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FORMATION OF SCIENTIFIC IDEAS RELATED TO LANDSCAPE SCIENCE

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Abstract: This article analyzes the origin of the term "landscape," the formation of landscape science as a distinct field, and the contributions of scholars who have advanced its development. The study also explores the formation and evolution of scientific ideas related to landscape studies. Based on the analysis, recommendations have been provided regarding the prospects for the further development of landscape science.

Key words: landscape, landscape science, geosystem, geoecology, scientific school, research center, anthropogenic landscapes, theoretical landscape science, cultural landscape, assessment, forecasting, "Green Space," natural resources, landscape dynamics, prediction, geosystem, geoecology.

Introduction. The Decree of the President of the Republic of Uzbekistan No. PF-60 of 8 January 2022 "On the Development Strategy of Uzbekistan for 2022–2026", the Decree No. PF-5863 of 30 October 2019 "On the Approval of the Environmental Protection Concept of the Republic of Uzbekistan for the Period up to 2030", the Decree No. PF-5742 of 17 June 2019 "On Measures for the Efficient Use of Land and Water Resources in Agriculture", the Resolution of the Cabinet of Ministers No. 841 of 20 October 2018 "On Measures to Implement the National Goals and Targets in the Field of Sustainable Development until 2030", as well as other relevant normative-legal documents, serve as an important basis for fulfilling the tasks set in this research work. In the "New Uzbekistan" Development Strategy for 2022–2026 and the Presidential Project envisaging the approval of the "Roadmap for its implementation in 2022", Goal 80 defines significant tasks for the implementation of the nationwide "Yashil Makon" (Green Space) project. In this regard, environmental protection, the rational use of natural resources, and, particularly, knowledge related to the science of landscape studies acquire special importance.

Literature review and methods. As a result of its development and differentiation, geography has evolved from an integral discipline of the ancient and medieval periods—studying nature, population, and economic activities—into a system of sciences. The structural composition of this system has long remained a focal point of scholarly attention. In almost all textbooks and teaching manuals on geography, as well as in scientific monographs and major theoretical articles devoted to the theoretical and problem-oriented issues of the field, authors have expressed their views on the structure of geographical science and the role of physical geography within it. Scientific information on the history of landscape studies has been addressed in the works of foreign scholars such as O. Peschel (1879), A. Hettner (1905), P. James (1972), G. Haase (1973, 1981), D. G. Harvey (1974), and J. Demek (1977); Russian scholars including A. A. Grigoriev (1930, 1948), N. A. Solntsev (1948, 1962), I. M. Zabelin (1949, 1959, 1978), V. L. Kotelnikov (1950), F. N. Milkov (1959, 1967, 1986, 1990), S. V. Kalesnik (1961, 1972), Yu. K. Efremov (1964, 1987), V. I. Prokaev (1973), E. Neef (1974), Yu. G. Saushkin (1976, 1980), V. S. Preobrazhenskiy (1972, 1981, 1986, 1988, 1997), A. G. Isachenko (1976, 1982, 1991, 2004, 2006), Z. V. Makarov (1977), N. G. Sukhova (1981), A. Yu. Reteyum (1985, 1997), I. I. Mamay (2008), K. N. Dyakonov (2014); and Uzbek geographers such as V. M. Chetyrkin (1947), A. Abdulkosimov (1983, 2017), R. U. Rakhimbekov (1995), Sh. S. Zakirov (1999, 2011), S. B. Abbasov (2002, 2017), Kh. Vakhabov (2006), and Kh. R. Toshov (2013, 2016, 2021). Understanding the current state of landscape science and forecasting its future development requires studying its historical foundations. The formation and evolution of landscape studies as a scientific discipline is closely associated with prominent scholars such as A. Humboldt (1769–1859), C. Ritter (1779–1859), and V. V. Dokuchaev (1846–1903).

The subsequent development of landscape studies was reflected in the works of G. N. Vysotskiy (1865–1940), G. F. Morozov (1867–1920), L. S. Berg (1876–1950), A. A. Borzov (1874–1939), R. I. Abolin (1886–1939), and others. In the next stage of theoretical development, the contributions of S. S. Neustruyev

(1874–1928), B. B. Polynov (1877–1952), L. G. Ramenskiy (1884–1953), S. V. Kalesnik (1901–1977), and V. N. Sukachyov (1880–1967) are invaluable. Significant scientific results in the field of landscape dynamics and evolution were obtained by B. B. Polynov, L. S. Berg, V. L. Komarov, I. V. Larin, and others. By the 1940s, the integration of geochemical ideas and methods into landscape theory led to the emergence of the field of landscape geochemistry. One of its founders is considered to be B. B. Polynov (1877–1952). As known from the history of geography, many scholars, on the basis of the above-mentioned considerations, have concluded that V. V. Dokuchaev is the founder of modern physical geography, including landscape studies. For example, one of the most influential Russian geographers of the first half of the 20th century, L. S. Berg, commenting on Dokuchaev's theory of natural zones, referred to him as the "true father" of geography. We likewise support the opinion that this great soil scientist was also a "great geographical scholar". Another important aspect that cannot be overlooked in the development of geographical sciences includes disciplines such as the History of Geography, Toponymy, and Methods of Teaching Geography. These belong to the group of "supporting" sciences that contribute to the advancement of geography, forming at the intersection of geography with social sciences. Toponymy is closely connected with philology and history; methods of teaching geography with pedagogy; and the history of geography with historical sciences. Regardless of which direction geographical science develops, it must not overlook an important axiom: all geographical sciences must preserve their essence by studying the laws characteristic of the geographical envelope (geographical sphere). Otherwise, they lose their geographical nature. All natural, social, or mixed processes and phenomena must be studied within the framework of the geographical envelope or its taxonomic units.

Results and discussion. If we look at the history of landscape science, the issues of the origin of its theoretical foundations have always been relevant. Because issues such as the history and development of the science are reflected in its content, views about it are clarified. The origin of the landscape doctrine also spans long periods. The scientists who thought about it (V.P. Semyonov - Tyan-Shansky, 1928; I.M. Zabelin, 1959, 1969; A.G. Isachenko, 1971;) called the declines in the development of the science of geography, the object of the science of geography and who pointed out such factors as the lack of unified opinions on the subject, the provision of geographical knowledge in higher education institutions and the opening of geography departments. Therefore, in order to look at the history of landscape science, first of all, it is necessary to clarify the importance of studying the history of science and the issues of the emergence of the theory of landscape, which is its theoretical basis.

Every science has its own developmental history, and landscape studies are no exception. The term *landscape* was first introduced into geographical literature in 1805 by the German geographer A. Hommeyer. In German, "Land" means land, and "Schaft" denotes interconnectedness or interrelation. In English, its semantic equivalent *landscape* refers to a natural view, while in French the term *paysage* conveys a similar meaning. Despite the extensive historical material accumulated on landscape science today, it is evident that these materials have not yet been subjected to consistent logical analysis. This is because analyzing the past stages of landscape studies is inherently complex. First, landscape studies belong to the system of physical geographic sciences. Even the core concept of the discipline—*landscape*—remains subject to numerous debates regarding its meaning and scope, and consensus has not yet been fully achieved. The views of many scholars on this issue are noteworthy. For instance, the prominent landscape scientist A. G. Isachenko stated: "Landscape science is part of the system of physical geographic sciences; indeed, it constitutes the core of this system and connects its constituent sciences" [3, p. 19]. Second, the emergence of systems theory in the mid-20th century further improved the theoretical foundations of landscape studies. The main idea of this theory is that "the Earth's surface is a unified whole composed of large and small geosystems due to the exchange of matter, energy, and information." It is well known that landscapes are typological rather than topological geosystems that recur across regions. Here, the term "landscape" expresses typological geosystems. Landscape science, in turn, is a discipline devoted to smaller typological complexes, and such an understanding clearly distinguishes it from regional physical geography.

Third, almost no landscapes in the world today remain unaffected by human activity. Natural landscapes are becoming increasingly anthropogenic. Even research in economics, economic geography, and ecology related to the efficient use and protection of natural resources reveals the necessity of applying the theoretical principles developed in landscape studies. In other words, landscape science is increasingly embodying a general geographic essence [8]. As the renowned landscape scholar Sh. Zakirov stated: "If ecology plays a key role among the biological sciences in resolving issues related to human–nature interactions, then landscape studies should play the same role within the system of geographical sciences" [2, p.118]. It is also appropriate to cite the view of scholar I. Q. Nazarov, who stated: "The theories of

landscape, geosystems, and geoecology are the result of the gradual development of geographical thought. These theories possess immense power and serve as a scientific methodological foundation." In his article "Pressing Theoretical and Practical Problems of Uzbekistan's Geography," Professor Kh. Vakhabov wrote: "Significant work has been done and continues to be done in the field of landscape studies in Uzbekistan. Nevertheless, a comprehensive monograph or methodological guide titled 'Landscapes of Uzbekistan' has still not been produced" [1, p. 4]. As a conclusion, it should be noted that many general scientific and general geographic problems can be solved on the basis of the theories developed within landscape studies. To date, scholars of our country have conducted several studies on the history of geography. These include, for example, the textbook "The History of the Geographical Study of the Nature of Central Asia" (1982) by R. U. Rakhimbekov and Z. N. Donsova, and the research works of A. Ochilov on the study of Central Asian nature. Rakhimbekov and Donsova conditionally divided the geographical development of Central Asia in the modern period (1961–1981) into 11 stages. All aspects of geography are covered in these stages, and the authors emphasize the crucial importance of landscape research, especially in connection with the constructive stage—i.e., the development of deserts and semi-deserts. The authors also conducted a detailed analysis of regionalization. In particular, natural geographic and landscape regionalization of Central Asia has been conducted in two main directions. Russian scholars (N. A. Gvozdeskiy, E. M. Murzaev, G. D. Rikhter, and others) considered geological–geomorphological and zonal differences in their regionalization schemes, whereas Uzbek scholars (L. N. Babushkin, N. A. Kogay, 1975) advocated a traditional ecological–geographical approach. As a result, Russian scientists separated mountains from plains during regionalization, while Uzbek scholars combined mountains and plains based on ecological unity. Landscape science incorporates both a system of knowledge and a community of individuals engaged in scientific activity—formal (scientific institutions) and informal (scientific schools). All these elements should remain the object of research in the history of landscape science, while its subject must include the objects and content of landscape research, its main directions, conceptual foundations and methods, scientific centers, and scholarly traditions [4, p. 5].

Conclusion. The study of the development of landscape science shows that despite numerous works and extensive research conducted in this field, consensus has not yet been achieved regarding its theoretical and methodological issues. The history of landscape science has long served merely as the history of the theoretical views of individual authors rather than as a subject of the discipline itself. The history of landscape studies is an integral continuation of the history of geography. Therefore, the crises that occurred in the history of geographical science had a significant impact on the formation of landscape science. For example, until the mid-18th century, clear notions of the subject, content, and tasks of geography had not been established; the decline of the discipline following the end of the "descriptive stage" (according to I. M. Zabelin) and the intensification of differentiation within geography were among the influencing factors. Analyzing the stages through which landscape science has passed is a complex process due to: (1) its belonging to the system of physical geographic sciences; (2) the introduction of systems theory in the mid-20th century, which significantly improved landscape theory; and (3) the increasingly general geographic essence of landscape science. Geographers have referred to the 19th century as the "century of natural sciences." During this period, several disciplines—such as geology, climatology, botany, zoology, and soil science—separated from geography and became independent sciences. Beginning from the last decades of the century, the theoretical foundations of landscape studies—i.e., the basis of landscape theory—began to take shape. Concepts such as the unity of nature, zonality, the "chorological concept," and theories of soils and forests served as essential foundations for landscape theory.

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