Chapter 4
A Typology of Risks and Threats Associated with the Digital Transformation of Economic and Legal Systems

Alexey Yu. Mamychev and Olga I. Miroshnichenko

Abstract The research is devoted to the analysis of potential risks and threats provoked by the fourth industrial revolution. The authors note that the digital transformation of society leads to new assemblies of digital technologies and people, generating a chain of visible and hidden changes that, in their interconnected totality, change the usual political, legal, and economic landscape. The concept of the "driver of change" is introduced, which is proposed to be understood as a certain technological agent and digital actant. The main threats are categorically differentiated; within each category, conclusions and proposals are proposed for the possible leveling of existing risks.

Keywords The 4th industrial revolution · Digitalization · Digital actant · Technology · Legal regulation · Doctrinal act · Information society · Threats and risks

JEL Codes O33 · K24 · K39 · D81

4.1 Introduction

The Fourth Industrial Revolution is radically transforming the socio-cultural and axiological-normative foundations of society. We are already witnessing dramatic changes in the development of economic, political, legal, and other types of social relations. Yet there is nothing unexpected and unpredictable about these arguably equivocal and ambiguous processes associated with the digital transformation of

A. Yu. Mamychev (✉)
Vladivostok State University of Economics and Service, 41 Gogol St., 690014 Vladivostok, Russia

Laboratory of Political and Legal Studies, Faculty of Political Science, Lomonosov Moscow State University, 27 b.4 Lomonosovsky Prospekt, 119234 Moscow, Russia

A. Yu. Mamychev · O. I. Miroshnichenko
Department of Theory and History of State and Law, Far Eastern Federal University, 10 Ajax Bay, Russky Island, 690922 Vladivostok, Russia

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society, which is actively taking place throughout the world. Each industrial revolution is known to have led to radical changes in the existing political, legal, economic, and socio-cultural paradigms and altered the ideological and axiological-normative foundations of society. The emergence of new tools and technologies tends to bring about new socio-technological configurations and assemblages, which alter the existing forms and nature of labor, social communication, power/hierarchical organization, etc. Just about every new "assemblage" of this kind alters, gradually or intermittently, the systemic setup of social relations and existing political, economic, or legal practices.

In this context, according to Gilles Deleuze and Félix Guattari, "the material or machinic aspect of an assemblage relates not to the production of goods but rather to a precise state of the intermingling of bodies in society, including all the attractions and repulsions, sympathies and antipathies, alterations, amalgamations, penetrations, and expansions that affect bodies of all kinds in their relations to one another… Even technology makes the mistake of considering tools in isolation: tools exist only concerning the interminglings they make possible or that make them possible. The stirrup entails a new man-horse symbiosis that at the same time entails new weapons and new instruments. Tools are inseparable from symbioses or amalgamations defining a Nature-Society machinic assemblage. They presuppose a social machine that selects them and takes them into its 'phylum': a society is defined by its amalgamations, not by its tools" (Deleuze & Guattari, 2010, p. 28).

The Fourth Industrial Revolution, likewise, has led to new assemblages of digital technologies and humans, which have given rise to a chain of visible and hidden interrelated changes, which, in turn, have combined to alter the existing political, legal, and economic landscape (Inshakova et al., 2020; Tarakanov et al., 2019). Besides, any revolution also gives birth to a new subject of political, legal, and economic history. A case in point is the proletariat, which has long served as a driver of political-legal and socio-economic changes and a foundational element in ideological systems. While its role and significance have been subject to different interpretations, the proletariat has been recognized as a significant factor in the transformation of society. A similar kind of "the subject of history" is being engendered by the current societal transformations too. At present, there is no accurate definitive term for it, with terms such as "technological agent," "digital actant," and "unit" variously employed. The one obvious thing is that the essence and conceptual component of the new "driver of change" are being reflected in the current socio-technological landscape in increasingly distinct ways.

Moreover, the Fourth Industrial Revolution is distinguished in the following major way: compared with its "predecessors," it forms a whole new dimension, a whole new reality for socio-economic and political-legal processes to take place in. The three preceding industrial revolutions altered substantially the way of interaction and the nature of relationships between and the significance of the three principal "realities"–physical, biological, and socio-cultural (or intercommunicating, i.e., created (constructed) and collectively developed by people). The fourth revolution, in turn, has given birth to a new type of reality–digital reality, which with each passing year becomes increasingly significant as it interacts with the basic realities of human existence.

4.2 Methods and Materials

The study is based on such methods as the logical, which allows using the methods of analysis and classification to methodize ethical problems of the technological revolution; the system-structural analysis, which allows applying differentiation and detailing of socio-political processes influenced by digitalization and which allows to elaborate ethical aspects in relations related to the use of AI and to highlight ethical and legal problems of these relations; predictive method and modeling method, which was used to identify trends in the development of Russian society under the influence of digital technologies soon.

4.3 Results

The present work explores some of the key risks and threats associated with the development of digital reality, and its influence on economic and legal systems.

4.3.1 New "Drivers of History"

Today, it is no longer questioned, especially in light of the rapid digitalization of society and the global challenges caused by the COVID-19 pandemic, that at the present social activity (at both the individual and collective levels) is "neighboring" or unfolding in conjunction with the activity of certain nonhuman elements–"actants," as they are termed in the contemporary literature (e.g., digital actants, like standalone digital algorithms or standalone robotized apparatuses, and biological actants, like viruses and bacteria).

According to Bruno Latour, an *actant* is an active principle or a source of action that, *on one hand*, can be human (e.g., conscious acts of will, joint actions, mental structures, and social institutions) or nonhuman (e.g., speaking biologically–a virus, technologically–a standalone digital technology, and environmentally–a natural phenomenon) (Bruno,), and, *on the other*, can be a combination or an assemblage (Bruno, 2018)[1] of the two, i.e., a fusion of the social and the material, the human and the nonhuman.

[1] If the term "system" is mainly used to describe interconnected social objects (people, created institutions), then "assemblage" is used to represent other specific relationships and mutual influences of both human and non-human (material, biological, digital, and other) elements. Assemblage is "the combination or assembly of something together, or the result of such a combination or assembly" (Bruno, 2018, p. 9). It is important to note that assemblage focuses on the close relationship of various elements (social, digital, biological, physical), however, "relationships between them (unlike the system-*auth.*) are not logically necessary but contingent (that have a predominantly random character of combination/assembly—*auth.*) mandatory as the historical result of their co-evolution (joint movement and development—*auth.*)" (Bruno, 2018, p. 21).

An example of the latter may be a person's orientation expressed through digital forms, which can generate specific events in socio-cultural and digital reality or cities, as "assemblages of people, networks, organizations, as well as of a variety of infrastructural components" (DeLanda, 2012, p. 13).

With that said, "an actant never really acts alone. Its efficacy or agency always depends on the collaboration, cooperation, or interactive interference of many bodies and forces" (Bennett, 2018, p. 45). In this theoretical-methodological model, the actant "is neither subject nor object but a 'mode' of what Spinoza calls 'Deus sive Natura' (God or Nature)… every mode is itself a mosaic or assemblage of many simple bodies… What it means to be a 'mode,' then, is to form alliances and enter assemblages: it is to modify and be modified by others. The process of modification is not under the control of anyone mode–no mode is an agent in the hierarchical sense" (Bennett, 2018, p. 47).

Processes of this kind include, for instance, modifications to digital algorithms in the machine learning process. Machine learning is implemented on specific social data and cultural artifacts; as part of the above process, the development of the digital algorithm produces a specific socio-cultural component, as well as quite a unique path for the future development of digital algorithmic systems.

This effect has already been captured in the development of various digital technologies and is quite common nowadays (Brockman, 2017; Kelly, 2017). Thus, the implementation of a standalone digital system that learns based on particular "socio-cultural material" or a certain algorithmic solution in different communities may lead to completely different paths for their development and to "bias in digital systems" or "digital discrimination" (Greenfield, 2018; Kaku, 2018; Stuart, 2019).

Another example of modification changes in people's mental activity and their volitional and emotional characteristics is based on the inclusion of digital technology in everyday life, which has been described in the contemporary literature quite substantively. Or take the effect of a virus pandemic—it may result in special trends in the development of digital systems for the identification, differentiation, and keeping track of social processes, modify political, and legal systems, alter practices related to bio-protection, social and medical distancing, and stay-at-home restrictions, transform people's axiological-normative orientations, etc. (Goodbye, Covid, 2020; Digital Agenda and Digital Initiatives During COVID-19, 2020, p. 19; The end of the familiar world, 2021, 380p.).

In our mental activity and exploratory practices, there, also, takes place a transformation of a sort of "dictionary" as we try to describe various events and processes and concepts and notions from some descriptive systems and exploratory protocols penetrate others. There occurs an intense search for new terminology that, *on one hand*, can make it possible to properly describe the latest radical changes in society, politics, and law taking place in light of the digital transformation of society and the spread of a virus pandemic, as well as global climate changes, and, *on the other*, can make it possible to view the various systems (social, environmental, biological, physical, and digital) as interrelated and equally significant (Bennett, 2018, p. 26).

In general, it is quite conventional for concepts and exploratory practices to interpenetrate from one area to another. For instance, using the discourse on the political

body or the analogy with social diseases and viruses that destroy the social organism, which traces their roots back to ancient philosophy, has already become a well-established trend these days. Today, the use of this kind of analogies is becoming a widespread scholarly trend again.

By way of example, it is fitting to share here a quote from a recently published book devoted to the philosophical-political analysis of the relationship between virus contaminations, digital evolution, and the transformation of political and legal practices. The author, Eugene Thacker, suggests, "we have two separate fields, each of which integrates informatics and materiality differently through a network paradigm—this last part is crucial. If information security tells us that certain kinds of computer behavior can be understood through the lens of epidemiology, then it is equally important to note that modern epidemiology tells us that infectious disease can be understood through the lens of mathematics, statistics, and informatics. In one the basic idea is that we can understand particular types of computer behavior through the lens of biology, while in the other the basic idea is that we can understand infectious disease through the paradigm of informatics… The view of contagion presumes a condition of biological materiality, that can then be abstracted into metaphor (computer 'virus') when contagion is considered within epidemiology, it also implicitly links contagion with material and biological processes of the rate of infection, logistic growth, and epidemic thresholds" (Thacker, 2020, p. 74).

4.3.2 Artificial Intelligence, New Technological Formate of Transformation of Socio-economic and Political-Legal Relations: Main Risks

The term "intelligence" derives from the Latin "intellectual" understanding, reason, mind, and it generally means the thinking ability, the mental principle of a person (Ozhegov, 2014, p. 315). According to Patrick Henry Winston, an exhaustively precise and comprehensive definition of natural intelligence in its ordinary meaning seems impossible since intelligence is a "complicated mixture of a significant number of diverse skills in the field of information processing and presentation" (Morkhat, 2018, p. 59).

George Luger points out that today the concept of intelligence is vague and unclear "most of us are sure that we can distinguish 'intelligent behavior' when we face one. However, it is unlikely that someone can give intelligence a definition specific enough to evaluate a supposedly intelligent computer program and at the same time reflect the viability and complexity of the human mind"; "intelligence is a very complicated field of knowledge that is impossible to describe with the help of one theory" (Morkhat, 2018, p. 65).

It is believed that the term "artificial intelligence" was first coined by computer scientist John McCarthy at the Dartmouth Seminar in 1956, but before that, there were speculations whether machines can think (Smith, 2006).

In 1945, in his work "As We May Think," Vannevar Bush offered a system that enhances the human ability to think (Ibid.). Five years later, in the article "Computing Machinery and Intelligence," Alan Turing first raised the question of the possibility of creating a full-fledged artificial imitation of human intelligence. According to Turing, if a machine can behave as intelligently as a human being can, then it is just as intelligent as a human being (Alexander, 2017).

Stuart Russel and Peter Norvig identify 4 main approaches to the definition of artificial intelligence:

– an approach based on human thinking, that is, it is assumed that artificial intelligence should be able to implement mental activity similar to a human one, for example, it is capable to make decisions, solve problems, and learn;
– an approach based on human behavior, that is, it is assumed that artificial intelligence should be able to perform the actions, the performance of which requires intelligence from a person;
– an approach based on rational thinking;
– an approach based on rational behavior (Morkhat, 2018, p. 78).

To understand the details of artificial intelligence, it is necessary to consider the concepts of artificial intelligence proposed by the doctrine.

Human intelligence usually follows a sequence known as "perception—cognition—action," that is, in the first stage, people perceive something in the world around them, think about what to do, and then, once they have considered the options, decide to act (Kostoeva, 2019, p. 50–51). Artificial intelligence is programmed to do something similar since the computer perceives the world, then it processes the obtained information with the help of algorithms of optimization and verification, and the choice of actions is made in the same way as in humans. But it should be noted that even though there are lots of similarities between human intelligence and artificial intelligence, there are significant differences.

Each autonomous system working in a dynamic environment should create a model of the world and constantly update it, that is, the world should be perceived (or felt with the help of cameras, micros, and/or touch sensors) and then reconstructed in such a way that the computer "brain" has an effective and updated model of the world in which it operates before it can make decisions. The accuracy of the world model and the timeliness of its updating are the key conditions for an effective autonomous system.

In modern science, there are two approaches to artificial intelligence: strong (general) artificial intelligence and weak (narrow) artificial intelligence (Gutenev, 2012, p. 78).

A strong version of artificial intelligence suggests that computers can acquire the ability to reflexive thinking and self-awareness, even if their thought process is different from the human one.

The term "strong artificial intelligence" was first used by American philosopher John Searle. In this case, artificial intelligence is considered not just as a model of the mind, but it is this mind, thus, it is assumed that there is no fundamental difference

between natural intelligence (human) and artificial intelligence (machine) (Ableev, 2015, p. 60).

A weak version of artificial intelligence rejects any possibility of thinking for computers, emphasizing its limitation to one established (prescribed, imputed) task. Programs with weak artificial intelligence can have exceptional computing capabilities, but they are limited with a particular field, for example, as IBM Deep Blue beat Gary Kasparov at chess in 1997. We encounter more recent versions of weak artificial intelligence daily: virtual assistants as Siri and Alexa that are trained to recognize the voice and perform certain tasks set by the user, search systems, algorithms of social network platforms, web cookies that identify users on the Internet, etc.

Recently, a third approach to artificial intelligence has appeared—superintelligence (Duberry, 2019). This category refers to artificial intelligence, which surpasses the human brain in all tasks, including scientific creativity, general wisdom, and social skills. The appearance of this category is predicted because strong artificial intelligence learns and develops its skills exponentially, so it will reach the level of superintelligence.

It seems that thinking about the real risks of digitalization directs us precisely to the potential of such a "superintelligence."

We suggest, taking into account the above-mentioned doctrinal and technological features and the specifics of artificial intelligence, in particular of its "special type," to classify all problems and risks of digital transformation into three main groups, representing three basic scenario models for the development of robotic technologies and systems of artificial intelligence:

(1) "machine phylum"–the beginning of the machine era, robotic singularity or robotic event, after which systems of artificial intelligence and robotic technologies will gain full autonomy and will be able to launch the process of their self-reproduction and self-improvement, which will provoke a confrontation between humans and robots;
(2) 4th industrial revolution that implies a qualitative leap and change in the socio-economic structure of society, where systems of artificial intelligence and robotic technologies will become new perfect tools and will expand human capabilities, radically change our life, forms, and methods of interaction with social and natural objects (Matytsin & Rusakova, 2021);
(3) convergence—describes the processes of fusion, merging of human and artificial intelligence systems, the emergence of new human-robotic subjects, the "fusion" and subsequent integration of natural and artificial intelligence, the formation of a new stage of evolution (Inshakova et al., 2017);

Each of the mentioned categories needs a doctrinal understanding at the level of legal science. Law as a social regulator currently has the widest regulatory potential, which is expressed both in the actual opportunity to establish (formalize) the doctrinal and legal framework for digitalization and the opportunity of advancing the deontological coding of the development of innovative technologies (AI and RT systems). We think that the instrumentalist approach, which dominates in modern conceptual and legal versions, misses the fact that the right-wing reality itself is also

subject to digital transformations, and it waits for a suitable moment when there will be a certain type of social relations, for the settlement of which the legal and technical arsenal will be used.

4.3.3 Digital Transformation of Socio-economic and Political-Legal Relations

The introduction of intelligent systems for the detection and prediction of violations of the law is generally positive, but it increases the chance of human rights violations and discrimination against small groups (Dremliuga, 2020, p. 12). And digitalization of social relations itself on the one hand seriously expanding the range of opportunities, in particular in the field of access to information, on the other hand, may serve as a tool for serious restriction of rights of, for example, older members of society who do not have the necessary digital skills.

Currently, for the stable development of stable socio-economic relations, it is vital to elaborate ethical standards and requirements that are adequate to the conditions and requirements of the modern digital era that will regulate the processes of software development and the introduction of autonomous systems in the life of society. After all, the emerging technologization of the individual's everyday life transforms not only his behavioral attitudes but also significantly modifies the very structure of social relations, including the forms of resolving social contradictions (socio-political conflicts) (Goncharov et al., 2019).

For instance, instead of traditional subject-object forms of external pressure (army, security system, economy, political institutions, natural resources) used in socio-political conflicts, today the direction of the accentuated negative informational impact is no longer objects of the physical world but the direct consciousness of the individual (values, beliefs, culture, behavioral attitudes, life strategies). I.e., earlier the objects of influence were institutions (army, territory, economy), then in the conditions of reformatting the direction of external pressure, specific technologies for activating the destabilizing potential that transfer the conflict from the latent sphere to the public space come to the fore (Postalovsky, 2019, p. 47).

First of all, to develop the above-mentioned list of requirements, it is necessary to analyze potential risks of digitalization for the subsequent systematic objectification of the pros and cons of the possible introduction of certain technological models.

Indeed, when looking at the above-mentioned differentiation of risks, it becomes obvious that each of the potential threats is managed and directed by a person, that is, it can be stopped by the same person. Recently, it has been massively overlooked that end-to-end digital technologies are just a product and an object of human activity and that it is people who create, program the shell, and use these *objects*, they lay valuable, rational, moral, emotional, and psychological components in the original code of the latter (for example, based on which machine learning, data array analysis, and the formation of a meaningful solution are carried out). Thus, the potential threats

coming from artificial intelligence units are nothing more than a future mistake of the creator/user?

We suppose that, to neutralize the risks mentioned today, first of all, it is necessary to formalize ethical standards, ensuring both their suitability for regulation of specific relations and innovative processes, as well as the integrity of the latter with the current value-regulatory systems of the society (at the national and international legal levels). Moreover, there is a need for comprehensive work to predict and model the impact of ethical standards on the development of RT and AI, individual autonomous systems, and robotic technologies. Currently, projects of such ethical coding for the development of RT and AI have just started to emerge. For example, the version of the ethical standard "Ethically Aligned Design" for the creation of robots and artificial intelligence of the Institute of Electrical and Electronics Engineers (IEEE), which justifies that autonomous devices and intelligent systems should function based on a system of human value-regulatory and ethical regulators, in compliance with the universal standard of human rights and freedoms.

Some leading states have proposed the formation of a Universal Declaration of Robotics and ethical standards for the development of software based on systems of artificial intelligence. From the point of view of the research team, this generalized experience can become the basis for the development of a national ethical standard for the creation of robots and artificial intelligence, reflecting both global trends and international standards as well as national and cultural patterns of digitalization of the Russian society, aims, tasks, and specifics of the implementation of the program "Digital economy in Russia."

The latter is also since for the stable development of the Russian state and society, their reproduction in the future, it is necessary to harmonize various regulatory and legal systems that regulate the life of society and the functioning of robotic technologies. This is a key problem that should be raised during the development of any projects of ethical and normative mediation of relations. All various social regulators of all levels, including the regulatory one, should function in coordination and a consistent manner.

4.4 Conclusion

1. To neutralize main existing risks and threats of digitalization, first of all, it is necessary to conceptualize the key concepts and relations, to form the doctrinal and legal foundations and priority directions of the state's legal policy in the field of the development of end-to-end digital technologies, to distinguish and form the appropriate legal modes for the functioning of autonomous devices based on "weak artificial intelligence" (an autonomous device that performs certain tasks, set and controlled by the software and/or the operator) and "strong artificial intelligence" (an autonomous device that independently perceives the external environment, makes decisions, selects or corrects the interaction model, operating mode, and so on.);

2. At the legislative level, it is necessary to first form the foundations and specific socio-political programs related to stimulating the development of robotic and digital technologies, software, artificial intelligence, as well as their potential introduction to social processes to improve the life of people, to preserve and produce basic socio-cultural values;
3. It is necessary to elaborate deontological and ethical standards based on basic national and cultural values and moral standards, metric certificates, etc., regarding the development of end-to-end digital technologies, which should be followed by developers, manufacturers, and users of these innovative technologies;
4. The current informational and digital legislation is contradictory and incomplete, and it needs to be systematized and brought into a coherent, consistent state. One of the options for such systematization could be public and expert discussion, as well as the adoption of a strategic doctrinal act in the field of information development of society;
5. We suppose that it is necessary to elaborate a special state program for the preservation and reproduction in the society of metapolitical (traditions, customs, symbols, images, rituals, etc.) and metajuridic (mental, psychological, spiritual, moral, etc.) foundations for stability and constant development of political and legal organization of the society. We think that in the twenty-first century, the main competition will unfold between various socio-cultural images, information content, virtual images (which will be constructed based on the national-cultural material developed by society in the process of its development), and other symbolic resources of politics. In its turn, market competition (between goods, services, resources) will recede into the background and it will be replaced with the competition between projects socio-cultural plans that provide a semantic and ideological paradigm for the modern development of digital and social, intersubjective, and virtual reality. At the same time, the key resources that can ensure the harmonization of digital development trends and real socio-political relations, the integration of socio-cultural identities and virtualized forms of group interaction and online communities will be the traditional sign and symbolic systems and the dominant socio-cultural organizations.

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