


Integrative role of human geography in solving global problems of modernity

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ABSTRACT

The purpose of this article is to substantiate the integrative role of human geography based on the information-synergistic paradigm and UN materials on sustainable development in solving global problems of the 21st century.

Results. The analysis of previous studies and the relevance of the chosen research topic indicate the high place of geography in general and human geography in particular. Such an analysis indicates of the importance of the raised topic and the integrative role of human geography in the leading universities of the world, which determines its important worldview, mental and cultural role in society. It can ensure the survival of the contemporary civilization of our planet and ensure the right for future generations to live and evolve in favorable conditions of the biosphere. More and more scholars are advocating the importance of geography as an integrative discipline and a leader in providing education for sustainable development. The article presents the integrative role of human geography in solving the global problems of present, namely the interaction in the system "Human - Society - Nature". The article provides a thorough analysis of the main UN documents on the implementation of the strategy of sustainable development in the life activity of society and the education system. Human-geographical science and education are considered from the standpoint of the tasks of post-non-classical science of the 21st century. The article describes the formation of the foundations of education for sustainable development, which should be anticipatory in nature, widespread in various regions of the planet with the support of all countries of the world. The article defines the essence of post-non-classical science, the role of individual sciences in solving the global problems of present and the place of human geography in it. The concept of the information revolution of the contemporary world, the role of sciences in it, in particular information geography, is justified. The article provides a detailed overview of the development of human geography in the leading universities of the world and Ukraine and analyzes the their research areas. The analysis of educational problems of human geography in Ukraine and V. N. Karazin Kharkiv National University was carried out. An analysis was conducted to reveal the features of the structure, content, methods and methodology of human geography in the leading countries of the world, Ukraine and at our university. The article states that the main trends of the world's leading universities regarding the development, place and role of human geography as a complex science of human, society, and nature are powerfully implemented in our university. It is also stated that human geography has a powerful meaning, because it should contribute through its research and educational programs to the formation of the foundations of a global mentality, the basic conditions of global culture in particular. Based on the conducted research, the article presents the main points of development of human geography, in particular in Ukraine, to ensure its integrative role in plans for the future development of the planet in terms of the sustainable development requirements.

Taking into account the modern demand for the integration of scientific research and the necessary changes in the education system, this study reveals the role of human geography as an integrative science and education in accordance with the requirements of sustainable development and overcoming global problems of civilization.

Keywords: *human geography, human-geographical research, system, synergy, society and nature, information geography, geographic education, sustainable development, education for sustainable development, contemporary global problems.*

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Problem Statement. Nowadays the global world is rapidly changing, and it is in a state of constant changes, shocks negative for society and the natural environment, and dynamic instability of many components. Mankind is experiencing not just problems of a global nature but a global civilizational crisis of the systemic nature, covering all regions and countries of the world, all spheres of society. This crisis has a gigantic scale and unpredictable consequences for humanity and the planet. The question is: what to do? How to find a way out of the crisis which is increasing its catastrophic effects, threatening to destroy all life on the planet? The problem concerns politicians, public figures, educators, and scientists of all fields, each person in particular. Humanity as a global society must change its guidelines, reconsider and limit its needs concerning the environment. Without interaction with environment, it cannot exist and develop further, form its environmental views, creating a global mentality in interaction in the system "Human – Society – Nature". We are talking about the formation of the foundations of education for sustainable development, which should be proactive, and widespread in different regions of the planet with the support of all countries of the world. The integration of human geography with the natural sciences, humanities, and social sciences is an objective process and testifies to the superposition of the subject areas of these sciences and their significant potential. Integrity and interdisciplinarity, the complexity of the object-subject area of study of human geography, the breadth of its applied tasks (including in achieving sustainable development) provides it with a leading position in solving these problems [53].

Analysis of recent studies and publications indicates a high place for geography in general and human geography in particular. More and more scholars are committed to understanding the significance of geography as an integrative discipline and leading one in providing education for sustainable development. The high standards, approaches, methodology, and resources of geographic education for studying the interaction of world systems, humans and the environment at the local, regional and global levels are emphasized.

Issues of geographical education in the aspect of sustainable development are raised in the M.E. Meadows' works (2020), which proves that geographical education is an important tool for under-

standing the content, orientation of sustainable development goals and how to achieve them [12]. Geography as a "science of sustainable development" is increasingly important in developing knowledge and skills to provide future generations with the tools to overcome the global crisis.

An analysis of educational programs in the field of geography at German universities, taking into account the formation of competencies for sustainable development, is presented in the S. Sprenger's paper (2018) [34]. A. B. Murphy (2007) emphasizes the growing importance of geography in the United States, increased public interest in geographic knowledge, awareness of geography in other disciplines, development and widespread adoption of GIS technologies, the growth of the labor market for geographers, and improvement of geographical education [14]. Donert, K. (2007) revealed some issues of geographical education in the system of higher education of European countries [7].

The justification of the revolutionary changes in traditional ideas about the standards of geographic education, which is included in the concept of "Powerful Geography", is presented in Boehm, R. G. et al. (2018) [5]. The concept of "Powerful Geography" involves combination of principles of human abilities, the theory of powerful disciplinary knowledge and the concept of the free curriculum to train geography teachers as a social discipline. As well as it includes their further work in modeling geographical knowledge, skills and the best training to achieve personal, career goals, and aspirations.

Although geography on board with philosophy, history and foreign languages is recognized as one of the four compulsory disciplines in the UNESCO's recommendations on education in the XXI century, the place of geography at all levels of education in Ukraine is still uncertain and unreasonably understated [1]. The Ukrainian geographers repeatedly raised the issues of determining the significance and potential of geography as a science, geographical education in the context of solving global problems of modernity. In particular, D.S. Malchikova and K.V. Mezentsev (2022) analyzed the process of contemporary transformation of the standards of basic geographical education in Ukraine and foreign countries and determined the impact of this process on the formation of a public image of geography [46]. In our previous studies, we paid attention to the realities,

challenges, experience of changes in human-geographical science and education [53], trends in the post-industrial development of society and the role of human geography, expanding its capabilities through the information and synergetic component [49, 51, 52], the issue of training specialists in the field of human geography and regional development in Ukraine [48], educational and ideological opportunities of geography as an integrating discipline in view of achieving the goals of sustainable development [50].

This article justifies the integrative role of human geography based on the information and synergetic paradigm and UN materials on sustainable development in solving global problems of the XXI century.

The research tasks are:

- analysis of the main UN documents on science and education to identify priority issues for overcoming global problems of humanity;
- definition of the essence of post-nonclassical science, the role of individual sciences in solving global problems of modernity, and the place of human geography in it;
- substantiation of the concept of the information revolution of the contemporary world, the role of sciences in this, in particular information geography;
- review of the development of branches of human geography in leading universities of the world, Ukraine and analysis of directions of their research;
- review of educational problems of human geography in Ukraine and V.N. Karazin Kharkiv National University; identification of the main points of human geography development, in particular in Ukraine; to ensure its integrative role in the future development plans of the planet in terms of sustainable development requirements.

Presentation of the main material of the study. Attention to the growing problems on the planet has been drawn for a long time, and since the middle of the twentieth century it has been taken care of by powerful international organizations (UN, NATO, UNICEF, etc.), which play a coordinating and organizing role in research, discussions of the situation.

From the point of view of synergetics as a complex component of post-nonclassical science of the XXI century, it is necessary to consider the existence on the planet of a global system of a social, natural, technogenic nature with many subsystems of different nature and hierarchical level. In the aspect of human geography, we will talk about the global social and geographical system, namely a complex, thermodynamic, open, hierarchical system with powerful internal and external information connections and influences.

The main problem of the contemporary state of the global social and geographical system is the following: a person, whose life is based on powerful technologies and means of influencing nature, has become a powerful force and carries out a powerful expansion in the environmental niche of the planet. Pressure on the biosphere has reached its limits. According to Erwin Laszlo, a member and active figure of the Club of Rome, humanity has already entered the era of bifurcations due to its unreasonable activity on the planet [10]. However, there are unknown movement directions of subsystems of the global social and geographical system to attractors, their changes, and losses. But it is already well known that the power of technogenic civilization does not allow to function the laws of nature, which evolutionarily were formed over many millennia and provided self-support, self-development, and self-organization of the biosphere. The anthropocentrism of society is the basis of global natural and social disasters, the growth of tension between countries, etc. Human is an author of the majority of human-made disasters on the planet, and it is up to him to correct the troubles and misfortunes of his human-made victories in the biosphere.

Without dwelling on many components of the global socio-geoecological crisis of the planet, let's consider some issues of overcoming it. This should be embedded in the renewal and transformation of education. Synergetics is an interdisciplinary science that gives impetus to the same direction of other sciences about nature, humans, society, technology. The science and education can provide a completely new nature-centered self-organizing environment on our planet for the formation of global human values, world-class, and understanding of culture. Without it is impossible to overcome military aggression and conflicts, religious, political, cultural misunderstandings, and problems. The basis of this approach is the fundamental nature of education, the ability to form a holistic view of nature, human, society and its technical and technological capabilities. The combination of the humanities and the natural sciences through education can have a powerful impact on changing "human qualities".

As is well known, education always performed many important functions in society; in particular a significant one is the transfer of social experience of generations. It did this task, teaching a person to live in unity with nature many years ago. Nowadays a powerful flow of information, contemporary information technologies, forming confidence in the omnipotence of human and his influence technologies, changes in the environment are not enough. It is necessary to give comprehensive knowledge, practical skills for living in an era of rapid change, the spread of adversity in the natural and social. Change must

concern science and education together, in unity. Contemporary science provides technogenic civilization with powerful means of influencing the natural environment for the rapidly growing needs of mankind, thereby accelerating the growth of the economic, social sphere. At the same time it excludes aggravation of the geocological crisis of consumption due to the destruction and pollution of the environment, decrease in non-renewable resources, and deterioration of the climate situation in many regions of the world. Consequently, education based on post-nonclassical science should have a proactive character and lay the foundations of the civilization that can save the world from global problems of the anthropogenic nature.

Since the end of the twentieth century the efforts of progressive scientists of various scientific directions have given light of hope for the survival of mankind through combining efforts to change the behavior of society. The apogee of these efforts ended in 1992, when the World Summit on Sustainable Development was held in Rio de Janeiro (Brazil) [41]. The era of further efforts of scientists, politicians, public associations for the development and further implementation of documents of sustainable development in science, education, and consciousness of global society began.

Today, the strategy of sustainable development is the leading strategy for the further existence of the information (post-industrial) society.

There is no reasonable alternative to sustainable development, and the entire world community is taking certain steps to switch to a new strategy for its development in the 21st century. Ukraine lags far behind other countries in this process. This process can be accelerated by forming and functioning a new education system, namely education for sustainable development.

Sustainable development involves not only the competent, rational use of natural resources by current generations, but also measures to preserve the environment in the name of the life of future generations. Therefore, an important point of education for sustainable development is practical implementation of the laid foundations of sustainability, ensuring early action to solve environmental problems, as well as problems of sustainable economic and social development.

"Agenda 21" was the first international document that identified education as an important tool for achieving sustainable development and highlighted areas of activity in education. "Agenda 21" states that "education is the foundation of sustainable development" and the main tool for creating a humane, equal and attentive to human problems society in which every individual should have own human dignity and a decent standard of living [2]. Obviously, the main

reason for the emergence of education for sustainable development is the awareness of the need for changes in the educational paradigm to further sustainable development of society, the economy and preservation of the environment. Education for sustainable development involves the transition of such an economically and socially oriented education model, which should be based on broad interdisciplinary knowledge. This knowledge is based on an integrated approach to the development of society, which allows making and implementing decisions at the local and global levels. These decisions are aimed at improving the quality level of living which are not threaten the ability of future generations to meet their needs [40]

Education for sustainable development is at the heart of the United Nations programs. It defines education as encouraging changes in knowledge, skills, values and attitudes to ensure a more sustainable and just society for all [38].

In the UNECE Strategy for Education for Sustainable Development, the overarching goal of education for sustainable development is the statement that "all people should have the knowledge and skills to contribute to a sustainable development process which meets the needs of the present and does not compromise the ability of future generations to meet their needs.... Education... should allow individuals and societies to work for sustainable development. Its goal is to make people more informed, moral, responsible and demanding..." [9, 39]

The contemporary concept of education for sustainable development is mainly based on the following international acts on the development of environmental education: Belgrade Charter, 1975 [36], Tbilisi Declaration, 1977 [35], Declaration of Thessaloniki, 1997 [6].

The general international documents on sustainable development, which contain separate provisions on education for sustainable development are the following: Agenda 21, 1992 [3], Report of the UNECE Regional Ministerial Meeting for the World Summit on Sustainable Development, The Sixth Environment Action Programme of the European Community 2002-2012, 2001 [37], United Nations Millennium Declaration, 2002 [31, 42].

The special international documents on education for sustainable development are the following: Dakar Framework for Action "Education for All: Meeting our Common Commitments" (text was adopted by the World Education Forum, Dakar, Senegal, 2000) [44], An Agenda 21 for Education in the Baltic Sea Region (adopted by the Meeting of Ministers of Education of the Baltic Sea Region, Stockholm, Sweden, 2002) [4], Sofia Conference on Adult Education (Sofia, Bulgaria, 2002) [33], UNECE Ministerial Statement on Education for Sustainable Development [45] (Kyiv, Ukraine, 2003), Basic Ele-

ments of the UNECE Strategy on Education for Sustainable Development (Kyiv, Ukraine, 2003), Draft UNECE Strategy on Education for Sustainable Development (Geneva, Switzerland, October 2004) [39].

In 2005 The UN General Assembly proclaimed the “Decade of Education for Sustainable Development” [38]. In 2015, leaders of all countries at the UN summit expressed support for the transition to sustainability through the implementation of 17 Sustainable Development Goals for the period till 2030 [43]. At the same time, education is formulated as an independent goal, and all other goals of sustainable development and their tasks are also related to education. In 2016 Ukraine developed a national system for sustainable development, which includes 86 tasks and 172 indicators (7 tasks and 11 indicators for education) [43]. In 2017 UNESCO developed recommendations for harnessing the potential of education to achieve each of the Sustainable Development Goals (SDGs) [8].

Education for sustainable development aims to form a worldview based on the principles of sustainable development, systematization and assimilation of information on such development. The peculiarity of education for sustainable development is the following: it covers the environmental, economic and social problems of education and upbringing from the perspective of forming a new system of value orientations and models of behavior of the younger generation and society as a whole. It significantly complements and expands the framework of environmental education, and allows all aspects of educational activities to be developed in the context of sustainable development. Its diversity of topics requires the use of complex elaboration. It makes it possible to create a systematic mechanism for transforming life priorities at the individual level and, therefore, to ensure the leading function of education concerning the modeling of social processes.

Particular attention should be paid to the practical implementation of sustainable development models, the formation of appropriate norms of behavior and lifestyles, and an active public position on implementing sustainability in the everyday experience of children and adults. Ukraine needs a responsible and strategically-minded young generation for its future survival. This need must be met primarily through education by creating schools of advanced education for sustainable development, developing children's value orientations that meet the needs of sustainable development as personally important and appropriate.

The issues of sustainable development should become an important component of contemporary education. Sustainable development should be seen as a universal and necessary element of everyday life and included in all subjects and disciplines. It is necessary to strengthen the relationship between the

natural and social sciences, introducing interdisciplinary approaches. The traditional emphasis on teaching individual subjects should be maintained in education, while opening up opportunities for multilateral analysis of real-life situations. All this will affect the structure of curricula and teaching methods and require lecturers to abandon the role of only information carriers, and students from the role of only information consumers.

Sustainable development requires a concept of education aimed at an integrated and dynamic approach that considers the importance of critical thinking, social learning and participation in society. That is why economic, social and environmental aspects are intertwined in education for sustainable development. In a broader context, ethics and equity are important components of education for sustainable development.

All materials of world forums, normative documents on their basis are embodied in the strategy of education for sustainable development and should be in educational programs of all levels. This gives hope for the search and implementation of ways to restore historical values, ensure the unity of human and nature from the local to the global level on the basis of changing not only knowledge, behavioral skills, but also the formation of a culture of these relationships through nature-centric science, a new philosophy of behavior, etc. The restoration of social experience can be possible through an educational system based on a proactive character, known and unknown attractors, the emergence of “strange attractors”, whose behavior is almost impossible to predict.

As it is well known, synergetics began to develop very rapidly from the end of the twentieth century, first within the framework of physical science. Then they covered other natural, social and human sciences. Initially, the basis of synergetics was dominated by mathematics, its conceptual apparatus, methods, but increasingly spread in the behavioral sciences, humanities, etc. In the field of subject-object area of synergetics are complex thermodynamic systems, their stability and instability, chaos in nature and society, the possibility of self-improvement of such systems, self-regulation and self-organization, self-development, self-preservation, determination of the role of random factors leading to strange attractors, natural and social disasters, revolutionary changes in systems. All these aspects can and should comprehensively explore the sciences of human, society, nature, technology based on the embodiment of the information-synergetic paradigm. In particular, the documents on sustainable development and the tasks of education speak not only about interdisciplinarity, but also raise important issues of the anticipatory nature of such education, changes in teaching methods from a simple transfer of knowledge to a

practical and project form. It ensures the formation of sustainable skills and competencies, including on real materials of the local level. We believe that the geographical component of education is fundamental in the formation of knowledge, skills, attitudes and practices, taking into account the sustainable development goals. It allows people to make more informed decisions for the survival of present and future generations. The potential of geography is underestimated, given the formation of a holistic comprehension of the global problems of mankind, as it covers the achievements of both natural and social sciences. A powerful base of geography as a science of sustainability is formed based on their integration, which gives powerful knowledge through the prism of spatial patterns of interaction between society and nature [11].

Human geography is an integrative science that allows comprehensively analyzing the complex processes of synergetic nature occurring in the world social and geographical system, to respond to the current challenges of present effectively. That is why studying human geography is extremely important for higher education, and it is represented in leading universities of the world, Europe and Ukraine. In many countries of the world, geography and human geography in particular is contained in various educational fields, but its integrative, culturological orientation remains. We consider the features, state and prospects for the development of geographic education and science in the top 10 universities in the world according to QS World University Rankings, namely: University of Oxford, London School of Economics and Political Science, University of Cambridge, University of California Berkeley, National University of Singapore, University of California, Australian National University, University of British Columbia, University College London and University of Hong Kong as well as Akdeniz University and V. N. Karazin Kharkiv National University (*Table 1*).

We consider the correspondence of the level of human-geographical education and science to the challenges of modernity at the leading universities of the world, and other higher education institutions that were not included in the ranking in 2022, but have a significant potential in the development of human-geographical education and science.

The study of human geography at the University of Oxford is carried out through various academic departments and interdisciplinary programs offering specialized courses and research opportunities [28]. The most relevant areas in scientific research are the study of the spread of COVID-19, the interaction of the economy and society, transformational processes in society and justice, research in the field of energy, comprehensive research on the interaction of society and nature, geopolitical research, the interaction of

local authorities and society, technological and technical aspects of society, population mobility, transport, and logistics research. The University of Oxford focuses on scientific research, critical thinking, and intellectual exchange, creating a stimulating environment for students interested in studying and understanding human-geographical processes.

Human-geographical education is also actively implemented at the London School of Economics and Political Science [20]. The study of human geography is viewed through a multidisciplinary prism, combining social, economic, and political perspectives. The School offers a range of programs and research opportunities that reveal different aspects of human geography and its intersection with the global challenges of humanity. The teaching and research of human geography is influenced here by the school's broad approach to studying the social sciences. The most important scientific areas at the London School of Economics and Political Science are: economic geography, environment, and urbanization, planning and development. The activity of the school emphasizes field research, interaction with experts, experience of expeditionary work and contributes to the creation of a lively and intellectually stimulating educational environment.

Human geography at the University of Cambridge is actually studied at various academic faculties as part of interdisciplinary programs, but the formation of a powerful intellectual environment for studying human geography is ensured [26]. The university emphasizes effective research, interdisciplinary interaction and intellectual exchange, which creates a stimulating and enriching environment for students interested in studying the features of human geography.

The study of human geography at the University of Berkeley [23] is provided by various topics, including urban geography, cultural geography, political ecology, economic geography, and GIS (Geographic Information Systems). Field research, practice and expeditionary activities are essential for future human geography specialists. The University also organizes workshops, conferences and public lectures of famous scientists, allowing students to participate in debates and discussions and be aware of current trends in the development of human-geographical science.

The study of human geography at the National University of Singapore is carried out through interdisciplinary programs, research opportunities and a focus on understanding the spatial dynamics of society and its environment [21]. Students have the opportunity to participate in field studies, excursions and expeditions, to implement research projects in local communities and within international projects, as well as to gain their own experience in collecting, an-

Table 1

Place of human geography in the world's leading universities (constructed by the authors)

| No. | Higher Education Institution | Structural unit providing educational services | Levels of training | Study programs | Research Centers |
|-----|------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| 1. | University of Oxford (UK) [28] | Department of Social Sciences, School of Geography and Environment | Bachelor of Geography, Bachelor of Science, Master of Science, Doctor of Philosophy (PhD) | "Nature, Society and Environmental Management", "Sustainable Development, Entrepreneurship and Management", "Geography and Environment" | Center "Future of the city", Department of Transport Research |
| 2. | London School of Economics and Political Science (UK) [20] | Department of Geography and Ecology | Bachelor of Geography, Bachelor of Science, Master of Science, Doctor of Philosophy (PhD) | "Environment and Sustainable Development", "Economic History and Geography", "Human, Geography and Urban Geography", "Urbanization and Urban Development", "Regional Urban Development", "Human, Geography and Urban Studies", "Regional and Urban Planning", "Economy, Ecology and Climate Change", "Urban Policy". | There are research centers and initiatives that focus on topics related to human geography, in particular - the "LSE Cities Research Center", |
| 3. | University of Cambridge (UK) [26] | School of Physical Sciences, Faculty of Earth Sciences and Geography, Department of Geography, Department of Geography, Archaeology and Anthropology | (Bachelor, Master, Doctor of Philosophy, etc.) | "Geography of Life activity", "Geography of Infrastructure", "Geography of Education" | Cambridge Centre for Environment, Energy and Natural Resources Management, Centre for Geopolitics. |
| 4. | University of Berkeley (USA) [23] | College of Literature and Science, Department of Geography, Institute of Urban and Regional Development | (Bachelor, Master, Doctor of Philosophy, etc.) | "Development of society and the environment", "Urban Geography" | Center for Global Capital Studies, Gentrification Research Center |
| 5. | National University of Singapore (Singapore) [21] | Faculty of Arts and Social Sciences, Department of Geography | Pre-university training, bachelor, master of science | "Urban Geography", "GIS", "Sustainable Development" | Asia Research Institute, Asia Sustainable Cities Research Center |
| 6. | University of California (USA) [25] | Department of Geography | (Bachelor, Master, Doctor of Philosophy, etc.) | "Cultural Geography", "Geospatial Systems and Technologies" | There are centers dedicated to urban studies, environmental sustainability, social justice and regional development |
| 7. | Australian National University (Australia) [19] | Fenner School of Folklore and Society | Bachelor, Master of Science | "Sustainable Development", "Urban Systems" | Center "Human Ecology" |
| 8. | University of British Columbia (UBC), (Canada) [24] | The Vancouver Campus, Faculty of Arts, Department of Geography | Bachelor of Geography, Bachelor of Science, Master of Science, | "Human Geography", "Environment and Sustainable Development" | Institute of Resources, Environment and Sustainable Development, Centre for |

| | | | Doctor of Philosophy (PhD) | | Human Settlements Studies |
|------|----------------------------------------------------------|--------------------------------------------------------------------|-------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|
| 9. | University College London (UK) [29] | Faculty of Social and Historical Sciences, Department of Geography | Bachelor of Geography, Bachelor of Science, Master of Science, Doctor of Philosophy (PhD) | "Economic Geography", "Geography of the World", "Social Geography", "Global Migration", "Human Geography", "Urban Geography", | Center for Leading Spatial Analysis, Laboratory for the Study of Spatial Transformations |
| 10. | University of Hong Kong (China) [27] | Department of Geography | Master of Sciences, Doctor of Philosophy (PhD) | "Geography and Urban Management" | Center for Urban Studies and Urban Planning, Center for Cultural Heritage Studies |
| 11.* | Akdeniz University (Turkey) [22] | Department of Geography | Bachelor, Master | "Human Geography", "Geography and Information Systems", "Urban Geography" | Research Center for Urban and Regional Planning, Research Center for Cultural Heritage Management and Tourism |
| 12.* | V. N. Karazin Kharkiv National University (Ukraine) [18] | Department of Human Geography and Regional Studies | (Bachelor, Master, Doctor of Philosophy, etc.) | "Economic, Social Geography and Regional Development" | Educational Laboratory for Socio-Economic and Information Technologies |

**some universities that were not ranked in 2022, but have a significant potential for human-geographical training*

alyzing and interpreting data. Fieldwork experiences enhance students' understanding of spatial dynamics, cultural landscapes, urban transformation processes, and environmental issues. The University also contributes to the implementation of powerful studies of complex world processes and the study of the global perspective of the development of human geography. The university's educational and scientific activities emphasize international cooperation and global prospects for the development of human geography, forming a dynamic educational environment for students interested in studying the global problems of humanity and the role of human geography in solving them.

The scientists at the University of California in Los Angeles focus on the following issues: demographic problems and racial composition of the population, spatial transformations and differentiation of development, cultural and historical geography, globalization, urban, political and economic geography, population migration, natural geography, human geography, methodology of geographical research [25]. The University of California system encourages interdisciplinary collaboration, allowing students to explore the connections between human geography and other disciplines such as sociology, economics, political science, anthropology, and environmental science. The study of human geography at the University of California system involves the availability of interdisciplinary programs, research projects, fieldwork experience, and involvement in solving real practical human-geographical problems. The emphasis of geographical education of this university is

focused on systematic research, cooperation and practical implementation of the acquired knowledge, creating a dynamic and intellectually stimulating environment for students interested in studying human geography.

Australian National University focuses on indigenous issues, human impact on the environment, the state of urban systems and the sustainability of cities, the development of geographic science methodology, interactive methods and their application [19]. Field studies and practices are important components of social and geographical education at the university. The school organizes excursions and research projects that allow students to observe and analyze real geographical phenomena. The specificity of the Australian University in educational and scientific activities is powerful scientific research, cooperation with leading scientists and practitioners, practical implementation of the knowledge gained.

Among the priority areas of the University of British Columbia are the issues of urbanism and economic development of cities, transnational trade flows, climate change, information geography, GIS and spatial analysis, geodemographic features (gender-age structure, racial composition), colonialism and justice, military geography and state security [24].

The study of human geography at this university encompasses a wide range of topics and approaches, particularly cultural geography, urbanism, economic geography and social justice. Students develop skills in spatial analysis, GIS (geographical information systems) and qualitative methods of human-geographical research. Field research and practice are

important components of receiving a geographical education at the University of British Columbia. Students can participate in excursions, public research projects and gain practical experience collecting and analyzing geodata. Fieldwork experiences enhance students' comprehension of spatial dynamics, cultural landscapes, urban transformation processes, and environmental issues. An important feature of geographic education at the University of British Columbia is the interdisciplinary cooperation and integration of various scientific areas to ensure the integrated nature of education and science.

It is worth noting geospatial analysis, sustainable use of natural resources, global health issues, demographic issues and population migration, including refugees and forced migrations, "brain drain", geography of world culture, feminist cities, global urbanism, urban infrastructure and housing urbanism, urban heritage among the main scientific areas at University College London [25]. Educational programs provide general training in human geography, covering its various components: urban geography, cultural geography, political ecology, economic geography and social theory. The specificity of human-geographical education in the college is to provide opportunities for obtaining a quality education, carrying out independent scientific research and testing their results.

The University of Hong Kong has opportunities to study applied geography and urban management [27]. Scientific research is specific and focuses on the study of China, its role and influence on the world stage, in particular by rethinking and recontextualizing China's strategic position through large-scale changes in economic and social structures, as well as the rapid process of urbanization over the past 40 years; research of cities and transport infrastructure using qualitative and quantitative research methods, analysis of the opportunities and challenges of rapid urbanization, as well as improving the growing complexity of transport planning and design, mobility and sustainability, security and management in megacities. The peculiarity of geographical education in this higher education institution is the emphasis on studying the Asian region and China itself, the problems and prospects for its development, the spread of influence and regional hegemony.

It is worth noting human geography, urban-geographical studies and the latest concepts of methods and techniques for using geospatial analysis tools (GIS) among the priority scientific areas of Akdeniz University [22]. The university is equipped with modern geospatial laboratories that provide students access to the most modern tools and software for geospatial analysis and mapping. Students can also join geographic clubs and associations, participate in research projects with faculty, and attend conferences

and workshops organized by the department. These activities contribute to forming an active academic community, allowing applicants to expand their knowledge, develop research skills and communicate with professionals in the field. This experience of the university fully corresponds to the modern demand for the level of geographical education. Department of Geography of the Akdeniz University also has an advisory board consisting of businessmen, local government representatives and NGO representatives. The course catalogs are shaped according to current problems and issues by holding regular meetings with the advisory board every year. In addition, bachelor students have to prepare a graduation thesis that deals with current and regional issues in order to graduate.

Human-geographical science and education is also actively developing at V.N. Karazin Kharkiv National University, and it is represented by the following areas: human geography and sustainable development, demography, migration processes, social geography, political geography and geopolitics, urban geography and urban planning, geography of agriculture and agro-industrial complexes, regional geography and peculiarities of regional development [13, 15-18, 32]. Particular attention is paid to studying the theory and methodology of human-geographical science and information geography as a new and promising field. Students gain a deep comprehension of spatial development models, processes and dynamics of human-geographical processes, exploring ways of the spatial distribution of the population and opportunities for regional development. Much attention is paid to international cooperation, obtaining and implementing the experience of the best universities in Europe and the world in lecturers and students' educational process and research work.

In general, the training of specialists in specialty 106 Geography takes place at all three levels of higher education in Ukraine. 17 higher education institutions of Ukraine train bachelors and 14 higher education institutions of Ukraine train masters within the specialty 106 Geography. There is a fairly wide variety of proposed educational programs, including programs in the field of geography, recreation and tourism, natural geography and environmental management, human geography and regional studies [48]. Content analysis of educational programs of the first and second levels of higher education of these universities indicates a wide range of specialized disciplines that contribute to the formation of highly qualified specialists in regional development, its monitoring and management based on the formed potential of knowledge in the field of human geography and understanding of the peculiarities of the interaction of society-environment-economy and the formed spatial thinking [18].

Therefore, the necessary measures to improve the structure, content, and measures for the implementation of the educational field of this science have been proposed based on the analysis of the place and role of human geography as an integrative interdisciplinary science in solving global problems of humankind. Such changes should be based on the evolutionary synergetic approach to forming knowledge, practical skills, etc. Human geography and its educational component meet all the requirements of this approach. Human-geographical education and its educational programs should include interdisciplinary, synthetic courses. Cross-cutting and leading lines are historicism, evolutionism, information and synergetic laws and the principle of construction.

Human geography as a science has a powerful direction of further development based on interdisciplinarity, from the standpoint of synergy, which is extremely important in the instability and unpredictability of the development of global society of upheaval, chaos and catastrophes in present. Involvement of a wide methodological toolkit and various scientific approaches provides comprehensive and verified research results. It is also important to cooperate with stakeholders, particularly local and regional authorities, communities, politicians, practitioners, scientists of other research institutions and higher education institutions. Such cooperation creates the basis for expanding the social demand for science and education.

Based on the principles of sustainable development, contemporary human geography is designed to be an ambassador for solving global challenges. Therefore, human-geographical research should lead in solving complex global challenges, such as urban sprawl, demographic problems, social inequality, problems of war and peace, etc.

Among the prospects provided by high-quality human-geographical education, the leading place is occupied by the integration of new technologies, such as spatial analysis and forecasting of development, the introduction of the foundations of information geography, remote sensing, big data analytics and geospatial modeling. These areas allow forming a new comprehension of spatial processes and approach the transformation of the human-nature interaction, positively solve tactical and strategic compromises.

Information geography is one of the powerful tools for the transition of human-geographical education to a qualitatively new level of development because it focuses on the formation of skills for mastering and processing the rapidly growing flow of information, the study and application of geographical information systems, remote sensing, spatial analysis and the introduction of geospatial technologies. The analysis conducted by the authors demonstrates that the development of information geography and its

implementation in the educational and scientific process in the leading universities of the world has increased significantly in recent years thanks to the corresponding main trends in the development of education and science. Information geography is an interdisciplinary science, based on geographical concepts and methodology of computer science, synergetics, cybernetics, statistics, earth sciences and other related disciplines. Leading universities recognize the importance of interdisciplinary education and offer programs integrating geospatial technologies with different areas of human geography such as urban planning, environmental management, health, transport and social sciences. This important human-geographical area ensures the excellence of research, and therefore some of the world's leading universities have established research centers, institutes and departments dedicated to information geography. They focus on improving geospatial technologies, developing innovative methodologies, and addressing pressing societal challenges. They contribute to developing theories, algorithms and applications related to GIS, remote sensing, spatial analysis and data visualization.

All bachelor's, master's, and PhD programs of the world's leading universities have been implemented to some extent and continue to develop information geography, providing a comprehensive and powerful educational component. Their basis is the mastery of geospatial technologies, data management, and implementation of geospatial analysis. Educational programs necessarily include practical experience, project-based learning and field studies to enhance practical skills and prepare students to solve real-world practical problems. Comprehension of the need for such training leads to the fact that universities and their research centers invest in advanced geospatial laboratories, high-performance computing resources, remote sensing equipment, and access to geospatial data repositories. Such resources allow researchers and students to conduct advanced geospatial analysis, process large data sets and develop innovative geospatial programs.

Leading universities also collaborate with government agencies, industry partners, and research institutions to address real-world challenges and drive innovation in education and research. This collaboration often includes collaborative research projects, knowledge sharing, and technology transfer, ensuring that academic research will have a practical implementation and positive impact on society's development.

Leading universities are implementing their contribution to open data initiatives by sharing geospatial data sets, developing open source software tools, and advocating for open access to geospatial information. This joint and open approach contribu-

tes to this direction's innovative development, research reproducibility and free access to geospatial technologies.

Therefore, the development of information geography as a component of human geography in the leading universities of the world is characterized by interdisciplinary cooperation, research excellence, improvement of educational programs, the availability of the most modern equipment, cooperation with external partners, opportunities for professional development and commitment to open data and open source software. These universities play a crucial role in developing geospatial technologies, promoting innovation in solving complex social problems through the application of information geography and information development of society. It is worth adding about the importance of education and science in the difficult conditions of the present, war, social upheavals, a significant loss of intellectual potential, problems of restoring the economic potential of the country, the loss of stability of many regions, etc. There is a problem of strengthening the scientific component, training qualified specialists in policy issues, regional development, monitoring and planning of territories in further sustainable development. This is a problem of education. This is a problem of education and integrated interdisciplinary science, namely human geography.

Human geography has a powerful value, because it should contribute through its research and educational programs to the formation of the foundations of the global mentality, the fundamental conditions of world culture in particular. Information geography in this respect will continue to evolve rapidly. It is necessary to translate these changes into educational programs, to form relevant important students' competencies.

It should be noted that the main trends of the world's leading universities regarding the development, place and role of human geography as a complex science of human, society, nature are powerfully implemented in our university. Based on it we note that Kostiantyn Niemets was a generator of ideas for improving human-geographical science and education at our department. He was one of Ukraine's leading scientists in information geography as a component of human geography. He paid much attention to improving human geography's scientific and methodological apparatus. Rapid changes in the flow of various information about a person, society, nature, the aggravation of crises in the biosphere require the expansion of knowledge about various types of information, the search for new methods for mastering it and improving educational programs and theoretical and methodological foundations of our science on this basis [47]. The conceptual and terminological apparatus changes following the transformation of

science itself. The algorithm of this process is simple: a new social order for solving specific problems of society requires the development of new research methods and addressing these problems due to the impossibility of solving them within the previous theoretical and methodological paradigms. In turn, the latter causes the development of the conceptual and terminological apparatus, etc.

The conceptual and terminological apparatus of contemporary social geography was formed historically in the conditions of the development of science itself, starting from economic geography with its transformation into economic and social, socio-economic, and finally into human geography. It was a science not just geographical, but interdisciplinary by definition from the beginning. Therefore, scientific and methodological, methodological and terminological apparatus were formed accordingly. Many intersections from the beginning of development were from economics, mathematics, then from sociology, political science, cultural studies, computer science, etc. Undoubtedly, this development should occur in the near future at the expense of the conceptual and terminological apparatus of cybernetics, synergetics, systems theory, etc. Kostiantyn Niemets substantiated and considered the construction of the thesaurus, structure, content, and the formation of educational programs of geographical orientation in general and human geography in particular. In this aspect we note the significant work on developing the conceptual and terminological apparatus, research methods following global problems and social challenges.

The practical activity of human society poses new and new problems to science, causing rapid development and new research areas. Many bifurcation points are unpredictable in the interaction of society and nature, and the development of global civilization as a whole. This requires the implementation of synergetic laws in human-geographical research, which should cover new phenomena, challenges for answering the question of changes in human behavior and society as a whole, and directions for developing social and geographical systems at bifurcation points, in particular. Given the extraordinary complexity of contemporary challenges to the sciences of society, nature, and human on a global scale; the complexity of processes at all levels in different parts of the world, human geography with its powerful interdisciplinary approach should significantly expand its subject-object research area. Given the need to apply the laws of synergetics in human geography, it is necessary to implement the concept of nonlinearity as soon as possible in its scientific apparatus, which is used very limitedly, although this is one of the main qualities of contemporary social and geographical systems. Further research requires consideration of cross-cutting lines of humanization, in particular

cultural and behavioral geography, the development of behavioral maps that can become the basis for improving infrastructure, in particular transport, etc. Natural and social, purely anthropogenic cataclysms are rapidly spreading and problems. It requires the study of the mechanisms of the spread of anthropogenic cataclysms; in particular, this concerns natural and human-made disasters, their prevention, and overcoming with the analysis of natural and human losses, and financial resources.

The regional gaps in the levels of socio-economic development, availability of human potential, its prospects are growing rapidly in Ukraine. These processes will be intensified as a result of the war that Russia started against Ukraine, and the negative migration situation against this background. In general, there are processes of disintegration of countries under the pressure of globalization in the world. In the same aspect, research is needed on regional identity, in particular ethnic, racial, gender, age, professional, corporate, etc. An important issue for studying human geography is the regional mentality as the basis of regional identity in the new socio-political conditions. It should be noted that this problem was in the field of view of scientists abroad at the end of the last century. Since then an important concept of the cultural landscape has appeared, as the territory is historically inhabited by a certain group of people, namely bearers of certain cultural values.

Conclusions. Summing up the study of the important and complex problem regarding the role of science and education in overcoming the threatening problems of contemporary civilization, we note several aspects regarding the role of human-geographical science and education in these processes. Each science in a certain period of historical development performs certain important functions. Its success depends on the future of science itself and its contribution to the development of society, efforts to overcome global troubles, etc. The social order also sets the task for scientific developments, areas and, accordingly, the implementation of achievements in the

education system. The system of transferring the social experience of generations works according to this scheme. In the current crisis state of interaction of humankind with the environment, the means of technogenic civilization do not allow solving these problems. The problem is in a person, his worldview, the dominant role in the biosphere, etc. The leading scientists of the world raise the question of the need for revolutionary changes in "human qualities" [26]. Taking into account the contemporary demand for the integration of scientific research and the necessary changes in the education system, this study reveals the role of human geography as an integrative science and education following the requirements of sustainable development and overcoming the global problems of civilization.

A thorough analysis of the main UN documents on implementing the sustainable development strategy in the life activity of society and the education system was carried out. Human-geographical science and education are considered from the standpoint of the tasks of post-nonclassical science of the 21st century. The main role belongs to the information and synergetic paradigm in theory and methodology, practical activity. Hence a change in the functions of human geography, the structure and content of education is necessary. The authors analyzed the identification of features of the structure, content, methods and techniques of human geography in the leading countries of the world, Ukraine and in our university. These issues will be considered in more detail and thoroughly in the monograph of the scientists of the department, textbooks, etc. The analysis of previous studies indicates the importance of the topic raised and the integrative role of human geography in the world's leading universities, which indicates its significant worldview, mental and cultural role in society. It can ensure the survival of the contemporary civilization of our planet and ensure the right for future generations to live and evolve in favorable conditions of the biosphere.

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Інтеграційна роль географії людини у вирішенні глобальних проблем сучасності

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У статті представлено інтегративну роль суспільної географії у вирішенні глобальних проблем сучасності, а саме взаємодію в системі «Людина – Суспільство – Природа». В статті проведено ґрунтовний аналіз основних документів ООН з питань втілення стратегії стійкого розвитку в життєдіяльність суспільства та систему освіти. Суспільно-географічна наука і освіта розглянута з позицій завдань постнекласичної науки XXI століття. В статті розкрито формування засад освіти для стійкого розвитку, яка має носити випереджальний характер, широке поширення в різних регіонах планети за підтримки всіх країн світу. В статті визначено сутність постнекласичної науки, роль окремих наук у вирішенні глобальних проблем сучасності і місце в ній суспільної географії. Обґрунтовано поняття про інформаційну революцію сучасного світу, роль наук в цьому, зокрема інформаційної географії. В статті проведено детальний огляд розвитку галузей суспільної географії в провідних вузах світу, України та аналіз напрямів їх дослідження. Виконаний аналіз освітніх проблем суспільної географії в Україні і ХНУ імені В. Н. Каразіна. Проведено аналіз виявлення особливостей структури, змісту, методів та методики суспільної географії в провідних країнах світу, Україні і в нашому університеті. В статті зазначено, що головні тенденції провідних університетів світу стосовно розвитку, місця і ролі суспільної географії як комплексної науки про людину, суспільство, природу потужно реалізуються в нашому університеті. Також зазначено, що суспільна географія має потужне значення, бо має сприяти через свої дослідження і освітні програми формуванню засад глобального менталітету, засадничих умов загальноосвітньої культури зокрема. На основі проведеного дослідження в статті наведено основні точки розвитку суспільної географії, зокрема в Україні для забезпечення її інтегративної ролі в планах майбутнього розвитку планети в аспекті вимог стійкого розвитку.

Ключові слова: суспільна географія, суспільно-географічні дослідження, система, синергетика, суспільство та природа, інформаційна географія, географічна освіта, стійкий розвиток, освіта для стійкого розвитку, глобальні проблеми сучасності.

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