

Declaration

On open access to scientific knowledge

Annotation. The problem of limited access to the texts of scientific journals and monographs continues to remain one of the most relevant in modern science. To date, several approaches to solving this problem have been developed: publications in open access journals; placement of preprints of articles in archival repositories; development of social networks for scientists; creation of open online collections of scientific literature. While the use of open scientific journals, archival repositories and social networks for sharing scientific work continues to be limited, open scientific collections such as Sci-Hub and Library Genesis are proving to be a more effective solution in practice. At the same time, an obstacle to the full operation of such scientific portals in most countries is insufficiently developed legislation on intellectual property, which does not take into account the peculiarities of the process of publishing scientific publications; as a result, instead of stimulating science and the arts, it becomes a brake on scientific progress. A necessary step towards solving this problem is the adoption of a new declaration on open access to scientific knowledge, which recognizes the free functioning of scientific Internet libraries as legally legitimate.

Key words: open science, knowledge, freedom, libraries, intellectual proprietary, scientific literature, open access.

Introduction. Latest twenty years marked serious crisis V system of scientific periodicals: scientific journals have become unreadable due to high prices¹. In search of a way out of the crisis, the scientific community began to actively seek and develop new approaches that would make scientific journals completely free for readers.

Budapest Initiative. IN In 2001, a discussion on this issue took place in Budapest, which resulted in the first definition of "open access" to scientific literature as the opportunity for all people to find, read,

download and distribute scientific publications on the Internet in the absence of financial, legal and technical barriers². In addition, the text of the Budapest Declaration recorded the main options for the path to open access, which by that time had formed in science:

(a) the green path to open access assumes that researchers will begin to independently post their work on the Internet on their portals or upload them to specially created repositories - the so-called "archives". This open access area emerged thanks to the arXiv project, which was developed in 1991 by physicist P. Ginsparg and is still actively developing with the support of Cornell University, with 2.5 million open access preprints³. Ginsparg's project became a model, a prototype for the creation of many other open scientific archives; Thus, in 1999, Nobel laureate G. Varmus came up with a project for an open portal where all scientific articles in the field of biology and medicine were to be stored⁴. The Varmus project is today known as PubMed, and its database volume is about 8 million storage units.

(b) golden option open access means Creation And development alternative scientific journals that support their work through funding sources other than subscriptions: universities, foundations, author contributions, etc.⁵



In 2003 at the Medical Institute named after Howard Hughes⁶, and then at the site of the Max Planck Society for Scientific Research in Berlin⁷ two more declarations were signed, which, along with the Budapest

are being considered How fundamental, although they did not contain fundamentally new ideas.

Along with these three declarations, the history of open access includes dozens of public statements of a smaller scale, among which we can note the open appeal of twenty-five Nobel laureates to the leadership of the National Institute of Health⁸

or the call of the creators of PloS to boycott paid scientific journals, to which 34 thousand researchers from 180 countries responded⁹.

Result. How effective were these public initiatives? As can be seen in the graph¹⁰, starting around the mid-nineties, the percentage of new scientific articles that are published in an open access journal or posted in an open repository has continuously increased, but this growth has been relatively slow, and by 2011 the number of scientific publications that could be found on the Internet in the public domain, amounted to less than half of the total—from which we can conclude that 10 years after the adoption of the Budapest Declaration, the problem of access to scientific literature continued to be very acute. Thus, open journals and archival repositories were not enough to solve the problem.

Against the backdrop of the failure of the green and golden paths to open access in science, new approaches have developed over the past 14 years, which in practice have shown higher efficiency¹¹, and today we can highlight three new open access areas:

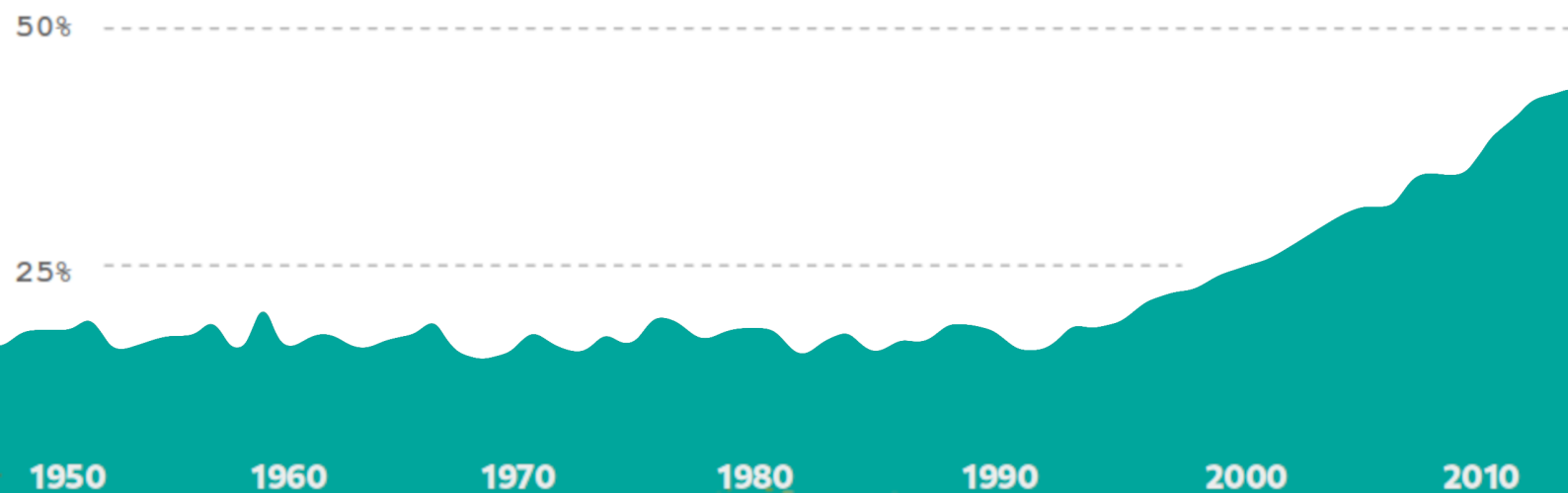


(c) the radical open access option was first implemented in 2011 by the Sci-Hub project¹². In the literature, it is also called "black open access" after the color of the Sci-Hub project logo¹³, however, it can hardly be considered successful, since the color black has negative connotations in many cultures. The cardinal color is a shade of dark red and is used in the logos of famous

universities such as MIT¹⁴ and Stanford¹⁵. The color got its name because the vestments of Roman cardinals were painted in it.¹⁶.

Advantage cardinal approach it became possible to access a significantly larger number of scientific articles, including previously published ones, while the "green" and "gold" options are fundamentally limited only to new articles. Thus, in 2018, the Sci-Hub repository

totaled 81 million storage units, which accounted for about 70% of the total number of registered DOIs, thanks to which



About 85% of publications in paid journals were available through Sci-Hub¹⁷. If we take into account that, first of all, Sci-Hub provided access to articles from the most popular scientific publications, then in practice the percentage of articles available on Sci-Hub reached 95%. Thus, the emergence of Sci-Hub was in some way a revolution, since there was access to almost all scientific literature, which ensured the rapid growth of the project's popularity in different countries, including China, the USA, India, Africa and Latin America¹⁸.

The novelty of Sci-Hub was that it worked completely automatically: the uploading of articles into the repository was carried out by a robot - which significantly distinguished it from "green" and "dark green" open access projects, which require the participation of a large number of volunteers and are therefore not as effective .

(o) the partisan version of open access to scientific knowledge was proposed by A. Schwartz¹⁹. To some extent, this approach has been the standard way of working for most online non-fiction libraries such as Library Genesis for many years²⁰, where are the repositories

replenished directly, i.e., by site readers, users.

The novelty of A. Schwartz's proposal was to scale this method and thus forever make closed access to knowledge part of history.

As with green open access, the transformation systems scientific communications V in this case should be carried out "from below" by the efforts of many people, so this approach can be called "dark green".

At the moment, the main problem with partisan and radical approaches to open access is the imperfection of intellectual property legislation, which considers such projects as "illegal" or "pirated", which is why they are called "shadow libraries"²¹. Thus, in 2012, as a result of a lawsuit, one of the largest online libraries of scientific literature, Gigapedia, was closed²². In the same year there was

Aaron Swartz was arrested for trying to download several million scientific articles from the paid repository JSTOR. The following year, an Internet activist was found hanged in his own apartment.²³. A. Schwartz actively opposed the monopoly of several private corporations on the entire scientific property of the world; in his partisan open access manifesto, he spoke of bribed politicians and the laws they pass that work to benefit corporations rather than the people.

The Sci-Hub and Liebgren projects also did not escape lawsuits: an injunction was imposed on the operation of sites in the United States, and Sci-Hub was fined \$15 million in absentia²⁴. By comparison, the online retailer Nootropics Depot was recently fined \$2 million for selling non-FDA-approved brain-enhancing drugs.²⁵ In addition, access to Sci-Hub is blocked at the provider level in countries such as the UK, Austria, France, Italy, Sweden and Russia, and at many universities. Recently, the creators of the scientific library Z-Lib were arrested in Argentina²⁶.

(c) the social path to open access implies the creation and development of professional scientific social networks, which provide registered to researchers the opportunity to share your work. This approach is presented by the ResearchGate projects²⁷ and Academia.edu²⁸; it can loosely be called "blue", since blue is the standard color of social media. Implementing blue open access under current IP legislation is also problematic. Thus, the social network Research Gate has repeatedly received lawsuits from scientific publishers and was forced to remove scientific works from user pages²⁹. At the same time, scientific social media potentially

can fully transform scientific communication: standard publications of articles in scientific journals, which appeared in the 17th century, may be replaced by completely new formats for knowledge exchange.

Thus, a new declaration on open access to scientific knowledge is long overdue, one that responds to current practices and reinforces the scholarly community's support for new open access options, while also emphasizing the need

improvement
 legislation about intellectual property so that it ceases to serve as an obstacle to access to scientific knowledge. But first, it is necessary to consider several issues that often raise objections and ultimately lead to the failure of any attempt to promote the idea of open knowledge.

Necessity. Does it really matter so that scientific knowledge is accessible to everyone? As a rule, relatively little attention is paid to this issue, since the value of scientific knowledge seems self-evident - but this is far from the case. Consider the argument: only specialists need access to scientific journals because they are too complex for the layman. Similar objections have been raised against universal literacy, while it is now obvious that the economic development and well-being of the country directly depends on the level of literacy and education of citizens. Moreover, the problem with access to scientific literature today primarily affects scientists and students, including the most

financially secured universities³⁰. As for universities in countries with a difficult economic situation, information inequality is not only felt more strongly here, but is also further consolidated as a result of the outflow of researchers to more prosperous regions. Further, access to scientific literature is necessary not only for professional scientists: in particular, the Sci-Hub portal is popular among journalists, innovators, talented schoolchildren and doctors, since a significant part of scientific journals relate to the field of biology and medicine³¹. A 2019 study found that 28 million medical journal articles were downloaded through Sci-Hub³². Such information is necessary to make correct diagnoses and treat patients. Conclusion: free access to scientific knowledge means lives saved.

Economy. Distributed erroneous the view that open access is an economic utopia: in reality, open scientific journals, which are free to readers, have been around for a long time and have a high impact factor³³. As a rule, such publications are supported by universities or

scientific funds. IN first case magazines are free for both readers and authors of articles; however, the second model is more common today, when for publication in a scientific journal an author's fee is taken, paid by the author from the total amount

grant, allocated fund on research. This model causes a lot of criticism, since it creates barriers for the authors themselves: the amount of funding in some cases in different countries may not be comparable. But it should be recognized that restrictions on publication for authors are still a much lesser evil, moreover, many journals do not charge author fees in cases where payment is not possible. In addition to the above, an alternative model is also possible, in which scientific publications, along with researchers, apply for funding on a competitive basis. This model is currently little used in practice, but it looks the best.

Tradition and innovation. Open access to scientific knowledge wrong contrasted "traditional" system of scientific communication that appeared in the 17th century. Although scientific journals have always been distributed by subscription, the price of subscription has never been so high as to act as a barrier that limits scientific knowledge from access to outsiders³⁴. Moreover: such a limitation contradicts the very nature of scientific knowledge, for the existence of which open

communication is a necessary condition. Appearance in the 17th century. scientific journals marked a transition from closed forms of communication characteristic of e.g. for alchemy, to the open exchange of ideas and results. In the 20th century scientific publications are gradually becoming the property of large transnational corporations, which view them primarily as a resource for making profit³⁵. Thus, the demand for open access is a demand for a return to the fundamental values of science³⁶ that are under threat in the modern world.

We

**employees of research institutions, professors and
teachers, graduate students of natural sciences
scientific and humanities faculties**

we approve

1. The right to receive knowledge is a fundamental human right. Artificially created and maintained inequality in access to knowledge is unacceptable.
2. Lack of access to modern scientific knowledge causes serious damage to the healthcare system, preventing correct diagnoses and correct treatment, resulting in thousands of lives lost.
3. Scientific knowledge is by its nature open, and the development of science is possible only in conditions of free exchange of information. Closed access to scientific journals is not only morally unjust, but also undermines the fundamental principles of scientific knowledge and becomes destructive for the very enterprise of science.
4. Restriction of access to scientific knowledge today has become possible due to insufficiently developed legislation on intellectual property, which instead of stimulating scientific progress turns into a profit-making tool for large transnational corporations - the formal owners of a significant part of scientific journals.
5. Necessary legislatively allow free functioning of electronic scientific libraries and Internet portals, such as Sci-Hub and Library Genesis. Legal prosecution of citizens for the creation and use of open scientific libraries and repositories contradicts the basic values of a civilized society and is unacceptable.
6. Open access implies the ability to freely read and distribute scientific periodicals and monographs, including using computer programs, but does not allow for the possibility of plagiarism. The right of the author of a scientific work or an original idea to be considered an author must be protected.

REFERENCES

1. McGuigan GS, Russell RD The business of academic publishing: A strategic analysis of the academic journal publishing industry and its impact on the future of scholarly publishing. *E-JASL*. 2008. Vol. 9. N. 3. P. 105.
2. Budapest Open Access Initiative. 14 Feb 2002 Budapest, Hungary.
3. Ginsparg P. ArXiv at 20. *Nature*. 2011. Vol. 476. N. 7359. P. 145-147.
4. Varmus H. E-Biomed: A Proposal for Electronic Publications in the Biomedical Sciences. National Institute of Health. May, June 1999. 14 p.
5. Guédon JC The "green" and "gold" roads to open access: The case for mixing and matching. *Serials review*. 2004. Vol. 30.No. 4. P. 315-328.
6. Bethesda Statement on Open Access Publishing. Bethesda, Maryland: Howard Hughes Medical Institute, 11 Apr 2003.
7. Berlin Declaration on Open Access to Scientific and Humanitarian Knowledge. 22 Oct 2003. Berlin: Society for Scientific Research named after and Max Planck.
8. Open letter signed by 25 Nobel Prize winners // Science Dissemination using Open Access. Trieste: ICTP, 2008. P. 16-19.
9. Varmus H., Brown P. Eisen M. Open Letter // *PloS*. 2,000.
10. Piwowar H. et al. The state of OA: a large-scale analysis of the prevalence and impact of Open Access articles // *PeerJ*. 2018. Vol. 6. P. e4375.
11. Singh VK, Piryani R., Srichandan SS The case of significant variations in gold-green and black open access: evidence from Indian research output // *Scientometrics*. 2020. Vol. 124. P. 515-531.
12. Banks M. What Sci-Hub is and why it matters // *American Libraries*. 2016. Vol. 47.No. 6. P. 46-49.
13. Green T. We've failed: Pirate black open access is trumping green and gold and we must change our approach // *Learn. Publ.* 2017. Vol. 30. N. 4. P. 325-329.
14. History // MIT Brand Guide.
15. Color // Stanford Identity Guide.
16. Richardson CM The Cardinal's Wardrobe // *A Companion to the Early Modern Cardinal*. Brill, 2019, pp. 535-556.
17. Himmelstein DS et al. Sci-Hub provides access to nearly all scholarly literature // *ELife*. 2018. Vol. 7. P. e32822.
18. Sci-Hub usage statistics. 2024.
19. Swartz A. Guerilla Open Access Manifesto. Jul. 2008.
20. Cabanac G. Bibliogifts in Lib Gen? A study of a text-sharing platform driven by biblioleaks and crowdsourcing // *Journal of the Association for Information Science and Technology*. 2016. Vol. 67.No. 4. P. 874-884.
21. Gardner GJ, McLaughlin SR, Asher AD Shadow libraries and you: Sci-Hub usage and the future of ILL. *ACRL* 2017, pp. 568-587.
22. Losowsky A. Library.nu, Book Downloading Site, Targeted Injunctions Requested By 17 Publishers // *Huffington Post*. 2012.
23. Single R. Feds Charge Activist as Hacker for Downloading Millions of Academic Articles // *WIRED*. 2011.
24. Schiermeier Q. US court grants Elsevier millions in damages from Sci-Hub // *Nature*. 2017. Vol. 6.No. 541. P. 10.1038.
25. Arizona Company and CEO Plead Guilty to the Distribution of Drugs Not Approved by the FDA and Will Pay \$2.4 Million // US Attorney's Office. 2023.
26. Two Russian Nationals Charged with Running Massive E-Book Piracy Website // US Attorney's Office. 2023.
27. Manca S. ResearchGate and Academia. edu as networked socio-technical systems for scholarly communication: A literature review // *Research in Learning Technology*. 2018. Vol. 26.
28. Niyazov Y. et al. Open access meets discoverability: Citations to articles posted to Academia. edu // *PloS one*. 2016. Vol. 11.No. 2. P. e0148257.
29. Chawla DS Publishers take ResearchGate to court, alleging massive copyright infringement. *Science*. 2017.
30. Sample I. Harvard University says it can't afford journal publishers' prices // *The Guardian*. 2012.
31. Bendezú-Quispe G. et al. Sci-Hub and medical practice: an ethical dilemma in Peru // *The lancet global health*. 2016. Vol. 4.No. 9. P. e608.
32. Till BM et al. Who is pirating medical literature? A bibliometric review of 28 million Sci-Hub downloads // *The Lancet Global Health*. 2019. Vol. 7.No. 1. P. e30-e31.
33. Morrison H. Directory of open access journals (DOAJ) // *The Charleston Advisor*. 2017. Vol. 18.No. 3. P. 25-28.
34. Guédon J.-C. Open Access Archives: from scientific plutocracy to the republic of science // *IFLA Journal*, 2003. Vol. 29.No. 2. P. 129-140.
35. Larivière V., Haustein S., Mongeon P. The oligopoly of academic publishers in the digital era // *PloS one*. 2015. Vol. 10.No. 6. P. e0127502.
36. Merton RK The sociology of science: Theoretical and empirical investigations. University of Chicago press, 1973.