la profondità di attività e interessi di Lomonosov nelle varie Scienze umanistiche e sperimentali.