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ARTIFICIAL INTELLIGENCE AND ARTIFICIAL SOCIALITY: NEW PHENOMENA AND CHALLENGES FOR THE SOCIAL SCIENCES

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In the last years, there has been a new wave of reflection on and criticism of artificial intelligence (AI) technologies' theories and principles spreading in society's everyday life. The massive penetration of AI technologies in peoples' lives raises a host of conceptual and methodological issues for sociology and, more generally, social sciences. Among these are: should social scientists interested in AI start assessing policies and institutions that promote AI in everyday life from abstract philosophical theories of AI? Or should AI theories, developed already to the level of theory in computer sciences, draw on existing experience and empirical evidence regarding the functioning of different social structures and institutional arrangements to avoid merely issuing normative demands 'in a vacuum'? Or should AI scholars explore new phenomena based on a new multi-disciplinarity platform? What is the appropriate unit of analysis and assessment of AI development in society?

It makes questions such as these more pressing by the plausible thought that the social sciences should have among their aims the formulation of proposals that latch on to, and can influence, broader debates in society about the desirable progress of AI. It raises the further question of how social sciences and humanities among parties involved in studying AI can realistically have such an influence.

ИСКУССТВЕННЫЙ ИНТЕЛЛЕКТ И ИСКУССТВЕННАЯ СОЦИАЛЬНОСТЬ: НОВЫЕ ЯВЛЕНИЯ, ПРОБЛЕМЫ И ЗАДАЧИ ДЛЯ СОЦИАЛЬНЫХ НАУК

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This sets the stage for our special issue. Its goal is to review the substantive normative and methodological questions and discuss them regarding empirical questions, showing how they can shed light on each other.

Three general notes about the assumptions and scope of the discussions in this volume, we believe, might help the reader see the picture more clearly. First, in the framework of new social analytics AI, whatever the scholars understand by this notion, must be examined in relation to new phenomena that have been called ‘artificial sociality’ (AS) — the reality of new forms of interaction between humans and machines/algorithms [Rezaev, Tregubova, 2019]. The distance between AI and AS in research will continue to decrease. Second, the development of AI and AS will continue to have mutual ‘obligations’ as well as ‘obligations’ to society. Third, we believe that humans have everything to make AI and AS beneficially serve society at this juncture. The point is not to lose this opportunity.

The special issue that we introduce to the reader aims exactly to discuss, of course, in a preliminary manner, how social sciences researchers see the pros and cons of AI and AS development in contemporary society. The volume offers the opportunity to assess sociologically the problems of AI technologies implementation we are facing today and their long-term effects.

This issue not only sheds light on the practices of AI technology proliferation, an invisible and visible presence in everyday life but calls for more research about and attention to social and emotional aspects relative to these contexts. Learning to study in and support AI development requires leveraging research and coalescing across fields of study.

Our chief aim here is to try to gain some understanding of what AI essentially is — to take a stab at an analysis of the basic theoretical foundations for social scientists to address the problems of AI and AS, producing something for other researchers to improve upon, or to reject altogether in favor of some entirely different superior account. We want to get the discussion going.

We invited to this volume the papers oriented toward both theoretical and practical exploration of AI technologies in everyday life. Two consequences follow from this, and they need to be sign-posted well in advance. First, much has inevitably had to be left out. To the readers expecting an informed discussion about comprehensive theoretical frames for AI analysis, or the effects of new AI technologies on the economy, or how society can tackle the socio-cultural biases that might be exposed in artificial technologies, let us offer our apologies right away. The second, trying to incorporate in this special issue the studies on the topic developed in other countries, we have unfortunately made our choice only on three papers from Great Britain, Japan, and the USA.

In what follows, we will take a rather traditional tack for introductory to the matter pieces. We will have a preliminary observation of the literature status on the subject; then, we will propose conceptual assumptions that we believe are the guiding principles for exploring AI and AS phenomena. We will stress those issues that, in our understanding, must be in the focus of social analytics today. By highlighting aspects of the AI that overlap with economics, sociology of everyday life, ethics, philosophy, we hope not only to complement present studies in computer sciences and other

disciplines (which are typically written for a disciplinary-inclined/trained audience), but furthermore to act as a guide for cross-disciplinary engagement on issues that will surely benefit from the attention of scholars from a variety of backgrounds. We will then provide an overview of the pieces presented here and finally make some concluding remarks.

Literature Overview

Such a wealth of various work has been done in AI so far that we cannot describe it in any substantial depth here. However, many excellent overviews of recent work in the field have already been written, and beautifully so [Boden, 2016; McCorduck, 1979; Ford, 2018].

For readers familiar with modern professional literature on AI who desire technical surveys of current issues, we highly recommend Russel and Norvig [2016]. For those with little or no computer science background and no special training in AI, read on. We believe this special issue will be a noble companion and familiariser.

There is an enormous flow of research publications dealing with AI. However, the 'Big Three' dominates in this flow: computer science, cognitive science, and philosophy [see Rezaev, Tregubova, 2019]. Most recently, in the Western world (especially in the US), there is a surge of publications coming from the humanities and critical theory. These publications concentrate on social justice, privacy, and ethical issues.

Simultaneously, such well-established fields as science and technology studies (STS) and communication theory have started to claim quite strongly their interest in examining the reality of AI technologies. These disciplines have already produced some promising theoretical and methodological approaches [Woolgar, 1985; Collins, 2018; Lee, Larsen, 2019; Ruppert, Law, Savage, 2013; Esposito, 2017b; Floridi, 2015] and some bright empirical investigations of AI phenomena [e.g., Ziewitz, 2016; Beer, 2017; Esposito, 2017a]. However, the monopoly on AI research within the social sciences framework that STS and communication theory explicitly or implicitly try to commend is not justifiable. As for another matriarch of the social sciences — sociology — she appears to be everywhere and nowhere in this publications pool. However, since the 1990s, sociologists have started developing specific sociological approaches to studying AI and AS [Wolfe, 1993; Joerges, 1990; Collins, 2014; Carley, 1996; Couldry, 2015; Etzioni, Etzioni, 2017].

To characterise most largely the pool of publications on AI, we will make two generalisations with two pairs of directions. On the one hand, computer scientists and engineers insist on 'Order and Progress', and the representatives from humanities concentrate on freedom and equality¹. On the other hand, we have theorists who focus on their favorite theories, conceptual disputes, and empiricists for whom the most important thing is to make everything working and everything has to be confirmed by survey data.

¹ Today, one finds down to earth language to explain complex phenomena more often in the humanities and liberal arts than in hard sciences. It is humanist who uses the vernacular while the scientist speaks the esoteric language and mathematical formula. Moreover, the scientists are often ignorant of the philosophical, ethical, and social implications of their work. For many scientists, the phrase 'philosophical questions' has become a handy label to attach to a collection of vague or unanswerable questions, which only become worthy of considering when they become scientific. Quite often, it is the scientist who overstates his/her competence with brazen self-delusion. This situation is known, well discussed, and widely criticised.

Another critical issue is the interrelation of AI research in academia and business. The border between them is blurred today: corporations create strong research departments that publish extensively, while universities develop MA and PhD programs in cooperation with business organisations. Moreover, within the universities, there is a differentiation between research teams focused on academic and applied science. Both tend to believe that their kind of science is the best [Hoffman, 2016]. However, it seems that corporations ultimately win — they manage to develop both science and business due to various kinds of resources. With few exceptions (such as Stanford University and MIT), universities try to keep up with corporations but are getting neither academic discoveries nor commercial products with comparable volume and quality.

Today, a notable trend in AI research development, which brings together scholars' efforts from academic disciplines and researchers from business organisations, is the rise of a human-centered AI. In recent years, large human-centered AI institutions were established in the US² and Europe³. The fundamental idea for HCAI is to place the good of a human being and humanity at the center of AI technologies development, to adjust technology to people, not people to technology.

Finally, a few words about AI research in Russia. Here we see all the same development trends, adjusted for some delay and local specifics.

First, in Russia, a similar ratio of academic and business research in AI is observed: for example, the largest conference on AI issues in 2020 was organised by a corporation⁴. Academic events against this background look modest, although quite worthy.

Second, Russian language science is dominated by the same 'big three' disciplines that took shape in the framework of Soviet science: computer science ('informatics'), cognitive science / neuroscience, and philosophy.

Third, there is a selective reception of ideas, approaches, and methods developed in Western Europe and North America in the social sciences. Certain areas of STS and actor-network theory are prevalent [Utekhin, 2012; Zemnukhova, 2018; Sivkov, 2018; Kuznetsov, 2020], as well as micro-sociological approaches [Khonieva, 2017; Maximova, Glazkov, 2018; Klowait, 2018; Korbust, 2018]. Besides, several publications discuss the problems of inequality connected with the development of AI technologies [Kapeliushnikov, 2017; Nim, 2018], and we believe that their number will grow, following the general international trend.

A New Social Analytics for Artificial Sociality

In 2018, during the International Sociological Association (ISA) congress in Toronto, we asked ourselves: are sociologists ready to analyse artificial sociality? [Rezaev, Tregubova, 2018] Then we started the research, which we thought to continue within the ISAs forums' framework. The current pandemic has disrupted plans, and we can-

² See, for example, The Institute for Human-Centered AI (HAI) at Stanford University [URL: <https://hai.stanford.edu> (accessed: 22.02.2021)], and MIT Sloan Office of Media Relations (2020) 'Human-Centered AI': How Can the Technology industry fight bias in machines and people? Nov. 19. URL: <https://mitsloan.mit.edu/experts/human-centered-ai-how-can-technology-industry-fight-bias-machines-and-people> (accessed: 22.02.2021).

³ For more details see: European Network of Human-Centered Artificial Intelligence. URL: <https://www.humane-ai.eu> (accessed: 22.02.2021), and Human-Centered AI Lab (Holzinger Group). URL: <https://human-centered.ai> (accessed: 22.02.21).

⁴ See: Artificial Intelligence Journey. URL: <https://ai-journey.ru/en> (accessed: 22.02.2021).

not present the results of the new study in this issue. However, we can ask: what has changed in two years?

In 2018, the answer to the question about sociologists' readiness was negative: the interest of social scientists in AI and AS was due more to the peculiarities of their biographical trajectories than to institutional factors. If we had the opportunity to conduct research during the forum in 2020, we would formulate the following hypothesis: sociologists' interest in AI is increasing, but this is happening under pressure from outside: from applied research on markets and organisations and critical research on oppression and inequality. In other words, recalling the 'clichés' of the Soviet era, sociology is either the servant of capitalism or quite the opposite.

The situation with the pandemic has made this state of affairs obvious. Social scientists are asked for recommendations on optimising online interactions' effectiveness and making predictions concerning public opinion about using new technologies and novel ways to regulate everyday life. Simultaneously, they are expected to criticise errors, distortions, biased decisions of algorithms, which, presumably, lead to an increase in class, racial, gender, etc. inequality under capitalism.

If our hypothesis is correct, then the current situation can be interpreted optimistically (sociologists are needed!) and pessimistically (sociologists are expected to do what they do not want or cannot do).

Here we are cautiously optimistic, but with a caveat: we need to understand what social scientists can and cannot do.

Social analytics today is designed not to predict but to pose problems. In the industrial era, before the development of artificial sociality, sociologists could at least offer solutions to problems. Today, this is not the case because the principle is violated. We do not know what the machine does to the human interaction, and we cannot predict its actions. One way to see this is that AI does not understand the existential dimension of human life: pain, loneliness, death, birth, the joy of human interconnectedness and social intercourse.

Today's AI technologies are designed to overcome time. AI designers are mostly interested in technology's ability to shrink space and time. AI is viewed only instrumentally, that is, as being merely the ability to decrease by degrees the 'distance' separating the desiring subject and the object of desire, and to do so without in any significant way altering the subject or the object. However, we are not confident that this collapsing of time and space does not alter human existence as a social being.

Here is a series of questions that capture the paradoxical situation in modern social science.

What does the modern enlightened reader know about artificial intelligence? What does he/she expect from a special issue of the social science journal dedicated to artificial intelligence? Are these expectations the expectations of the social scientist or the layperson? In other words, what is the source of knowledge and opinion about AI? Is it necessary to draw a line here between a sociologist and a citizen? And if necessary, should the sociologist know more wider or narrow?

We are sure that most of the journal's readers have some idea about the development of AI technologies and their impact on people's lives. In everyday life, we are constantly confronted with AI technologies themselves and their understanding in social

media, mass media, popular science literature, movies, etc. Simultaneously, as social scientists, we find ourselves locked in a disciplinary framework that, at first glance, surprisingly little can help in understanding the problems of AI and AS. What turns out to be relevant to sociologists interested in AI turns out to be ultimately borrowed from critical theory, STS (including actor-network theory), communication studies, or some combination of these. Simultaneously, the importance of social problems associated with the spread of AI today does not cause doubt even among representatives of the technical sciences.

It seems that the social scientist in AI research today knows what s/he does not know, and this is his/her strength and weakness. On the one hand, our task is to understand and accept this; on the other, to take a step forward, to know, from the obvious to the non-obvious.

A few years ago, we wrote: What can be more social than social intercourse, understood as establishing relations and emotional interconnections between people? Today it is time to ask: what can be more social than artificial intelligence and artificial sociality? The purpose of both problems is to encourage sociologists to address issues they overlook. Today, we combine these two questions under the heading of artificial sociality research.

Hence the key question for social scientists is this — ‘How to measure artificial sociality?’ We need to learn how to measure, compare, and test the effects of AI on human society and the interaction between humans and machines. Today’s tasks are to analyse people’s interactions with AI and not explore artificial sociality in the old ways, relying on the old terminological apparatus. And here, the need for inter-disciplinary and potentially anti-disciplinary research on AI and AS becomes clear.

Interdisciplinarity in AI Research

Development of AI technologies appears to be a prominent aspect of contemporary social change. Because it is embedded in and influenced by different social practices, it cannot be adequately understood from a single professional standpoint or single disciplinary framework. Interdisciplinary research is more often advocated than genuinely practiced — perhaps because it is challenging and resource-intensive and because it requires researchers to venture out from their usual comfort zones and work together in teams with new theoretical agenda and conceptual structures.

There is a consensus in commentaries of the social scientists that interdisciplinarity does not necessarily replace the disciplines but indeed depends on disciplinary knowledge for its further development [Frodeman, 2010]. For example, Neil Smelser insists that ‘the boundaries of most disciplines have become so permeable and indistinct, and so much exportation and importation have occurred that if one ranges widely in his or her discipline, one is being in effect interdisciplinary’ [Smelser, 2003: 653].

It shows above all that the idea of disciplinarity never ceased to strengthen.

In other words, since its inception, AI technologies are in constant movement between researchers and practitioners, between science and policy, between different disciplines. Therefore, trans-, inter-, multi-, and pluridisciplinarity — which continue to be in vogue today — have resulted from a long historical construct, to which the sciences dealing with AI bear witness.

Here we are at the very beginning of the journey. Within the framework of this issue, we offer twelve theses on AI and AS, which can become the basis for further research. We also address the reader to the discussion of anti-disciplinary issues and the new social analytics of AI in our previous study [Rezaev, 2020].

AI in Everyday Practices: Collateral Damage of Capitalism

There are different biases that scholars detect in contemporary AI technologies. As an example, you can see the review of O'Neil [2016] in this volume. However, the authors pay little attention to the pure capitalist and market-oriented biases.

Today, relations between AI and society's everyday life represent a form of economic rationalism that reduces all 'AI — society' dimensions into consumer manifestations. There is a shift of AI from primarily a technological and cultural to an economic concern. Values of commodification reduce AI to a trading device with a strict profitable orientation. However, AI technological progress goes hand in hand with artificial sociality progress. AS affects the potential of humane in a society.

Competitive individualism and consumerism divide people rather than bring them together around common public interests. AI design based on a particular set of values might bring more harm than good. Practices that justify selfishness as a virtue and sustain the loss of any sense of being societal and public while encouraging feelings of shame and disconnection among the economically dispossessed cannot guide AI's design.

When Adam Smith wrote of the wonders of markets, he assumed a marketplace situated within a moral order composed of people who were sensitive to the importance of being socially oriented. Smith was convinced the moral order would support poor workers' well-being whose hard lives he found so deeply troubling. Unable to imagine how markets destroy virtue, Smith envisioned a future of material abundance shared by all. How does it work in a situation when AI technologies have started to divide society in new ways?

The irony of the market society is that it widens the gaps separating the rich from the poor and everyone else. There are additional ironies with AI technologies in the market society. They can create needs no one needs to fulfill, and simultaneously it might fail to satisfy the genuine needs everyone has.

These are the problems that AI designers, engineers, scientists, and humanists have to address consistently.

An Overview of the Issue

This special issue contributes to an extended dialogue between ideas and evidence, theoretical constructions, and empirical reality. The authors use mixed methods and multiple levels of analysis.

The papers below are structured according to the several sections: conceptual and theoretical, methodological, and oriented to empirical research at macro-, meso- and micro-levels. These divisions, though, are more utilitarian than exemplars of organisational robustness.

The first part of the volume comprises the papers written in English. We start with Andrey Rezaev's deliberately provocative piece titled 'Twelve Theses on Artificial

Intelligence and Artificial Sociality'. It aims to give the reader a general theoretical frame for examining AI and AS. The paper introduces the working definition of AI and argues that AI must be discussed in relation to AS. It envisages AI research as multi-cross-disciplinary and potentially a-disciplinary scientific activity. The paper stresses the necessity to look at the AI's expansion regarding capitalism's advances.

The following papers grapple with AI and AS problems, going from theory to particular practices and policies, and vice versa.

Athina Karatzogianni, in her paper, offers a specific plan to search ethical AI. She presents twenty-one interlinked studies, focusing on the ethical judgments, empirical statements, and practical guidelines, informing AI policies across three domains: tech corporations, governments, and civil society actors.

Nils Kloweit and Maria Erofeeva address how ethnomethodological approaches expand our capabilities in AI analytics and correlate them with research in the field of Human-Computer Interaction to show the 'competitive advantages' of multimodal conversational analysis.

Nobuko Hosogaya discusses domains where Japanese corporations adopted telework and shows some changes and effects caused by telework in work styles and human resource management.

Azeb Tadesse, Walter Allen, and Claudia Mitchell-Kernan introduce in their paper a pilot study of the integration of EdTech for online learning within the context of low connectivity environments in East Africa. The report provides insights and understanding on the decision-matrix and consideration not only on online learning solutions but also the broader issue of integrating technology into social institutions.

The second part of the Volume includes papers presented in Russian. A theoretical model of the digital society in A. V. Smirnov's study based on four concepts: super-connectivity, platformisation, datafication, and algorithmic governance. Using the panel data from the 2003—2018 longitudinal survey, the author addresses the challenges of balancing the quality and equity of digital society in Russia.

A. P. Klimovich discusses the concentration of power in the era of digital capitalism, comparing the cases of the US and China as instances of interactions between a democratic and authoritarian state with the IT giants.

T. S. Martynenko and D. E. Dobrinskaya raise the question of how the ubiquity of algorithms affects the digital divide's nature. The authors review algorithm-related mechanisms, such as systems of social ranking and filter bubbles.

A. M. Korbut in his article examines the inclusion of smart devices in domestic life. The author shows the emergence of new forms of communication and sociality in interaction with AI.

A. M. Davydova, M. A. Solyanova and K. Sorensen analyse disciplinary practices in digital self-tracking. The paper identifies several mechanisms of control basing on a series of interviews with the users.

A. I. Egorova and N. Kloweit present a study in the conversational analysis focused on the abilities of modern AI technologies to conduct a conversation. The empirical base of the study is a dialogue with Google Duplex.

This special edition was prepared in the unique context of the COVID-19 pandemic when scholars and professionals around the world particularly were caught in the

trilemma of trying to save the lives of citizens, to mind the unprecedented restrictions for the citizens' fundamental rights, and to ensure economic survival and social development. The paper by I. A. Blokhin and his co-authors turns the readers' attention to the realisation of AI advances in medicine. The authors discuss the strengths and weaknesses of AI in diagnostics, as appeared during the pandemic development. They conclude that the usage of AI technologies helped to improve diagnostic accuracy during the COVID-19 pandemic.

The next four articles contain a methodological reflection on how to conduct research in the era of artificial sociality. N. D. Tregubova, M. L. Nee and A. A. Kitaeva present the study based on a comparative analysis of transnational migration processes in the countries of the former Soviet Union. Their paper demonstrates how online culture shapes a 'division of labour' between people and algorithms in online research.

The focus of M. B. Bogdanov and I. B. Smirnov's paper is digital traces and machine learning in sociology. The authors consider the disadvantages of traditional data sources and how they can be overcome using digital footprints.

M. Yu. Alexandrova discusses how to use machine learning methods in sociology to predict partial non-response of respondents using a Naïve Bayes Classifier.

N. V. Yartseva presents her experience of conducting research on the GDELТ platform. The author characterises types of data, tools for data analysis, and visualisation available to social scientists.

T. A. Nestik, N. N. Sedova and E. G. Klimanova characterise fundamental trends in applied sociological research in Russia for the near future. The authors argue that the research market will be re-shaped by automatising data collection and analysis because of the development of the internet of things and various AI algorithms.

The last section contains two reviews of scholarly monographs that consider the critical characteristics of artificial sociality under contemporary capitalism. A. A. Ivanova discusses the concept of 'weapons of math destruction' developed by Cathy O'Neil, who analyses algorithmic biases in different social spheres. D. M. Zhikharevich presents his reflections on Shushana Zuboff's monograph on surveillance capitalism.

To Conclude

Taking seriously that the concepts of AI and AS have relevance to contemporary social sciences, we hope this collection of articles may constitute a step forward not only in the scientific understanding of those concepts and of their analytical relations but also of their importance as substantive phenomena that are frequently appealed to in contemporary societies characterised by the fact of technological advancement.

The authors of the papers in this volume do not reach uniform conclusions about the essence and prospects for AI technology realisation in everyday life. As this is one of the first attempts in the Russian scholarly journals to address the questions of AI technology and Artificial Sociality in the system of coordinates of the social sciences, we regard this diversity of views as a strength; it would not be helpful or appropriate to reach premature closure on this important topic.

We hope this issue potentially deepens our understanding of and implications for AI technology use while guiding professional development necessary for researchers in the social sciences. Also, we believe materials offer insights and practices that ease

some challenges inherent in our high-use technology society for those promoting humanistic views.

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