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# Information Technologies and Civil Society: Why We Need Horizon Scanning



We are going to speak of the future. Yet isn't discoursing about future events a rather inappropriate occupation for those who are lost in the transience of the here and now?

— Stanislaw Lem<sup>1</sup>

The social *imaginare* enables a society to construct its identity by expressing its expectations for the future. A society without a vision would therefore be dead.

— Patrice Flichy<sup>2</sup>

## Transformative Technologies

Digital platforms continue to change our society. We are witnessing rapid technological growth: new networking and communication mechanisms, tools for information dissemination and human resources mobilization are emerging. The list of innovations that can transform our future is growing every day. It includes artificial intelligence, new approaches to working with big data, crowdsourcing practices, the Internet of Things, new forms of access to the internet, augmented and virtual reality mechanisms, 3D printing technologies, blockchain and crypto-currencies, biological chips, chatbots, and non-standard forms of virtual community organization.

The scope of information networks extends beyond the human being as such, recalling British ecologist and futurist James Lovelock's concept of Gaia, according to which all living beings on earth are one super-organism. So, for example, Alexander Pschera writes about the potential of the "Internet of Animals" as a new technology for dialogue between humans and animals. According to Pschera, "animals in the Internet of animals are not just web content or memes created by humans," but "data generators and data carriers."<sup>3</sup> Scientists are also studying how to create a "bio-internet of things"

by connecting bacteria to the global network.<sup>4</sup> Not only bacteria, but even atoms can now be actors in the global network. Researchers are working on the creation of a Quantum Internet, which may allow a qualitative leap in everything concerning the speed and safety of information transfer.<sup>5</sup>

New technologies make it possible to implement ideas that were previously only to be found on the pages of literary works. And this is not just about science fiction. For example, programmers Damien Riehl and Noah Rubin have implemented an idea explored by Jorge Luis Borges in his story *The Library of Babel*. The Argentinean writer described a book depository containing the results of a combinatorial search for all possible combinations of 25 characters. Such a library would contain absolutely all texts, both created and not yet created by mankind. Although the library invented by Borges would exceed the size of the visible Universe, it turns out that the scale of big data may approach the realization of his vision. The programmers have created an algorithm that generates all possible combinations of eight notes and 12 beats, and uploaded an archive of billions of melodies with free access under the Creative Commons Zero License. The authors of this project thus sought to protect users from lawsuits from the music industry.<sup>6</sup>

The transformative potential of technologies can be seen both in everyday life and especially in times of crisis, when survival under new threats and rapidly growing uncertainty requires innovation. Digital platforms offer new formats for participation in decision-making, contribute to a greater transparency of public institutions, and form new control mechanisms for traditional government institutions. Experts Alex Berditchevskaia and Markus Droemann, from the British Innovation Foundation (NESTA), have noted that the central innovation supporting social and political transformation is the development of a “collective intelligence” that mobilizes human resources to address a wide range of issues. Among other things, new possibilities for rapid mobilization increase social resilience in a crisis.<sup>7</sup>

On the other hand, researchers point out that, contrary to what might be expected, information technology is not capable of resolving the problem of economic inequality. In the new digital economy, the rich are still getting richer and egalitarian forms of cooperation are becoming a front for the development of “surveillance capitalism” (Zuboff, 2019),<sup>8</sup> which is based on large-scale collection and analysis of personal data.

The story of Cambridge Analytica has shown new possibilities for manipulating the behavior of Facebook users that question freedom of choice. According to Lawrence Lessig of Harvard University, “if we could put up with the need to destroy democracy to stop climate change, what’s happening today is the destruction of democracy to sell advertising more effectively.”<sup>9</sup> Lessig goes on to note that the architecture of modern social networks stimulates polarization, because the greater the degree of polarization, the greater the involvement of audiences, which is key to the commercial success of these platforms. Thus, the laws of the market destroy democracy, while democratic political systems are to live by the laws of the market.

Some researchers point out that new forms of digital work have, in fact, offered new forms of exploitation of the working resources of internet users (Fish & Srinivasan 2012).<sup>10</sup> Internet activism often turns into so-called “slacktivism” when real offline actions are replaced by the simple click of a mouse, leaving a subjective sense of participation, but less likely to lead to significant change. New surveillance and control technologies threaten media freedom and the right to personal privacy. Social networks are being transformed from a new public space into a space of propaganda, toxicity,<sup>11</sup> and social polarization. Finally, a popular saying that “someone has already created a mobile application for that task,” according to publicist Evgeny Morozov (2013), is an example of blind faith in the ability of technologies to find an answer to any social or political challenge and, as a result, creates a sense of indifference.<sup>12</sup>

The coronavirus pandemic is a vivid illustration of the contradictions related to the role of information technology. On the one hand, we have seen a wide range of innovations that have emerged to combat the crisis, from new forms of data analysis to network-based resource mobilization for the development of home-made personal protective equipment. On the other hand, information technology has significantly scaled up the processes associated with the spread of misinformation, which has led the World Health Organization to declare an “infodemic.”<sup>13</sup>

Moreover, innovations related to viral shedding in the monitoring and observance of quarantine regulations are a significant step in the development of surveillance technologies that violate the right for privacy. Discussion of the coronavirus on social networks has been accompanied by a significant level of emotional tension and contributed to social polarization as well as to the development of digital vigilantism.<sup>14</sup> In Russia, internet technologies have been used to bring crisis-related volunteer mobilization under government control, while the role of independent horizontal mobilization was relatively minimized.<sup>15</sup>

One way or another, the dynamics of information technology development and its impact on social and political processes can hardly be reduced to a linear influence on certain aspects of our lives. With the increasing complexity of present systems, the impact of this or that technology is sometimes unpredictable and is open to an endless series of changes. Moreover, innovative processes often change the power balance between activists and state institutions. On the one hand, activists create new challenges for those in power. On the other hand, those in power mobilize their resources to neutralize independent innovations and to develop new technologies for controlling and managing society. However, despite the binary opposition of power and civil society, many innovations also create new forms of cooperation and synergy between society and state institutions.

## Between Cyber-Optimism and Cyber-Pessimism

Researchers and experts increasingly differ in their appraisal of the impact of information technology on our lives. This is especially true of their assessment of the impact of technology on social and political aspects of social development. Researchers can often be divided into groups of cyber-optimists, who emphasize the positive impact and potential of technology, and cyber-pessimists, who focus on the negative aspects of social and political transformation. Between these two is a group of cyber-pragmatists trying to find a balance between the extremes.

According to Brian Loader and William Dutton (first director of the Oxford Internet Institute), internet development has always been accompanied by a mixture of utopian and anti-utopian discourses. Recently, however, “even in academia, there has been a critical turn in discussion of the Internet with a growing prominence of skepticism and concern over the social, economic and cultural underpinnings of the Internet and its consequences for society.” Researchers note that “the Internet is no longer a futuristic innovation that might shape social and economic development, but clearly is a central aspect of contemporary network societies.”<sup>16</sup>

Pessimism is expressed not only about the nature of the impact, but also about the degree/speed of this impact. David Karpf, a researcher at George Washington University, has analyzed articles from *Wired* magazine over the last 25 years and concluded that, contrary to expectations, the internet’s development is gradually slowing down.<sup>17</sup> According to Karpf, although Facebook in 2019 is different from Facebook seven years ago, the scale of these differences and their impact on our lives is much less than we might have imagined. While the second half of the 1990s and the beginning of the 2000s were a period of revolutionary transformations that changed our way of life, the impact of innovation is now more

linear. A number of prophecies, such as that wearable technologies (like Google Glass) or virtual reality would bring a new revolution, have not yet been fulfilled. Even though the Internet of Things has been incorporated into the design of our homes, it has hardly become a transformational technology that has completely changed our lives. This kind of skepticism can also be expressed about the role of blockchain technologies, etc.

Moreover, there are almost no big new players on the innovation market. Alphabet (Google), Apple, Amazon, Microsoft and Facebook remain the key IT companies. Karpf relates this to changes in market regulation capabilities: "During a period of rapid media and technological change, effective regulation is extraordinarily difficult because the regulators cannot keep up with the behaviors they are regulating. But as Internet time slows down and a few massive companies acquire quasi-monopolistic market power, it gets easier to regulate the market effectively." In addition, the speed of transformations can also slow down because IT giants effectively control the market, acquiring their potential competitors. A powerful wave of "creative destruction" and volatility will be required in order to change the current status quo, one that can push aside monopolists and free the field for new innovators to grow. Therefore, Karpf concludes, "the Internet of 2022 will probably look a lot like the Internet of 2019."

The solution required to explain how technologies are changing our lives was the emergence not only of abstract theories, but also of methodologies for the critical analysis of cycles of technological innovation, from invention and development to widespread application. For example, the so-called "hype cycle" developed by Gartner, a research and consulting company, describes the development of any technology as a series of phases, starting with the "innovation trigger," through the buildup of expectations of a particular technology, and thence to disillusionment, work on its shortcomings, and finally the achievement of a state of productive stability.

However, the purpose of this book is not to predict the role that technologies will play in five or ten years' time. Today, there is a wealth of literature on upcoming trends, and some institutions, such as the Future Today Institute,<sup>18</sup> offer a detailed and comprehensive annual analysis of the vector of possible technological development. We do not need a Cassandra, a Nostradamus or even a Ray Kurzweil. Moreover, we would like to avoid a position of technological determinism according to which understanding the future role of technology will help us to predict the dynamics of social and political processes, and the development of civil society in particular.

First and foremost, we seek to help critically assess the range of risks and opportunities for civil society associated with the development of information technologies. Isaac Asimov, assessing threats to humanity, wrote a book titled *The Choice of Disasters* in 1979. The title contains an important element of evolutionary optimism. Even if catastrophes are inevitable, the "choice" we make is ours. The aim of the present book's authors is to support the development of conditions that will increase the role of individual actors and of civil society at the critical intersections of social and political development and to support the possibility of "choice" based on knowledge and critical thinking.

Such an understanding of the role of information technologies does not indicate that the authors share the position of technological determinism. However, the importance of information technologies is emphasized by researchers from a wide variety of disciplines. For example, Shahar Avin and his colleagues at Cambridge University Centre for the Study of Existential Risk suggest that threat assessment should be considered through three vectors: the role of critical systems in sustaining our existence; the role of global risk in spreading mechanisms; and finally, the role of mechanisms that allow us to respond to new challenges, including those of prevention and mitigation.<sup>19</sup>

In this system of analysis, information networks have a triple meaning: they are critical to supporting our lives,



they can be used to spread different threats (as in the case of the “infodemic”), and they can be an important mechanism for responding to crises. However, the key factor in preparedness for the future, as well as in the ability to not just anticipate this but also participate in its creation, is knowledge, and also the ability to predict a wide range of possible scenarios.

## **From predicting trends to expanding the imagination**

“At first, there was an idea of what might have been at first...” – this formula could perhaps describe the emergence of the internet. Long before the Internet’s creation, various models of global information networks appeared in the works both of humanitarians, such as Teilhard de Chardin, and of those who worked to create technologies, such as Vannevar Bush. One of the important documents that shaped the development of the internet was John Barlow’s Declaration of Independence of Cyberspace, written in 1996. In it, Barlow proclaims the creation of a new world where “anyone, anywhere may express his or her beliefs, no matter how singular, without fear of being coerced into silence or conformity.”

At the same time, in the mid-1990s, the ideology of virtual communities was developed by Howard Rheingold. Concepts that envisage how technologies can enable new forms of social interaction, new types of economies and new political systems have played a significant role in the development of these technologies.

The key role of the imagination in the creation of the internet has been highlighted by a number of scholars, including French researcher Patrice Flichy and Professor Robin Mansell at the London School of Economics.<sup>20</sup> All these studies are based on the understanding that any technology is the object of social construction. Therefore, the role of technology in socio-political development and,

in particular, in the development of civil society, depends above all on the richness of our imagination (the societal “*imaginare*”) and on our ability to perceive different models for the future development of civil society.

According to Ramesh Srinivasan and Adam Fish, the authors of *After the Internet*, the ability to deconstruct myths related to the development of information technology, and in particular the myth of the internet, as a technology that can bring us closer to the “end of history,” to global democratization, and to prosperity for all, is equally important. This kind of deconstruction is a prerequisite for creating something new. Speaking about the world “after the internet,” the authors of this book write not about a world without the Internet, but about a world where the role of the internet is qualitatively different from that of its current embodiment.<sup>21</sup>

On the other hand, amidst the crisis of the current internet models, the demand for new imaginary models, in particular, is increasing. For example, researcher Ethan Zuckerman has called for a fairer internet. However, that would require that we imagine how such an internet could work. According to Zuckerman, Wikipedia remains almost the only platform that continues to realize the original vision of the internet, while the spirit and logic of commerce has transformed much of the global network. Zuckerman wonders if we can imagine a new type of social media design that will promote mutual understanding rather than spread misinformation, and support cooperation even when people have different opinions. “We’ve grown so used to the idea that social media is damaging our democracies that we’ve thought very little about how we might build new networks to strengthen societies. We need a wave of innovation around imagining and building tools whose goal is not to capture our attention as consumers, but to connect and inform us as citizens,” Zuckerman sums up.<sup>22</sup>

Development of our imagination requires resources that allow us to go beyond visible solutions. Science fiction is a one example of such resources. For instance,

Isaac Asimov describes a new type of electronic democracy in his story “Franchise,” in which the popular vote procedures necessary for the election of the President are replaced by the Multivac super-computer. The computer’s decision is based on an analysis of big data and on answers from one person, which allows the computer to make the final decision. Science fiction writers often become pioneers pointing the way for further technical development. For example, Stanislav Lem proposed “ariadnology” as a scientific discipline of information search. Research shows that science fiction movies like the epic Star Wars or the Star Trek series have significantly influenced the development of technical imagination and the process of invention. Cambridge researcher Shahar Avin offers a systematic analysis of various models for exploring a possible future of artificial intelligence, ranging from science fiction literature to computer games.<sup>23</sup>

Thinking about how technologies are changing society is often limited to the range of technological solutions that already exist. The practice of developing social and technical imagination helps to overcome these limitations. The application of these practices should enable us to suggest the role that different innovations could play in different areas of life. This kind of imagination is not only a reflection of opportunities and risks, but also a driver of innovation.

Our project has two objectives. On the one hand, we want to show the risks and opportunities for the development of civil society associated with the emergence of new information technologies and digital practices. On the other hand, we want to help readers expand their own social and technical imagination. The results of our research can support the development of social and technological innovations. Social and technical imagination is a potential resource with which it is possible to achieve change. We believe that those who are first to grasp future trends will be able not only to effectively use technological developments, but also to become leaders in social innovation.

## The Development of Social and Technical Imagination and Horizon Scanning Technique

The future is not only time, but also a discipline. Future analysis practices often evoke skepticism and are associated, at worst, with mediums and, at best, with futurologists. But we must admit that today systemic thinking about the future is a necessary condition for making decisions in the present. The systemic nature of such thinking is ensured by a number of techniques that offer models of thinking about the future and the structure of this thought process. Recently, new technologies of complex system modeling, based on simulations managed by artificial intelligence, have allowed us to analyze millions of possible scenarios.<sup>24</sup> However, the purpose of this book is not to identify the most likely scenario vectors, but to expand our readers' range of thinking about the future. To achieve this, we have chosen the Horizon Scanning technique, used both by researchers and by government agencies.

The Horizon Scanning technique proposes that we imagine several scenarios of the future, among which the authors should indicate three: the possible, the probable and the preferable. Special attention is paid to so-called "wild cards," also known, thanks to Nassim Taleb, as Black Swans, i.e., events that are unlikely to happen, but with a potentially high impact on the scenarios of certain processes.

The purpose of Horizon Scanning is to analyze a wide range of sources and indicators in order to identify trends in change that can lead to a significant transformation in the world around us. According to one definition, the purpose of Horizon Scanning is "the systematic examination of potential (future) problems, threats, opportunities and likely future developments, including those at the margins of current thinking and planning" (Van Rij, 2010).<sup>25</sup> Horizon Scanning has two goals. The first is to provide a "warning." It tries to identify dangerous trends as early as possible. The second goal is "creative," allowing one to reflect on new opportunities and take first steps towards their implementation.

In addition to “unpredictable phenomena,” the horizon scanning technique pays special attention to so-called “weak signals.” The term stands for peripheral information that is far away from the spotlight and from topical discussions. This information is complex and difficult to access. Many “weak signals” will lead to nothing, but others have the potential to become harbingers of events and trends that, over time, will have an impact on science and society. When analyzing a weak signal, it is important to consider such factors as the credibility of the source, the degree of possible impact, the level of innovation, and the extent to which the signal can change existing practices and approaches in a given area.

Another important element of analysis is the identification of “axes of uncertainty.” It enables us to identify the areas in which the dynamics of scenarios are least predictable. This analysis can focus on identifying possible bifurcation points beyond which a scenario cannot be determined within probability categories.

Modern scientific literature offers various methods for Horizon Scanning. Some authors suggest starting an analysis with the widest possible range of sources and topics. Wide scanning of weak signals makes it possible, through system analysis, to focus on those topics that are likely to influence future scenarios. Relying on categorization by level of possible significance and credibility, weak signals can be made to cluster and form topics. Other authors suggest focusing initially on analyzing specific topics that may be relevant in the future and on finding weak signals related to these, both confirming and disproving the significance of the topic. Finally, the two approaches can accommodate each other and be integrated within the same study.

Horizon Scanning is not only a form of analysis, but also a part of constructing the role of technologies and their future direction. Building alternative models of the future is an important element in critical thinking about the present. The ability to imagine the possible, the probable and the desirable, as well as to try to draw images of the

unpredictable, is a necessary skill for making strategic decisions and forming long-term strategies in different spheres. Our task is to expand the window of opportunity through reflection on possible and probable future options, to achieve a desired future, and to be ready for unpredictable scenarios that await us beyond the horizon of events.

## Interdisciplinarity and scanning optics

Horizon scanning offers a technique, an analysis framework and a set of guidelines for studying the future. In addition to a framework for a systemic approach, thinking about the future should be based on a concept that offers a different degree of understanding of the role of information technologies in social, cultural and political processes. Various theoretical approaches offer various “scanning optics.” Below are a few examples.

Based on the principles of ecological psychology, horizon scanning can look for new forms of affordances that fundamentally change the forms of civil society development.<sup>26</sup> The theory of social movements suggests focusing on how information technologies are changing the way human resources are mobilized and collective action is organized.<sup>27</sup> Cultural-historical activity theory suggests investigating the role of technologies in the mediation of new forms of relationships between the user and the environment, as well as the development of new types of human activity systems.<sup>28</sup> A number of social and political theories draw attention to the role of technology in transforming institutions and relations of power between people and state.<sup>29</sup>

Cybernetic approaches draw attention to new feedback models and mechanisms for creating models of a desired future. Cultural approaches suggest paying attention to new mechanisms of production of meanings. Evolutionary approaches consider technologies in the context of the evolutionary process from development of new forms

of mutual aid to achievement of the point of technological singularity beyond which “the future no longer needs us.”<sup>30</sup>

This is only a partial list of concepts suggesting different types of horizon scanning optics. Such concepts can offer different interpretations of technological trends and weak signals, as well as various scenarios for possible, probable and desirable futures. The variety of the above-mentioned approaches emphasizes that, when it comes to the role of technologies in the development of civil society, horizon scanning should be an interdisciplinary project bringing together representatives of humanitarian, social and engineering disciplines and offering different systems of analysis and critical thinking apparatuses.

## How We Did It

The Horizon Scanning system of this project consisted of two phases. In the first phase, about 100 experts in the field of social projects and civil society development shared their visions of the role of information technologies in the future transformation of their field. This survey of experts allowed us to feature a wide range of possible topics of analysis. The results of the survey are reflected in the chapter written by Aleksey Sidorenko, head of the Greenhouse of Social Technologies.

In the next phase, we brought together an interdisciplinary group of researchers to participate in the Horizon Scanning Workshop. What was important to us was the interdisciplinarity of this group, enabling the horizon scanning to be performed in measurements specified by different types of research optics. The invited experts, therefore, included sociologists, anthropologists, urbanists, geographers and computer science specialists. At the first stage, the group of researchers gathered for a two-day seminar, where the main topics of the book were identified and clustered with the help of a facilitator, global risk expert Dr Timofey Nestik. In addition, each seminar participant

made a presentation on their field of research and the potential role of the research for horizon scanning.

The meeting also included a discussion of the general methodological framework of the project and the formation of a common research framework, which helped us find common ground and form a common semantic space despite the interdisciplinary nature of the group and the fact that participants would perhaps approach the analysis of similar topics on the basis of different systems of coordinates. Discussing horizon scanning technique also helped participants to overcome the temptation to focus on today's events and sought to push the authors of the book out of their comfort zone and to look forward.

## Conclusion

The purpose of this volume is to expand the spectrum of the social and technical *imaginare*. The target audience is heads of non-profit organizations, movements, public initiatives, journalists, public figures, and representatives of grant-making organizations – in general, all those involved in the development of civil society today. Each chapter is focused not on a specific technology, but on a problem or issue related to technological development. Different chapters discuss the same technologies (e.g., artificial intelligence), but at the same time touch upon different problems related to these. Some chapters address several technologies at once. All chapters consider the role of future technologies in the context of civil society development issues.

Our book has several goals. The first is to analyze how technological development can influence the development of civil society in Russia, the former Soviet Union, Central and Eastern Europe. The second is to help those involved in these issues to make decisions in the context of possible future development scenarios. We hope that analysis of the future will help to improve the effectiveness



of long-term civil society development solutions, increase the range of opportunities associated with building strong horizontal communities, and enable readers to become leaders in social innovation. Moreover, this project will help to anticipate the risks associated with restrictions on civil liberties and threats of human rights violations resulting from technological development.

Science-fiction writer Isaac Asimov once wrote: “We cannot prevent the collapse of the empire, but we can still shorten the period of Barbarism.”<sup>31</sup> To paraphrase Asimov, we cannot predict the future, but we can try to systematically comprehend its possible scenarios and the probability of certain events in order to minimize the risks and maximize the opportunities for constructive development. In this book we try to help each reader to formulate their own unique portrait of a desired future in order to make this desired future more likely to happen.

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