Proceedings of the Informing Science + Information Technology Education Conference

An Official Publication of the Informing Science Institute
InformingScience.org

InformingScience.org/Publications

MODERN TRANSDISCIPLINARITY: RESULTS OF THE DEVELOPMENT OF THE PRIME CAUSE AND INITIAL IDEAS

Vladimir S. Mokiy *	Institute of Transdisciplinary Technologies, Nalchik, Russian Federation	vmokiy@yandex.com
Tatiana A. Lukyanova	Institute of Transdisciplinary Technologies, Nalchik, KBR, Russian Federation	luktania@mail.ru

* Corresponding author

ABSTRACT

Aim/Purpose	This paper focuses on systematizing and rethinking the conformity of modern transdisciplinarity with its prime cause and initial ideas.
Background	The difficulties of implementing transdisciplinarity into science and education are connected with the fact that its generally accepted definition, identification characteristics, and methodological features are still missing. In order to eliminate these disadvantages of transdisciplinarity, its prime cause and initial ideas had to be detected. It is also important to analyze the correspondence of the existing opinions about transdisciplinarity with the content of these cause and ideas.
Methodology	The qualitative analysis of the literature reviews on the subject of transdisciplinary was used in order to determine the correspondence of the opinions about the transdisciplinarity with the meaning of its prime cause and initial ideas. These opinions had to be generalized as well. Through this method, it was possible to detect and classify opinions into 11 groups including 39 stereotypes of transdisciplinarity. For substantiation of transdisciplinary approaches that are consistent with the approaches of contemporary science, C.F. Gauss random variables normal distribution was used. The "Gauss curve" helped to show the place of transdisciplinary and systems transdisciplinary approaches in the structure of academic and systems approaches. The "Gauss curve" also demonstrated the step-by-step "broadening of the

The full paper was previously published as the following and is being presented at this conference:

Mokiy, V. S., & Lukyanova, T. A. (2022). Modern transdisciplinarity: Results of the development of the prime cause and initial ideas. *Issues in Informing Science and Information Technology, 19,* 97-120. https://doi.org/10.28945/4951

Abstract published in *Proceedings of InSITE 2022: Informing Science and Information Technology Education Conference*, July 6-7 [online], Article 2. Informing Science Institute. https://doi.org/10.28945/4931

	scientific worldview horizon due to sequential intensification of synthesis, integration, unification, and generalization of the disciplinary knowledge."
Contribution	After reconsideration of the results on qualitative analysis of the literature reviews, the generalized definition of transdisciplinarity could be formulated, including the definition for transdisciplinary and systems transdisciplinary approaches. It was proven that transdisciplinarity is a natural stage for the development of contemporary science and education, and the transdisciplinary approaches were able to suggest the methods and tools to solve the complex and poorly structured problems of science and the society.
Findings	Many existing stereotypes of transdisciplinarity do not meet its prime cause and initial ideas. Such stereotypes do not have deep philosophic and theoretical substantiation. They also do not suggest the transdisciplinary methods and tools. Thus, the authors of such stereotypes often claim them to be transdisciplinary or suggest perceiving them as transdisciplinarity. This circumstance is the reason why many disciplinary scientists, practitioners, and initiators of higher education view transdisciplinarity as a marginal direction of contemporary science. Based on the generalized definition of transdisciplinarity, as well as its prime cause and initial ideas, it was shown that transdisciplinarity is presented in contemporary science in the form of two different approaches, i.e., the transdisciplinary approach and systems transdisciplinary approach. The objective of the transdisciplinary approach is to ensure science development at the stage of synthesis and integration of disciplinary knowledge, while the objective of the systems transdisciplinary approach is to ensure that the problems of modern society are solved through unification and generalization of the disciplinary knowledge.
Recommendations for Practitioners	The practitioners should take into consideration that the transdisciplinary and systems transdisciplinary approaches have different specific features. Within the limits of the transdisciplinary approach, a team of disciplinary specialists forms a new method to solve each new problem every time. As a result, the solution of the problem is created based on the consensus formed by compromises. Such a solution is difficult to be risk analyzed. Within the limits of the systems transdisciplinary approach, a team of disciplinary specialists uses a universal systems transdisciplinary methodology to solve each problem. In this case, the disciplinary specialists do not seek compromises, but perform their part of research using the disciplinary methods and tools. The disciplinary results are unified and generalized by the generalist specialist, who has a methodology of the systems transdisciplinary approach. Thus, the solution of the problem should be subject to risk analysis since it is included into the basic research process.
Recommendations for Researchers	The researchers should consider that within the limits of the transdisciplinary approach, the disciplinary specialists are managed. Within the limits of the systems transdisciplinary approach, the disciplinary knowledge is managed. Thus, the transdisciplinary approach is efficient for organization and research with participation of the scientists of the complementary disciplines. An example of such research can be a team of researchers of medical disciplines and complementary disciplines from chemistry, physics, and engineering. The systems transdisciplinary approach is efficient for organization and performance of research with participation of the scientists of non-complementary

disciplines such as economics, physics, meteorology, chemistry, ecology, geology, and sociology.

Impact on Society

The prime cause of transdisciplinarity is associated with a desire of economists, politicians, and managers to find a method of efficient long-range forecasting, planning, and control of social and economic development of the modern society, as well as the search for the solution to current problems accompanying this development. The transdisciplinary approaches formed the methods and tools to solve these tasks. Although society could use the advantages of the transdisciplinary approaches, it is necessary to ensure that in the consciousness of the disciplinary specialists, "the desire to have such approaches" should coincide with "the desire to apply such approaches" for the benefit of the society.

Future Research

In terms of the main initial idea, transdisciplinarity is formed as a global approach. The global approach should have a traditional institutional form. This implies that it should be a science discipline (meta-discipline) and have carriers with the transdisciplinary worldview. Training for such carriers can be organized by the universities within the limits of the systems transdisciplinarity departments and Centers of Systems Transdisciplinary Retraining for Disciplinary Specialists. Thus, it is reasonable to initiate discussions for the idea to reform the disciplinary structure of the universities while considering the creation of such departments and centers.

Keywords

transdisciplinarity, transdisciplinary research, systems approach, systems transdisciplinary approach, higher education

AUTHORS

Vladimir Mokiy (https://orcid.org/0000-0002-7107-8089) is the Head of the Russian School of Transdisciplinarity (http://td-science.ru); Head of the Scientific Research Laboratory of Transdisciplinary Planning and Forecasting in Kabardino-Balkarsky State University, Russia (from 1996 to 2003); Director of Institute of Transdisciplinary Technologies, Russia (from 2007 to present); Member of the Russian Philosophical Society (from 2015 to present); Member of the Society of Architects of Russia (from 2013 to present); Member of the International Academy of Organizational Sciences, Russia (from 2016 to present); and Member of the Research Group Systems Science and Philosophy of the Bertalanffy Center for the Study of Systems Science (BCSSS), Austria (from 2017 to present); Individual Founding Members of the Global Alliance for Inter- and Transdisciplinarity (from 2022 to present). A complete bibliography of Dr. Vladimir Mokiy can be found by following this link: http://td-science.ru/index.php/kabinet-direktora/26-eng/473-curriculum-vitae

Tatiana Lukyanova (https://orcid.org/0000-0002-7634-303X) is the Leading expert of the Russian School Transdisciplinarity (http://td-sci-ence.ru); Project manager for the protection of biological resources in government agencies, Russia (from 1998 to 2007); Leading specialist of Institute of Transdisciplinary Technologies, Russia (from 2007 to present). Specialist of the Center for Sustainable Development, Kabardino-Balkar State University, Russia (from 2020 to present); Individual Founding Members of the Global Alliance for Inter- and Transdisciplinarity (from 2022 to present).