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Scientific journals in the Russian innovation system

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Abstract. Revolutionary technological change in the publishing business and the expansion of information technology have given an impetus for scientific journals institution to evolve with the development of bibliographic databases that create new information products, indicators, and indices. The Russian scientific journals institution, which plays a significant role in the Russian innovation system, is developing in line with this trend. The article analyses the Russian innovation system actors' narratives regarding the role of journals in the functioning of the system. The methodological basis of the study includes theories and approaches of narrative economics and original institutionalism that allow focusing on the use of qualitative research methods. Narratives reflect actors' ideas of publication activity indicators getting increasingly used in management practices in the field of education and science. These indicators have received special significance within the framework of the managerialism doctrine, or new public management, in which publication activity indicators were associated with the effectiveness of scientific research. The role of journals and indices is considered from two points of view: at the individual level actors talk about personal success in publishing articles in top-rated journals; however, at the level of science and education the role of publication activity indicators is described using negative connotations; actors refer to the situations as problematic. Further development of the Russian scientific journals institution should contribute to the formation of new foundations and organizational structures which allow taking into account and intensifying the grassroots initiatives of scientists and innovators.

Keywords: Russian innovation system; narrative economics; scientific journals institution; managerialism; bibliographic databases.

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Роль научных журналов в российской инновационной системе

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Аннотация. Революционные технологические изменения в издательском бизнесе и экспансия информационных технологий создали импульс для эволюции института научных журналов параллельно с библиографическими базами данных, которые порождают новые информационные продукты, показатели и индексы. Статья посвящена анализу нарративов акторов российской инновационной системы относительно роли журналов в ее функционировании. Методологическая база работы включает теории и подходы нарративной экономики и оригинального институционализма, которые позволяют сделать акцент на применении качественных методов исследования. Согласно полученным результатам, через нарративы транслируются идеи о том, что показатели публикационной активности все чаще используются в управленческих практиках в сфере образования и науки. Особую значимость они получили в рамках доктрины менеджериализма, или нового государственного менеджмента, где связываются с эффективностью научных исследований. В нарративах о российской инновационной системе роль журналов и индексов понимается двояко: на индивидуальном уровне акторы рассматривают публикацию статей в высокорейтинговых изданиях как личный успех, однако на уровне всей сферы науки и образования влияние показателей публикационной активности оценивается с использованием негативных коннотаций, ситуации описываются как проблемные. Дальнейшее развитие института российских научных журналов должно способствовать формированию новых институтов и организационных структур, позволяющих учитывать и активизировать низовые инициативы ученых и инноваторов.

Ключевые слова: российская инновационная система; нарративная экономика; институт научных журналов; менеджериализм; библиографические базы данных.

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INTRODUCTION

The concept of national innovation system (NIS) has been investigated by economists for decades, and the first to apply it were proponents of evolutionary economics. The most cited definition was formulated by Stanley Metcalfe, who sees the system in question as “that set of distinct institutions which jointly and individually contribute to the development and diffusion of new technologies and which provides the framework within which governments form and implement policies to influence the innovation process. As such it is a system of interconnected institutions to create, store and transfer the knowledge, skills and artefacts which define new technologies” [Metcalfe, 1995, p. 38]. This interpretation puts a special emphasis on the role of institutions that are instrumental in creating, storing and transferring new knowledge used in the development and application of technologies.

Later the NIS concept was drilled down, formalized in a number of models and extended to various economic practices. Indeed, the specificities of national institutions, state regulation measures and academic organizations add to the significance of both in-depth country-specific studies of innovation systems and the search for their common characteristics and differences.

The field of academic studies is traditionally the crucial element of the national innovation system. It is scholarly research that create the bulk of new knowledge, which is eventually used in technological developments. Among the channels of scientific communication within academia is the publication of books and periodicals. However, in the second half of the 20th century another equally important scientometrics-related function was added to journals' remit. In turn, scientometrics itself, which originated as a tool for librarians and libraries, gradually turned into an important means of science management.

The revolution in the field of scientific journals is associated with bibliographic and abstracting databases, whose emergence and rapid development were due to the spread of the Internet and computer technology. Various indices and indicators characterizing the quality of scientific journals and their status in the academic hierarchy gained wide popularity. This resulted in the widespread use of bibliometric indicators in the field of academic performance management.

At the same time, there emerged a predictable side effect, that is the dysfunction of metrics manifested in using indicators in the regulation of socio-economic processes [Muller, 2018]. This is what happened with journal metrics: their growing influence on actors' motivation has turned high scientometrics indicators into an end in itself. It is natural that in the narratives of the national innovation system's actors, especially those from the academic sphere, the problems of publication activity, journals and bibliographic and abstracting databases are among the principal ones. At that, in most cases such narratives are described using negative connotations.

Over the past decade, the Russian practice has witnessed a large number of domestic journals' rankings being developed based on both quantitative measures and expert assessments. Despite the fact that all the rankings cover a significant part of the leading journals, there are serious disagreements among experts regarding the legitimacy of certain indices of scientific periodicals. Moreover, one cannot rule out the factor of a conflict of interest in the preparation of such rankings.

Thus, our research aims to analyse the evolution of the Russian scientific journals institution through the prism of the national innovation system actors' narratives.

To achieve the said purpose, we apply the approach of narrative economics and accomplish the following objectives:

- to identify the specific features of the formation of the Russian scientific journals institution in conjunction with the development of bibliometric databases;
- to demonstrate how the use of bibliometric indicators correlates with the managerialism doctrine;
- to analyse the narratives to single out practices relevant to the actors of the innovation system and associated with the scientific journals institution.

In line with the stated purpose and objectives, we have adopted the following structure of the study. First, we have analysed the recent scientific concepts about the Russian scholarly journals system. Next, we have looked at the possibilities of using narrative economics to explore the Russian innovation system and the scientific journals institution, in particular. The main part of the article is devoted to the analysis of the narratives existing in the Russian mass media and online resources about scholarly journals and the development of the Russian innovation system.

THE SCIENTIFIC JOURNALS INSTITUTION IN RUSSIA

The emergence of the modern Russian system of scientific journals was in parallel with the development of information and computer technologies. At the end of the 20th century, the legacy of scientific journals from the Soviet period was significant and world-class. However, during the 1990s' market reforms an increasing number of editorial offices faced difficulties in printing and distribution. At that time, the top-rated titles were able to maintain their publication frequency and readership through library subscriptions. The situation was more problematic for regional periodicals that, with rare exceptions, could not boast of a large readership. There was a revolution in the sphere of Russian scientific journals brewing, and it came to pass with the spread of electronic information carriers.

In 2005, Russian journals first published their digital versions on eLibrary¹. This was a landmark event for the Russian system of scientific communication, and the

¹ eLibrary is the national electronic library in Russia.

country managed to successfully follow the global trends in this area: for example, the Scopus database was introduced in Russia only the year before. In addition, during that period a number of Russian journals first launched their official websites, which greatly simplified access to their resources.

The development of the Russian system of scientific periodicals took place against the backdrop of a worldwide rise in the number of scientific publications and the increasing influence of bibliographic databases [Kotsemir, 2012]. Publication activity of Russian researchers grew at a rapid pace. For example, in 2010 the number of articles indexed in Scopus was 40,401, and ten years later, in 2020, this amount reached 129,270 pieces. This made it possible for the Russian academic community to improve its position in SCImago Journal & Country Rank and move from the 16th to the 10th place based on the number of documents. At that, between 2010 and 2020 the total number of articles in the top-20 journals increased 1.6 times, and of Russian papers – 3.2 times¹.

Russian journals are constantly increasing in numbers, although over the past five years the growth rate has significantly slowed down. Obviously, this situation is due not only to the evolution of science. The field of scholarly publishing is characterized by some adverse trends, such as predatory publishing; however, the academic community is gradually forming institutions designed to counteract this phenomenon.

One of the central establishments in the field of Russian scientific periodicals was the Russian Science Citation Index (RSCI). In collaboration with Web of Science, the RSCI database covering 887 Russian journals was set up. Together with the journals indexed in Scopus and Web of Science, the RSCI database constitutes the RSCI core. The Russian journals in the RSCI update their impact factors once a year, which are calculated for two and five years for the entire RSCI database and individually for the RSCI core. In fact, an institution of national journals has been created in Russia united in a national bibliometric database. This allowed using various quantitative indicators as tools for implementing scientific and educational policy.

Russian researchers, like most of their foreign colleagues, are involved in a kind of race for publications. Printing articles in scholarly journals has become more focused on achieving a variety of scientometric indicators rather than promoting research findings and scientific communication. The reasons behind this 'battle for the bibliometric indicator' are rooted in the implementation of neoliberal reforms in the Russian science and education management system [Nureev, Volchik, Strielkowski, 2020].

Various kinds of indicators play a key part in the neoliberal system of government. The central principle un-

derlying the development of the socio-economic order is associated with being effective. For market-oriented industries producing private goods, it is quite simple: profit is the main evidence of efficiency. However, the indicator of profitability is hardly applicable to public, mixed or credence goods. Therefore, in the field of education and science, where most of the goods produced are public or credence ones [Tambovtsev, Rozhdestvenskaya, 2020], non-market indicators are widely used to evaluate the effectiveness of organizations. These indicators are applied when introducing socio-economic policy and designing a variety of development and project management programmes. However, in social science Campbell's law has long been applied: "The more any quantitative social indicator is used for social decision-making, the more subject it will be to corruption pressures and the more apt it will be to distort and corrupt the social processes it is intended to monitor" [Campbell, 1979, p. 85]. Science policy can be viewed as a kind of social policy, and Campbell's law almost inevitably means that any measure applied on a consistent basis will significantly distort the processes being regulated. The retrospective studies of the Western experience of using metrics or indicators in social policy have shown that this practice leads to significant negative consequences, especially in the medium and long term [Lorenz, 2014].

In recent years, bibliographic indices have become an important indicator of the effectiveness, which is in demand when planning the programmes for developing and managing educational and research organizations. The practice of evaluating the effectiveness of scientific research through these indices was borrowed from the best foreign practices. Although many researchers examining neoliberal policy claim that this practice distorts actors' incentives and ultimately destroys academic values and the institutional environment in universities [Lorenz, 2014], the negative aspects of the use of metrics are often ignored by policymakers, since they become not just performance indicators, but mechanisms for exercising power [Beer, 2016]. The growing impact exerted by the spread of journal indices as metrics has already led to a lock-in effect depending on the previous development trajectory (path dependence) [Volchik, Maslyukova, 2019]. Therefore, if the current policy on scientific organizations' performance evaluation continues, some bibliometric indices, even if abandoned, will be replaced by others.

One cannot deny the essential advantages of the institution of bibliographic databases and indices. First, it allows using convenient quantitative, and therefore comparable, tools to perform a comparative assessment of the scientific contribution and the position of journals and individual researchers. Secondly, the system of indices and indicators stimulates competition between researchers and research groups for notable publications. Thirdly, quantitative indicators clarify to the general public the is-

¹ SCImago Journal & Country Rank. <https://www.scimagojr.com/countryrank.php?year=2010>; <https://www.scimagojr.com/countryrank.php?year=2020>.

sues concerning the development of scientific periodicals, which contributes to the popularization of science.

Bibliographic indices are considered to be a questionable practice when they serve as a tool of the state's socio-economic policy. Their accessibility and apparent clarity produce an illusion of having expert knowledge in a particular scientific field. In the case of bibliometrics, we face a widely discussed phenomenon of decreasing public confidence in this knowledge, which is devalued due to the alleged availability of online information [Nichols, 2019].

The use of bibliometrics, as well as various derived indices and indicators, should be supplemented by in-depth expert assessments completed by specialists in a particular area of scientific knowledge. However, expert activity also faces significant restrictions (especially when it comes to the distribution of substantial financial resources) associated with the phenomenon of conflict of interest. Therefore, to minimize negative effects, organizations should be adaptive and capable of building various combinations of expert knowledge and quantitative bibliometric indicators to use them in planning and evaluating scientific activities.

In the Russian practice, bibliometric indicators have become commonly used. For instance, publication of scientific articles in journals indexed in the first two quartiles (Q1 and Q2) of Scopus and Web of Science is one of the evaluation criteria for scientific performance in the Priority 2030 program for the development of Russian universities. Publications in the relevant titles is among the requirements for participating in the competition for scientific grants and the evidence of scientific projects' effectiveness implemented using the grant funding.

The case of China is quite typical in terms of evaluating scientific activity with the help of quantitative measures. For example, there is a widespread practice of scoring depending on the journal's impact factor, in which the article was published. This leads to the importance of the quantitative approach being overestimated and is generally interpreted as a negative factor in the development of the innovation system, since it encourages a reorientation towards short-term goals to the detriment of long-term objectives [Appelbaum et al., 2018].

The emergence of the institution of Russian scientific journals and bibliometric databases has resulted in a situation that in sociology is associated with the phenomenon of a scientific article being transformed from a means of knowledge production to a reporting tool [Gingras, 2018]. Obviously, most scientists are strongly motivated to generate new knowledge, but the mechanisms of science management create powerful incentives for them to use scientific publications for utilitarian purposes of reporting, obtaining rankings or funding through grant support. The adaptive response of the actors modifies their behaviour, which causes change in the institutional environment of science and education. Further, through

the analysis of narratives, we will trace how the statements made by the actors characterize their understanding of the role of scientific journals in the development of the Russian innovation system.

The practice of Russian journals ranking within their research fields has significantly progressed lately. A meaningful contribution was made by the scientific electronic library *eLibrary* that serves as a platform for systematic studies of journals by all areas of scientific knowledge. For example, Sokolova and Borgoyakova [2021] have used the data from *eLibrary* to analyze Russian journals in physics and arrived at a number of conclusions regarding systematization of periodicals according to thematic areas, journals' coverage in particular lists and citation databases, as well as their accessibility in the information space.

Currently, the design and promotion of economic and management journals rankings is the most productive avenue for research. The first rankings of economic journals appeared in the period from 2012 to 2015 [Muravyev, 2012; Muravyev, 2013; Balatsky, Ekimova, 2015]. In 2016, there was made an attempt using the Kendall rank correlation coefficient to combine all the then existing rankings: Muravyev's, the HSE's¹ and Balatsky's. As a result, it was found that the correlation between all these rankings was weak [Subochev, 2016].

According to the scientometric studies of Russian journals, the community of economists does not express confidence in the bibliometric tools used in the practice of the science effectiveness evaluation [Rubinstein, 2021]. It is also noted that, along with scientometric indicators based on citations of articles, it is necessary to take into account the results of sociological surveys and expert assessments of scientific journals [Rubinstein, Burakov, 2021].

Bibliographic databases are widely utilized when investigating the evolution of particular scientific disciplines, as well as national innovation systems [Uriona-Maldonado, dos Santos, Varvakis, 2012]. The number of publications on NISs is also constantly growing. For example, over a five-year period (2017–2021), Russia ranks second in the Scopus database in terms of the number of articles featuring the term 'innovation system' in the title, abstract and keywords (see Table). It is noteworthy that among the countries leading in the number of articles about innovation systems are China, the United States and the United Kingdom, which traditionally pay special attention to innovation. Considering that these articles are indexed in the main bibliographic database, we can conclude that the problems of innovative development are widely debated by Russian science at the global level as well.

The Russian studies on innovation and economy competitiveness also involve analysis of scientific publications

¹ National Research University Higher School of Economics.

Number of Scopus articles featuring the term 'innovation system' in title-abs-key, 2017–2021
Количество статей в Scopus по title-abs-key (innovation system), 2017–2021

Year	Number of articles			
	China	Russia	United Kingdom	USA
2017	56	68	50	53
2018	55	66	52	50
2019	55	79	53	48
2020	78	65	53	45
2021	114	64	75	38
Total	358	342	283	234

Source: compiled based on data from the Scopus database (<https://www.scopus.com/>).

in domestic journals. Its results, among other things, underlie the idea that “a formal increase in the number of publications on competitiveness does not translate into qualitative indicators” [Gordeev, 2021]. However, it is of interest that the interest of Russian researchers in the problems of innovation and the development of the Russian economy's competitiveness is growing. It is also worth noting that 35 out of 342 Russian articles indexed in the Scopus database between 2017 and 2021 used Russian as their original language.

NARRATIVE ECONOMICS AND RESEARCH OF THE RUSSIAN INNOVATION SYSTEM

It has been only five years since the publication of Robert Shiller's influential work on narrative economics [Shiller, 2017]. In the meantime, there had emerged a considerable number of publications that dealt with narratives as a tool for analysing various economic issues – starting from financial markets and accounting to the economics of sports and studies of the influence of morality and religion on economic science [Zaman, 2019; Bąk, 2021; Willett, 2021; Newman et al., 2022]. Since 2017, 28 authors of research articles and 14 authors of book reviews have explicitly addressed narrative economics within the Web of Science database. In our project on exploring the Russian innovation system from the standpoint of narrative economics, we also demonstrated how narratives complemented the understanding of innovation processes along with traditional economic modelling [Volchik, Maslyukova, 2021; Volchik, Fursa, Maslyukova, 2021].

In the field of economics, narratives can be viewed from two perspectives:

- as simplified scientific proto-economic models characterizing the actors' ideas about the functioning of certain economic mechanisms [Shiller, 2019];
- as information about social contexts and practices that actors consider relevant [Akerlof, Snower, 2016].

Both types of narratives provide details about rules and regularities, routines and institutions, a specific social

situation and a certain field of activity. Therefore, when analysing narratives, the special emphasis is placed on the actors who themselves identify significant ideas, rules, routines and institutions, while acting as subjects possessing primary information about the specificities of organizations, industries and activities.

To study the Russian innovation system, we addressed the narratives from the media and online resources. The Federal Media: 2020 ranking by the Medialogia company was used to select the sources of the narratives¹.

Based on two Top-10 Most Cited Newspapers 2020 rankings – by media citation indices and by social media hyperlinks – 11 sources were selected. Similarly, 16 journals were chosen using the Top-10 Most Cited Journals 2020 ranking by media citation indices and the Top-10 Most Cited Newspapers 2020 ranking by social media hyperlinks. To select sources from among online resources, the first ten ranking positions were used from two Top-30 Most Cited Online Resources 2020 rankings – by media citation indices and by social media hyperlinks; as a result, 16 online resources were taken.

In total, at the first stage we selected 43 data sources. Then, using the content analysis method we found 30 keywords to conduct a search in the electronic archive of periodicals Integrum² for the period between January 1, 2010 and July 1, 2021. The search result was 33,491 articles (without reprints). In the texts selected, 1,149 narratives were identified and used for qualitative analysis.

Narratives about the Russian innovation system are usually produced by three types of actors: business leaders, academics, and the state authorities (regulatory bodies). Obviously, education and science (academia) workers are the ones who discuss the issues of scientific journals most often, since this institution directly affects their activities and organizations with which they are affiliated.

The analysis of the selected narratives allowed us to group them according to six central problems related to the development of the Russian innovation system:

- state regulation of innovation;
- choosing research topics and areas;
- demand for innovation;
- institutional structure and competitive environment for innovation;
- human resources engaged in research and innovation;
- intellectual property.

In the narratives of each group, there is a reference to the role and significance of the system of Russian and international scientific journals and bibliometric databases for innovation processes. Further in the article, we analyse such narratives about scientific journals and related indicators.

¹ The Federal Media ranking. Medialogia. <https://www.mlg.ru/ratings/media/federal/10165/>. (in Russ.)

² Integrum database. <https://integrum.ru/>. (in Russ.)

NARRATIVES ABOUT SCIENTIFIC JOURNALS AND THE RUSSIAN INNOVATION SYSTEM

In the total array of narratives about the Russian innovation system consisting of 1,149 articles, scientific journals are mentioned in 31 narratives. For our research purposes, of special importance are the context and the social situation, in which the actors consider the scientific journals institution as significant. The analysis of the narratives that refer to scientific journals and related problems allows us to gain greater insight into how the actors of the Russian innovation system evaluate the role and functions of scientific periodicals.

The overwhelming majority of the narratives contain negative or neutral statements about using bibliometrics and the journals status as indicators for assessing the effectiveness of science and education:

"Our distinguished surgeon, a graduate of Moscow University, a member of the Imperial Academy of Sciences, Nikolay Ivanovich Pirogov liked to repeat: 'Science, taken by itself, both shines and warms, while education, taken apart from science, neither shines nor warms, but only sparkles'. It appears that instead of an organic combination of academic, fundamental science and education, we sometimes get only a false sparkle.

We are constantly told how much money is invested in science, and yet we publish too few articles. Articles, publications in the top-rated scientific journals are important, but this is the final stage of research. And if writing articles and publishing them in Scopus and Web of Science is at the forefront, when is it time to think and engage in actual scientific research? Let us take the same Steklov Mathematical Institute: we have reached the level of 2.5 publications per employee per year. This is a lot, because mathematics is a fundamental science, not applied one, and a mathematician cannot write more than two good articles a year, even if inundated with money, you cannot jump higher than your own head.

But we are repeatedly required to publish more and more papers. All without coordinating state assignments in terms of the number of publications with the Academy, with its specialized divisions that could give their professional assessment. Where does this lead to? My colleagues, in order to get out of this absurd situation, are suggesting: let's split them up and publish separate 'episodes' instead of finished, lengthy articles. Scientists are forced to accept the 'rules of the game' and respond to formalities with formalities. And what is all this for? For reports? But this is a dead end..."¹ (Valery Kozlov, Vice President of the Russian Academy of Science).

In general, the problem of scientific journals in the narratives is viewed in the context of various rankings, reports or positioning the actors and organizations in the scientific community. There is a recurring cliché that doing high-level research is the same as publishing in top-rated journals.

Compared with the Soviet period, the global interest in Russian-language journals has declined significantly. Of course, there are numerous explanations for this trend. For example, the Soviet Union was a much larger player in the scientific publications market and at that time Russian was rightfully the second language of scientific publications after English. Currently, in the discourse of international citation bases Russian-language journals are designated by the euphemism 'regional periodicals'. Russian science experienced profound change in the post-Soviet period and motivated Russian scientists to publish articles more in foreign journals than in domestic ones. And not all representatives of the academic community are satisfied with this state of affairs: *"When I worked in the States in the 1990s, there were our academic journals lying on the tables of local scientists. A significant part of them was translated by the AIP, the American Institute of Physics. We even received publishing royalties from the All-Union Copyright Agency. And original texts not having English versions were translated by overseas colleagues using dictionary. Including those who did not speak Russian. If they did not understand, they asked, and we helped. And now we are offered to earn points by publishing in their journals. But a one-sided game is definitely not on Russian scientists' agenda"*² (Mikhail Kovalchuk, President of the National Research Centre "Kurchatov Institute").

The development of Russian scholarly journals is also impeded by the problems inherent in the country's entire system of science and education, such as insufficient funding, a significant concentration of journals in the capitals and two or three regional research centres, the spread of unscrupulous behavioural practices, focus on short-term goals set by constantly changing benchmarks and performance and development indicators, dependence on various rankings and 'black' and 'white' journal lists.

In the narratives, scientific research is strongly associated with the publication activity indicators. In fact, research performance and publication performance are used as identical concepts: *"Institutes and scientific organizations to build on their basis AI research centres will be selected in several stages, which implies the participation of a large number of experts, the Analytical Centre³ said. To receive a grant, one has to show how their research is going to help solve the problem of industry and business. The establishment of the centres will lay the groundwork for future scientific and technological developments: the project participants will have to meet performance indicators in terms of the number of research articles published by Russian scientists and their citation rates in leading journals. By 2024,*

² Military colonization is superseded by technological colonization: Mikhail Kovalchuk on convergence and the future of science. Lenta.ru. April 20, 2016. <https://lenta.ru/articles/2016/04/20/kovalchuk/>. (in Russ.)

³ The Analytical Center for the Government of the Russian Federation.

¹ On the day of Russian science – about the reasons for its crisis. Znak.com. February 8, 2019. (in Russ.)

the centres' experts are to publish at least 90 research papers on AI in Q1 journals from the Web of Science and Scopus databases (it is important for confirming their status in the global scientific community). At least the same number of articles is to be published in A+ conference proceedings on artificial intelligence"¹ (Anton Blagoveschensky, Irina Alpatova, Evgenya Noskova, Ivan Chernousov, journalists).

Viewing a published scientific article as the main result of the conducted research has another negative consequence, that is the poor interaction with the business: "I can admit that we should have more engineering centres. The targeted programme on their development has been effective for many years. But I believe, the situation is more complicated. Wherein does the problem lie? It lies in the loose ties between research organizations (universities) and businesses. It has to be said in fairness that our higher educational institutions and research organizations historically exist in the logic that the main result of their performance is a publication in a top-rated journal or a patent"² (Valery Falkov, Minister of Science and Higher Education of the Russian Federation).

The research funding efficiency evaluated through the prism of publication activity and Russia's contribution to the global scientific rankings can lead to incorrect conclusions. One of the examples is comparing the science funding dynamics and the number of articles published in journals from the world citation databases:

"Our science has one problem: it is poorly 'fed'. Invest the funds similar to those in the West, and the country will deliver the world-class results. This thesis is supported by numerous Russian academicians in the disputes that are being waged around our science.

The authors of the Strategy³, however, do not agree with this opinion. They claim that domestic science is ineffective and uses the allocated funds with the efficiency as low as of a steam locomotive. Here are the figures. Despite the fact that over the past decade, there has been a tenfold increase in spending on research and development (from 48 billion rubles in 1999 to 485.8 billion rubles in 2009), Russia's position in the world scientific ranking keeps falling. For example, in 2008, Russia accounted for only 2.48 % of articles in prestigious scientific journals, while, say, the share of France was 5.5 %, Germany – 7.5 %, China – 9.7 %. Today, we rank between Brazil (2.59 %) and the Netherlands (2.46 %).

But it is much more disturbing that there is no call for our scientists' research findings by their colleagues. For the period of 2004–2008, the average citation rate of one article

published by Russian researchers (or with their participation) accounted for only 2.4 citations. For comparison, for China this rate was 2.95, Japan – 4.64, France – 5.53, and Germany – 6.1. At the same time, the 'cost' of one Russian publication grew at a faster pace and in 2008 amounted to about 850 thousand US dollars compared, for example, with 221 thousand in Poland. It is like throwing good money after bad"⁴ (Yury Medvedev, journalist).

The above piece of text does not take into account a number of factors related to the peculiarities of the Russian innovation system. For instance, there is an important role of linguistic, thematic, sectoral, and institutional factors, which negatively affect the quantitative indicators of Russian scientists' publication activity. It is indicative that when publication activity explicitly became one of the central characteristics in assessing the scientific activity of universities, this provoked a wave of publications in foreign junk journals [Mikhailov, 2018]. This is another clear example of the actors' distorted incentives and the negative impact on academic institutions and values.

Research fields differ in their specificities and conditions for producing academic knowledge, which is reflected in scientific publications. Among the benefits of bibliographic indices is that they allow, based on quantitative indicators, comparing and assessing the performance of particular organizations and research groups. However, without an additional expert assessment of scientific performance, bibliometric indices are similar to a convenient, but incomplete, and therefore easily distorted tool for monitoring and regulating the field of science and education. Academician Vladimir Fortov warned about such processes at the very beginning of the recent reformation of the Russian Academy of Science:

"Aleksandr Milkus: According to the Ministry of Education and Science, the RAS is inefficient, since scientists from hundreds of academic institutions have not published a single research work in reputable journals in recent years.

Vladimir Fortov: You should compare the cost of one publication. In our country, it is several times lower than in the USA. There, in order to prepare one article, a researcher spends two million dollars, while here it is about 100 thousand dollars. We are more efficient than the USA.

As for publications, I can elucidate. Researchers in chemistry publish lots of articles, while in physics – a few. Landau, if I am not mistaken, had only 80 papers, which, on top of that, were written in co-authorship. There is an institute that produces radar-absorbing coatings for military weapons. They do not publish articles. But the effect is colossal.

Milkus: How then to evaluate the efficiency of the Academy?

Fortov: There are indicative assessments. Say, a group of institutes engaged in energy research are rated thus

¹ Blagoveschensky A., Alpatova I., Noskova E., Chernousov I. (2021). Artificial intelligence is entrenched in the budget. *Rossiyskaya Gazeta / The Russian Newspaper*, February 7. (in Russ.)

² Milkus A. (2020). The Minister of Science and Higher Education of the Russian Federation Valery Falkov – on installing additional budget places in regional higher educational institutions and flexible university programmes. *Komsomolskaya Pravda / Komsomol Truth*, February 17. <https://www.kp.ru/daily/27092/4165514/>. (in Russ.)

³ The Innovation Russia-2020 Strategy.

⁴ Medvedev Yu. (2011). Russian science will acquire an innovative development strategy. *Rossiyskaya Gazeta / The Russian Newspaper*, January 19. <https://rg.ru/2011/01/19/nauka.html>. (in Russ.)

and thus. And those in chemistry are rated differently. Competition must take place within the same weight class. Assessment can be made according to the amount of funds raised from the industry. If you are producing something useful, they will buy it. The institute I have mentioned earlier is involved in unique research and earns a billion rubles a year.

And another thing, we know who is worth what. When a person is strong, engaged in science, trains staff, we elect him/her as a corresponding member. No matter how long you have been sitting on any commissions of the Ministry of Education and Science, this will not help you get into the Academy¹ (Vladimir Fortov, President of the RAS).

Over the past ten years, Russian journals have come a long way towards integration into the global bibliometric system. However, when planning measures for their development, it is necessary to take into account institutional and historical peculiarities:

"The current circumstances remind me of the situation in domestic football or hockey. They buy effective players for fabulous sums who will score goals. And children's sports schools are left on the back burner. Scientists are also told that they should publish in foreign journals, and as one of the defining indicators they introduced the citation index. But why should articles be published specifically in the West? I want the results of my work to be primarily visible and accessible in my country! It is necessary to educate, teach Russia, open up the horizons of the talented youth.

Incidentally, there are a lot of 'stars' among young people, but what is next? Promising jobs can be counted on the fingers of one hand, and it is quite a problem to stay on in a university as the decision is made on a competitive basis. How could one establish scientific school, where the continuity of generations is important, on the basis of competition? We are not a nation of individualists, where everything is wrapped up in personal achievements, but a people who value collective opinion. And we have this characteristic at the gene level"² (Sergey Inge-Vechtomov, academician of the RAS).

In today's severe conditions for the Russian economy, the country's system of research journals is facing new challenges due to the 'import substitution' of some international bibliographic tools. There emerge significant difficulties with publishing Russian scientific periodicals and providing access to global bibliographic databases, which requires certain adaptation measures and mechanisms to be developed. In the narratives of the actors representing the academic community, this problem is also

raised in the context of the institutional peculiarities of the Russian sphere of science and education:

"Anastasiya Proskurina: We are extremely underfunded, since no one believes in our ideas. Some friends of ours help us with reagents, colleagues also send them from abroad. Since recently, top-rated scientific journals have stopped accepting our papers for political reasons. All of them are financed by particular banks and individuals. Editors are not free in their decisions. That is why everything is moving so slowly. If there were more money, there would be more resources, and this would mean time, premises, good equipment, reagents, and staff salaries. When all this is concentrated in one point – a research makes it, if not – it lasts 20 years.

Svetlana Samodelova: But you receive grants, don't you?

Proskurina: Well, we received 500,000 rubles in grant funding. Of them, 100,000 (20 %) is paid to the institute, that is the rule. 350,000 of the remaining 400,000, we spend on reagents and equipment to conduct research. Of the rest money, researchers get only 3–5 thousand rubles each, that is all.

On the way towards substantial grants of 7–15 million, small research teams face insurmountable barriers. You must have about 8 publications for the last three years in journals with rankings similar to the Web of Science. This is one of the leading online platforms in the research community. It is technically impossible for us to do this. Therefore, we are working for peanuts"³ (Anastasiya Proskurina, Senior Researcher of the Institute of Cytology and Genetics, the Siberian Branch of the RAS).

As seen from the above narratives about Russian journals, the main social contexts imply them used as a tool for reporting and measuring the impact of scientific research. If the innovation system is viewed as a set of institutions that allow generating new knowledge and transforming it into new technologies, then the role of scientific journals here seems to be rather small. In the actor's discourses, journals are almost never referred to as a source of knowledge or a platform for scientific discussions. However, this does not mean that they do not perform these functions – the reporting and measuring functions are merely perceived as much more relevant in the current conditions.

If narratives are considered as sources of information about the rules that actors adhere to in their activities, then their analysis regarding the development of the scientific journals institutions speaks of ingrained managerial practices. Publication activity indicators are instrumental in maintaining motivation, providing management and reporting in the system of science and education. In addition, the mechanisms based on managerial practices

¹ Milkus A. (2013). They wanted to make the second Dynamo society out of the Academy of Sciences. *Komsomolskaya Pravda / Komsomol Truth*, July 7. <https://www.kp.ru/daily/26100/3000082/> <https://www.kp.ru/daily/26100/3000082/>. (in Russ.)

² Danilevich E. (2015). Fate to choose? Academician Inge-Vechtomov on heredity and brain drain. *Argumenty i fakty / Arguments and Facts*, June 15. https://spb.aif.ru/society/science/sudba_na_vybor_akademik_inge-vechtomov_o_nasledstvennosti_i_utechke_mozgov. (in Russ.)

³ Samodelova S. (2021). Why unique developments in the field of cancer do not reach patients. *Moskovskiy Komsomolets / Moscow Komsomolets*, February 14. <https://www.mk.ru/science/2021/02/14/rukovoditel-pozhalovavsheysya-putinu-ucheny-raskryl-podnogotnyu-raboty-laboratorii.html>. (in Russ.)

cause significant bureaucratization of scientific activity, which negatively affects the evolution of academic freedoms and values.

Definitely, for practicing scientists, journals remain one of the main sources of information about research conducted in their research field. And for immediate research purposes, scientists are guided more by the reputation of colleagues and scientific groups than by bibliometric indicators.

It is important that the institutionalization of Russian scientific journals would not degenerate into endless and costly bureaucratic procedures and indicators. Communication, cooperation and healthy competition in the sphere of academic journals in one way or another affect the reputation of scientific publications.

CONCLUSION

Scientific journals keep playing a substantial role in the development of the academic sphere of the national innovation system. The development of the institution of scientific journals and bibliometric tools can be perceived according to the distortion in the perception of reality. In social studies, this phenomenon is referred to as 'the optimism gap', which lies in that individuals are more optimistic about personal prospects rather than prospects of the country or the industry they work in [Pinker, 2018].

In the narrative about the Russian innovation system, journals, indices and their impact are also regarded at two levels: the individual one and the level of science and innovation. In the first case, actors usually, albeit with reservations, talk about personal success in publishing articles in top-ranked journals. At the same time, when evaluating the impact of publication activity indicators on the development of science and education, they often use negative connotations and describe situations as problematic. Such a shift in optimism is akin to behavioural distortions that affect an adequate assessment of the situation and rational choice [Kahneman, 2011]. While analysing the narratives, one can easily notice that the focus has been switched from the information and communication function of scientific journals to the accounting and management one.

Digitalization in the sphere of academic publishing not only facilitated access to knowledge, but also encouraged a galloping growth in the number of journals and publications. In this regard, the importance of the expert function, which is traditionally performed by scientific journals, is steadily increasing. However, expertise and expert knowledge are closely linked to academic values and informal institutions in the scientific community. The established peer-review practices suggest that scientists acting as reviewers carry out their activities on a non-commercial basis.

Reaching by Russian journals the global publishing level is also associated with the preservation and devel-

opment of mechanisms for the international participation of reviewers, authors and editors in publishing processes. Despite certain successes achieved, issuing journals amid various restrictions requires flexible adaptation mechanisms to be developed. It should be realized that the creation and improvement of the domestic alternative of international bibliographic databases is an essential tool for promoting scientific communication and expert activity. However, there is always a risk of enhancing the impact of the constructed indices on the science policy implementation. Scientometric indicators are significant for the scientific community in the first place. They should not become part of the bureaucratic management mechanism, which is fraught with an increase in the management transaction costs and the diversion of vast resources from the genuine research process. In the Russian system of science management, the schemes and mechanisms of managerialism applied in implicit and explicit forms are quite strong [Nureev, Volchik, Strielkowski, 2020]. Neo-liberal principles of managerialism go very well with the stimulation of quasi-competition associated with the 'battle for the indicator', but it is worth highlighting that the main losers in this 'battle' will be active researchers.

The contribution of the institution of scientific journals and bibliographic databases to the development of the national innovation system lies primarily in reducing the actors' costs when accessing scientific information, generating new knowledge and exchanging research results. The journal system can be viewed as an important part of the transaction sector in the economy, facilitating and structuring repetitive interactions in the field of science and innovation.

The innovations development is related to the functioning of the mechanisms for stimulating and promoting grassroots initiatives [Phelps, 2015]. Improving the Russian system of scientific journals should also provide channels for promoting and discussing grassroots initiatives. There are certain achievements in this domain: for instance, the Association of Scientific Editors and Publishers (ANRI) is among the key players in the creation of social capital and a platform for communication in the field of scientific publications.

The institution of scientific journals and bibliographic databases has become an essential element of modern national innovation systems, and its development predetermines the emergence of new knowledge and technologies and their efficiency. The primary objective for the Russian innovation system is to establish an organizational and technological structure that is resistant to external shocks and unites digital libraries and scientific journals. It is of crucial importance that the activities of new institutions and organizational structures would account for and activate the grassroots initiatives of scientists and innovators. ■

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