EDUCATIONAL ACTIVITIES AND CREATIVE WORK OF RUSSIAN SCIENTIST, THINKER, AND PHILOSOPHER M.V. LOMONOSOV

ATIVIDADES EDUCACIONAIS E TRABALHO CRIATIVO DO CIENTISTA, PENSADOR E FILÓSOFO RUSSO M.V. LOMONOSOV

ACTIVIDADES EDUCATIVAS Y TRABAJO CREATIVO DEL CIENTÍFICO, PENSADOR Y FILÓSOFO RUSO M.V. LOMONÓSOV

Olga VOLNYAKOVA [1]
Oleg ARAPOV [2]
Elmira ARAPOVA [3]
Denis SOLODUKHIN [4]

ABSTRACT: Lomonosov is the founder of secular education in Russia. The long process of forming the educational principles that created the basis for scientific development and the training of academic personnel resulted in the creation of Moscow University. The university under Lomonosov's plan embodied the unity of natural science and humanities, elimination of theology and the secular education system, training of national academic personnel, combining education and upbringing, implementation of the principles of self-government. This article considers the outstanding ideas of the scientist and thinker in terms of their interrelationship, interdependence, and mutual influence, thereby offering a holistic view of this Russian scientist's work. The methods used in this study are based on philosophical research traditions. The findings of this research can be used to advance research on the relationship between science and philosophical knowledge, both in the scientist's activity and in the education system.

KEYWORDS: Education. University. M.V. Lomonosov. Science. Worldview.

RESUMO: *Lomonosov é o fundador da educação secular na Rússia. O longo processo de formação dos princípios educacionais que criaram a base para o desenvolvimento científico e a formação do pessoal acadêmico resultou na criação da Universidade de Moscou. A universidade sob o plano de Lomonosov incorporou a unidade das ciências naturais e humanas, a eliminação da teologia e do sistema educacional secular, a formação de pessoal acadêmico nacional, combinando educação e desenvolvimento, implementação dos princípios*

[1] Russian Technological University – Russia. Candidate of Philosophy, Professor. Department of Human and Social Sciences, Institute of Administration Technologies, MIREA. ORCID: https://orcid.org/0000-0002-8086-1673. E-mail: olgavolnyakova@yandex.ru
[2] Russian Technological University – Russia. Candidate of Philosophy, Associate Professor. Department of Human and Social Sciences, Institute of Administration Technologies, MIREA. ORCID: https://orcid.org/0000-0002-8107-9958. E-mail: oleg.g-arapov@yandex.ru
[3] Russian Technological University – Russia. Candidate of Philosophy, Associate Professor. Department of Human and Social Sciences, Institute of Administration Technologies, MIREA. ORCID: https://orcid.org/0000-0001-9310-5896. E-mail: elmira.a.arapova@yandex.ru
[4] Russian Technological University – Russia. Candidate of Philosophy, Associate Professor. Department of Human and Social Sciences, Institute of Administration Technologies, MIREA. ORCID: https://orcid.org/0000-0002-0139-3358. E-mail: denis.v.solodukhin@yandex.ru

de autogoverno. Este artigo considera as ideias marcantes do cientista e pensador em termos de sua interrelação, interdependência e influência mútua, oferecendo assim uma visão holística do trabalho desse cientista russo. Os métodos utilizados neste estudo são baseados em tradições de pesquisa filosófica. Os resultados desta pesquisa podem ser usados para avançar nas pesquisas sobre a relação entre ciência e conhecimento filosófico, tanto na atividade do cientista quanto no sistema educacional.

***PALAVRAS-CHAVE**: Educação. Universidade. M. V. Lomonossov. Ciência. Visão de mundo.*

***RESUMEN**: Lomonosov es el fundador de la educación secular en Rusia. El largo proceso de formación de los principios educativos que sentaron las bases para el desarrollo científico y la formación del personal académico dio como resultado la creación de la Universidad de Moscú. La universidad bajo el plan de Lomonosov incorporó la unidad de las ciencias naturales y las humanidades, la eliminación de la teología y el sistema educativo secular, la formación del personal académico nacional, la combinación de educación y educación, la implementación de los principios del autogobierno. Este artículo considera las ideas sobresalientes del científico y pensador en términos de su interrelación, interdependencia e influencia mutua, ofreciendo así una visión holística del trabajo de este científico ruso. Los métodos utilizados en este estudio se basan en tradiciones de investigación filosófica. Los hallazgos de esta investigación pueden ser utilizados para avanzar en la investigación sobre la relación entre ciencia y conocimiento filosófico, tanto en la actividad del científico como en el sistema educativo.*

***PALABRAS CLAVE**: Educación. Universidad. MV Lomonosov. Ciencias. Cosmovisión.*

Introduction

Mikhail Vasilyevich Lomonosov is known primarily as a natural scientist. He discovered and formulated the law of conservation of matter and motion, created and scientifically substantiated the theory of heat, laid the foundations of atomic and molecular theory, and was the founder of physical chemistry, all of which represent an era in the development of the world science.

Both a scientist and a philosopher, Lomonosov recognized the experience as the starting point and basis of all scientific ideas and discoveries. He believed that only a combination of empirical methods and theoretical generalizations could lead to the truth. Thus, this Russian scientist enriched philosophical knowledge by exploring epistemological problems such as the unity of cognition, developing scientific research methods, and formulating scientific concepts. One of Lomonosov's distinguished services is creating the Moscow University project.

Lomonosov worked out the structure of the Moscow University to the last detail: the principles of management, the number of departments, professors, the list of their benefits and duties, and even the regulations for students. He pioneered the idea of a comprehensive education, which included the study of both the sciences and the humanities. For the first two years, all students had to study at the Faculty of Philosophy, where they studied metaphysics (theoretical philosophy), logic, morals, and other abovementioned disciplines. Only then could they continue their education at the chosen faculty. According to Lomonosov, this approach made it possible, first, to form the very personality of a future scholar.

Already at that time, Lomonosov initiated a multistage system of education. He insisted that the university should have a gymnasium, without which the university would be “like a field without seeds”. He also advocated the democratization of education: it was assumed that representatives of all estates could enter the university and gymnasium.

Lomonosov advocated an education free from religious dogmas, arguing for a principled position on the need to exclude theology from the system of university education.

This article aims to present the multifaceted activities of Lomonosov in the scientific, educational, and Enlightenment spheres of Russian state development in the 18th century. The main research objectives are to reveal the core aspects of Lomonosov's activity, thereby revealing the creative universalism of the Russian genius, which has remained relevant throughout the centuries, and to show that the freedom of spiritual life was the basis of Lomonosov's creativity and that the "freelance philosophizing" principle allowed him to elevate his conclusions to broad philosophical generalizations.

This article's novelty lies first in its attempt to fill a certain gap in the scholarship on Lomonosov, which has thus far considered the various aspects of his multifaceted creativity separately, without considering their internal interdependence and interrelationship, which stems from the integrity and encyclopedism of his personality. We also emphasize some anticipation by Lomonosov of the “linguistic turn” of the 20th century. In addition, we pay attention to the pillars of his approach to establishing the university, which was taken up by I. Kant and F. Schiller almost half a century later, forming largely the basis for the famous University of Berlin. In contrast to those thinkers, Lomonosov did not limit himself to abstract reflections but practically embodied his ideas with the establishment of Moscow University.

Literature Review

Lomonosov's legacy is represented mainly in Russian scientific literature. In Russia, he is studied comprehensively and across the spectrum of his achievements in the natural and exact sciences, humanities, poetry, arts, and philosophical thought. The 300th anniversary of Lomonosov saw a wave of publications related to various aspects of his life and activities, and an updated and supplemented edition of his complete works has been initiated. All over the country, conferences were held on the work and legacy of the first ethnically Russian scientist and encyclopedically educated academic, the Russian Leonardo, who contributed to many academic and artistic life areas. From the array of research literature, the collection edited by M. A. Maslin (2011), the works by R. N. Scherbakov (2011), and V. Shiltsev (2011), and the proceedings of the conference held by the Philosophy Department of Moscow State University of Fine Chemical Technologies, named after M.V. Lomonosov (IVANOVA, 2012), are of particular note.

In the West, mentions of this Russian scientist are extremely rare and mainly related to his natural science research (physics, chemistry, and other areas). These include biographical notes in reference books, dictionaries, and general scientific reviews. Examples include the notes of B. M. Kedrov (1973), R. W. Fairbridge (1997), S. Maslikov (2014), C. Garstka (2020), and a review in the ENCYCLOPEDIA OF SEAS (2017). It is also worth mentioning the publication “M.V. Lomonosov 1711–1765: A Mediator between East and West” (1990) and the works by P. Hoffmann (2011) and R. Crease (2011).

The studies by F. Naumann (2014a, 2014b), R. Crease, V. Shiltsev (2013, 2018), N. Nail (2012), and others are devoted to the formation of Lomonosov as a scientist and his days in Germany.

Publications by A. M. Cherepashchuk, V. V. Nesterov, And E. K. Sheffer (1995); A. Koukarine, I. Nesterenko, and Y. Petrunin (2013); M.Ya. Marov (2004), V. Shiltsev (2012), and R. Crease (2012) considered astronomical and natural science views of Lomonosov. The works by B. N. Menshutkin (1952) and A. I. Rusanov (2011a, 2011b) presented the chemical aspect of Lomonosov research. V. B. Yakovlev (1961) addressed the subject of metallurgy. I. A. Gerasimova (2020), in the study of the oil and gas genesis problem, presented, among others, the approach of M. V. Lomonosov.

The geological and geographic direction of Lomonosov's activity is presented in the works by F. Naumann (2016), as well as V.M. Kotlyakov and A.A. Tishkov (2011) mathematics – in the article by S. Kutateladze (2011).

M. B. Sverdlov considered Lomonosov's contribution to Russian historical science (2011). Several articles are devoted to one or another particular philological and linguistic issue (O. A. Arapov (2013), P. E. Bucharkin (1997), C. A. Johnson (1964), C. Garstka (2020), R. Lauer (2020), F. M. Berezin (1979)).

Philosophical and ideological aspects are considered in M.A. Maslin and O.A. Volnyakova (2011). The influence of the tradition, established by H. WOLF in psychology – including through Lomonosov– is presented in S.H. Klempe's work (2020). The theological context of the Russian scientist's views is considered in M. Levitt's article (2009).

Some aspects of Lomonosov's approach to education are presented in O. G. Arapov, E. A. Arapova, O. A. Volnyakova, D. V. Solodukhin (2018, 2020).

“Political-ideological” aspects in the context of modernity are presented in the work of S. Usitalo (2013), considering the Russian scholar as the “national myth.” R. Crease and V. Shiltsev (2017) consider Lomonosov a prominent and multifaceted personality who managed in his not long life to carry out forefront research while at the same time cultivating the support of patrons, rulers, and cultural leaders throughout political turmoil. E. Tashlinskaya (2021) comprehends his contribution to the development of domestic and world science and philosophy in the context of the Russian Enlightenment, combining the desire for freedom, autonomy, and progress of the sciences with a commitment to spiritual traditions, patriotism, and reverence for the state.

Thus, the research literature mainly presents Lomonosov's achievements in science and the humanities to a much lesser extent. Moreover, all of them are considered separately; the universality of Lomonosov's talent in his multifaceted practical and theoretical research is almost not addressed. This article seeks to fill this gap. It thematizes some advancing of the "linguistic turn" of the 20th century and touches pillars of his approach to establishing the university.

The educational and enlightening activities of M. V. Lomonosov are covered in the works of V. K. Bobrovnikova, M. L. Ishlinsky, A. R. Pavlova, S. I. Vavilov, T. S. Butorina, V. K. Bobrovnikova (1961), T. S. Butorina (1990; 1991), M. L. Ishlinsky; Pavlova (1986), S. I. Vavilov (1961).

Materials and methods

Working methods are based on the research traditions of humanitarian knowledge: philosophical and anthropological approach to the problems of human existence, comparative

method of considering the problems of education in connection with different cultural and historical contexts of its development. In addition, phenomenological and hermeneutical research methods are used. Based on them, the foundations, essence, and methods of Lomonosov's multifaceted activity are revealed and philosophically comprehended.

Results

A characteristic feature of the work of the great natural scientists is the unity and interrelation of philosophical thinking and natural scientific research. As a rule, great scientists do not exist in isolation from philosophical knowledge and rise in their generalizations to serious philosophical conclusions. Moreover, as the history of science testifies, some of the breakthrough scientific research at different times, despite the complexity of the processes occurring in science and the ambiguity of the real preconditions of scientific discoveries, was based on certain previously created philosophical concepts.

Lomonosov's work demonstrates that he was both a naturalist and a philosopher. His worldview and philosophical views were formed based on the great philosophical tradition of the Modern Age, under the influence of the outstanding discoveries in the natural sciences of that era and on his natural-scientific research.

Lomonosov's scientific and educational projects present a secular, non-religious interpretation of philosophy, built on a scientific model differing from religion in its subject area and methodology. According to Lomonosov's deep conviction, freelance philosophizing must be imbued with skepticism.

Problems of cognitive activity

The philosophical worldview of Lomonosov was based on experimental knowledge and its rational comprehension, which allowed him to open the way to creative, indigenous, independent philosophizing and enrichment of natural science with discoveries. Lomonosov greatly contributed to the development of various sections of philosophical knowledge and, above all, to solving many epistemological problems. He saw the unity of cognition in the combination of practice and theory. According to him, observation, experience, and experiment are the most reliable means of cognition of nature. Lomonosov regarded experimental data as the basis of all scientific ideas and discoveries. Assigning to it an important place, he also believed that only a combination of empirical methods with theoretical generalizations could lead to the truth. For this purpose, it is necessary to

summarize a large amount of experimental data, generalize the factual material, comprehend it, and explain and prove it. It means to move into that cognitive sphere, where the abstract thinking of the scientist-theorist functions and where he operates with a logically ordered conceptual apparatus. Along with this, Lomonosov gave great importance to scientific hypotheses, noting that this is the only way that the greatest people have reached the discovery of the most important truths. Thus, from experience through hypotheses to the theory formation and the strict scientific truth establishment is the creative method of Lomonosov, scientist, and philosopher.

Scientific universalism of the Russian scientist was expressed in his interpretation of scientific concepts as ideal entities, extremely diverse, and at the same time, having some general features. In Lomonosov's opinion, scientific, historical, and philosophical concepts reflect changes occurring in the world, so their periodic revision is necessary. The history of cognition, thus, in a certain sense, is the history of the formation of concepts. They were formed initially in mythology, religion, philosophy, and science. It is necessary to ideate not simply by cognizing individual names, names of things, and their qualities (the position of medieval nominalists) but also by relating names to original, tangible things and actions. The difficulty here is “not in the difference of language, but in the difference of times,” that is, the success and accuracy of using concepts are determined by the general level of culture, science, philosophy, and consists in considering the dynamically developing process of cognition.

Contribution to the natural sciences

Lomonosov's worldview principles manifested themselves in the definition of ontological problems, the intelligent solution to the problems of existence, the key pillar, and world development, searching for the actual causes of phenomena. This is evidenced by his statement about the material unity of the world, its variability, the unity of the laws of its development, the interrelationship of natural processes, the nature cognizability, the unity of matter and motion. Lomonosov formulates a *universal natural law*: “But all changes encountered in nature happen in such a way that if somewhat is added to something, it will be taken away from something else. Thus, as much matter is added to one body, so much is lost to another [...]” (LOMONOSOV, 1950b). According to the scientist, the law of matter conservation is so universal that it also applies to the rules of motion.

Lomonosov laid the foundations of modern chemical atomistic, based his explanation of the natural phenomena on the change of matter consisting of the smallest particles-elements (atoms) united into corpuscles (molecules). According to his doctrine, the main properties of matter are extension, inertial force, form, and mechanical motion.

Lomonosov was a man of encyclopedic knowledge, successfully working in many areas of science, technology, and humanities that allowed him to approach the tasks of cognition of nature not only from the point of view of a single science but to rely on the combined data of a whole complex of sciences. The scientist repeatedly stressed the need for integrated research, which would combine the methods of several sciences to achieve a common goal – true knowledge. He attached particular importance to mathematics, considering it the highest degree of human knowledge. As for chemistry, to become a real science, it must "...measure through Geometry, weigh through Mechanics, and look through Optics" (LOMONOSOV, 1950b). The result of this principle implementation was, in fact, the creation by Lomonosov of a new science – physical chemistry. Thus, the widely used in the practice of his scientific research the idea of the union of sciences, their integration, mutual penetration, enrichment, and the creation on this basis of a new ontology – the Unified Scientific Worldview.

The relationship between science and religion

An important component of Lomonosov's worldview is his views on the relationship between philosophy and theology, science and religion, knowledge and faith in the cognition of the unity of the world, and the integrity of human existence. For example, the famous Russian scientists V. I. Vernadsky and S. I. Vavilov recognized the presence of what can be called the "cognitive content" of religion in his writings, which is evident in the fact that religion sets boundaries and limits to the mind. According to Lomonosov, "… the saving thing is to imagine in one's mind the incomprehensible majesty and inexplicable wisdom of the Almighty Creator" (LOMONOSOV, 1950a) that is, to be guided by what God has predetermined. However, it is also true that in an age of almost undivided domination of the religious worldview, Lomonosov defended the idea of the sovereignty of scientific creativity. On this note, he wrote that the reasoning entailing that the Creator creates everything "... is very harmful to the development of all sciences... although it is easy for them to be philosophers, learning by heart three words: "God created it" and giving this as an answer instead of all reasons" (LOMONOSOV, 1950b).

Generally, Lomonosov harbored a complicated attitude toward religion. His understanding of the value of religious ideas lacked the unambiguity that we observe in many similarly progressively thinking scientists and philosophers of that era. Nevertheless, as a highly educated man of science, he remained a spiritual man or a true believer as understood at that time. In some aspects of his worldview, he even expressed an aspiration to reconcile science and religion, recognizing the legitimacy of both (SIPOVSKY, 1911). Lomonosov justified the importance of science and supported its right to autonomous development independent of religion and theology, and at the same time, he recognized the active role of God as the highest reason in establishing world harmony.

The cognitive value of science means, among other things, the right to have its research methods. Distance from religion is realized through the distinction of the spheres and the methods of science and theology. It is equally unacceptable to “measure God's will with a mathematical compass” or to study astronomy or chemistry “by Psalms” (LOMONOSOV, 1950b). The monopoly and diktat of the clergy in the cognition of the world are as unacceptable as the “canonization” of certain conceptions of the world order – this is Lomonosov's deep conviction.

According to V. V. Zenkovsky, “In Lomonosov, we deal with a religious-philosophical position new to Russian people, in which freedom of thought does not prevent a sincere religious feeling which is already essentially churchless” (ZENKOVSKY, 2001). Indeed, according to M. V. Lomonosov, science and religion are two sides of the integral human spirit – each with its subject and research method. Both have a common starting point and a related study subject, which is God – this is why harmony and unity are possible between them.

With all this in mind, Lomonosov believed that to avoid possible conflict, it was necessary to separate initially the areas in which science and the Church operate and by no means to regard the Bible as a scientific manual. While the Bible does not deal with natural scientific questions but rather with the person's inner life and relationship with God, science is primarily concerned with the world order.

Organization of education

Lomonosov's scientific and educational projects present a secular, non-religious interpretation of philosophy, built on a scientific model and differing in its subject matter and methodology. Lomonosov also advocated education free from religious dogmas. This position

found its expression, among other things, in the organization of secular education in Russia. Its origins are connected with the establishment of the Moscow University (1755), whose plan was developed by the Great Russian scientist.

In the European West in the Middle Ages and the Modern Age, scientific societies formed around philosophical and theological faculties of universities, but in Russia, the main distributor of "bookishness" was not a university. However, a monastery and clergy were the most educated estate. The institutionalization of secular science and philosophy of the European type in Russia was rather lengthy and was not limited to one-time copying of Western European university traditions. The beginning of this process is associated with the opening of the Kiev-Mohyla (1632) and Slavic-Greek-Latin (1685) academies where the actual philosophical courses were taught. By the beginning of the 18th century, the Moscow Slavic-Greek-Latin Academy was the only higher educational institution whose activity prior to the Synod (i.e., until the 1720s) was aimed at training theologians, also secular scientists and specialists.

In Europe, the Enlightenment posed the problem of reforming existing universities following the demands of the time. In the 1790s, in Germany, there were projects of I. Kant and F. Schiller's ideas would largely form the basis of the famous Berlin University. Almost half a century before, Lomonosov formulated a concept that was not limited to abstract reflections but was implemented into practice.

The position of Lomonosov on the need to separate theology from the subjects, which, in his opinion, should be mandatory for teaching at Moscow University, is fundamental. In the university regulations which he was commissioned to draw up, he wrote: “I think that the University should have three faculties: law, medicine and philosophy (I leave the theological one to the religious colleges)” (KOTLYAKOV; TISHKOV, 2011). As conceived by Lomonosov, the Faculty of Medicine was the faculty of natural sciences; the main chairs here were professors of chemistry, natural history, and anatomy. The Faculty of Philosophy united philosophy (logic, metaphysics, and moral science), physics, oratory (eloquence), poetry, history, and study of antiquities. The Faculty of Law strictly corresponded to its title. The absence of a theological faculty in Lomonosov's plan was innovative and was subsequently reproduced in the structure of all Russian universities. The Moscow University establishment became the crowning achievement of M.V. Lomonosov's creative and public activities and a high-profile event for the whole of Russian culture. The decree of Empress Elizabeth on the University establishment, signed on Tatiana's Day, 12 January 1755, marked a special role of the Russian state in the development of science and education.

The sciences in the 18th century were still rather poorly differentiated, so the Philosophical Faculty was supposed to study philosophy, mathematics, mechanics, physics, geography, philology, and history. The program of the Medical Faculty included anatomy, chemistry, and biology. Only the Faculty of Law was in line with its name. University students were first required to study at the Philosophy Faculty to learn general disciplines, and only then could they continue their education at a faculty of their choice.

Lomonosov drafted the Regulations for Moscow gymnasiums as the first level of education for schoolchildren of all estates, who then wish to study at the university. It was assumed that the teachers of the gymnasiums would be university professors; such an approach ensured continuity and a high level of education.

The Russian scientist defended such forms of self-government of the Moscow University as the election of the rector from among its professors the right of the university to award doctoral and master's degrees.

Lomonosov was alien to the idea of education only as of the acquisition of a certain amount of knowledge. The Russian scientist gave priority to the formation of spiritual and moral qualities that an educated person should possess. Among the most important of them, he considered such qualities as wisdom, integrity, open-mindedness, diligence, and modesty. He believed that, in general, scientific activity should be subordinated to the idea of disinterested service to the truth and Enlightenment. It should not be allowed to treat science as a craft, as only a tool "to earn money for life" (LOMONOSOV, 1950b).

The role of humanitarian knowledge in the system of the scientific worldview

An outstanding Russian theorist and naturalist, one of the founders of Russian science, Lomonosov, firmly believed in scientific knowledge's special intellectual and social mission. He advocated establishing universities of particular natural and exact disciplines and a vast complex of humanities or sciences about the spirit, as they were later called. According to his deep conviction, humanities play an important role in cognition, education, and Enlightenment: they train students' skills to think freely and critically, generalize, justify scientific ideas, and choose "the road to right judgment" (LOMONOSOV, 1950b). Humanitarian education forms the freedom of spirit necessary for scientific activity, the flexibility of mind, inclusivity of thought, responsibility, and insight. He wrote that we are especially grateful to Descartes for affirming the right of learned men to argue and for opening the way to freelance philosophizing. Like many other scientists of his time, the

Russian scientist used the term “freelance philosophizing” not only to philosophy but also to theoretical thought in general, including, first, theoretical natural science. Lomonosov's concept of “freelance philosophizing” meant, above all, freedom of creative thought in cognition of the world and freedom of philosophically enriched creative thought. In this sense, Lomonosov wrote about the importance of studying philosophical knowledge.

Lomonosov believed that the student – the future scientist- must assimilate scientific thought in its integrity and unity and acquire the desire to “explore and discover, that which is not yet known” (LOMONOSOV, 1950b). He was convinced that a scientist should not be confined to his narrow field because science is unified, and all scientific disciplines are interconnected. Therefore, in addition to the disciplines close to his sphere of scientific activity, a scientist must also know mathematics, history, philosophy. Knowledge is one whole, first, because there is one world, nature as an object of cognition. Nature is harmonious in all its infinite diversity, and cognition of this objective harmony of the world determines the harmony of knowledge, the internal relationship of the sciences. The idea of the unity of cognition as the most important worldview principle is a condition for success in achieving the truth, so Lomonosov believed and repeatedly stressed the importance of this idea. He wrote that chemistry is inextricably linked with physics, while math is the “eyes” of physics. Lomonosov was convinced that the relationship of the sciences should become fundamental in university education.

Lomonosov saw an undoubted benefit in students' study of philology (ARAPOV, 2013) since every scientist should write his scientific works in a “clean and proper style.” In addition to a rather good knowledge of his native language, Lomonosov prescribed foreign languages for all scholars to read the latest publications of their foreign colleagues and maintain scientific correspondence with them.

Unity of spiritual culture

Lomonosov was one of the first thinkers to move from the narrow-methodological problems of forming scientific concepts and beliefs to the general philosophical problems of language ontology and tried to highlight its cognitive, worldview, anthropological, and value aspects. First, he was interested in those aspects of language, the depths of the word, which address the very nature of things.

In his “Compendium for lovers of beautiful speech,” discussing the role of language in human perception of the world and the existence of things themselves, Lomonosov says that

language “can represent all kinds of proposed matter with selected speeches and proper words” and “certify its justice” (LOMONOSOV, 1950b). The word reveals to a person the different sides of things: practical, aesthetic, intellectual, etc., and presents the levels of their existence, from the material and low to the high and spiritual. “As substances which are represented by the human word differ in their degree of importance, so also... language... has different degrees of propriety: high, mediocre, and low” (LOMONOSOV, 1950b). The role of language in representing reality is not passive: language does not merely display what exists but reveals its very essence, revealing to us the depths of the meaning of existence and the shining peaks of the spirit. When we deal with linguistic images of the world, showing us its spiritual beginnings and the ideal essence of things, it is by language itself that we are forced to relate to the world morally.

Lomonosov was convinced that our knowledge of the world and humans is rooted in the world of language. As language reveals the world to one's mind, the same world appears to one. The high language style in poetry, philosophy, and science reveals the very existence in its most important aspects of meaning to the human. They serve as the basis for the unity of the world and are at the same time a kind of key to the discovery of the hidden mysteries of the universe and the depths of the human being. Perception of these meanings as the highest values of culture determines the human ontology – existential purpose and place in the world. Harmony of language is the way to the harmony of thought, and therefore to the world harmony, the pursuit of which was the main goal of science and the arts in Lomonosov's thought.

Speaking about the role of language in culture, Lomonosov, first, points to such an important function as the preservation of the historical memory of people. Without knowledge of history, which “writes” itself in certain “sacred” texts of culture – oral or written sources that form the cultural tradition, the cultural and historical self-consciousness of people does not develop. Culture, not having sufficient grounds for its self-cognition, cannot realize itself fully, does not see the real meanings and goals determining its existence and destination, its place in the world history, the future, and does not have benchmarks of historical evolution.

According to Lomonosov, language, the basis of culture, is also the basis of the spiritual unity of people. Therefore, Lomonosov pays great attention to the preservation and development of language. According to his thinking, it is necessary to take care of the language and study its history, see the origins and realize the driving forces determining its genesis and development stages. In this case, he notes the special role of poets as the creators and protectors of language, “its faithful and vigilant priests.” The poet is truly the voice and conscience of culture. He

heralds to descendants the bygone days, but while speaking about the ancient times, the past reveals the present day's true historical and spiritual nature.

Thus, a clear vision of the existing deep relationship between language and many levels of life and culture of people – material, intellectual and spiritual- determines Lomonosov's position on the role of language in the cultural and historical formation of peoples. Lomonosov is aware that such linguistic forms of culture as myth, heroic-epic tales, poetry, and literature of culture, accumulating the people's historical experience and comprising the fundamental meanings of existence discovered by them, form its ideological foundations the moral principles of people's life (SASSIN, 2020). On the other hand, these forms of culture themselves and the language that creates them reflect the intellectual and spiritual life of people (GNES, 2019). The worldview inherent in people with its roots in history is directly connected with the diverse and complex world of language and the linguistic reality of the world. These ties, essential to the nature of culture itself, ultimately create that spiritual image of people that determines its role and place in world history, an awareness of which is one of the most important spiritual tasks for any culture.

Lomonosov laid down the true understanding of the sacrificial nature of culture, and national patriotism developed further by his spiritual successors (e.g., F.M. Dostoevsky). According to Lomonosov's conviction, the development of language and national culture does not require the abandonment of one's own culture for the sake of something alien to the very letter and spirit of ethnic culture. It also does not require ignoring other people's cultural and historical experience, another language and culture, but active and constructive dialogue between them. True sacrifice is an inherent openness to and acceptance of another as one's own for the sake of the highest spiritual amalgamation, the moral unity of cultures and people.

Conclusion

The article shows that an important component of Lomonosov's worldview is his views on the relationships between philosophy and theology, science and religion, knowledge and faith. These relationships are important in recognizing the unity of the world and the integrity of human existence. By likening the relationship between science and religion to two sisters, the thinker believed that science and religion are two sides of the integral human spirit, each with its subject and research method.

Lomonosov was the founder of secular education in Russia, a long process of forming the principles of education, creating the basis for the development of science and training of

trained scientific personnel, corresponding to the demands of the time and ended with the establishment of the Moscow University in 1755. The great contribution of the Russian scientist in this field lies in his writing of the regulations, draft, and charter of the university, which affirmed the secular nature of education in Russia in contrast to many Western European universities with theological faculties. Lomonosov fought officials far from science, for the university's autonomy, to establish a gymnasium at the university, for the opportunity to study in the university irrespective of class, and for the spirit of liberty and freedom for students.

The significance of Lomonosov's legacy goes beyond specific scientific discoveries, philosophical reflections, resolving organizational problems, and rises to issues of cultural and historical nature. As the first creator of Russian grammar, he emphasized the role of language in culture, preserving traditions and historical memory that form the basis of the spiritual image of people. This basis determines its role and place in world history, and the awareness of this is one of the most important spiritual tasks of any culture.

REFERENCES

ARAPOV, O. Celestial beauty of our language. Philosophical views of M.V. Lomonosov on the problems of language and self-cognition of Russian culture. **Bulletin of TSPU**, v. 5, n. 133, p. 17-20, 2013.

ARAPOV, O. *et al*. Philosophical problems of education in the Russian natural scientific thought. **Russian Technological Journal**, v. 6, n. 6, p. 84-100, 2018.

BEREZIN, F. The History of General and Comparative Linguistics in 19th Century Russia. **Historiographia Linguistica**, v. 6, n. 2, p. 199-230, 1979.

BOBROVNIKOVA, V. K. **Pedagogical ideas and activities of M.V. Lomonosov**. Moscow, 1961.

BUCHARKIN, P. E. The Poetic Style of M.V. Lomonosov as a fact of the History of the Russian Literary Language. **Russian Linguistics**, v. 21, p. 63-77, 1997.

BUTORINA, T. S. **Lomonosov M.V. On upbringing and education**. Moscow: Pedagogy, 1991.

BUTORINA, T. S. **M.V. Lomonosov and the pedagogical thought of Russia in the 18th century**. Vologda: Publishing House of the Vologda State Pedagogical Institute, 1997.

CHEREPASHCHUK, A.; NESTEROV, V.; SHEFFER, E. Possibilities of Sub-Milliarcsecond Astrometry in the Lomonosov Project. In: **Astronomical and Astrophysical**

Objectives of Sub-Milliarcsecond Optical Astrometry. International Astronomical Union. Dordrecht: Springer, 1995.

CREASE, R. Mikhail Who? **Physics World**, v. 24, n. 11, p. 21, 2011.

CREASE, R. Transit Watching. **Physics World**, v. 25, n. 8, p. 16, 2012.

CREASE, R.; SHILTSEV, V. Pomor Polymath: The Upbringing of Mikhail Vasilyevich Lomonosov, 1711–1730. **Physics in Perspective**, v. 15, n. 4, p. 391-414, 2013.

CREASE, R.; SHILTSEV, V. Mikhail Lomonosov (1711–1765): Scientist in Politically Turbulent Times. **Il NuovoSaggiatore**, v. 33, n. 5-6, p. 43-56, 2017.

CREASE, R.; SHILTSEV, V. Fueling Peter's Mill: Mikhail Lomonosov's Educational Training in Russia and Germany, 1731–1741. **Physics in Perspective**, v. 20, p. 272-304, 2018.

FAIRBRIDGE, R. **Lomonosov, Mikhael Vasilyevich (1711–1765)**. Dordrecht: Springer, 1997.

GARSTKA, C. Lomonosov, Michail Vasil'evič. *In*: **Kindlers Literatur Lexikon**. Stuttgart: Metzler, 2020.

GARSTKA, C. Lomonosov, MichailVasil'evič: Das lyrischeWerk. *In*: **Kindlers Literatur Lexikon**. Stuttgart: Metzler, 2020.

GERASIMOVA, I. Petroleum Genesis as a Problem of Transdisciplinary Research. **Epistemology&Philosophyof Science**, v. 57, n. 3, p. 125–141, 2020.

GNES, A. Festival culture as a means of preserving vital differences in the ideologically equalised world. **The Beacon: Journal for Studying Ideologies and Mental Dimensions,** v. 2, 020310005, 2019.

HOFFMANN, P. Michail Vasil'evičLomonosov (1711–1765). *In*: **Enzyklopädist im Zeitalter der Aufklärung**. Frankfurt am Main: Peter Lang, 2011.

ISHLINSKY, M. L.; PAVLOVA, A. R. **M. V. Lomonosov is a great Russian scientist**. Moscow: Pedagogy, 1986.

IVANOVA, A. **Contribution of M.V. Lomonosov in the development of humanitarian knowledge**. Textbook. Moscow: Moscow State University of Fine Chemical Technologies Publishing House, 2012.

JOHNSON, C. Lomonosov's Dedication to His Russian grammar. **Slavic Review**, v. 23, n. 2, p. 328-332, 1964.

KEDROV, B. Lomonosov, Mikhail Vasilievich. *In*: **Dictionary of Scientific Biography**. Band 8: Jonathan Homer Lane – Pierre Joseph Macquer. New York: Charles Scribner's Sons, 1973.

KLEMPE, S. **The Impact of Psychologiaempirica on the European Enlightenment**. Cham: Springer, 2020.

KOTLYAKOV, V.; TISHKOV, A. At the Cradle of Russian Academic Geography. **Herald of the Russian Academy of Sciences**, v. 81, n. 533, p. 925-931, 2011.

KOUKARINE, A.; NESTERENKO, I.; PETRUNIN, Y. Experimental reconstruction of Lomonosov's discovery of Venus's atmosphere with antique refractors during the 2012 transit of Venus. **Solar System Research**, v. 47, p. 487-490, 2013.

KUTATELADZE, S. The Mathematical Background of Lomonosov's Contribution. **Journal of Applied and Industrial Mathematics**, v. 5, n. 2, p. 155-162, 2011.

LAUER, R. Lomonosov, MichailVasil'evič: Predislovie o pol'zeknigcerkovnych v rossijskomjazyke. *In*: **Kindlers Literatur Lexikon**. Stuttgart: J.B. Metzler, 2020.

LEVITT, M. The Theological Context of Lomonosov's 'Evening' and 'Morning' Meditations on God's Majesty. *In*: **Early Modern Russian Letters:** Texts and Contexts Selected Essays. Boston: Academic Studies Press, 2009.

LOMONOSOV, M. **Selected Philosophical Works**. Moscow: State-Publishing House of Political Literature, 1950a.

LOMONOSOV, M. **Complete Works:** in 10 vols. Moscow: Publishing House of the Academy of Sciences of the USSR, 1950b.

LOMONOSOV, M. **Selected Prose**. Moscow: Soviet Russia, 1986.

LOMONOSOV, M. **Mittler zwischen Ost und West**. Marburg, 1990.

LOMONOSOV, M. **The Western Arctic Seas Encyclopedia. Encyclopedia of Seas**. Cham: Springer, 2017.

MAROV, M. Mikhail Lomonosov and the discovery of the atmosphere of Venus during the 1761 transit. **Proceedings of the International Astronomical Union**, 2004.

MASLIKOV, S. Lomonosov, Mikhail Vasilievich. In: **Biographical Encyclopedia of Astronomers**. New York: Springer, 2014.

MASLIN, M. **M.V. Lomonosov**: Pro et contra: Personality and creativity of M.V. Lomonosov in assessments of Russian thinkers and researchers. St. Petersburg, 2011.

MASLIN, M.; VOLNYAKOVA, O. The worldview of M.V. Lomonosov. To the 300th anniversary of the great scientist's birth. **Bulletin of Moscow State University of Fine Chemical Technologies**, v. 6, n. 5, p. 4-8, 2011.

MENSHUTKIN, B. **Russia's Lomonosov, Chemist Courtier, Physicist Poet**. Princeton: Princeton University Press, 1952.

NAIL, N. **Russi intra muros**: Studentenaus Sankt Petersburg 1736–1739 bei Christian Wolff in Marburg. Marburg, 2012.

NAUMANN, F. **M.W. Lomonossow in Freiberg**. Freiberg: TU Bergakademie, 2014.

NAUMANN, F. **Acamonta – Sonderbeilage**. Freiberg: TU Bergakademie, 2016.

RUSANOV, A. Beginnings of chemical science in Russia. **Russian Journal of General Chemistry**, v. 81, p. 2-14, 2011.

RUSANOV, A. M. V. Lomonosov and colloid chemistry. **Colloid Journal**, v. 73, p. 721-723, 2011.

SASSIN, W. War of ideology vs a sober view: sustainable vs resilient? **The Beacon: Journal for Studying Ideologies and Mental Dimensions,** v. 3, 020440211, 2020.

SHCHERBAKOV, R. The Founder of Russian Science. **Herald of the Russian Academy of Sciences**, v. 81, p. 921-925, 2011.

SHILTSEV, V. Nov. 19, 1711: Mikhail Lomonosov, Russia's first modern scientist. **APSNews**, v. 20, n. 10, 2011.

SHILTSEV, V. Mikhail Lomonosov and the dawn of Russian science. **Physics Today**, v. 65, n. 2, p. 40-46, 2012.

SIPOVSKY, V. **M. Lomonosov, 1711-1911**: Collection of Articles. St. Petersburg: Ya. Bashmakov& Co., 1911.

SVERDLOV, M. M.V. Lomonosov and Russian History. **Herald of the Russian Academy of Sciences**, v. 10, p. 931, 2011.

TASHLINSKAYA, E. Do We Need a New Enlightenment for the 21st Century? Education Project: Utopia or New Reality? (Intellectuals of Russia of the 18th Century). **Dialogue and Universalism**, v. 31, n. 2, p. 247-261, 2021.

USITALO, S. **The Invention of Mikhail Lomonosov (A Russian National Myth)**. Boston: Academic Studies Press, 2013.

VAVILOV, S.I. **Mikhail Vasilievich Lomonosov**. Moscow: Publishing House of the Academy of Sciences of the USSR, 1961.

VOLNYAKOVA, O. *et al*. Principles of Higher Education Development in Works of Russian Philosophers and Scientists of 20th century. **Revista praxis educacional**, v. 16, n. 39, p. 337-355, 2020.

YAKOVLEV, V. M. V. Lomonosov, and ferrous metallurgy commemorate his 250th anniversary. **Metallurgist**, v. 5, p. 544-545, 1961.

ZENKOVSKY, V. **History of Russian Philosophy**. Moscow: Academic Project, 2011.

How to reference this paper

VOLNYAKOVA, O.; ARAPOV, O.; ARAPOVA, E.; SOLODUKHIN, D. Educational activities and creative work of Russian scientist, thinker, and philosopher M. V. Lomonosov. **Revista online de Política e Gestão Educacional**, Araraquara, v. 26, n. 00, e022019, Jan./Dec. 2022. e-ISSN: 1519-9029. DOI: https://doi.org/10.22633/rpge.v26i00.16470

Submitted: 08/11/2021
Required revisions: 30/12/2021
Approved: 27/02/2022
Published: 31/03/2022