UDC 31

The political aspects role and significance of environmental education

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Abstract

Space technology and space activities are traditionally considered as a promising direction of development of civilization, a means of solving global problems. The present and future of mankind is unthinkable without astronautics. However, its practical results and consequences have been very contradictory and far from ideal due to the vices of national and international institutions, the lag of society in environmental education and education. The development of cosmonautics in Russia and the world went in a pre-ecological direction, and only at the end of the XX century, environmental problems began to be realized. The time has come to take stock of the development of space technology and activities in the twentieth century and to draw lessons in order to prevent a global catastrophe and to break the ecological deadlock in which modern space and society find themselves. Space technology is a set of technology in the field of space activities directly related to the exploration and use of outer space. It covers relevant ground facilities, aircraft, and technology. Greening of equipment is an improvement of the quality of equipment in the process of implementing environmental policy aimed at continuous improvement of the environmental management system, prevention of pollution, other harmful effects and consequences of technological progress.

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Keywords

Politics, space, practice, structure, dynamics, development.

Introduction

The overall results of the outgoing XX century testify to the deployment and growth of environmental problems caused by the rapid development of technology, including aerospace, industrialization, world wars, active conquest of nature, the development of nuclear energy, spatial expansion, including aerospace. Along with the problems, however, came the awareness of the limitations, limits of population growth and resource consumption, began environmental regulation, training of professionals and education of society.

Forecast for the XXI century: the global environmental problem will remain decisive. The alternative to over-industrialization, depletion of the earth's biosphere resources, global catastrophe and the death of mankind (pessimistic scenario) is the greening of technology and human activities, ecological restriction of spatial expansion and nature management, the transition to integrated environmental management (optimistic scenario).

The technical and social reality of the XX-XXI centuries presupposes the important role of space technology as a powerful means of civilization development and disaster prevention and at the same time as a source of global danger. In essence, we are talking about the balance of two objective processes: cosmization and ecologization.

The state and development of space, as well as any other technology, determine three main aspects: 1) the achieved social, scientific, technological level (background); 2) the volume, share of resources allocated for its development; 3) efficiency, i.e. the ratio of "benefit" and "harm" throughout the life cycle.

Based on the technical and social reality, to prevent a disaster, it is necessary to assess the balance of positive and negative impacts of space technology and to take measures to increase the "benefit" and minimize the "harm", taking into account the background and resource constraints.

All works devoted to this problem can be divided into three groups. The first promotes space exploration, justifies space expansion using mythology, idealizes positive opportunities, ignoring or underestimating environmental and other problems. The second defends the opposite position, harshly criticizing the space mythology, space exploration, and space organization. The third provides a balanced assessment of the possibilities, limitations, environmental problems and consequences of space exploration.

In General, there is an acute shortage of research and literature with a balanced assessment of the" benefits "and" harms " of space technology, with an analysis of the history, status, development forecasts and recommendations for environmental policy and management in the field of space activities.

Let us briefly consider the results, inherited problems and strategy of greening this sphere in the context of technical and social reality at the turn of XX-XXI centuries.

Cosmonautics has made a significant positive contribution to the development of Russia and the world community: going into space, the constant presence of people outside the Earth, the creation, use of communications, telecommunications, monitoring, including environmental, of the Earth from space, unique materials, technologies, control of military activity, etc. Thanks to cosmonautics, humanity saw itself and its space home - habitat in a new way, as in a mirror, gained knowledge about the world picture and the properties of the Earth, felt United on a beautiful, but limited, fragile planet. All this dramatically accelerated the development of civilization.

At the same time, space activity in the XX century was accompanied by an increase in

environmental danger and damage to people and nature, mass violations of environmental rights of citizens. During the 40 years of the space era, more than 5 thousand space objects have been launched in the world, about 20 cosmodromes have been created, and such activity is growing. Significant damage in the areas of space, missile polygons in areas falling fragments of rockets on the Earth's surface (affected more than 30 million ha), especially on the territory of Russia (Altay, Arkhangelsk oblast, etc.), as well as Kazakhstan, in near-earth space, where 3 thousand tons left people debris and irreversibly degrading the environment, losing their properties due to the exorbitant physical and chemical actions; excessively high environmental risk to humans in space [Dikeç, 2005].

Mass efficiency (ratio of payload mass to total launch mass) of the launch vehicle-1-3%. This is the efficiency of modern space technology, i.e. 97-99% of the mass of the launched systems-production waste, and very harmful to the surface and atmosphere of the Earth, its biosphere (gas emissions, spent stages, fuel residues, etc.). Starting weight 142 heavy launch vehicles-hundreds and thousands of tons (about 700 tons - "proton", Russia, "Arian", France and 2 thousand tons - "space Shuttle", USA).

Main part

Actual problems of space activity are high technical risk, increased accident rate (probability of launch vehicle accident 1-5%), the corresponding environmental consequences, etc. This is due to the fact that launch vehicles are usually multi-stage and disposable. Hence the extremely high total cost of space programs.

Most often, aggressive, highly toxic components of rocket fuel are used. One of the most acute problems – fuels-supertoxicants. A special place is occupied by asymmetric dimethylhydrazine (heptyl), which has the 1st class of danger. "All the first generation of heptyl tankers died. There is no register of persons who worked with heptil." In Altai the pathological medical phenomenon "yellow children" connected with influence on a human body of rocket fuel is widespread. According to the results of the research, which were published in the report of Yu. On the issue of rocket and space activities in the Altai-Sayan region (Altai regional Institute of ecological systems, Gorno-Altaysk) at the 4th scientific conference "Altai-Kosmosmikrokosm", held in Barnaul (June 1998), the surface area of 250 thousand km2(! The territory of the Altai-Sayan region of Russia (an elongated ellipse to the East, the center of the unique natural ecosystem of Altai) is contaminated with heptyl residues from the falling second stages of "Protons" and other launch vehicles launched from the Baikonur cosmodrome [Kallio, Häkli, 2011].

The problem of environmental hazards of space activities is not domestic. The process of exporting pollution and waste from highly developed rich countries is growing. So. the transformation of the territory of Russia into a landfill of space waste as a result of launches by Protons and other Russian launch vehicles of "foreign" satellites (especially telecommunications), carried out on orders of foreign corporations, has been added to the problems we already have. This is extremely beneficial for them: on the cheap, they get rid of many environmental problems, especially remote ones [Kallio, Häkli, 2011]. But things are not much better in the US. China, France, where dangerous fuels (hydrazine, heptyl, etc.) are also used. Huge areas are used for spaceports. Areas of falling stages of launch vehicles, spent objects falling to Earth after the termination of existence, occupy more than K) million km2. They are located not only on land, but also in the oceans. The creation of sea launch sites for launch, the expansion of the use of the ocean also lead to negative consequences [Walters, Lüthi, 2016].

Along with the intensification and expansion of space activities, problems are also growing.

Conditionally (according to the criterion of ecology) the history of space technology of the XX

century can be divided into two stages: 1) pre-ecological (until the mid-80s); 2) ecological (since the mid-80s).

Harmful effects of modern space technology cover the surface, surface and upper atmosphere of the Earth and near-earth space [Kong, 2002].

From the standpoint of the system approach, it is advisable to investigate and predict the ecological situation-environmental hazards and safety of space technology throughout the life cycle of facilities and technical systems (development, production, testing, operation, disposal of equipment and waste).

The main negative impacts on the system "man-society-nature" can be grouped as follows.

1) Pollution of the natural environment by harmful emissions of gases-products of combustion of rocket fuel and unworkable fuel residues in the areas of falling rocket stages, fuel spills, spray in the atmosphere due to incomplete combustion and subsequent hit the surface; space debris in near-earth space; falling fragments of equipment from space to Earth after the termination of existence, etc. [Browne, 2007].
2) Powerful noises, vibrations, electromagnetic radiation.
3) Long-term stay of people (astronauts) outside the Earth in an artificial habitat, under the influence of a complex of harmful factors: weightlessness, radiation, toxicity, microbiological contamination, electromagnetic fields, noise, vibrations, changes in light, powerful psychological stress, etc. [Bech, Borch, Larsen, Thrift, 2010].
4) High level of occupational diseases of personnel associated with CBS – the risk of long-term adverse effects on the life and health of the population.
5) Consequences of accidents.
6) The destruction of the natural environment due to the military use of space technology.
7) Waste pollution, environmental damage during liquidation and disposal objects (including military equipment and weapons).

The current state of space technology, its anti-ecological nature are the result of gross miscalculations in forecasting. Thus, in the 60s of the XX century, only the problem of space debris pollution of near-earth space was predicted. All other environmental concerns have actually been overlooked or underestimated [Low, Smith, 2013].

Most of the forecasts were and continue to be devoted to positive target impacts, with the reverse processes and negative consequences, as a rule, are considered superficially and incomplete.

Until recently, in Russia and the world there were no historical studies devoted to the environmental aspects (environmental hazard and safety) of space technology. (Only at the beginning of 1999 was the work published [Hartal, 2016]). It is a paradox in the conditions of mass greening of public consciousness and activity in attempts to prevent ecological catastrophe. Without the knowledge and use of historical experience, we are doomed to repeat mistakes, the social cost of which is constantly growing.

Dangerous trends in the development of space technology are, first, commercialization- space activities (the current global market is about $ 100 billion). with a steady growth of 5% annually) in the absence or ignoring of environmental restrictions; secondly, the increase in the number of launches of environmentally harmful launch vehicles and the creation of near-earth global systems with impacts exceeding the natural capabilities of the environment for self-recovery, which leads to its irreversible degradation.

The development of space activities at the turn of the XX-XXI centuries contradicts the existing system of environmental restrictions and priorities. In the new century, mankind is entering with antiecological space technology. Objectively, this contributes to the implementation of the pessimistic

scenario in the XXI century.

The criticism to which modern space activities in Russia and the world are subjected is largely justified and reflects the reaction of society to the gap between promises, declarations, enormous costs, on the one hand, and relatively modest results, large-scale harmful consequences, on the other. The potential of cosmonautics of Russia, the USA and other countries is used inefficiently, which is due to the military Genesis of most of the operated space technology facilities, a high degree of militarization and monopolization of the sphere of space activities, direct environmental irresponsibility [Ekers, Loftus, 2012].

The roots of the problems lie in the inherited policy of confrontation between States in the XX century and the weak control of society over the sphere of space activities. The beginning of the space age in 1957 and the rapid development of cosmonautics in the 60-90s of the XX century are a direct consequence of the race of strategic military and space capabilities of States in order to achieve national and international security.

However, the emerging scientific, technical and technological opportunities space exploration, exploration and use have not been intelligently and responsibly correlated with real needs and opportunities in the context of prioritizing other terrestrial survival and development challenges. This led to the "race of space research" that unfolded in the world in the 60-70s, a capacious social assessment of which is given in the dialogue A. Toynbee-D. Ikeda.

The reason for the anti-ecological development of space technology is not only in its military Genesis and excessive politicization. Closeness, elitism played a bad role in the fate of cosmonautics: initially aimed at solving universal problems of survival and development, space activities turned into an area of unrestrained and wasteful race of ambitions and records, the realization of myths and social utopias in the absence of adequate control by society.

It is still the "sacred cow" of technological progress for the mass mythological consciousness, formed by fiction in the pre-ecological era of the conquest of nature and actively exploited by politicians, businessmen, scientists, writers (a bright modern example). This allows space monopolies to successfully manipulate society in order to satisfy their corporate interests, which is facilitated by the backlog in the environmental regulation of space activities, concealment and distortion of environmental information. Sober assessments of space technology, taking into account the social and environmental consequences, appeared only in the 80-90-ies of the XX century. At the turn of the XXI century, the balance of environmental danger and safety of space activities acquires a clearly negative character. The origins of this process - at the junction of the XIX-XX centuries: it was then that the awareness of the huge potential of technology, technocracy and began its feverish implementation with an underestimation of the negative consequences; humanitarian warnings were ignored, environmental Sciences and methods were just emerging [Wang, 2013].

Technocracy, technicism of the XX century were based on the mythology of spatial expansion of man and humanity to conquer nature. At the same time, awareness of the consequences occurred with great delay, information about them was underestimated, deliberately ignored or hidden. One of the most important reasons for this is the lag in environmental education and education of professionals and society.

The professionals who have created the most difficult equipment and technologies, in essence an eye-they are and still are mostly environmentally illiterate people. Even in the new textbooks on the basics and prospects of rocket and space technology, designed to train rocket scientists in the best universities of Russia, Bauman Moscow state technical University and the Moscow aviation Institute, written by respected design experts and professors, there are no sections on environmental problems.

In an effort to develop the industry in the name of solving the environmental problems of the Earth and humanity (monitoring, remote sensing of the Earth from space, space industrialization, etc.), engineers underestimated and did not see (rather, did not want and do not want to see) the threat from space technology and their activities [Khatib, 2004]. The tragedy of space development XX century: depreciation and concealing environmental damage caused by it to the Earth's biosphere, the environment and human health, while exaggerating the potential of technology to solve global ecological problems of civilization. The declared development of space technology and technologies in the interests of people, for the survival and sustainable development of Russia and humanity (removal of harmful, resource-intensive material and energy production into space; settlement outside the Earth, etc.) does not stand up to elementary criticism from the standpoint of assessing the impact of space technology and space activities on the environment.

With existing technologies (rocket and space technology, etc.) effective global systems in near-earth space, successful commercial space exploration is an utopia, self-deception and deception of professionals and society [Paikowsky, 2009].

For example, the design mass of the space power system (KES) with a capacity of 10 GW, which converts Solar energy into electrical energy and transmits it to the Earth, when placed in a geostationary orbit (36 thousand km from the Earth in the equator plane) will be about 50-100 thousand tons. with the known efficiency of space technology (1%), thousands of heavy rockets are needed. In this case, the mass of waste only from the process of creating one CES will be 4.95-9.9 million tons, which neither the economy nor the earth's biosphere can tolerate. This and other projects of global systems based on modern technology is a clear bluff, but it is on the totality of such developments that the cosmic future of mankind is already being built, spending huge resources and ruining nature. Most of the large space projects being implemented and proposed are environmentally dangerous, grossly contrary to environmental legislation and elementary common sense [Dikeç, 2015].

The conflict of interests of enterprises, agencies, States, transnational corporations engaged in space activities, on the one hand, and civil society, on the other, is an inherited social and technical reality. The Institute for space technology and activity assessments, based on independent environmental expertise, has not yet been established in Russia, the United States, other countries or under the auspices of the United Nations. Society loses and suffers damage due to the influence of space mythology, gaps in legislation, powerful lobbying of their interests by space monopolies and agencies, environmental illiteracy and irresponsibility of professionals, concealment and distortion of information.

The space industry is not only late with the forecast, assessment of the environmental consequences of space technology and space activities, with the introduction of environmental measures, objects, systems, technologies (they have long been developed, examples-in [Husted, Plesner, 2017]), but now consciously and fully delays this process. Commercialization of space exploration, implementation of major international projects began in the conditions of environmental uncontrolled and free use of the natural environment (especially near-earth space). But everything comes at a price.

With the inherited extremely low environmental characteristics of space technology, the implementation of global space colonization systems and projects is almost impossible. Implemented and promising space projects and programs, as a rule, are extremely wasteful (especially related to human flights into space). For example, the international space station project is estimated at $ 90 billion, and the planned expedition to Mars-500-1000 billion. This would be enough to solve the most pressing problems of mankind: the shortage of drinking water and food in underdeveloped countries, where the majority of the World's population lives.

Such a vicious development of space is no longer acceptable: the limits of impacts on nature and economic waste have been reached and exceeded. The environmental dangers of space activities have become a new real global threat. The inevitable process of harsh economic, social, environmental criticism, examination of all space technology, projects and programs is coming. Accelerated greening of space technology and all space activities is an objective necessity. This sphere continues to develop by inertia in the paradigm of scientific and technical revolution, while in the world in response to the approach of ecological catastrophe, the ecological revolution is gaining pace.

The technical reality of the XXI century requires the search for a "Golden mean", a new strategy of space activities to realize the potential of space for the survival and development of civilization by achieving a balance of interests of man, society, States, transnational corporations, the entire world community [Cittadino, Machado, 2016].

Successful development of cosmonautics in the interests of mankind is impossible without:

– overcoming of the current situation and radically improve the environmental characteristics of space technology and space activities, which require:

– systematic research and awareness of historical experience, real situation, inherited problems and development trends;

– strengthening of legal regulation and control over space activities by civil society with active use of all democratic institutions and international cooperation [Iveson, 2000; Auyero, 2006; Howarth, 2006], taking into account the experience of using social technologies in other spheres of activity;

– development and implementation of environmental policy through the environmental management system in accordance with the strategy and principles of sustainable development.

Radical improvement of environmental characteristics requires appropriate concentration of resources not on huge, seemingly prestigious, but ineffective projects and programs, but first of all on minimizing harmful effects on the natural environment. Problem number 1-increasing the mass efficiency (efficiency) of space technology by an order of magnitude: up to 10-30%. This is possible due to the active environmental improvement of technology, the introduction of fundamentally new ways of moving in space, materials and technologies. The implementation of social technologies (human rights, principles of bioethics) is of paramount importance in relation to human flights into space and life outside the Earth. Necessary: quotas for the number of launches; restrictions for launch vehicles with low efficiency, high risk of accidents; prohibition of supertoxicants; payment for launch, emissions, debris and other measures. A key role in the process of greening space technology should play a change in the psychology, stereotypes and ethics of space industry professionals on the basis of the introduction of environmental education in the training process (the author in 1997-1998 developed a course of lectures "Fundamentals of environmental safety of space activities").

Technical reality reflects the environmental culture (ethics, competence, responsibility) of professionals and other social relationships on which goals, values, decisions, ways of their implementation and consequences depend.

After the conference "Rio 92" in the world there is a "quiet" environmental revolution, the right-the basis of which is the new international standards ISO-14000 "Fundamentals of environmental management", which gave impetus to the development of national standards [Batuman, 2015]. Environmental management includes development and implementation of environmental policy, independent environmental expertise of solutions, projects, technologies, processes, products; information transparency and access for environmental control. Environmental information may not be subject to state and commercial secrets. Environmental management covers a set of legal regulation mechanisms (environmental licensing, certification, insurance, control, audit) with the use of economic

criteria (fees for resources, impacts and consequences), requirements, regulations, space-time restrictions and prohibitions for equipment, technologies, products, services (including space technology and space activities), developed on the basis of modern scientific methods (assessment, environmental risk management, etc.) [De Backer, Dijkema, Hörschelmann, 2019].

Unfortunately, it is in this area that environmental management is poorly developed and lags behind due to the inherited system of departmental and corporate relations, which in every way counteracts the control of society.

Environmental policy in the field of space activities in the world is virtually absent: no one has formulated and not made public (it does not have Goskomekologiya. Russian space Agency, the largest space corporations in Russia; similar situation in the environmental protection Agency, NASA and us space corporations). In Russia, the principle of ensuring the safety of space activities and the protection of the natural environment declared in the law "on space activities" [Featherstone, 2015; Ziegler, 2009] is not fulfilled: none of the implemented space projects (as of the end of 1998) has passed the mandatory environmental examination, which is also contrary to the law " on environmental expertise "(1995). In addition, this applies to the scope of Chapter 26 "Environmental crimes" of the Criminal code of Russia. In 1994, Russia began the process of greening space activities with the participation of the state, but then it was actually blocked and stopped by lobbyists of the rocket and space industry using known bureaucratic methods.

Conclusion

At the end of the XX century, Russia and the world began an active organized public opposition to the growing environmental danger of space activities as a reaction to the large-scale harmful effects of space technology on human health and the state of the environment, which in fact is not anti-space, but an environmental process that objectively accelerates the transition to integrated environmental management in the XXI century.

In the coming years, Russia and the world community will have to develop an environmental policy, create and implement an effective system of environmental management of space activities, and tighten requirements for professionals and technicians. There is a need for a new impetus from society for the greening of space activities, including the establishment of appropriate non-governmental environmental organizations to conduct independent research.

Space technology and the activities of the XX century in practice confirmed the law of techno-humanitarian balance-technology in its development is ahead of the humanitarian awareness of the consequences, after which either society self-destructs, or a humanitarian breakthrough follows and the cycle repeats. The main methodological and practical issue of the technical reality of the XXI century on the threshold of ecological catastrophe, the transition from "techno-humanitarian" cycle to "humanitarianism", i.e. the priority office of alternative law "Humanities-technical balance". This will require the implementation of an environmental policy based on knowledge of the background and reliable forecasting of complex consequences, which corresponds to the principles of environmental management aimed at development through the greening of technology. Humanity has a chance to survive: relying on environmental education, consciously limiting and overcoming the evils of technocratism-technicism, to realize the process of humanitarian-technical (ecological) synthesis, using social technologies of civil society and opportunities for international cooperation, increasing the responsibility of professionals, effectively applying the creative potential of technology and activities with a minimum of harmful effects and consequences.

References

1. Auyero J. (2006) *Spaces and Places as Sites and Objects of Politics*. *The Oxford Handbook of Contextual Political Analysis*. Available at: https://doi.org/10.1093/oxfordhb/9780199270439.003.0030 [Accessed 12/11/12].
2. Batuman B. (2015) "Everywhere is taksim": The politics of public space from nation-building to neoliberal Islamism and beyond. *Journal of Urban History*, 41(5), pp. 881-907. Available at: https://doi.org/10.1177/0096144214566966 [Accessed 05/11/12].
3. Bech H., Borch C., Larsen S.N., Thrift N. (2010) Resistance, politics, space, architecture: Interview with Nigel thrift. *Distinktion*, 11(2), pp. 93-105. Available at: https://doi.org/10.1080/1600910X.2010.9672765 [Accessed 16/11/12].
4. Browne K. (2007) A party with politics? (Re)making LGBTQ Pride spaces in Dublin and Brighton. *Social and Cultural Geography*, 8(1), pp. 63-87. Available at: https://doi.org/10.1080/14649360701251817 [Accessed 07/11/12].
5. Chernigovskaya T.V. (2016) *Psikhofiziologicheskie i neirolingvisticheskie aspekty protsessa raspoznavaniya verbal'nykh i neverbal'nykh patternov kommunikatsii* [Psychophysiological and neurolinguistic aspects of the process of recognition of verbal and non-verbal patterns of communication]. Saint Petersburg: OOO "Izdatel'stvo VVM" Publ.
6. Cittadino G., Machado J.S. (2016) Law and politics: An essay on the relationship between time and space [Direito e política: Um ensaio sobre o tempo e o espaço]. *Revista de Estudos Constitucionais, Hermeneutica e Teoria Do Direito*, 8(2), pp. 164-173. Available at: https://doi.org/10.4013/rechtd.2016.82.04 [Accessed 13/11/12].
7. De Backer M., Dijkema C., Hörschelmann K. (2019) Preface: The Everyday Politics of Public Space. *Space and Culture*, 22(3), pp. 240-249. Available at: https://doi.org/10.1177/1206331219830080 [Accessed 08/11/12].
8. Dikeç M. (2015) *Space, politics and aesthetics*. *Space, Politics and Aesthetics*. Available at: https://www.scopus.com/inward/record.uri?eid=2-s2.0-84969699688&partnerID=40&md5=35329424db80ea661259b8d9b14938d4 [Accessed 19/11/12].
9. Ekers M., Loftus A. (2012) *Gramsci: Space, Nature, Politics*. *Gramsci: Space, Nature, Politics*. Available at: https://doi.org/10.1002/9781118295588.ch1 [Accessed 03/11/12].
10. Hartal G. (2016) The politics of holding: home and LGBT visibility in contested Jerusalem [La política de contención: el hogar y la visibilidad LGBT en el Jerusalén en disputa]. *Gender, Place and Culture*, 23(8), pp. 1193-1206. Available at: https://doi.org/10.1080/0966369X.2015.1136813 [Accessed 17/11/12].
11. Howarth D. (2006) Space, subjectivity, and politics. *Alternatives*, 31(2), pp. 105-134. Available at: https://doi.org/10.1177/030437540603100201 [Accessed 08/11/12].
12. Husted E., Plesner U. (2017) Spaces of open-source politics: Physical and digital conditions for political organization. *Organization*, 24(5), pp. 648-670. Available at: https://doi.org/10.1177/1350508417713215 [Accessed 19/11/12].
13. Iveson K. (2000) Beyond designer diversity: Planners, public space and a critical politics of difference. *Urban Policy and Research*, 18(2), pp. 219-238. Available at: https://doi.org/10.1080/08111140008727834 [Accessed 15/11/12].
14. Kallio K.P., Häkli J. (2011) Young people's voiceless politics in the struggle over urban space. *GeoJournal*, 76(1), pp. 63-75. Available at: https://doi.org/10.1007/s10708-010-9402-6 [Accessed 09/11/12].
15. Khatib L. (2004) The politics of space: The spatial mani-festations of representing Middle Eastern politics in American and Egyptian cinemas. *Visual Communication* 3(1), pp. 69-90. Available at: https://doi.org/10.1177/1470357204039599 [Accessed 06/11/12].
16. Kong L. (2002) In search of permanent homes: Singapore's house churches and the politics of space. *Urban Studies*, 39(9), pp. 1573-1586. Available at: https://doi.org/10.1080/00420980220151664 [Accessed 12/11/12].
17. Low S., Smith N. (2013) *The politics of public space*. *The Politics of Public Space*. Available at: https://doi.org/10.4324/9780203390306 [Accessed 12/11/12].
18. Paikowsky D. (2009) The space club - Space policies and politics. In: *60th International Astronautical Congress 2009, IAC 2009*, 11, pp. 9034-9042.
19. Walters W., Lüthi B. (2016) The Politics of Cramped Space: Dilemmas of Action, Containment and Mobility. *International Journal of Politics, Culture and Society*, 29(4), pp. 359-366. https://doi.org/10.1007/s10767-016-9237-3 [Accessed 14/11/12].
20. Wang S.-C. (2013) *Transatlantic space politics: Competition and cooperation above the clouds*. *Transatlantic Space Politics: Competition and Cooperation above the Clouds*. Available at: https://doi.org/10.4324/9780203381939 [Accessed 14/11/12].
21. Zashchirinskaya O.V. (2010) Psikhogenez stilei obshcheniya [Psychogenesis of communication styles]. *Vestnik Sankt-Peterburgskogo universiteta. Seriya 12. Psikhologiya. Sotsiologiya. Pedagogika* [Bulletin of St. Petersburg University. Series 12. Psychology. Sociology. Pedagogy], 2, pp. 206-216.
22. Zashchirinskaya O.V., Gorbunov I.A. (2009) Emotsii v kontekste neverbal'noi kommunikatsii normal'no razvivayushchikhsya podrostkov i ikh sverstnikov s narusheniem intellekta [Emotions in the context of non-verbal communication of normally developing adolescents and their peers with impaired intelligence]. *Vestnik Sankt-Peterburgskogo universiteta. Seriya 12. Psikhologiya. Sotsiologiya. Pedagogika* [Bulletin of Saint Petersburg University. Series 12. Psychology. Sociology. Pedagogy], 3-2, pp. 174-185.
23. Zashchirinskaya O.V., Turchaninov E.E. (2017) Sravnitel'nyi analiz psikhologicheskikh zashchit sredi vypusknikov

obshcheobrazovatel'nykh i spetsial'nykh (korrektsionnykh) shkol [Comparative analysis of psychological defenses among graduates of comprehensive and special (correctional) schools]. *Nauchnoe mnenie* [Scientific Opinion], 2, pp. 29-34.

Политические аспекты роли и значения экологического образования

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Аннотация

Космическая техника и космическая деятельность традиционно рассматриваются как перспективное направление развития цивилизации, средство решения глобальных проблем. Без космонавтики немыслимо настоящее и будущее человечества. Однако ее практические результаты и последствия оказались весьма противоречивыми и далекими от идеала из-за пороков национальных и международных институтов, отставания общества в экологическом просвещении и образовании. Развитие космонавтики в России и мире шло в доэкологическом русле, и лишь в конце XX века стали осознаваться экологические проблемы. Пришло время подвести итоги развития космической техники и деятельности в XX в. и извлечь уроки с целью предотвращения глобальной катастрофы и выхода из экологического тупика, в котором находятся современная космонавтика и общество. Авторы отмечают, что космическая техника – это совокупность техники в сфере космической деятельности, непосредственно связанной с исследованием и использованием космического пространства. Она охватывает соответствующие наземные объекты, летательные аппараты, технологии. Экологизация техники – повышение качества техники в процессе реализации экологической политики, направленной на постоянное улучшение системы экологического управления, предотвращение загрязнений, других вредных воздействий и последствий технического прогресса.

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Ключевые слова

Политика, пространство, практика, структура, динамика, развитие.

Библиография

1. Защиринская О.В. Психогенез стилей общения // Вестник Санкт-Петербургского университета. Серия 12. Психология. Социология. Педагогика. 2010. № 2. С. 206-216.
2. Защиринская О.В., Турчанинов Е.Е. Сравнительный анализ психологических защит среди выпускников общеобразовательных и специальных (коррекционных) школ // Научное мнение. 2017. № 2. С. 29-34.
3. Защиринская О.В., Горбунов И.А. Эмоции в контексте невербальной коммуникации нормально развивающихся подростков и их сверстников с нарушением интеллекта // Вестник Санкт-Петербургского университета. Серия

12. Психология. Социология. Педагогика. 2009. № 3-2. С. 174-185.
4. Черниговская Т.В. Психофизиологические и нейролингвистические аспекты процесса распознавания вербальных и невербальных паттернов коммуникации. СПб.: ООО «Издательство ВВМ», 2016. 203 с.
5. Auyero J. Spaces and Places as Sites and Objects of Politics // The Oxford Handbook of Contextual Political Analysis. 2006. URL: https://doi.org/10.1093/oxfordhb/9780199270439.003.0030
6. Batuman B. "Everywhere is taksim": The politics of public space from nation-building to neoliberal Islamism and beyond // Journal of Urban History. 2015. No. 41(5). P. 881-907. URL: https://doi.org/10.1177/0096144214566966
7. Bech H., Borch C., Larsen S.N., Thrift N. (2010) Resistance, politics, space, architecture: Interview with Nigel thrift. Distinktion. No. 11(2). P. 93-105. URL: https://doi.org/10.1080/1600910X.2010.9672765
8. Browne K. (2007) A party with politics? (Re)making LGBTQ Pride spaces in Dublin and Brighton // Social and Cultural Geography. No. 8(1). P. 63-87. URL: https://doi.org/10.1080/14649360701251817
9. Cittadino G., Machado J.S. Law and politics: An essay on the relationship between time and space [Direito e política: Um ensaio sobre o tempo e o espaço] // Revista de Estudos Constitucionais, Hermeneutica e Teoria Do Direito. 2016. No. 8(2). P. 164-173. URL: https://doi.org/10.4013/rechtd.2016.82.04
10. De Backer M., Dijkema C., Hörschelmann K. Preface: The Everyday Politics of Public Space // Space and Culture. 2019. No. 22(3). P. 240-249. URL: https://doi.org/10.1177/1206331219830080
11. Dikeç M. Space, politics and aesthetics // Space, Politics and Aesthetics. 2015. URL: https://www.scopus.com/inward/record.uri?eid=2-s2.0-84969699688&partnerID=40&md5=35329424db80ea661259b8d9b14938d4
12. Ekers M., Loftus A. Gramsci: Space, Nature, Politics // Gramsci: Space, Nature, Politics. 2012. Available at: https://doi.org/10.1002/9781118295588.ch1
13. Hartal G. The politics of holding: home and LGBT visibility in contested Jerusalem [La política de contención: el hogar y la visibilidad LGBT en el Jerusalén en disputa] // Gender, Place and Culture. 2016. No. 23(8). P. 1193-1206. URL: https://doi.org/10.1080/0966369X.2015.1136813
14. Howarth D. Space, subjectivity, and politics // Alternatives. 2006. No. 31(2). P. 105-134. URL: https://doi.org/10.1177/030437540603100201
15. Husted E., Plesner U. Spaces of open-source politics: Physical and digital conditions for political organization // Organization. 2017. No. 24(5). P. 648-670. URL: https://doi.org/10.1177/1350508417713215
16. Iveson K. Beyond designer diversity: Planners, public space and a critical politics of difference // Urban Policy and Research. 2000. No. 18(2). P. 219-238. URL: https://doi.org/10.1080/08111140008727834
17. Kallio K.P., Häkli J. (2011) Young people's voiceless politics in the struggle over urban space // GeoJournal. No. 76(1). P. 63-75. URL: https://doi.org/10.1007/s10708-010-9402-6
18. Khatib L. The politics of space: The spatial mani-festations of representing Middle Eastern politics in American and Egyptian cinemas // Visual Communication. 2004. No. 3(1). P. 69-90. URL: https://doi.org/10.1177/1470357204039599
19. Kong L. In search of permanent homes: Singapore's house churches and the politics of space // Urban Studies. 2002 No. 39(9). P. 1573-1586. URL: https://doi.org/10.1080/00420980220151664
20. Low S., Smith N. The politics of public space. The Politics of Public Space. 2013. URL: https://doi.org/10.4324/9780203390306
21. Paikowsky D. The space club - Space policies and politics // In: 60th International Astronautical Congress 2009, IAC 2009. 2009. No. 11. P. 9034-9042.
22. Walters W., Lüthi B. (2016) The Politics of Cramped Space: Dilemmas of Action, Containment and Mobility // International Journal of Politics, Culture and Society. No. 29(4). P. 359-366. URL: https://doi.org/10.1007/s10767-016-9237-3
23. Wang S.-C. Transatlantic space politics: Competition and cooperation above the clouds // Transatlantic Space Politics: Competition and Cooperation above the Clouds. 2013. URL: https://doi.org/10.4324/9780203381939