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# Cyberspace of the Fourth Scientific and Technological Revolution

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### ABSTRACT

The aim of the article is to analyze briefly a modern phenomenon of the cyberspace from the sociological and environmental viewpoints. The cyberspace is a material system constructed by a man. This space is now shaping by the technical means developed by the Fourth scientific and technological revolution (hereafter the STR-4). As a result, we are now living within a complex and inseparable sociobiotechnical reality of a double quality. It's both environment and a variety of the agents, social, natural and virtual. The carrying structure of the cyberspace is an all-embracing and all-penetrating informational network. Three models of this space are considered: technocratic, socially constructed and alternative ones. The cyberspace is an instrument of capitalist accumulation, a particular branch of it and self-sustained phenomenon of a high complexity. The basic laws of its development are defined both by technological progress and contradictory global-local trends of evolution of a global whole. The cyberspace is a very mobile structure conditioned by the struggle for resources and geopolitical domination of the global stakeholders and therefore this space works as a promoter of global hybrid wars and other state of emergence. The media is a necessary instrument of a power, more influential than any other social institution of modern society. Therefore, it's an inseparable part of the cyberspace. At the same time this space is shaped by many civil organizations and the individuals. Finally, the cyberspace is Janus like because it is simultaneously absolutely necessary for users and potentially risky for them.

**Keywords:** cyberspace, environment, globalization, information, networks, the STR-4, models, risk, socio-biotechnosphere, self-confrontation, space-time inversion, virtual reality

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## 1. Theory and method

The article is relied upon the work of Z. Bauman, U. Beck, M. Castells and other theorists of the informational society and the Fourth industrial Revolution i.e. the STR (K. Schwab). Then, I've used the results of my own investigations on the prospects of the Scientific and Technological Revolution coming based on the works of K. Marx and my own field researches on informational structure of urbanization processes (Yanitsky, 1970, 1972). After then, I'd studied the informational network structures of Russian environmental movement including the networks of Russian environmental activists.

Besides, during the years of 1970-2010 I'd conducted and analyzed about 400 in-depth semi-structured interviews with them. In each case I'd focused on the activist's networks with their counterparts from various social milieus, say, with the other activists, family, local people, commuters, shift workers, municipal staff, policemen, police officers, rescuers, and with some others. These interviews had been combined with other methods of the field studies (personal and municipal archives, human documents, and included observations) that gave me more complex and convincing data. In all interviews I'd combined a top-down and bottom-up approaches.

## 2. The notion of cyberspace and its evolution

Theoretically speaking, the cyberspace is one of the evolutionary shaped forms of horizontal and vertical interconnection including the turnover of a matter and information in our living system. The key notions in this concept are an exchange and metabolism of the all with all. Nowadays, the cyberspace is a result of the STR-4 evolution and represents the all-embracing informational networks producing by permanent process of global exchange of an energy, information, knowledge, natural and financial resources, people, technical inventions, etc. But at the same time the

emergence of the cyberspace designates a growth of all kinds of risks, social, political and technological.

From the historical viewpoint, the cyberspace isn't an absolutely new phenomenon. It has been shaped gradually, step by step as a result of the development of human practices, contacts, conflicts and travelling. Nobody exactly knows when the circle of various ties and networks finally closed and the people recognized an importance of such global network space as an instrument of economy development and political domination over their neighbors and adversaries.

Recently the cyberspace is already the all-embracing and all-penetrating informational network. This space is not only a system of space-time representation of endless amount of interconnections and their permanent switching and reprogramming by the global stakeholders. It resembles a particular disposition of political forces and modes of thinking as well. More than that, the cyberspace is an organized space constructed and developed by the set of most mighty stakeholders of the world. In other words, I consider the cyberspace as a form of existence of the Fourth scientific and technological revolution (i.e. the STR-4) as the new stage of capitalism development. Today all of us are obliged to live and work within this space. But the roles of particular individuals and social entities in it are different in accordance with their social and political status and disposition on the global arena.

As U. Beck argued (1992: 6), the 'reflexive modernization means self-confrontation with the effects of risk society that cannot be dealt with and assimilated in the system of industrial society.' In this sense, the cyberspace is a field of interaction and confrontation of the 'old' and 'new' structures. Keeping in mind the growth of the planet population and the deficit of some living resources like drinking water this confrontation will only sharpen. The limits to such growth generate new kinds of national and

global networks predominantly within civil societies.

### 3. The models of cyberspace

Theoretically speaking, there are three models of cyberspace: technocratic (as a direct continuation of the STR-4), social constructivists and alternative ones. The adherents of the technocratic one insist that the STR-4 is a product of the development of informational industry in the widest sense of the word. They also stated that all forms of social life will be now created and structured by this industry. Accordingly, the technocrats are the main political and social force that shapes now a global political and social agenda and will define it in the foreseeable future.

Of course, this space maybe considered as an integrated form of social activity. But if one has a more detailed look on the cyberspace he will understand that it is much more complicated than it seems on the first glance. **First**, there are two forms of it: substantial i.e. real and socially-constructed. In turn the last one has two forms: an active political behavior and a kind of demonstration behavior. **Second**, the cyberspace consists not only from social networks – there are information crossroads i.e. the hubs as well that generate tension and conflicts. **Third**, to my mind, the cyberspace is a kind of a secondary reality which offers the recipes for all cases of our life and a place in which an individual can escape. All three above forms have a common ground, a conflicting and risky character conditioned by their social and political status.

Then, it's obvious that the cyberspace is a socio-technological instrument that allows to device any kind of social or ecological structures or processes. And the cyberspace as a whole is not an exclusion here. And these virtual structures may exert influence on real structures and processes of social and natural ecosystems.

Under alternative mode of living I mean the already existed eco-communities which

residents are using the cyberspace in emergency cases or as a reference book for everyday needs. The participants of eco-settlements are tried to keep distance from social networks, especially from political ones.

### 4. What are the relationships between material and virtual processes?

Such differentiation is very conditional because in principle they are both the forms of material world. At the same time they may be considered as its ontological and epistemological forms of its existence. But the further the more the sociologists prefer a discursive i.e. *secondary analysis* of global and local processes. Such analyses is much more cheaper and faster than an organization of the interdisciplinary research projects based on uninterrupted monitoring of complex structures and processes relied upon the investigations of multisided metabolic processes.

But the adherents of discursive analysis forget that such analysis is actually the analysis of public opinion and it's cannot reflects adequately the continuous and nonlinear processes in material and cyberspaces. Besides, the very topic of a particular discourse may be socially constructed and therefore may have no relation to the actual state of matters in the world or in the given megalopolis.

Finally, there is a humanistic aspect. Up to now humanity including particular individuals had mainly been in direct contacts with nature or/and with built environment. Nowadays, a man perceives of and oriented in a permanently moving environment via technical devices only. It's a quite another mode of perception that provoke changes in human brain and its neuron system. Every day the media informs us with the accidents, disasters and other 'breaking news', but all that happen 'behind the screen' of our TW-set or the I-phone. The so-called sofa wars demobilize us making people less sensible to the suffering of the others.

### 5. Is the cyberspace only the instrument of capitalist accumulation?

In our times the cyberspace is simultaneously the instrument of capitalist accumulation, a particular branch of it and self-sustained phenomenon. To my mind, this space may be considered as a living organism embracing all spheres of our life. This statement doesn't contradict with all three modes of its functioning mentioned above. The simultaneous existence of the above three modes of functioning is reflected in the existence of three relatively independent social institutions.

Some of them are built in the very mechanism of capitalist accumulation, others are relatively independent, still others are mainly the creators of new forms of cyber defense, cyber invasion (so-called cyber conquistadors) are created and used for shaping of new forms of geopolitics, etc. But it seems to me that the further the more our world is becoming more complicated and unpredictable, in particular for the reason that social and political life is shifting toward the cyberspace and governed by it.

## **6. What are the basic laws and regularities of the cyberspace?**

Its basic laws are to be the all-embracing and all-penetrating milieu from which there is no way out. Its main regularity is to be permanently mobile and developing and therefore to be a main instrument of a government of all socio-technological processes and a stimuli both to its expansion and use as an instrument of geopolitical expansion. In modern times isn't necessary to occupy a certain territory it's well enough to dominate on its productive processes including its political institutions.

To my mind, to be one step ahead in relation to ongoing events in material milieu is one of the key features of the cyberspace functioning and development. And the space-time inversion by information processes is the main instrument here. The cyberspace as a new global structural-functional system is Janus-like.

On the one hand, the masters and developers if it make a lot of goods in all spheres of our life, say, in industry, medicine, logistics, advertising

and so on and so forth. On the other hand, they take an active part in all kinds of conflicts and wars including the hybrid ones. The modern wars are the testing ground for new arms including the informational, chemical and biological ones.

## **7. What are the relationships between the cyberspace and mass-media?**

The media is a real power it sometimes is much more influential than any other social institution of modern society (Arsenalt and Castells, 2008). Therefore, it's an inseparable part of the cyberspace. But it doesn't mean that the media totally dominated on the cyberspace. Usually, the media is permanently struggling on two fronts. On the one hand, it attempts to shape a worldview of all population of the earth irrespectively of social status of particular groups and communities. On the other hand, the media attempts to be a leading social agent on the global and national political scene.

The media is the most attractive sphere of social activity. It's the field of business and political activity, a field for self-realization and what I see the most important is an opportunity to influence and maintain a consumer mode of thinking and doing. All in all, the media pretends to be the major constructor and governor of modern society.

Are there any ties between the media activity and the information society development? Surely, because of they are two inseparable drivers of modern economy and social processes. But, to my mind, there are at least two dangers. The first is to eliminate such social institutions as the sciences and civil society organizations from the governance of modern society. The second is not taking into account the role of feedback produced by human intervention into the laws of natural complex ecosystems. It's another example of a dialectics of cyberspace development.

## **8. The relationships between power institutions and civil society organizations**

They are varied from tight collaboration till tough competition. W. Gamson (1990) offered a basic typology of their relationships: two types of acceptance (full legitimation and co-optation) and non-acceptance (pre-emption and repression). But in our very mobile times we are needed in a kind of dynamic typology. Relying upon my long-term investigations of Russian environmental movement development and on the study of the role of voluntary associations in the run of the Syria warfare (the case of the besieged city of Aleppo) I offer the following dynamic typology of their relations: relatively stable, unclear but moving toward disagreements and conflicts, rigid opposition to existing power structures and full adversarial ones. But in all above cases the both sides has been under the 'hat' of existing cyberspace. Such 'cover' is rooted in all-embracing and all-penetrating nature of global information networks. This dependence might to be overcome if a global civil society really exists. There were many efforts to construct such civil network but all such attempts failed (Kaldor et al., 2003).

There are a lot of research works considering the use of the information and communication technologies by various civil organizations and by the social movement organizations in particular. To my mind, the research that has been fulfilled by the group of European sociologist seems to me the most interesting among others (Van de Donk et al., 2007). It's interesting because it combines the field researches including the case-studies with theoretical analysis of pro and contra in the use of the ACT by civil society organizations. \*Baldassari and Diani (2007) underscored the integrative power of civic networks.

## **9. The cyberspace, society and an individual**

This is a very complicated question because between them are many mediating agents, institutions and milieus. The only scholars operate by such general notions because the individuals are living and acting in a particular environment, permanently changing but stable

in their perception. On the other hand, the environment in which the individual lives in has to be stable because without such relative sustainability his/her existence is impossible. Nevertheless theoretically speaking, the further the more the Homo Faber and Homo Consumence are penetrated each other.

An impact of cyberspace in general and cyberwars in particular on human behavior deserves a special attention. The matter is that the individuals are usually perceives themselves more dependent on material environment (wellbeing, traffic, services and their accessibility, etc.) than on the virtual one. It's a false perception. The virtual environment permanently shaping human consciousness, his/her behavior, needs, requirements, fears and a mode of living in general.

A 'consumer society' phenomenon has been entirely shaped by mass-media that in turn had been guided by the interests of capital accumulation. But it's not all. Advertising is gradually forcing out the content based on scientific researches and replaced it by social-constructed information that demobilize human consciousness and behavior. Quickly changing media pictures gradually shaping a kind of a 'collage consciousness' not informing the individual about what is going on in reality.

M. Castells (1996, 2000) following A. Touraine argued that the actual issue of the individual in informational society is his new identity in it. On the one hand, I agree with him when he stated that the image of the self may be constructed beyond the cyberspace. Nevertheless, as it Bauman clearly showed that such 'self' (as the image and real opportunities) of the poor and the reach is quite different. Personal identity is mainly defined by his/her social status. Of course, the individual's prospects depend in his/her own efforts but in a certain degree only.

## **10. Why I insist on the studies of environmental wars?**

First of all, because of all kinds of environmental wars are inherently

interdependent, tightly integrated. It means that the unintended harm (conflict, accident, disaster) in one place will have a resonance in all kinds of environment, natural, social and technical. Then, in the case of such war it's rather difficult to define the social and spatial margins of such harm. After then, one should keep in mind that all kinds of environmental disasters irrespectively of their source may generate a cascade and cumulative effects with unpredictable consequences.

Then, while to restore a particular building is a relatively easy task, the restoring of a particular zone of living environment in which all its parts are highly interdependent is a rather complicated one which is needed not only in financing but in a special toolkit of knowledges, technical equipment, transportation, etc. Today, to my mind, not conventional arms but biochemical wars are the most risky because of the speed and mass character of their dissemination. After then, every environment has its own limit of carrying capacity. If it's to overcome this environment is transforming into a set of actors that begins to move forth their requirements.

Finally, the environment is a macro-organism in which metabolic processes are permanently going on. Such processes have no definite spatial margins because the metabolic processes are going everywhere but with various time-space rhythms. These processes are subjected to the Second law of thermodynamics only.

In such uncertain and mobile conditions the people have to practice a generative mode of behavior. 'Generativity is a mode of life whose purpose is assisting others in their being, care of their life and volume of their resources' (Bauman, 2015: 129).

## **11. How these laws and regularities are interrelated with functioning of the natural and social systems?**

The life at the expense of the nature and its ecosystems is a law of any kind of social

agents and systems existence. Historically speaking, to a certain limit the nature was capable to restore its functioning to some degree. Besides, one should keep in mind that the biosphere is also changing under the influence of various cosmic structures and processes. But the growth of human population coupled with its industrial activity by and large lead to irreversible changes in large natural ecosystems. Recently, as I've mentioned earlier, there is no separate man and nature, a global society and the biosphere, etc. Or more generally: under condition of modern very mobile and therefore unstable world any dichotomy approach is not relevant to its analysis.

In conditions of sociobiotechnical environment shaping or its existence a number of interrelated issued are emerging. They are as follows:

**First**, what are the regularities of functioning and development of such complex and very mobile system? **Second**, what are the relations between the parts of such complex system, say, between its social and biotechnical, socio-technical and biological elements, etc.? **Third**, who will care for them, repair and maintain them? **Fourth**, what kind and amount of resources are needed for the sociobiotechnical maintenance, say, electricity or solar energy and so on and so forth. **Fifth**, what kind of the research instruments for such studies will be needed? For example, does it will be the case studies, expert survey or permanent monitoring? **Sixth**, what amount of expenses, be it money, energy, technological devices or skilled manpower will be needed for such monitoring? **Seventh**, finally the wastes are the huge problem both for humans and their environment. Bauman introduce the 'wasted lives' notion in a scientific turnover (Bauman, 2004). They are not only poison the complex environment but represent serious threat to the systems of space monitoring.

## **12. What is the structural-functional organization of the cyberspace? Is it a part of global sociobiotechnical environment?**

In general – yes, it is. But the further the more the cyberspace is playing a leading role in the shaping of the structural and functional organization of this environment. By and large, a socially-constructed milieu replaces the natural ones. More than that, the interdisciplinary scientists invent biotechnical materials, for example, biodegradable and many others.

To my mind, in the foreseeable future the existing cyberspace will continue to expand and become more embracing. As it openly seen now, already today the cyberspace bring much less calm and wellbeing to ordinary people and more poverty, sufferings, conflicts and wars to them. The existence of an efficient wiki-economics is needed a peace on the planet, mutual trust, and a lot of people who will take a risk to become the wiki-economy participants. Until now, such data are unreliable, subjective, and not interrelated with a particular environment in which they have been gained.

To live in the environment full of the smart machines and in the environment without one-to-one human contacts is not so attractive prospects. Otherwise, human beings will simply become the functional appendage of the world of smart machines only. Such technocratic utopia is as not accessible as total political dictatorship.

As to the prospects of global sociobiotechnical environment I may to set forth my personal opinion only. A development of such complex environment has not technical but human limits. If humans have to live in a totally socially-constructed milieu they begin to degrade as human beings because the contacts with virtual i.e. information environment only means the total subjection of people to it and therefore their transformation into human-like robots.

Therefore we should speak not about the specificity of cyber environment but about its

growing impact on everyday life of humans. Is this environment is simply a continuation of market economy mechanism or may serve to people as such? For example, to warn them about possible threats and risks, to protect them, etc.

## **13. The cultural role of the cyberspace**

Let's start from some basic issues. First, as A. Giddens argued that 'We are in the period of evident transition.' There are two directly interconnected ways of transformation. 'On the one hand, there is the extensional spread of modern institutions, universalized via globalizing processes. On the other, but immediately bound up with the first, are the processes of intentional change, which can be referred to as the radicalizing of modernity...These are the processes of evacuation, the disinterring and problematizing of tradition' \*Giddens, 1994: 56, 57). Second, I agree with S. Mützel (2009) that there is no principled difference between the relational and actor-network theory in their interpretation of both as culturally constituted process. Third, at the same time the cyberspace imposes on both concepts its all-embracing and all-penetrating specificity. Fourth, the distinction between the understanding of the actor-network and relational approaches is relational in itself because non-human actors like the natural disasters and technological accidents may radically change an individual and mass behavior. Fifth, the visualization of any kind of events is now under strict control of the media-magnates (Arsenault and Castells, 2008).

Then Giddens named the following changes in the post-traditional society. First, it was 'the development of new surveillance mechanisms ensuring much greater social integration across time-space...' Second, the 'institutional reflexivity became the main enemy of tradition.' 'Third, the globalization is an 'in here' matte, which affects, or rather dialectically related to, even the most intimate aspects of our lives.' Fourth, the 'traditions do not wholly disappear; indeed, in some respects, and some contexts,

they flourish.' Fifth, local community becomes increasingly reshaped in terms of distant influences.' Sixth, 'tradition becomes fundamentalism as a counterbalance to radicalism (Giddens, 1994: 92, 95, 100, 101; see also: Bauman, 2011).

Is it a new version of the Enlightenment as the idea of interdisciplinary education of all? I think not. On the contrary, our world is entering into a period of conflict between the culture in traditional meaning of this term i.e. as the accumulation of all forms of culture and their transmission to the next generations and socially-created and politically-dependent cultural events and artifacts with a very short time of their existence on a public arena. As we can see, very often something new is proving to be a renewal of well-known classic dramas. It's not accidental that social networks are often called as a spam, human waists.

Finally, I'd remind that the information revolution gave way to the 'weakness is the power' principle. It means that the traditional minority gains access to information and other weapons it may cause a great harm.

#### **14. Does the cyberspace promote the hybrid wars?**

To my mind, this question is not correct. If cyberspace is all-embracing and all-penetrating the hybrid wars is an inherent part of it. We are living in hybrid environment that is very risky one, and the matter is only in a kind of particular risks. Are they simply usual impediments and inconveniences or they are real threats? The hybridization of our living milieu is a principled point of a comprehension of the cyberspace.

Let me give a very simple example. In the last year many parts of the world had been attacked by strong snowfalls. Usually, it's not a problem and sometimes, and in the countries with hot climate it may be a kind a happening. But if has a long-term character it becomes the hybrid war with a cascade effects and unpredictable results. It means that any hybrid

war has no space-time limits.

#### **15. Conclusion: What are the results and prospects?**

The cyberspace is a very complicated organization of an information mode of production and dissemination that is highly dependent on activity of all natural, social and technical agents. As to humans as such their position and role in this production process is different. Some of them are the creators of mode of production, others are only its users, and still others are trying to escape from it as much as possible.

The global cyberspace shaping is not only a qualitative technological shift but a substantial social turn and all-embracing social environment. Modern capitalism has generated the cyberspace and now can't to cope with it. More than that, the cyberspace emergence is a new form of reflexive modernization that, according to U. Beck's definition, that means in this context the self-confrontation with its consequences and side-effects. In particular, this process designates an escape from the control of existing social institutions and the turn to ad hoc politics. In any case this space is risky or/and raises a degree of unsustainability of the global sociobiotechnical system. What is absolutely clear is that in individualized society a man experiences the feel of loneliness, abandonment and exclusion from actually human ties. Such exclusion is the most painful for the youth who were already 'born into a world already split...into online and online domains' (Bauman, 2015: 81). I share the position that 'people's capacities for cooperation are far greater and more complex than institutions allows them to be' (Sennett, 2013: 19).

But now we shouldn't forget that our world is in the period of transition from the STR-3 towards the STR-4 and the cyberspace will be involved in it, actively and passively. By active involvement I mean the will of media magnates to be the leaders of this



transition process. By passive involvement I mean their role of the mouthpiece of ongoing transformations.

This transition is not linear and peaceful in its character. On the contrary, it's burdened with new risks, contradictions and wars. The wars for new resources, living spaces and geopolitical domination will sharpen and the media will be an active participant of the above processes. But in any case the STR-4 development doesn't mean a total transformation of the sociobiotechnosphere into a kind of technologically-constructed and governed sphere.

Is the sum of above processes may be considered as new phase of modernization? Yes, it is but it's openly technocratic modernization with giant losses of social capital and cultural heritage. To be in direct contacts with people and cultural artifacts and communicate with them distantly and indirectly it is not the same. Besides, the very process of choosing acquired a controlled character. How to live in this transition that is post-traditional and permanently mobile society is still an open question.

In our times the hybrid wars are not necessary the armed ones. It may be a result of any environmental disaster ranging from the floods to strong and continuous snowfall. More important that cyberwars are becoming everyday practices.

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## References

1. Arsenault A. and Castells M. 2008. Switching Power: Rupert Murdoch and the Global Business of Media Politics. *International Sociology* 23(4): 488-513.
2. Baldassari D. and M. Diani. 2007. The Integrative Power of Civic Networks. *American Journal of Sociology*. Vol. 113, No 3, (November): 735--780.
3. Bauman Z. 2001. *The Bauman reader*. Malden, MA: Blackwell Publishers Inc. –365 pp.
4. Bauman Z. 2001a. On Glocalization: Or Globalization for some, localization for some others, in: Bauman Z. *The Bauman reader*. Malden, MA: Blackwell Publishers Inc., pp. 298-311.
5. Bauman Z. 2001b. *The Individualized Society and the Bauman reader*. London: Polity.
6. Bauman Z. 2004. *Wasted Lives. Modernity and its Outcasts*. Cambridge, UK: Polity Press.
7. Bauman Z. 2011. *Culture in a Liquid Modern World*. Cambridge: Polity Press.
8. Bauman Z. 2017. *A Chronicle of Crisis: 2011-2016*. London, UK: Social Europe Edition.
9. Bauman Z. and Raud R. 2015. *Practices of Selfhood*. Malden, MA: Polity Press.
10. Beck U. 1992. *Risk Society. Toward a New Modernity*. London: SAGE.
11. Beck U., Giddens A., and Lash S. 1994. *Reflexive Modernization. Politics, Tradition, and Aesthetics in Modern Social Order*. Stanford, Calif.: Stanford University Press.
12. Castells M. 1996. *The Information Age. Economy, Society and Culture*. Oxford: Blackwell Publishers, Ltd.
13. Castells M. 2000. 'Materials for an Exploratory Theory of the Network Society. *British Journal of Sociology*, 51 (1). Jan/March: 5—24.
14. De Donk W., B. Loader, P. Nixon, D. Rucht., eds. 2004. *Cyberprotest. New Media, Citizens and Social Movements*. London: Routledge.
15. De Donk W., B. Loader, P. Nixon, D. Rucht. 2004. Introduction: Social Movements and ICT, pp. 1-26, in: De Donk W., B. Loader, P. Nixon, D. Rucht., eds. 2004. *Cyberprotest. New Media, Citizens and Social Movements*. London: Routledge.
16. Gamson W. 1990. *The Strategy of Social Protest*. 2nd ed. Belmont, CA: Wadsworth Publishing Company.
17. Giddens A. 1994. Living in a Post-Traditional Society, pp. 56-109, in: Beck U., Giddens A., and Lash S. 1994. *Reflexive Modernization. Politics, Tradition, and Aesthetics in Modern Social Order*. Stanford, Calif.: Stanford University Press.
18. Kaldor M., Anheier H., and Glasius M., eds. 2003. *Global Civil Society Yearbook*. Oxford: Oxford University Press.
19. Mützel S. 2009. Networks as Culturally Constituted Processes: A Comparison of Relational Sociology and Actor-network Theory. *Current Sociology*, Vol. 57, no 6: 871-887.
20. Sennett R. 2013. *Together: The Rituals, Pleasures and Politics of Co-Operation*. London: Penguin.

21. Schwab K. 2016. *The Fourth Industrial Revolution*. Geneva: World Economic Forum.
22. Yanitsky O. 1970. *Socio-informational Aspects of Urbanization*. Paper presented at the VII World Sociological Congress. Varna, Bulgaria.
23. Yanitsky O. 1972. Socio-informational processes in a society and the urbanization, in: Yanitsky O., ed. *Urbanization, Scientific and Technological Revolution and the Working class*. Moscow: Nauka, pp. 76-96 (in Russ.).

