Promotion of Russian scientific journals into the international databases through the example of the Computer Optics journal

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Abstract. The article is devoted to the issues of promoting Russian scientific journals in the international research area, it describes the historical prerequisites for the recognition of the Russian scientific school by the world scientific community, and provides some characteristics of the national peculiarities of the Russian research culture. Particular attention is paid to the difficulties associated with the fact that some Russian researchers underestimate the necessity for the Russian scientific journals to enter the international databases, the need to increase the citation index of scientists and publish their works in English. The result of this situation is a certain scientific isolationism and Russia's lagging behind the world trends. The relevance and effectiveness of international scientific integration is shown through the example of the Computer Optics journal. The fundamental points are emphasized that allowed this journal to gain high prestige among the scientists working in the field of computer optics and image processing all over the world. These points include, in particular, compliance with the international standards for reviewing the articles and with the rules of publication ethics, high level of scientific publications, compliance with the requirements for the format of articles and the openness policy. All the above, together with the strategic planning, efficient organization and regulation of the publishing process allowed the journal to achieve good performance in the international scientometric databases Scopus and Web of Science.

1. Introduction
Integration into the global information space is one of the priority tasks for the Russian science nowadays. Mikhail Kotyukov, the Minister of Science and Higher Education of the Russian Federation, when speaking in June, 2019 at the meeting of the Federal Assembly of the Russian Federation, reported to the senators on the decisions that should promote Russia to the position of one of the leading technological nations by 2024.

The Minister noted the publishing activities of scientists as one of the numerous indicators of the Russian science development. “Recently, Russian researchers have prepared twice as many works published in international databases and scientific journals. But according to these indicators, despite the serious efforts, we are still at the edge of top ten countries. We require additional 70,000 scientific
articles by Russian scientists, 25,000 patent applications annually, and the most difficult part – we need to increase the total number of young researchers by 35,000” [1].

2. Historical background

The objectives of such a large scale in Russia are comparable to the period of the Academy of Sciences foundation in the 18th century, when both the recognized and the young scientists began to publish their scientific works almost immediately after the institution had been opened. An Academic University and an Academic Gymnasium were established at the Academy, as well as the in-house printing shop, which facilitated publishing of various collections of works.

The year 1728 in Russia was a starting point for the publishing activities of the Academy of Sciences: on January 2, 1728, the “Sankt-Peterburgskie Vedomosti” newspaper was issued for the first time. In addition to the chronicle of Russian and European events, it contained the first scientific articles on history, literature, geography, as well as the texts with chemical, mathematical, natural and physical content [2].

The research papers of scientists and professors were discussed at the Academy meetings and only after that they were published in the bulletin “Comments of the Imperial Saint Petersburg Academy of Sciences”, created as the main printed journal of the Academy of Sciences. The discussion at the meetings can be called the first peer-reviewing of articles, which is a prerequisite for the publication of a work nowadays.

Back then, in the years when the scientific and research work in Russia was just beginning to strengthen as an important and independent activity, it attracted the attention of European scientific communities. Thanks to the bulletin “Comments of the Imperial Saint Petersburg Academy of Sciences”, which was reviewed in Dutch, German and French scientific journals, it was quickly recognized by the world scientific community.

The introduction of the “Brief Description of the Comments of the Academy of Sciences” was an important event for the scientific life of Russia, as it became the first scientific periodical in Russian. It published the translations of articles from the original journal with a focus on mathematics, history and astronomy.

Thus, the eighteenth century was fundamental for the scientific publishing in the Russian Empire. Due to its publishing activities, the Academy of Sciences both developed the science industry in its homeland, and brought the Russian achievements to the world stage.

3. Ways to solve the problem

The point at issue today is again an integration breakthrough. It is necessary to release to the public the multiple scientific developments and discoveries that are present in the Russian scientific discourse, but do not become known to the world scientific community.

That is why the scientific periodicals and the problems of editorial and publishing business have become the subject of close study for both foreign and Russian researchers [3-5].

There are two ways to accomplish this task: by increasing the publication activity of Russian researchers in foreign scientific journals or by introducing the Russian journals to the international databases. Both ways: the first one (the individual way), and the second one (the institutional way) have particular difficulties and challenges.

We will dwell on the problems of the second way – the entry of the Russian scientific journals into the international databases and will consider this process using the example of the Computer Optics journal, which has been consistently overcoming the difficulties of acquiring the status of a world-class scientific journal for more than 30 years.

4. National peculiarities

As a rule, the problems faced by the Russian journals when entering the international information space are associated with particular national characteristics of the Russian research culture: with the psychological unpreparedness for changes experienced by many Russian researchers, as well as the underestimation of the importance of international publishing standards. All these problems are in a way interconnected and one leads to another.
The paper of the Russian sociologists N.G. Popova, A.V. Merenkov and D.V. Shkurin is devoted to the analysis of the issue of “the national specifics of scientific activity in Russia through the study of a scientific journal – one of the most important elements of the scientific communications network, which is both its node and the connection between other components”. This study helps to answer the questions about the state of the scientific knowledge generation system in general, and to develop the measures for its changing to the better [6].

Based on an in-depth interview with the editorial staff members that influence the strategy of preparation of Russian scientific journals for the entry into the international scientometric databases Scopus and Web of Science, the authors of the study have identified a range of trouble areas that require changes. These trouble areas include various aspects of work on the journals: interaction with the authors, reviewers, organization of editorial work, standards of publication ethics, content selection, printing format, and website state.

The authors indicate the reason hindering the current development of the Russian journals by referring to the statement from the editorial “Scientific glasnost” published in one of the issues of the journal Nature about the so-called “scientific nationalism” [7], which is expressed in the unwillingness of Russian scientists to publish their works in English and the general distrust towards the international scientometric indices. The statement was based on the words of the then President of the Russian Academy of Sciences, Academician Y.S. Osipov in the electronic edition Gazeta.ru about the low level of citation of scientific articles published in the scientific journals in Russian [8]. He denied the significance of the citation index criterion, questioned the need to publish the research works of Russian scientists in foreign journals, and stated that any high-class specialist “can study Russian and read articles in Russian”.

The hot discussion that started in the media after the interview with one of the leaders of the Russian academic science was a reflection of the different views that existed in the scientific community at that time and that have not been overcome so far. This was confirmed by the results of the above-mentioned 2018 study on the national characteristics of the Russian science. The authors reported on the presence of the following types of discourses with their typical understanding of the national specifics of a Russian scientific journal: revolutionary-minded type (4%), liberal (29%), conservative (63%) and isolationist (4%). Moreover, the conservative type is clearly the leading one as compared to all others.

According to the Higher Attestation Commission of the Russian Federation, which is in charge of the state scientific attestation of the Russian scientists, at the beginning of 2019, 1,934 journals in Russia were included in the List of peer-reviewed scientific publications, where the scientific results of candidate and doctoral dissertations should be published. 73 more publications submitted the applications to enter this list [9]. Two thousand leading publications is a resource that could provide a fairly quick transit of the Russian scientific journals into the global scientific community. However, even a selective analysis of the bibliometric indicators of these journals in the Russian Science Citation Index on various topics – information technology, ecology, history, philology, international relations and foreign policy, computer technology, high-performance computing and nanotechnology, economics, culture, etc. – is enough to conclude that most journals of the Higher Attestation Commission are not yet ready for the integration and promotion into the international information space and require deep restructuring when preparing to enter the international scientometric databases.

In particular, the vast majority of articles are prepared exclusively by the Russian authors and only in Russian; the format of their articles does not meet the international standards; many journals do not comply with the principle of open access to the articles. These journals focus only on the Russian market of awarding academic degrees to Russian scientists, and this approach seems insufficient to expand the information space of the national scientific periodicals.

5. Profile of the Computer Optics journal
Unlike many other Russian scientific journals, the Computer Optics was initially focused on openness and integration with the world community, which made it possible to talk about its leading positions in its area of expertise today.
In terms of the current performance, the Computer Optics journal is almost equal to the Journal of the Optical Society of America A: Optics and Image Science, and Vision, and has surpassed such journals as the Journal of Modern Optics, Optik, Optical Engineering and the Journal of Experimental and Theoretical Physics. According to the indicators of the Scimago Journal & Country Rank, the Computer Optics Journal is within the second quartile in all the subject areas represented in it [10-11].

Every year the journal improves its scientometric indicators in the leading databases. In 2012, it entered Scopus, and in 2017, it was included in the citation database the Emerging Sources Citation Index (ESCI) formed by Clarivate Analytics. ESCI is an integral part of the Web of Science Core Collection, the journals from this database are considered as candidates for inclusion in the main WoS indexing database – the Science Citation Index Expanded. The journal is also represented in Crossref, Ulrich’s Periodicals Directory, MathNet, the EBSCO Publishing Applied Science & Technology Source Ultimate database on the EBSCOhost Research Databases platform, Inspec abstract databases, the EastView collection, as well as in the open international scientific information repositories GoogleScholar, OCLC WorldCat, ROAR, BASE, OpenAIRE, RePEc, Socionet.

In May 2016, the journal was awarded a quality certificate confirming its compliance with the international standards and the criteria of Scopus information system at the 5th International Scientific and Practical Conference “World-Class Scientific Publication – 2016”.

Below are the indicators of the Computer Optics journal in the scientometric database Scopus for the year 2018:

- SJR (SCImago Journal Rank): 0.535
- CiteScore: 2.37
- SNIP (Source Normalized Impact per Paper): 2.389
- Hirsch index: 23
6. Keys to success

6.1. Understanding the goals and objectives

All these results have been achieved due to the clear goals and carefully vetted objectives, that had been set at the end of 2014 by the journal editor-in-chief, academician of the RAS V.A. Soifer [12]. It should be said that by far not every editorial board of a scientific journal has a deliberate goal and clearly defined objectives, especially rare are the cases when such goals and objectives are supported by all the members of the editorial staff.

In case of the Computer Optics journal, it was the vision of the journal development strategy that determined its fairly rapid integration into the international information space.

In what way is it possible to take a leading position among the journals on similar topics published in Russia in the Russian and English languages? This challenge defined by the editor-in-chief predetermined the tactics of further work.

It was necessary “to attract new articles of a high scientific level, expand the range of authors, providing a real opportunity for quick (within one quarter) and open (free access to the full text of the article) publication. The journal issues shall be published soon in both Russian and English” [12]. In fact, these were the clear objectives, which later grew into a detailed action plan.

First, to increase the annual number of the journal issues, and to publish 120-150 articles during one year.

Second, to expand the editorial board and strengthen the editorial and publishing department significantly.

Third, to expand the number of reviewers and strictly observe the review period. Authors should receive a reasoned response from the editorial board within 4 weeks after the article is accepted by the editorial board.

6.2. The work of the editors

Over the next five years, the editorial board has undergone significant changes. Today it is an efficient structure that ensures the fulfillment of the objectives. The editorial staff includes the editor-in-chief, deputies of the editor-in-chief, executive secretary, promotion editor. The editorial and publishing department also operates as part of the editorial staff and includes the publishing editor, layout designers, literary editor, proofreader, translator. In addition, a special working group was created from among the editorial staff to discuss the operational issues on a regular basis.

The most important part of the editorial staff is the editorial board of the journal, which includes the foremost Russian authorities as well as the well-known foreign scientists: Professor Jari Turunen (Joensuu, Finland); Academician Jin Guofan (Tsinghua University, Beijing, China); Professor Kehar Singh (Delhi, India); Professor Richard Kowarschik (Jena, Germany); Dr. Liam O’Faolain (Cork,
Ireland); Dr. Olga Korotkova (Miami, USA); Dr. Sos S. Agaian, Ph.D. in Mathematics and Physics (Texas, USA).

6.3. Focus on the world scientific community
From the very beginning the journal was focused on entering the global scientific community. The first issues of the journal had the form of an international collection of articles of the International Center for Scientific and Technical Information with the scientific support of the General Physics Institute of the USSR Academy of Sciences and the Central Design Bureau of Unique Instrumentation of the USSR Academy of Sciences at the Pergamon Press publishing house. Starting from 1996, Samara State Aerospace University (presently - Samara National Research University named after Academician S.P. Korolev) and the Image Processing Systems Institute of the Russian Academy of Sciences (IPSI RAS) [13-14] undertook the publishing duties and maintained the tradition of international integration despite the challenges of the period of political and economic reforms in the history of Russia.

In 2015-2017, an English edition of the journal was issued under the title Computer Optics Selected Papers [15]. In 2016, a complete English-language issue of the Computer Optics journal with the original articles was published (Volume 40 No. 5).

The number of articles published in English is growing. The journal publishes the articles of well-known foreign scientists working in the field of diffraction optics, information optical technologies, nanophotonics and optics of nanostructures; analysis and understanding of images, pattern recognition; digital processing of signals and images, and geoinformation technologies from the USA, Germany, Ireland, Austria, China, Finland and other leading scientific countries [16-22].

6.4. High-quality peer review
Concerning the articles processing, the review period has been significantly reduced recently (down to one month) due to the increased number of reviewers. As a result, starting from 2016 the journal is published six times a year.

The total number of reviewers of the Computer Optics journal includes more than 200 experts in the major subject areas of the journal coming from Russia, the USA, Germany, Switzerland, India and other countries. The peer-review is performed by the scientists recognized in the scientific community and working in the field of computer optics and more specifically in the field which the particular article is devoted to.

The main requirements for a reviewer, in addition to the high expertise in his scientific field, include the awareness of the basic ethical principles of reviewing and compliance with the journal review requirements. The editors ensure that the reviews contain no bias or prejudice for political, religious, national and other reasons; the editors also ensure that there is no unreasonable criticism, humiliating comments or any kind of condemnation; and that the confidentiality rules of peer review, the main of which is its anonymity, are strictly observed.

6.5. Strict adherence the operating procedures
The editorial staff of the Computer Optics journal have developed the detailed operating procedures [23].

The editors' decision-making procedure and the terms of the article processing before the publication are determined by the "Regulations on the work of the editorial board and the editorial-and-publishing department of the Computer Optics journal" developed and approved by the journal editorial board [23].

The work of the editorial board is organized in such a way that it allows for the timely publication of 6 issues and over 120 articles per year.

In accordance with the ethics of scientific publications adopted in the journal, the editor always evaluates the articles by their content only, and does not take into account the author’s race, gender, sexual orientation, religious beliefs, ethnic origin, citizenship or political commitments [24].
6.6. Policy of openness
All the journal articles are available in the open access. In 2019, the Computer Optics journal was accepted into the major international database (catalog) of open access journals Directory of Open Access Journals (DOAJ). Today this database contains more than 13.5 thousand journals from 131 countries of the world that adhere to the policy of open access and work in all the areas of science [25].

7. Conclusion
In the context of the expansion of the scientific information space and the objective for the Russian scientific journals to enter the international databases, the scientific journal Computer Optics is gaining high prestige among the scientists working in the field of computer optics and image processing. This is due to clearly recognized goals and logically structured plans on tackling the objectives that have been brought up to the editorial staff by its editor-in-chief, and that are now effectively implemented by the entire editorial staff. Adherence to the international reviewing standards, maintaining high level of scientific publications, observing the rules of publication ethics and the requirements for the format of articles and the openness policy, as well as the efficient organization and strict regulation of the editorial and publishing process allowed the journal to achieve good indicators in the international scientometric databases Scopus and Web of Science. This is proved by the considerable interest to the journal publications and high citation rate of many articles [26-59] according to the Scopus data.

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