

idea

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SCIENTIFIC JOURNALS have a long history as a medium for dissemination of knowledge, going back to the times of Newton. Science, as we know it today, was formed by the system of academic publishing. One may argue that rapid dissemination of new knowledge was essential for the astounding technological revolution the world has evidenced in the last few centuries. This technological revolution has completely reshaped the way the world and science works, yet it seems that little has changed in the system of academic journals itself. Is the current system of academic publishing really optimal for its original purposes – the rapid sharing of reliable information regarding current research? Does the system really fulfill all the demands we have of it? In this Introduction, we'll try to address these questions based on our own experience and on the opinions we have obtained from world-leading scientists of different fields. We will also share the views and policies we offer here at Idea to partly overcome the existing problems and to lay the foundation for the transformation of the way how scientific knowledge is shared and disseminated.

It would be untrue to claim that the academic publishing system hasn't undergone change since its appearance in the mid-17th century. Peer-review, one of the most important concepts in modern scientific publishing, wasn't fully incorporated until the 20th century. The procedure was established to guarantee the scientific soundness, rigor, and quality of the manuscript to be published, very much unlike the subjective publications of the general press. However, does peer-review, as it is performed today, indeed fulfill its purpose? Are papers not occasionally retracted, even from very high-ranking journals? These retractions are sometimes associated with post-publication discovery of fraud and unethical behavior, yet the corresponding manuscripts had successfully undergone peer review. It is concerning to imagine the possible extent of the problem in countless lower profile journals. On the other hand, every scientist has likely encountered unqualified and sometimes even hostile reviews and faced rejection of manuscripts on the basis of subjective arguments, sometimes leaving the author in doubt if the reviewer has even read the manuscript. One of the reasons the peer-review system fails is the way it is currently handled. Most journals still adopt anonymous reviews, where the reviewers' names are not disclosed. Peer review is performed on a voluntary basis, as a service to the community; it is almost never rewarded properly, requiring almost inhuman discipline from the reviewers to dig deep and comply with the expected standards. Moreover, performing peer-review even in prestigious journals has almost zero impact on the career of the reviewers, making it an activity of secondary importance. We believe that it is essential to give the reviewers the credit and compensation they deserve for performing a job which is essential for the proper development of science. Idea will tend to disclose details about the reviewers of published articles and offer significant compensation for the reviews. Our mission is to highlight the importance of the reviewers' job, and we will fight

for the establishment of a system where reviewer scores and indices are as important as those of authors. We also believe it is important to build a strong and convenient system of post-publication review by the entire community, for which our platform will have a strong set of tools.

Performing peer review requires time. Given the exponentially growing number of publications, this time tends to grow indefinitely, contradicting the very purpose of scientific journals' existence – rapid dissemination of knowledge. In the past, many important results were published as short letters to the editor, sometimes just one paragraph long, which were quickly published without any peer review. Some of the discoveries published this way were later awarded with the Nobel Prize. Today, we have a plethora of digital tools to quickly share information, but academic publishing is still lagging behind the available technology. One important counterexample is the preprint repository arXiv.org, which is widely used and has become a de facto standard for the physics and mathematics communities. However, similar tools for other fields are not widespread. We believe that scientific journals of the future should be built around large preprint repositories and databases where manuscripts, full sets of experimental data, and source code are made available quickly and are stored forever, allowing anyone to analyze the data and build new science around published results. Journals like Idea will play the role of spotlights, highlighting the most important and impactful research in such databases. This will not only minimize the time before the information becomes publicly available, while keeping the rigorous peer-review process intact, but also allow the community itself to evaluate the results and influence the level of attention they attract. We believe that the technology and culture developed around social networks may be incorporated in the way research manuscripts are rated and evaluated in the open repository-driven journals of the future. That is why we like to think about Idea as a digital platform for academic publishing, rather than yet another journal.

Another reason to adopt a digital repository-based model of an academic journal is the onset of AI as a tool for data analysis and, possibly, even generation of new knowledge. If we want to keep up with the pace of progress, we should build platforms for knowledge dissemination in ways that will make AI-assisted research easier. Idea also plans to experiment with AI-assisted manuscript review to find the best practices for helping human reviewers to raise the standards of peer-review to a completely new level.

The scientific community is conservative in terms of its internal practices and changes slowly. We lag far behind the tech world, where the open-source community has already completely changed the rules of the game. But now is the time for change. We see tectonic cultural and political shifts happening around the world, and one can think of no better time to plant the seeds of new approaches that will revolutionize the way people perform research and share its results. We do not know which tools that we may offer will be adopted in the end, but the only thing we can do to find out is try. Idea's mission is to gather a community of researchers around a digital platform, where the opinion of every community member matters, and together shape the new era of academic publishing.

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Sincerely yours,
Idea team

“We want to return science to the roots of seeking knowledge and freely exchanging ideas” — Creators of the Idea project tell the story of the new science journal and the upcoming platform for scientific communication

To celebrate the launch of Idea, we talked to its co-founders about the vision behind the project, the pressing problems in science communications and the new ways of publishing and reviewing articles.

Idea is a new global platform for scientific communication. The first phase of the project is the release of a new science journal. Soon, the project will also launch an online preprint repository, a platform for free exchange of ideas, as well as collaboration between scientists around the world.

In this part, we talked to scientists and co-founders of Idea about their view of the system of academic publishing “from the inside” and the strong need to change something.



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How did the Idea project come about? And what did you want to achieve with this project?

ALEKSEY: All three of us work in science, so we have some experience with publishing in scientific journals and going through lengthy peer reviews of our papers. It's a system that is several centuries old and it has a lot of problems that persist into modern times.

The time is ripe for something new. We want to create our own science journal that will take all the best practices of the traditional system, but will serve as an evolution of the process that didn't change much in the last 100-200 years.

STANISLAV: I agree with Aleksey, science journals stay true to their 19th century roots, while the scientific community has modernized. It uses new tools and works on a much faster time scale. Today, scientists often need to wait for years while their article passes through the system of science journals. In a rapidly changing world of modern science, this is a very obvious thing of the distant past.

ILYA: For me, the crisis of scientific communication is intrinsically linked to the global civilizational crisis. Everywhere we look, old systems are no longer working and the old ways no longer provide the desired results. Society needs to grow up, but, to achieve that, science needs to grow up, as well.

Science and technology played a key role in precipitating this crisis, but they can be a key part of the solution. Science is stuck in a vicious circle driven by marketing and profit. We want to return science to the roots and make it about seeking knowledge and freely exchanging ideas.

Changing how scientists communicate and collaborate with each other is a great way to jumpstart this process.

Idea is an innovative project — it's not just a science journal, but also a preprint repository and communication platform. How will these elements work together and how did this format come about?

STANISLAV: In traditional science journals, articles are processed through a highly hierarchical system. The main goal for these publications is, ultimately, to retain exclusive rights to the content. Even if they don't want to publish an article in their main outlet, they still want to keep it in the system. The article is passed to the lower levels and less significant offshoots of the main journal, or it is constantly reviewed and revised.

This process can take years and it directly contradicts the mission of the science journals — sharing knowledge and highlighting discoveries.

We looked for alternatives to this system and were particularly interested in the preprint repositories. This format is popular among scientists in physics and mathematics, but it's not as widely known in other fields.

The articles submitted to the preprint repositories don't have to pass through the peer review system. After a brief pre-moderation process to confirm that the article is a scientific work, it becomes available to the community. The information spreads faster this way, but it's less trustworthy, because it wasn't reviewed by the scientific community.

ALEKSEY: We came up with the idea of combining the systems of traditional science journals and preprint repositories. The result will be an inverted pyramid. The authors will publish articles in preprint repositories, where they will become available within days after the moderation process. The community will then discuss

and evaluate these articles.

The author doesn't have to wait for months for their work to be part of the conversation.

In this system, the journal serves as a searchlight that brings attention to the most interesting and vital articles and discussions in the community.

We plan to test several systems for highlighting information in the repository. Firstly, we will work with a team of scouts — respected scientists, who will evaluate and review articles. Secondly, we will introduce a rating system that will help the community upvote interesting content and downvote incorrect information or faulty research. Finally, we plan to develop AI tools for moderating the repositories and reviewing the data in the articles.

ILYA: Our motto at this stage is "Test and Learn". The main goal is to create a healthy community around our platform. This community will determine how the platform evolves: we will try out different features and our community members will choose what works for them.

We've touched on the problems in the mainstream science journals. Can you elaborate? And tell us a bit more about the alternatives that you see as viable?

ALEKSEY: We don't want to compete with other science journals, because we have a common goal — spreading knowledge. We want to be part of this process and a useful tool for the scientific community. However, we can't close our eyes to the problems in the world of academic publishing. We know that there is room for improvement, and the scientific community is now ready to accept and accelerate new solutions.

STANISLAV: The key issue here is the peer review process.

Not only does it take far longer than is acceptable for modern science, it doesn't even achieve its goals. This process is meant to verify the information in a scientific article conclusively, but today, nobody can be certain that a peer reviewed article in a well-respected science journal is actually true.

There have been many instances over the years when peer reviewed papers were revealed to be misleading, based on bad data

When I became a scientist, I didn't think about receiving grants and publishing my articles in Nature. I was, and still am, motivated by the desire to discover more about the world and share that knowledge with others.

or on poorly conducted experiments. Most of the mainstream science journals work with a small pool of high profile reviewers. These reviewers are overworked and poorly motivated to do a thorough job.

I see multiple solutions to this problem. First, we can better motivate the reviewers, by giving them proper credit for their work — including their names alongside with the names of the authors and their conclusions as part of the article. Secondly, we need to establish a system of rewards for reviewers to make reviewing scientific articles a viable career path.

ILYA: Every major system inevitably has to deal with inertia. As a new generation in science, we have an opportunity to learn from the best practices and mistakes of the past, but also to try completely new things. If our ideas turn out to be relevant to the scientific community and we get an opportunity to bring them to life, we have a chance

to create something truly new in science.

How are you planning to reach out to the scientific community? And what can scientists who will engage with your platform expect?

ALEKSEY: We're a new science journal, so we expect some skepticism from our colleagues, at first. But, we have a solid plan

to win their trust.

First, we will collaborate with think tanks that consist of established scientists from various fields. These groups will work on issues of the Idea journal relevant to their field and lend credibility to our platform. The personal brand of these scientists will help us popularize Idea and open the conversation with the larger scientific community.

Second, we plan to spread the word far and wide. We will participate in conferences and talk about our project on various scientific platforms. We really should make a TED Talk called "How to publish your idea in Idea"...

STANISLAV: Science is a fairly conservative field. To earn the respect of the scientific community, we're launching a more traditional phase of our project, the science journal, first. When scientists begin to interact with our platform, we will start unveiling our unique features

and develop new approaches to scientific communication and collaboration together with the community.

What motivated you personally to participate in the project? Was there a definitive experience that convinced you that there's a demand for such a platform?

STANISLAV: I was inspired by the idea of creating a modern, technologically advanced platform for scientific communication. When I became a scientist, I didn't think about receiving grants and publishing my articles in Nature. I was, and still am, motivated by the desire to discover more about the world and share that knowledge with others. It is my firm belief that any platform for scientific communication needs to operate with these principles in mind. And the changes that are happening in the world of science today make such a platform possible.

ILYA: My motivation is similar. I see huge changes in the modern world and expect to see similar processes in science. However, something is lacking. I'm always stimulated by the most difficult and important tasks. My main work is making quantum computers. Creating a new platform for scientific communication and changing the structure of science is an equally challenging and exciting task.

ALEKSEY: I have some experience publishing in science journals, so I have, at least, in parts, a fair understanding of what works in this system and what doesn't. I can look at the process that traditional journals offer to the scientists who wish to publish there and offer practical improvements. I was inspired by creating something useful for scientists like me, who sometimes struggled with academic publishing and were sometimes frustrated by the results.



In the second part of this article, **RUSLAN YUNUSOV**, co-founder of Idea, who had been managing research for many years, shares his view on the scientific environment from the C-level perspective.

Today, the global volume of scientific information is growing explosively: the number of articles has doubled every 9 years since the middle of the last century, and the number of scientific journals beyond traditional hubs like Western Europe, Japan, and the USA is following a similar trend.

The current system of academic publishing and patent protection significantly slows down the exchange of scientific results, much less ideas. In contrast, preprint repositories enable a faster pace of scientific communication, which makes them attractive and popular among scientists, as it is an additional resource, which goes along with a publication in a peer-reviewed journal. The traditional system of scientific journals, on the other hand, now seems complicated and rigid, with more bureaucracy than joy of knowledge sharing.

I wholeheartedly support the idea of replacing traditional journals with an independent, unmediated publication platform in the future. Such a platform would facilitate direct interaction among authors, editors, and reviewers, guided by clear and transparent rules. The users would no longer be publishers, but individual scientists themselves.

Therefore, in the long term, using the Idea platform, we would like to create a system that optimizes the relationship between authors, editors, and reviewers. Through the fixation of ideas and texts, as well as "smart contracts," all parties can agree on deadlines, creative contributions, and remuneration for their work in a convenient way. Over time, this same technology will also help establish a system for rating scientists and reviewers, as well as facilitating relationships between

scientists and foundations, investors, and other organizations involved in science funding.

We believe that it is possible to simplify the process of publishing scientific articles, even now. Rather than treating preprints and journal publication as separate and parallel tasks, we aim to create a system where authors can simply place their manuscripts on one platform. The editors and digital capabilities of the platform will then assist in promoting, refining, and publishing the work on relevant resources.

A scientist's job is to generate knowledge, while Idea takes care of effectively transferring that knowledge to the appropriate audience. This will allow the scientific community to concentrate on creating new breakthroughs, not on promoting their publications.



Scientific communication: a reflection and a look into the future

For the zero issue of the journal, we have decided to do a live Academic Publishing Review: a series of interviews with the future editors of the first issue, world-class scientists, specialists in the natural science. This is a comprehensive philosophical conversation about all three eras of the global academic publishing system: inception, evolution, its current state with its weak points, and how to reform and improve it to achieve the optimal state.

Interview: Stanislav Straupe
Author: Dina Moiseeva

A portrait of Alexey Kavokin, a man with short brown hair and glasses, wearing a dark blue blazer over a light blue button-down shirt. He is looking directly at the camera with a neutral expression. The background is a blurred indoor setting with warm lighting.

Alexey Kavokin:

Phase transition in academic publishing

We talk to Alexey Kavokin about where and how academic publishing emerged, why Nature took off, how Macmillan and Shuvalov competed in the publishing business, why Einstein had an easier time working in science, and how grant funding affects the purity and quality of scientific discoveries; about the phenomenon of national journals, Chinese nuances, and the development of scientific publishing genres.

Alexey, your vast experience and perspective has allowed you to "capture" the phenomenon of the global academic publishing system since its inception. Let's talk about the emergence of the system and give a retrospective with key reference points. How did the system take shape? How did it evolve into its current format?

It all started in the 17th century, in 1665. The first two scientific journals were created, which still exist today. In France, it was the *Journal des Sçavans*, the Journal of the Wise, and in England, the *Philosophical Transactions of the Royal Society*. Both were sponsored, non-profit projects aimed at informing the public about scientific discoveries. The *Journal des Sçavans* came out once a week! It is now published twice a year. Following the example of these publications, scientific journals soon appeared in several German cities, and then it spread all over the world.

In Russia, after Peter the Great established the Academy of Sciences in 1724, it began printing its own editions. The emperor was very keen for them to print not only original works, but also a digest, so that the emerging Russian scientific community would be kept up to date. We know that very great scientists, Leonhard Euler, for example, did their work at the academy. They published outstanding articles in the *Proceedings of the St. Petersburg Academy of Sciences*, and then the University of Moscow joined in. And Lomonosov and Shuvalov immediately, at the founding of the university, got the rights to set up a printing office and publish their own journal. Thus, a kind of competition began, and the articles were published in Latin, French, and later in Russian. The language of science was changing. At the end of the 19th century, more and

more publications began to appear in German, then the scientific language became English.

Nature, which is now popular and is arguably the benchmark for scientific journals, was founded in 1869. It was a project that relied on substantial money. At first it had no commercial purpose, and the financial support of Macmillan, one of the founders of the journal, enabled it to publish once every one or two weeks and thus promote itself.

Nature quickly gained a reputation as a serious scientific journal, as its editors began to send articles to external reviewers. This practice was not immediately to the liking of authors; it became mainstream sometime in the mid-twentieth century. Prior to that, the editors or editorial staff were supposed to make their own decisions, which established scholars took advantage of, personally negotiating with editors to publish articles. Nature introduced professional journalism, where the editor took an active role, which

remains to this day. Authors don't publish whatever they want; there's a professional who looks at it all, discusses it with the author, edits it, and shapes it to a readable format. This, too, is one of the secrets to Nature's success.

Nature was followed by the American journal *Science* in the 1880s. Then, in the early twentieth century, the American Physical Society and its plethora of journals were

established. Another phase transition happened in the 1980s, when academic publishing began to move into the commercial arena. This was because the funding of science changed dramatically: grant funding came into being, and scientists were reporting on grants through publications. Hence the need for scientists to publish a considerable amount, which led to abuse.

The idea of getting your original scientific thought out to the public has been replaced by the idea of reporting on grants and getting new grants. On the other hand, journals have started to hunt for authors and readers who will pay for publications, leading to a certain inflation of academic publishing.



Image source – arxiv.org

An open-access electronic archive for scientific articles and preprints in physics, mathematics, astronomy, computer science, biology, electrical engineering, statistics, financial mathematics, and economics. Articles are not peer-reviewed before publication, but undergo an initial review by moderators. Created by physicist Paul Ginsparg in 1991, named xxx.lanl.gov, and renamed arXiv.org in 1998. Has had a significant impact on the development of the open access movement and the formation of the preprint system as the primary way to share scientific data in fields such as astronomy, astrophysics, nuclear physics and particle physics.

The same article was submitted to different journals with slight modifications, and the journals made money from it. Nature produced a huge number of subsidiaries as early as the 1980s and 1990s. This family was growing, the project making good profits: money was being taken from both readers and authors.

Open access journals, where authors have to pay for publication, have emerged, which comes at the expense of quality, in some ways. The idea of getting your original scientific thought out to the public has been replaced by the idea of reporting on grants and getting new grants. On the other hand, journals have started to hunt for authors and readers who will pay for publications, leading to a certain inflation of academic publishing.

Finally, in 1993, arXiv emerged at Cornell University as an alternative to commercial publishing and the arbitrary nature of outside referees who began to determine the fate of any article. It is a platform where one can post an article quite freely, without much restriction, and thus secure one's copyright. But this system is far from perfect, either. As a rule, non-reviewed articles are not accepted for grant reporting. The system of global scientific publications, therefore, has not yet reached a particular direction in which it can develop further without problems. It is now in a period of turbulence.

By the way, who funded journals before they became commercial enterprises?

As a rule, each journal had some permanent source of funding. Philosophical Transactions was funded by the Royal Society. The St. Petersburg Academy of Sciences funded its publications, the Moscow University funded its publications, and so on. There were also private

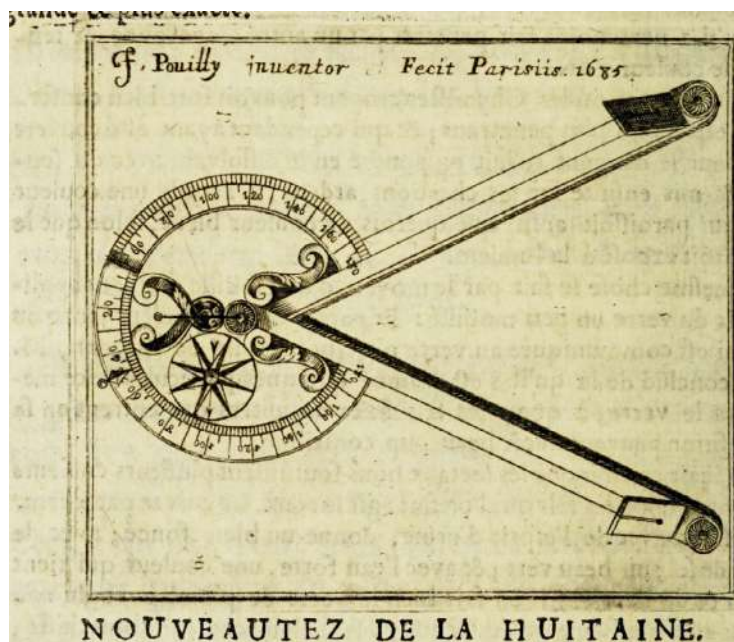
sponsors, such as Macmillan, who funded Nature with his own money. There are many such examples, but the main point is that once the funding disappeared, it had a very negative effect on the journal.

There are examples of European journals which, largely due to lack of funding, ceased to compete with the American and British major publications and eventually disappeared. The French Journal de Physique was a very respectable publication, but it was later merged with other journals into European Physics Letters, which is not particularly read. This unfortunate fate befalls journals, mainly due to lack of funding.

We should also mention the reviewer's job. Academic article reviewers receive nothing for their work, and often they simply refuse to do anything for non-prestigious journals. The editor looks for new reviewers, which takes extra time; in the end the work is done by PhD students or young postdocs in Asian countries who want to get ahead. The final quality really suffers, time is wasted, and it leads to a low level of review. If the reviewer is funded, as a professional they have to give a good quality review: they are contracted for money to do a certain job and have to treat it professionally.

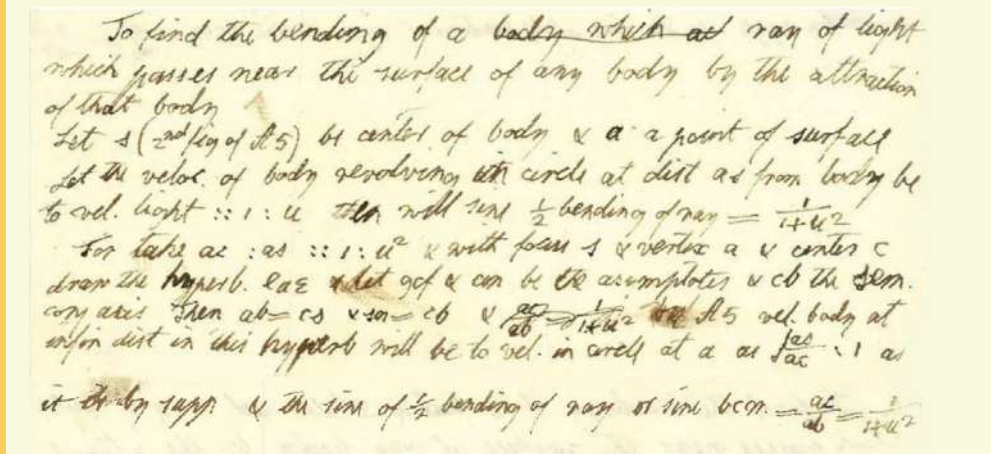
The second point is that, as a result of the turmoil of the peer-review process, articles come out with huge delays and are no longer big news. It is for this reason the arXiv format emerged, as you can publish your article there, and it will be instantly seen. However, arXiv is an alternative system; as a rule, articles published there are not accepted as reports;

Drawings from the Journal des Sçavans, 1685.
Source – archive.org



Excerpt from a letter from Henry Cavendish.

Source — link.springer.com



it is essentially a semi-official publication. The two systems can't be reconciled as of yet. I think that this is a big challenge facing the scientific community: finding a new form of academic publishing that would reconcile the peer review system with its shortcomings and advantages and the system of non-reviewed publications with its speed.

There is also a discussion of the "pyramid format", where the article is first submitted to the archive and then the editorial board selects the most interesting articles and invites the authors to send them to their reviewers. Beyond that, there can be several more levels. Selected articles would be distributed in all possible ways, reaching readers, published in digests, yet an author would publish an original work instantly, it would be available to readers. This is an interesting concept which has a right to exist.

How much has the format of the journal changed at all since the 18th century? How much has the format of an academic article changed?

Oddly enough, not much. Journal des Sçavans published illustrated articles, and they took great care of the quality of these illustrations: they were quality reproductions. Professional illustrators helped the authors understand their publications from a graphic point of view. Articles tended to follow the same structure as they do now. Of course, there were references to publications. Let's say Newton polemicized with Huygens, and they referred to each other's work. But Henry Cavendish, for example, did not publish all his works on the value of the gravitational constant, they remained in letters. Good for us that a letter to a famous person was considered a legitimate publication.

As for the important genre of scientific reviews. People have always written books, and a book is, in a sense, a review. Newton published three great books, in addition to journal articles. A book can include not only original work but also an analysis of literature. In contrast, articles in early journals were short news stories. The journal was akin to a newspaper; it brought the latest science news to the reader instantly. And reviews appeared in the Philosophical Transactions

of the Royal Society. A lot of different notes started to be published, in addition to philosophical notes, a few other directions appeared, and review articles began to be commissioned.

I would say that the genre of very short notes, letters to the editor, is a vanishing format nowadays. If you take even very well cited articles of the twentieth century, there were times when a person would literally publish a few lines, simply some fresh idea. This was accepted by the journal without a huge introduction, without elaboration, without experiments, without numerical calculations. A short idea, clearly articulated, was considered a product worthy of publication. Unfortunately, this no longer exists, and we would like to revive this genre.

I think we are experiencing a crisis in academic publishing, in general. It is not fulfilling its purpose: it is not quickly communicating interesting new results of scientific work to the public. I think this has to do with its commercialisation, which, in turn, stems from the global system of funding science, associated with grants and the associated bureaucracy. Previously, Einstein received money for research and was not accountable for it to anyone: it was believed that he knew best how to spend it. This is completely different now, and not only we, but our colleagues in most countries around the world, have to write an enormous amount of paper for every ruble they spend. Publications have become a form of accountability.

How do you feel about the claim that reviews in today's world are already obsolete the moment they come out?

I disagree. The alternative to reviews are monographs. In principle, a monograph is a venerable genre for a student, for someone who wants to get into a new field and understand something about it. A monograph is much more useful than a set of articles written by different people, with conflicting notations and so on. But monographs tend to be literally a decade late. If the field is rapidly evolving, it is very difficult to find a good monograph on recent developments. Reviews bridge the two. They emerge fairly quickly and fill a niche between letters and monographs.

The evergreen review genre is now becoming popular, a review that is updated gradually as new information becomes available. Does it solve any current problem or is it not really needed?

I think it's a decent idea, it depends on how it's implemented. It seems that the person who has a review out can be too lazy to go back to it later, add new links, add new sections. Frankly, I wouldn't risk subscribing to this form of activity. As an author, I wouldn't participate, but as a reader, I'd find it beneficial. A review, if evergreen, is better for the reader.

You mentioned several national journals which were published in French and German. Now all journals are in English, with the exception of China. What can you say about the national academic publishing system? Do national journals play a role today? Are they needed?

There are systems of national journals in China and in Russia. However, in order to get funding, both Chinese and Russian scientists try their best to publish in English journals, which have higher impact factors and are more appreciated by the community. This may not be a good thing. In the last hundred years, English has become the language of science, and it is not interested in giving up its position.

As for national journals. If we are speaking about the humanities, then of course they are needed. A journal of Russian literature should first and foremost be published in Russian. The problem is that the language of international communication is English. Louis de Broglie, who wrote in French, had a hard time getting his work noticed in Germany, and Niels Bohr and Einstein understood each other easily

because they both printed in German, which was then the international language of science. But, back then, the scientific world was smaller, information spread more easily, and translations were often published. Nowadays, no one invests in translations anymore, so it seems to me that there is no alternative to English journals in the exact sciences yet.

As far as we know, you are very familiar with Chinese scientific culture. Could you tell us what is going on there in general, are there any specifics?

China is changing, it is becoming more and more integrated into the English-speaking scientific culture. Nowadays, Chinese universities are mostly driven by academics who studied in the United States. In the nineties, when China first started to emerge, the most gifted students from China went to the United States, finished their education there, did PhDs, and were postdocs at American universities. Then the policy of returning talent came about, and a huge mass of these academics poured back into China. At every high-level university, most of the active academics are people who have gone through an American or European education. Naturally, when they came back, they brought back the standards they were taught in the US or the UK.

Much of what was there at the time of the Cultural Revolution and Mao Zedong is dying out. Although there are still academics in the Chinese Academy of Sciences who are very fond of writing articles in their native language, there are many publications, and this is carefully supported by the state. But still, it seems to me that this is a thing of the past.



ALEXEY KAVOKIN

is a Russian and French theoretical physicist and researcher in the field of polaritons. Professor at Southampton and Westlake Universities. He is head of International Abrikosov Center for Theoretical Physics at Moscow Institute of Physics and Technology and Principal Investigator at the Russian Quantum Center, and head of laboratory in St. Petersburg State University.

Alexey is a recipient of the prestigious International Prize in Quantum Physics 2020 (ISCS Awards). In his spare time, Alexey Kavokin, father of four children, writes and successfully publishes a series of popular science books for children about the adventures of Saladin the cat.



Gleb Sukhorukov:

*Publishing scientific ideas
is encouraging as it excites
research community*

We talk to Gleb Sukhorukov about why inflation of scientific papers has occurred, whether it is worth paying reviewers and revealing their names, the fate of traditional article structure, the possible metamorphosis of academic publishing, and the birth of principally new forms in the scientific publication system, as well as about which functions in publishing should be given to AI and how ChatGPT passed an exam.

Let's start by analyzing the status quo. It is clear that the academic publishing system is far from ideal. In your view, what is the most significant shortcoming at the moment?

If you look at the dynamics over the last twenty or thirty years, there has been such a thing as the inflation of scientific work. It used to be that the publication of a scientific work was something of an event. Decades ago, the people used to read papers from front cover to back cover and go to the library to do so, but now the things run much faster, and, simply put, people have no time to do that; they use the internet to find what they are interested in, skim some fragments of a research paper to find sections relevant to them. With the number of journals growing exponentially in the last decade, people don't read the whole paper, but often look at pictures, abstracts, or browse, pausing at a fragment, looking for and catching the chunks they need by keywords. It's not good, but it's inevitable, because there are only 24 hours in a day and an increasingly huge amount of information.

We understand that if something grows exponentially, it cannot last long. At some point, there will be a saturation or a decline, and hopefully it won't collapse. An increasing number of papers are being published, so the quality of these papers is falling. There is no longer certainty that published data is as reliable as it used to be. If a paper is published in a scientific journal, any scientist following the protocol described should obtain the results given. It is common knowledge that many papers are not reproducible, and this is virtually independent of the level of a journal. That's a major problem right now: there are too many publications, people do not read them from start to finish, there is a kind of satiety going on.

Do you think this is due to an increase in the number of researchers involved in research, or is it some kind of artificially inflated increase in articles?

I think both have a role. The number of scientists, especially in China, has increased. Moreover, they are doing a lot of research that previously went unpublished. There is now an increasing demand for

more publications in all countries. That is, the number of scientific journals is growing, but the number of researchers is clearly growing faster. It turns out that there are far more scientific publications than results worthy of publication.

Is such a situation invariable in relation to the level of the journal? Can fake results appear in any journal, irrespective of its quality?

It is very difficult to make an argument, it's more of a subjective opinion. In my opinion, a paper can be withdrawn from any journal due to incorrectness or lack of reproducibility. Both Nature and Science have quite a few examples of this. The only difference is that the caliber of papers in which there is widespread interest and the influence on the development of science is higher in highly ranked journals. The editors of such journals are trying to find papers that will be of more interest to the scientific community and potentially have a greater impact on the development of the industry. Of course, they do not admit that they take into account the current state of affairs when selecting papers.

But it is certainly true that editors in journals such as Advanced Materials, Nature and Science carry out more editorial revision, as it is the responsibility of the editor to ensure that the material is well presented.

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RGL, photo from Unsplash open source, author: Valeria Voevodina

Therefore, articles in highly ranked journals are easier to read, which obviously attracts more readers.

The cause of falsified data being found in articles is largely due to the poor quality of peer review. Is this the case?

Unfortunately, one cannot demand more from a reviewer.

The problem is that so many people want to publish, because publishing a research article is quite a big incentive; it affects getting grants and, ultimately, the career of a scientist. Rather than a tendency, there is a push to fabricate results somewhere in order to still get published. Reviewers nowadays just read the text of the paper and look at the illustrations. If everything looks logical, they never go to the lab to repeat the experiments, nobody does this and nobody will. Why blame the reviewer for believing that a person has honestly obtained their scientific result? If it looks reasonable and logical — the author gets a positive review.

Conversely, a reviewer may say that what is described can't happen, because it can never happen, but this will sound unconvincing. And if two reviewers agree and the third one objects, the article will still come out. As a number of examples show, even journals with very high ranking can miss falsification. However, I do not want to underestimate the importance of editors; they try to produce quality papers as much as possible.

How much time do you spend or are you willing to spend on reviewing articles?

I manage an average of one article a week. Very often I refuse to review due to lack of time. Maybe reviewers should be incentivised in some way. After all, you don't know the name of the reviewer, do you?

This is one approach. To publish the names of the reviewers, if the article is published. Perhaps this could encourage them.

I think it does make sense to disclose the names of the reviewers. By doing so, they will also take responsibility for whatever article is reviewed, but many will not like it. Moreover, it will definitely require the reviewers to spend more time on the article and read additional material — an article often does not fall completely within the competence of the scientist. I think the journal would only benefit by persuading the reviewers to disclose their name in case the article is accepted.

If we talk about financial incentives, it is unclear how this will work. After all, the reviewers won't have any more time.

If there is a financial incentive, you are buying the person's time. They understand that the responsibility is on them. You can, of course, do the math in some other way: if an article ends up getting a lot of citations, it may also have some effect on the reviewer's index. I like to interpret it as a sport sometimes, where not only goals scored, but assists are also counted. I think incentives would be the right move. Frankly, I wonder why no journal has done it so far.

Let's return to the academic publishing system as a whole. Does it have any significant positive aspects that should be preserved and replicated on some new reform platform?

I once came across a scientific article from the late 19th century. The amazing thing is that the structure of the article has not changed over the centuries. There are still Introduction, Methods, Results, Discussion... It is hard to imagine this format going away. Although so many people change the structure, the experimental details are put into brackets in small text or relegated to the appendix altogether, I think this greatly

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reduces the likelihood of them being read. In science, "materials and methods" are very important. It's better to keep this as it is. The experimental part should also be described in some detail, no need to relegate it to separate files.

I think the traditional, classic structure of a scientific article should not be abandoned, it is very important. Many journals have tried to introduce new formats, but I see no reason why the traditional structure should go away or change.

So you mean we should move away from the popular science style of presentation that is now being practiced?

Absolutely. Yes, this style is easier for other media to pick up, it is easier to write in this style, but the details are important for a research community of academics. The devil is in the details and this is often the case for scientific papers. It is also a style of writing where fragments of material are compartmentalized in a separate file, which brings extra complexity for specialists to go through their work.

Is it perhaps the job of the editors to supplement technical articles with some kind of popular science spin-offs? Then science journalists would do that, and the article would remain as technical as it should be.

If the article is aimed at scientists, then yes. Otherwise, it is not clear who the article is aimed at. Who reads scientific articles if not scientists? If it's a news bulletin or popular science, it is the editor's

job to attach a link... But this is no longer a scientific publication. I don't like the fact that many respected publishers have now become rather mainstream: adding pretty pictures and introducing a popular style of presentation, sometimes at the expense of technical details. This negative trend has been noticeable in recent years.

Another problem is the time that passes before publication. The time between submitting an article and its publication is getting longer and longer. Have you noticed this?

Well, no. Over at MDPI, which some people may criticize, I recently beat my record twice: thirty days, then twenty, from submission to publication. That doesn't mean that I submitted an article and it got published right away. The review came, it was pretty much to the point on which aspects needed to be improved. Perhaps they have a rather aggressive policy, but they publish quickly, and because of that, people have become more and more interested in publishing in this journal. If a manuscript has been waiting on publication for months, you hardly want to send another to the same journal. If we're talking about a parameter like the impact factor, it's increasing. Does that mean it determines the value of a publication? Perhaps not, but it certainly determines the demand for the publication: how many scientists have used it in their work and are referring to it.

Can you think of any other examples of successful changes in academic publishing policies or publishing formats? Which ones stuck with you in a good way?

On the plus side, there are more opportunities, more journals; in fact, you can take two publishers and always find two journals that are about practically the same thing. For scientists, perhaps this is a good thing.

Previously, people would come to the library, take a journal, look through all the articles, and then read the ones they wanted. Now, a person goes to Web of Science or Scopus, searches by keywords, and reads. They do not see the other articles in the journal. It appears that publications have blurred their boundaries. They are just a collection of articles that have been reviewed by the editors of this journal.

As far as we know, you have quite a lot of experience participating in the creation of new journals. Could you tell us about that? How positive or negative was that experience?

Rather, a negative one. When people take on a new journal, they have a lot of work to do. And there is no guarantee that this journal will take off in the end. It is

very common to be told "We must have high scientific values." However, how can it be achieved? If the journal is new, you must somehow convince people to publish in it. How do you make sure that they publish a decent paper? Go through a serious review process. But now, put yourself in the shoes of authors who have agreed to be published in a journal which has not yet taken off, but is only about to do so. They start being bombarded with reviews, and the journal is not yet established, and it is unknown whether it will be. This is not an incentive to contribute.

So, in order to launch a new journal, big publishers produce what they call Sister Gerald's. They change their goals, but not by much, and start — because the portfolio is always quite large — dumping some material into this sister magazine that they don't wish to publish themselves. That's how a new journal splinters off, and then develops.

If you start completely from scratch, you need a completely new idea. This is why I do not like the phrase "new journal". It should not attract attention by the fact that it will publish high science, because this is a very relative concept. It has to attract with its format, offer something completely new. I have no solution and no advice on how to make a good journal. However, I can tell you when there is a chance for success and when there is not.

You asked what new formats there are. There is now a video journal for scientific publications. They offer you a five- or ten-minute video about your research paper for a small fee. It is a sort of promotion of the work, a video of a scientific article. Someone may be more interested in watching a video than reading a paper. It wouldn't work for me, but it's been offered in recent years.

Illustration from the article "On a method of measuring contact electricity", published in *Nature* on April 14, 1881.

Source — [nature.com](https://www.nature.com)

The question is how well it will catch on.

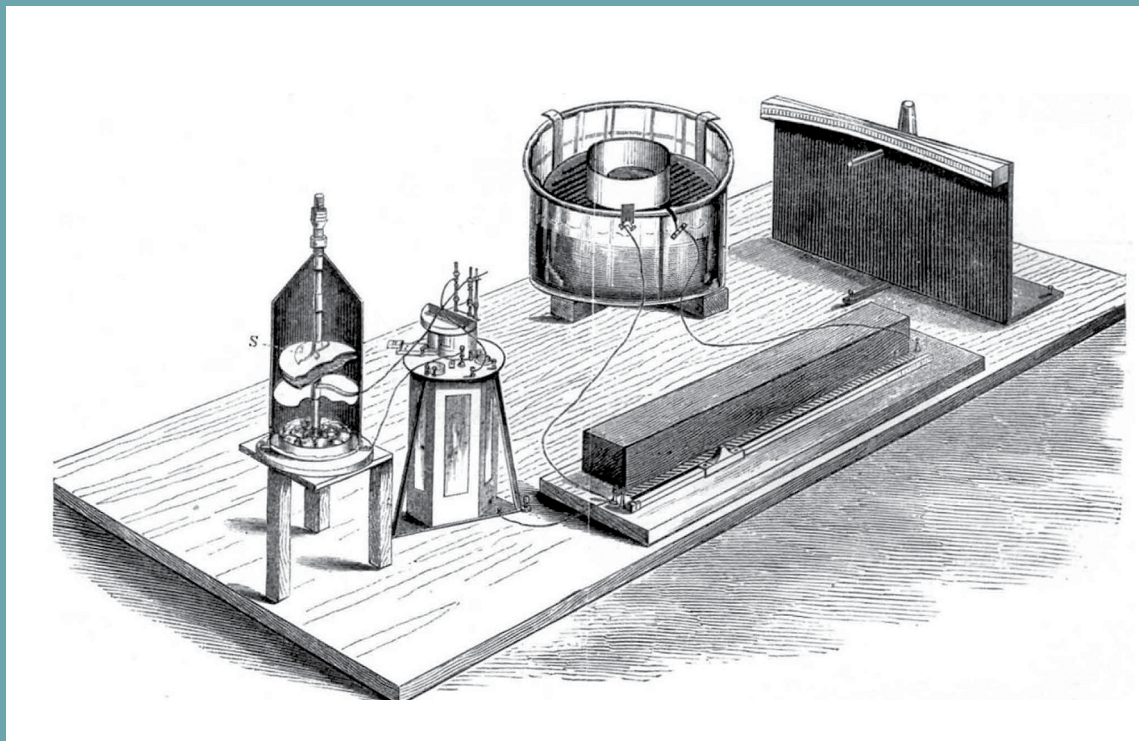
It is not a mass phenomenon, but it exists, it occupies its own niche. On the other hand, I think it may be dangerous at this point for artificial intelligence to be able to write an article by itself. Something needs to be done about that.

The present systems can't write a full-fledged scientific paper yet. But GPT-4 class systems are doing quite powerful things right now. In your opinion, what could be the role of such linguistic models in a modern academic publishing system to make them useful?

I think they can do the editing, the work on the text, and the language. After all, the majority of people do not speak English as their first language. On the other hand, academic English is quite simple, so most people can use it. The author can also use these tools to improve the text. After all, they are the most interested party in making their article easier to read.

What about some higher-level functions? Can an artificial intelligence system be the editor of a scientific journal?

I don't know if this is possible. Would artificial intelligence produce a new article if you just uploaded a set of data and articles on a certain topic? It would rather draw some kind of conclusion based on how similar results would be described by most scientists in the field. So it would be mainstream, but based on new data.



As far as reviewing is concerned, my understanding is that the way artificial intelligence answers a question is to produce the mainstream, generally accepted answer. But if it's an original idea, which happens from time to time in science, it could kill it.

However, it can very quickly check an article for plagiarism or find articles which have little new content. Particularly compared to previous publications of the same authors. You either have to be a specialist to catch this, or spend a lot of time on Google. Not all reviewers have the time for that.

Yes. It would be interesting if a review came to the author saying, "You know, we looked at your article and we saw that you've been publishing something similar for the past ten years, and there hasn't been much progress. Artificial intelligence told us that." And the author will say, "No, no."

At least the editor would certainly benefit from being able to see to what extent the article repeats what scientists have already written. I think that, in one way or another, it is already being used and will definitely carve out a niche for itself in the future.

I can't predict what will happen, but we have to be careful. I wouldn't want to end up in a situation where all articles are written by artificial intelligence.

I think it can help us navigate the whole range of articles. Now we all search by keywords and matches. Here we can turn on a more advanced search algorithm, and, as a result, catch more publications more relevant to what we need. It's definitely a useful tool for searching.

Do you somehow use GPT or some other systems in your practice?

Not yet. The only time I've used it is during an online exam. I ran my questions through GPT to see what my students would have answered had they used it. I wanted to see if they would get a full answer by using the resource, which would mean I asked a bad question.

How did GPT do on the exam?

Not that well. However, I noticed that if my students did use something, then it was a different program than I did. I didn't see a single overlap with GPT answers, and was quite pleased with that fact.

ChatGPT can answer the same questions differently to different people, depending on the time and the context of your previous conversations.

I didn't know that. That further complicates the situation. However, GPT wouldn't have passed the exam I set for my students, though it might receive up to 20%; I think it would be unable to pass.

Currently, over 20 academic publishers with a collective portfolio of hundreds of journals are allowing authors to post an abstract in video format along with a print article.

One of the first video abstracts was a video for an article published in the *New Journal of Physics* in 2010.

Let's return to the concept of the journal. How do you see the development? What would you like to realize, and what ideas would you like to improve in the world of scientific communication?

I want to say that it would be uninteresting to make another traditional journal, there are too many as it is. However, since Idea isn't related to any particular scientific field, I, despite being a fan of classic scientific communication, think that the format might be changed to attract attention.

I don't really have a strong vision, but people could publish the scientific ideas just as they are, possibly with some background information on why the concept works. Why do scientists read articles? To get inspiration, and see how ideas are realized, see what methods already exist. Let's imagine that a scientist already has an idea for a new direction, and they show the steps you need to take, imagining further development, but this could be an incomplete concept. This kind of format could attract more people — "This is what I'm going to do" — they could think after reading.

On the other hand, it is difficult to compete with existing journals. I'm thinking of articles with the outlooks format, which demonstrate potential directions and vectors of development. It's likely that the demand for such publications is currently high.

At the very least, outlooks are likely to be more sought out and read than “classic” articles.

It’s hard to imagine how something like that would be reviewed

It’s really hard to say. One would say that something is an awesome idea, another would say it’s nonsense that wouldn’t work, and yet another would say “that’s wonderful, but add this”. Reviewing something like this would be very difficult, but I imagine there would be enough interest to find a way to make it work. We need to be unique, separate from the rest, and that’s the approach behind Idea — “I have this idea, I think it could work” rather than the classic “I had this approach, did this, people before me did that...” It would be like a trampoline, where something can either successfully launch, or not. This is an alternative I can suggest.

This is very interesting. Won’t people be afraid to publish?

Yes. They doubtlessly will be, why write ideas? Only those who have previously failed, would like to share their experience. Or if a person has too many ideas that they can’t keep hold of, they’d be likely to share. There’ll definitely be a category of people that would read, but not want to publish. Perhaps we don’t want people like that. We’ll only invite those who want to participate. Maybe in the future, it’ll be an honor to

have been published “Have you never been published there? Where are your ideas?”.

Last question — not about the journal. How important are highly rated publications in a career? What should you focus on? What would you advise young scientists?

There’s an option that always works — a young scientist needs to find a research group that has a PI that constantly publishes in highly rated journals. If the scientist enters the group, the likelihood of being published in these journals as a co-author is much higher. This is an absolute fact.

If this doesn’t work out, you need to keep another thing in mind — it’s better to publish in a lower ranked journal than not publish at all, in wait of appearing in a highly acclaimed journal. A PhD candidate needs to defend their diploma, then find work, and you always need publications, no matter where they are. And another thing; there are many works that are just incremental, so they’ll never be published in a highly ranked journal; this can be seen from the start.

You always need to keep in mind the idea of your publication, and how you can strengthen this idea with experimental data. Perhaps you’ll be able to do this, regardless of any other problems related to publishing in highly rated journals. The politics of top journals encourage creativity and novelty, which makes you think about how to make a serious step forward. Highly rated journals always publish something new, and scientists always need to keep that in mind — what new thing they can do.



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is a Russian and British scientist in the fields of chemistry and physics of materials, and engineering. He is a professor at the Queen Mary University of London and Skolkovo Institute of Science and Technology. His research interests include biomedical sciences, biochemistry at the submicron level, and the development of multifunctional colloidal particles. He is developing multifunctional drug delivery systems using capsules. Ranked among the top 10 world-renowned scientists of Russian origin by Forbes.

He first demonstrated the possibility of forming polymer shells on microparticles by sequential adsorption of polyelectrolytes.



Artem Oganov:

The winner is the one who has the power to shape the exponent of progress

Is hierarchy important in the system of scientific journals? Are there pitfalls? How did peer review bury the Belousov-Zhabotinsky reaction? What does the execution of Lavoisier have to do with peer review? What should the ideal scientific journal of the third millennium be, why is it needed, and who should create it? We talked to Artem Oganov about this.

The modern system of academic publishing emerged over three hundred years ago. The mechanics of how scientists worked a century ago and now are very different. But not much has changed in the way scientists publish the results of their work, except in terms of coverage, digital capabilities, etc. The system is the same. We have already discussed this with other contributors to this issue and now we'd like to know your opinion. Firstly, is this true? Do you see this as a contradiction?

Strictly speaking, the system of academic publishing has been changing. Here are just two examples. Firstly, even in the first half of the 20th century, it was possible to publish a single paragraph article in such journals as *Nature*. Such articles could contain a description of some effect or experiment, but included no formulas, no illustrations, and no references. Nobel Prizes could be awarded for this kind of article. Nowadays, nobody would publish such articles.

● Back in the first half of the 20th century, it was possible to publish an article without going through peer review. It's a well-known fact that Albert Einstein published articles without going through peer review for most of his scientific career. This was the norm at that time.

Secondly, back in the first half of the 20th century, the anonymous peer review process was not common. For example, Albert Einstein published all his papers without peer review until the 1930s. When he moved to the United States, an almost scandalous situation

arose: he sent his work to *Physical Review*, expecting that the editor, as before, would view it and send it to publication. Instead, the editor sent the paper to anonymous reviewers — and received an angry rebuke from Einstein, who deemed sending the paper to anonymous reviewers an unacceptable treachery.

Another big innovation that has changed the world of scientific journals is online publication (also in the form of preprints) and the electronic system for submitting articles to journals. The system of academic publishing has undergone several key changes, but these changes are slower than changes in science itself, or in society. Now the time is ripe for more rapid, decisive change. Kurzweil's argument about reaching the singularity makes sense: the greater the pool of tools and knowledge we have, the faster the pace of change. This leads to exponential growth, and although this trend can be interrupted or even temporarily reversed by catastrophic events: world wars, pandemics, scientific revolutions. But on the whole, we can speak of an exponential acceleration: the pace of scientific discovery is growing, as does the pace of change in the society, and academic publishing cannot lag behind forever.

The format of short letters to the editor, which were published without peer review and contained important scientific findings, recording discoveries for which a Nobel Prize could be awarded, is now gone. As a result, despite a more user-friendly submission system, the gap between submitting a paper and its publication is only growing. The peer review system plays an important role, but slows down publication.

Correct. This contradiction is only growing and will certainly be resolved. I think that, in time, we will no longer have printed journals and will only have online versions — this is cheaper and faster, and allows us to do more things, such as crosslinking papers. In this case, each new issue of the journal can be produced gradually as more articles are accepted: as soon as an article is accepted, it would go into the issue instantly. Some journals are already doing this. But the delay due peer review is still there.

The role of various repositories, such as arXiv.org, should increase. Similar archives exist for specialists



BORIS BELOUSOV (1893–1970)

Soviet chemist and biophysicist.

In 1951, while studying the oxidation of citric acid by bromate in the presence of a catalyst (cerium sulfate), he observed the concentration fluctuations of cerium ions. The oscillatory reaction that he discovered is one of the first studies in the field of nonlinear chemical dynamics.

Photo source –
commons.wikimedia.org

in chemistry and biology; at some point they may be merged, but new ones may also emerge. One model for resolving the crisis is to introduce a system of publication in repositories where anyone can publish anything, but the materials are promoted in their visibility, accessibility, and ranking depending on expert feedback, which will no longer be anonymous. However, the pros and cons have to be thought through. There is a danger that, once reviewers are de-anonymised, the Pandora's box will be opened and conflict in the scientific community will increase dramatically.

I recently read a curious story that the greatest French chemist of the late 18th century, Antoine Lavoisier, once criticized a beginner chemist with the surname Marat, which, at the time, didn't mean anything to anyone. A few years later, Marat became one of the leaders of the French Revolution and took revenge on Lavoisier, starting his persecution, which ended with Lavoisier being guillotined (and even the death of Marat did not save Lavoisier, the spindle had already been set in motion). Be careful with negative reviews.

Let's go back to the preprint archive. To some extent, they could serve as a substitute for the format of quick letters to the editor in the modern world. Could the situation evolve to the point where all journals become some kind of superstructure over the archive?

This is possible. Suppose all articles are archived and there is some kind of fair ranking. Articles with a high

score advance in this ranking, become more visible, and thus you can distinguish a good publication from a bad one. The most successful articles that get the quality label will then be published in the journal. It sounds like a good thing, but the dangers lurk in the details. Who will rank materials and how? A group of volunteers, like in Wikipedia, but from among scientists? Dangerous. And would busy, prominent scientists do it? Probably not.

The current system of academic publishing is largely based on the hierarchy of journals. If you publish an article in *Nature* – well done, but if you publish it in the hypothetical *Journal of the Forestry Engineering College*, no one cares. Still, there are exceptions. I recall the story of a discovery made by the remarkable Russian chemist Boris Belousov – the Belousov-Zhabotinsky reaction. He sent his results to the renowned journal "Reports of the Academy of Sciences", where the article was rejected. Then he sent it to another journal – they wanted it cut down to two pages. He retracted the article in rage. As a result, after many years – speaking of publication speed – Belousov still published his article in a second-rate journal. It would seem that he had buried his article, but in the end it was "dug up". A miracle. So, journal ranking helps in evaluating the importance of scientific papers, but what if all the papers are published in the same archive of preprints instead of journals? How will you distinguish good science from bad?

It would seem that this should be counteracted by a rudimentary peer review system? At the very least, the pre-moderation on arXiv.org will not let an article about the Earth being flat through.

Yes, but there may be less obvious problems that a moderator might not notice. We have to have a mechanism that allows us to distinguish truth from lies. Otherwise, we would end up with a lot of popular science articles about the Earth resting on three whales. Once again we come back to the concept of some kind of ranking mechanism, which should be objective and with protection against abuse.

One may recall the "Perelman effect", his three publications on arXiv.org, for which he then won both the Fields Medal and the Millennium Prize. He didn't even submit them to journals, he simply posted them on arXiv.org with the message "those who seek will find". As we can see, the mathematical community found it, figured it out, and appreciated it.

That is correct, yes. However, we're talking about three papers on a major problem in mathematics by an established scientist, whereas I am talking about hundreds of thousands of papers by sometimes quite

unknown scientists on different, often quite specific, topics. No one will seek them out, they risk being simply buried. On the other hand, all sorts of trashy creativity can flourish in such a system. The purpose of the peer review system is to weed out the trash. But often the baby is tossed out with the water when we slow down the publication of articles for years, breaking people, as in the case of Belousov: after that story, he became disillusioned with the system and refused to publish in academic journals at all. There are quite a lot of such instances. People lose faith in themselves and faith in the system.

However, whether a different system would be better remains to be seen. I often see young people wanting change because they see flaws in society, or in the system of academic publishing. Both systems are bound to change, because change is the essence of history. However, we must first think about what we are introducing change for and what we are changing the current system to.

In our opinion, the existing peer review system does not fully ensure quality control. Retractions also occur in the most prestigious journals, not only because mistakes have been made, but simply because of falsification...

Yes, there are many such instances. There are also known examples of people trolling the system, quite successfully publishing deliberate and sometimes funny nonsense. The current system often overlooks blatant falsifications, as well. A scandal has just happened in my field. A group of American scientists published an article in Nature in 2020 about achieving room-temperature superconductivity. It turned out

that the experiments were flawed, likely even fake in some places. After two years of arguments, the article was retracted. It turned out that the team had other results published in prestigious journals, and those results were also withdrawn. Guess what happened to these authors? They published another paper in Nature in 2023 on the room-temperature superconductivity of yet another substance. This time it was obvious from the very first lines that the results were wrong, but this

article was published in Nature. Then, a striking situation occurred when Nature and Nature Communications sent me four articles for review in one week, each of which convincingly argued from different angles that this article on superconductivity was wrong. My feedback was simple: it was obvious from the start that it was a faked paper. Why would you even publish it in the first place? An obvious example of how the peer review system has multiplied itself by zero.

This seems to be a problem with the system itself. A reviewer has no responsibility. It is clear that, in prestigious journals, they are well-known academics who have little time to do what is essentially volunteer work. This is a service to the community and nothing else. Is it even possible to change anything?

You cannot force a person to redo someone else's work. It's impractical, people have their own work to do, as well. It is reasonable to think that any article merits publication as long as it contains no methodological errors or internal contradictions and still answers an important question. One person may see contradictions in an article, another may not, and a third will see contradictions that are not there. Anyone can have a

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NATURE

[FEBRUARY 27, 1932]

Letters to the Editor

(The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, nor to correspond with the writers of, rejected manuscripts intended for this or any other part of NATURE. No notice is taken of anonymous communications.)

Possible Existence of a Neutron

It has been shown by Bothe and others that beryllium when bombarded by α -particles of polonium emits a radiation of great penetrating power, which has an absorption coefficient in lead of about $0.9(\text{cm}^{-1})$. Recently Miss. Curie-Joliot and M. Joliot found, when measuring the ionisation produced by this beryllium radiation in a vessel with a thin window, that the ionisation increased when matter containing hydrogen was placed in front of the window. The effect appeared to be due to the ejection of protons with velocities up to a maximum of nearly 3×10^8 cm. per sec. They suggested that the transference of energy to the proton was by a process similar to the Compton effect, and estimated that the beryllium radiation had a quantum energy of 50×10^6 electron volts.

I have made some experiments using the valve counter to examine the properties of this radiation emitted in beryllium. The valve counter consists of a small ionisation chamber connected to an amplifier, and the sudden production of ions by the entry of a particle, such as a proton or α -particle, is recorded by the deflection of an oscillograph. These experiments have shown that the radiation emits particles from hydrogen, helium, lithium, beryllium, carbon, etc., and suggests that these particles from hydrogen behave, as regards range and ionising power, like protons with speeds up to about 3×10^8 cm. per sec. The particles from the other elements have a large ionising power, and appear to be in each case recoil atoms of the elements.

If we ascribe the ejection of the proton to a Compton recoil from a quantum of 2×10^8 electron volts, then the nitrogen recoil atom arising by a similar process should have an energy not greater than about 400,000 volts, should produce not more than about 10,000 ions, and have a range in air at N.T.P. of about 1.3 mm. Actually, some of the recoil atoms in nitrogen produce at least 30,000 ions. In collaboration with Dr. Feather, I have observed the recoil atoms in an expansion chamber, and their range, estimated visually, was sometimes as much as 2 mm. at N.T.P.

These results, and others I have obtained in the course of the work, are very difficult to explain on the assumption that the radiation from beryllium is a quantum radiation, if energy and momentum are to be conserved in the collisions. The difficulties disappear, however, if it be assumed that the radiation consists of particles of mass 1 and charge 0, or neutrons. The capture of the α -particle by the ${}^9\text{Be}$ nucleus may be supposed to result in the formation of a ${}^{12}\text{C}$ nucleus and the emission of the neutron. From the energy relations in this process the velocity of the neutron emitted in the forward direction may well be about 3×10^8 cm. per sec. The collisions of this neutron with the atoms through which it passes give rise to the recoil atoms, and the observed energies of the recoil atoms are in fair agreement with this view. Moreover, I have observed that the protons ejected from hydrogen by the radiation emitted in the opposite direction to that of the exciting α -particle appear to have a much smaller range than those ejected by the forward radiation.

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This again receives a simple explanation on the neutron hypothesis.

If it be supposed that the radiation consists of neutrons, then the capture of the α -particle by the ${}^9\text{Be}$ nucleus will form a ${}^{12}\text{C}$ nucleus. The mass defect of ${}^{12}\text{C}$ is known with sufficient accuracy to show that the energy of the quantum emitted in this process cannot be greater than about 14×10^6 volts. It is difficult to make such a quantum responsible for the effects observed.

It is to be expected that many of the effects of a neutron in passing through matter should resemble those of a quantum of high energy, and it is not easy to reach the final decision between the two hypotheses. Up to the present, all the evidence is in favour of the neutron, while the quantum hypothesis can only be upheld if the conservation of energy and momentum be relinquished at some point.

Cavendish Laboratory, Cambridge, Feb. 17.

J. CHADWICK.

The Oldoway Human Skeleton

A LETTER appeared in NATURE of Oct. 24, 1931, signed by Messrs. Leskey, Hopwood, and Reck, in which, among other conclusions, it is stated that "there is no possible doubt that the human skeleton came from Bed No. 2 and not from Bed No. 4". This must be taken to mean that the skeleton is to be considered as a natural deposit in Bed No. 2, which is overruled by the later beds Nos. 3 and 4, and that all consideration of human interment is ruled out.

If this be true, it is a most unusual occurrence. The skeleton, which is of modern type, with filed teeth, was found completely articulated, down even to the phalanges, and in a position of extraordinary contraction. Complete mammalian skeletons of any age are, as field paleontologists know, of great rarity. When they occur, their perfection can usually be explained as the result of sudden death and immediate covering by volcanic dust. Many of the more or less perfect skeletons which may be seen in museums scattered as the result of death from floods, or in the neighbourhood of drying water-holes. We know of no case of a perfect articulated skeleton being found in company with such broken and scattered remains as appear to be abundant at Oldoway. Either the skeletons are all complete, as in the *Strombosia* quarry at Sioux City, Nebraska, or are all scattered and broken in various degrees, as in ordinary bone beds.

The probability, therefore, that the Oldoway skeleton represents an artificial burial is thus one that will occur to paleontologists.

The skeleton was exhumed in 1913, and published photographs show that the excavation made for its disinterment was extensive. It is, therefore, very difficult to believe that in 1931 there can be reliable evidence left at the site as to the conditions under which it was deposited. If naturally deposited in Bed No. 2, the skeleton is of the highest possible importance, because it would be of pre-Mountstuart age, and would be in the company of *Pithecanthropus* and the Pittsburg, Heidelberg, and Peking men, all of whose remains are fragmentary to the last degree. Of the few other human remains for which such antiquity is claimed, the Galley Hill skeleton and the Ipswich skeleton are, or apparently were, complete. The first of these was never seen in situ by any trained observer, and the latter has, we believe, been withdrawn by its discoverer. The other fragments, found long ago, are entirely without satisfactory evidence as to their mode of occurrence.

The 1932 Nature article "The Possible Existence of the Neutron" does not contain a single formula.

Source – nature.com

The shortest paper that led to the Nobel Prize: Hannes Alwen's discovery of magnetohydrodynamic waves in 1942. Is one of the most important results in astrophysics and plasma physics.

failure of expertise. The goal is to build a system that minimizes these failures. You can make an analogue to the social rating of China, but for articles and for authors. And for reviewers, too. It is a pity that we didn't know the names of the reviewers who rejected Belousov's articles in due time. It would be nice to have them on a board of shame, but, unfortunately, the system is anonymous.

This decision is unlikely to be received with enthusiasm by the scientific community.

No ranking can be perfect, but this imperfection could be minimized. We currently rank scientists by scientometrics, such as citations, and this is the best tool we currently have, although it is far from ideal.

You can take prizes into account, but they also vary in their significance. So we need to introduce some kind of coefficients for different prizes, but where are we going to get them from? Importantly, no matter what you do, you will find imperfections in ranking or rating mechanisms. You could rank articles by the number of likes and dislikes, but there are nuances here, too. Imagine what would happen if scientists in China, with its huge population, wanted to give likes to their compatriots and dislikes to everyone else.

And if India joined the race with its vast army of scientists, what would be left of the system?

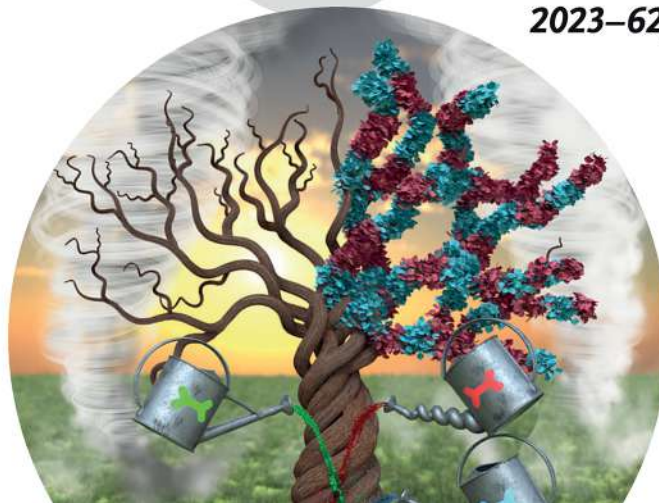
The likes and dislikes should surely be awarded by the professional community...

They have a large one. For all my love of China and Chinese scientists, they do have a tendency to preferentially cite Chinese authors. A system of likes and dislikes, as well as a system of peer review, can be highly susceptible to politicization, a division along national lines in the current Cold War. But there is not much we can do about it: whatever system we build, we are dealing with people.

When it comes to politicization and bias, many top Nature-level journals now have a lot of material that contains discussions on near-political and social topics that affect science in one way or another. In your opinion, is this a proper trend?

This kind of discussion is not to be found in more standard publications, such as Physical Review. Nature is an unusual scientific journal, with a particular niche, simultaneously being both scientific and popular science. It has social, educational, scientific-political, and even political articles. This, in itself, is actually rather good. Another

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issue is that the material itself tends to be biased, which both destroys the credibility of these journals and contributes to the fragmentation of the scientific community.

With the current trends towards fragmentation, what do you think of national journals targeting domestic audiences? In general, does this phenomenon have a place or are national journals unnecessary?

It all depends on the demand. If there is such demand among Chinese or Russian scientists, why not have a journal in these languages? Another thing is that science is inherently supranational. If you do not publish for the entire scientific community, but only for a part of it, I think it's a shame that your results will be lost to the rest. International scientific journals, in which scientists from all countries can publish, are system-forming. Yet we are losing this system very quickly: some journals, though not top ones, already refuse to publish works of Russian authors for political reasons. What if more journals join the boycott?

There is a very good journal, *Angewandte Chemie*, in Germany. It is an international platform, but it will never boycott German scientists, which is understandable. Are there any journals of this kind in Russia? As a matter of fact, there is *Russian Chemical Reviews*, which is a very good journal, while the rest of our journals leave much to be desired. We would be doing ourselves a great service if we created our own international journals that would be open to the world and would also be a safe haven for Russian scientists. The Germans, the Chinese, and, to a lesser extent, the Japanese do have such journals.

● We would be doing ourselves a great service if we created our own international journals that would be open to the world and would also be a safe haven for Russian scientists.

Can and should there be a scientific journal that is not tied to a particular state?

Today, this is rather utopian, because politics can unceremoniously interfere in the scientific world. One might argue that governments fund science, each in their own country, so why shouldn't they pursue their political interests in science? But in doing so, science is harmed and such a government is anti-scientific.

There are journals of a new type. Do you think they are necessary? Is the scientific community ripe for something new?

There are so many traditional journals that it is impossible to know all of them even in one's own field. It does not necessarily make sense to create another traditional journal, which will increase this great multitude by one, unless it is a high-level journal or a journal with a national connection — a safe haven for Russian scientists in case of a boycott. It also makes sense to create new journals which can lead to a change in the system of academic publishing. A pioneering journal has a chance to become a leader.

Let's fantasize a bit. Not all problems can be resolved at the moment, but where can we start? What should this pioneering journal look like? Perhaps this could be some sort of platform for scientific publication?

Let's first consider the requirements that an ideal academic journal should fulfill. First, it should select and publish high-level research. Second, the length of publication should be minimal. Third, the journal should be truly international, devoid of any prejudice. Fourth, it should be indexed in the international databases — Web of Science and Scopus. Fifth, the journal must be in English, as English is the language of science.

Many other points follow from these five criteria: the journal should be internationally peer-reviewed and published online, in order to speed up publication. Likely, the articles, authors, and reviewers should be rated. It might make sense to get rid of the anonymity of reviewers. It might make sense to combine such a journal with an archive, either in-house or an existing one.

To achieve these criteria, we need to rely on the young with their energy, curiosity, and unburdenedness. With their desire to change the world, one of the rarely realized innate human instincts. I would strongly advise a new kind of journal to draw on the creative energy of young people.

Let's go back to the exponential speed of change in the world. It is very difficult for older people, formed in a time of slower change, to keep up with current

progress. Those in their 30s and 40s are already starting to lag behind. If you want to be ahead, rather than perpetually lagging and catching up, look at the young. They will suggest new formats and new techniques.

At one time, the young Sergey Brin and Larry Page came up with a new idea, which, to many people, seemed like nonsense. Yet another search engine, differing from the already existing ones in that it was faster and smarter. This idea led to one of the most powerful companies, Google, and changed the world significantly, especially when Google created their map and navigator. But nowadays, in my opinion, Google rarely surprises anymore, because Sergey Brin and Larry Page are no longer young. Other companies are making breakthrough products. In the same way, journals need team renewal and an emphasis on young people.

It seems that it should be a platform with a community built around it. A community of professionals who would decide how the platform should transform, what works and what doesn't. Ideally, we need to create an evolving community.

You are absolutely correct. Those of us born in the 1970s and established in the 2000s are moving along the same tangent of the exponential curve as we were back then. The tangent now is quite different. We understand that, if you put a young team into a journal now, in ten years it will no longer be a young team and will start to lag behind the new leaders. The journal's team must constantly evolve so that you are not extrapolating the exponential in straight lines, but keeping pace with that exponential and even walking one step ahead. Whoever can shape the exponent is the victor.



ARTEM OGANOV

is a crystal chemist and materials scientist, Professor at the Skolovo Institute of Science and Technology and head of department at MISIS University, Fellow of the American Physical Society and the Royal Society of Chemistry, member of the Academia Europaea. One of the most highly cited Russian scientists.

● The change is held back mostly by fear, but fear should not guide our choices. A much better motivation is love. For example, love of science.

Such is human nature, that everyone has their own mission, which, however great, is still limited. This mission is dictated by the segment of the tangent on which that person lives. But the exponent gets steeper and steeper; new people, new ideas, and new techniques come along.

The fact that the system of academic publishing is changing so slowly has only made the crisis more acute. Sooner or later, the barrier to change will be breached and we will find ourselves in a different world. The change is held back mostly by fear, but fear should not guide our choices. A much better motivation is love. For example, love of science. If we love what we do, if we want science to develop, we need to make scientific results as widely available as possible, and publish them quickly and transparently.

So, let us strive together and do everything within our power to make it happen.

Science and ChatGPT: *What AI can share about scientific publications*

In previous interviews, the future editors of Idea's first issue have shared their views on the past, present, and future of the scientific publishing system.

To conclude, we decided to interview another editorial candidate, OpenAI's large language model, ChatGPT. Can artificial intelligence revolutionize the way research is disseminated? Can ChatGPT help find better solutions, and will its ideas coincide with what we've already been contemplating?

We present the text of the model in its original form. If it's hard for you to read, don't worry, you're not a machine.

We asked Ivan Oseledets, an expert in machine learning and a future member of the Idea team, to comment on GPT's tips.

What are the advantages and disadvantages of the current scientific publishing system?

Some of the key advantages and disadvantages that shape the way research is disseminated, accessed, and evaluated include:

Advantages:

1. Peer review: This process helps ensure the quality and accuracy of published research by having experts in the field evaluate the work before publication.
2. Credibility and recognition: Established journals provide a platform for researchers to gain credibility and recognition for their work, helping build their reputation and further their career.
3. Archiving and indexing: Scientific publishers provide a centralized location for research articles, making them easier to find and access for future reference.
4. Standardization: Publishers enforce strict formatting and citation guidelines, which promote consistency and ease of understanding across articles.
5. Dissemination: Publishers help distribute and promote research, increasing its visibility to the global scientific community.

Disadvantages:

1. Access barriers: Many journals are behind paywalls, limiting access to those who can not afford expensive subscriptions or individual article fees. This can hinder the dissemination of knowledge and exacerbate inequalities within the scientific community.
2. Slow publication process: The peer review and publication process can be time-consuming, delaying the dissemination of new findings and potentially hindering scientific progress.
3. Publication bias: Journals may favor publishing positive or novel results over negative or confirmatory ones, which can lead to a skewed representation of scientific knowledge.
4. Pressure to publish: Researchers may feel pressure to publish frequently in high-impact journals to secure funding or advance their careers, which can encourage rushed or subpar research.
5. High costs: The publishing process can be expensive for authors, particularly if they are required to pay article processing charges (APCs) for open access journals.

IVAN: The first two points about the importance of journal credibility and peer review, describing the merits of the current academic publishing system, are not questionable — it is indeed very important. However, the next two points, in my opinion, aren't as critical. I do not agree with the last advantage: modern publishers, unfortunately, do not contribute much to the dissemination of articles.



IVAN OSELEDETS

is a scientist and expert in machine learning and artificial intelligence. Director of the Artificial Intelligence Technology Center at the Skolkovo Institute of Science and Technology. He proposed a new method for the representation of multidimensional arrays (tensors) — the tensor train — and developed many efficient algorithms for solving multidimensional problems in various fields, such as chemistry, biology, data analysis, and mechanical engineering.

Of the disadvantages highlighted by AI, I agree that hiding materials behind paywalls is poor practice. The high price of being published and, simultaneously, the lengthy process of having an article published in a journal itself are also disadvantages that I would like to get away from. The rest of what is listed by GPT depends either on the journal's policies or on the researchers themselves personally. We should not absolve researchers who publish just because they are forced to publish.

IDEA TEAM: It has to be noted that at Idea we aim to make access to scientific content complete and free of charge. We would like to get away from the notion of making money from the scientific community — both from the readers and the published scientists.

Can you suggest some solutions which may help overcome the barriers you mentioned?

There are several potential solutions and initiatives that can help address the challenges posed by the current system of scientific publishing:

1. Open access publishing;
2. Preprint servers;
3. Post-publication peer review;
4. Alternative evaluation metrics;
5. Open science practices;
6. Reducing publication costs;
7. Training and education;
8. Collaboration and cooperation.

By exploring and implementing these solutions, the scientific community can work towards overcoming the barriers associated with the current system of scientific publishing and create a more equitable, efficient, and accessible landscape for research dissemination.

IVAN: A good example is the open review system, which is widely used in machine learning and has now been implemented on the OpenReview platform. It has greatly improved the quality of reviewing. Open reviews are characterized by the anonymity of both reviewers and the reviewed — the reviewer does not know exactly whom they are reviewing — and the ability to quickly lead a discussion in a forum format. Personally, I find rapid communication between author and reviewer convenient: the reviewer asks a question in the chat room; the author sees it and responds. Also, other users can join the discussion, ask questions about the article, and leave comments.

IDEA TEAM: But how would ChatGPT implement its own advice? Some of its answers completely coincided with our vision.

Imagine that you are to create a new scientific journal which aims to implement the principles you have just suggested. What will it look like?

Here's a possible outline of what such a journal might look like and some initial steps to kickstart the project:

1. Establish a clear mission and vision: Develop a mission statement and vision for the journal that emphasizes openness, transparency, accessibility, and collaboration.
2. Assemble a diverse editorial team: Recruit a diverse group of experienced researchers and professionals from different fields to serve on the editorial board. This team should be committed to upholding the journal's mission and vision and fostering a fair and inclusive publishing environment.
3. Adopt an open access model: Ensure that all articles published in the journal are freely accessible to everyone. To finance the journal, consider adopting alternative funding models, such as institutional memberships, article processing charges (APCs) with waivers for authors from low-income countries, or support from research grants and philanthropic organizations.
4. Encourage preprints and post-publication peer review: Promote the submission of preprints to relevant servers before formal submission to the journal, and support post-publication peer review by enabling ongoing comments and discussions on published articles.
5. Support open science practices: Require authors to share their data, code, and research materials as a condition of publication, whenever possible and ethically permissible. This will improve transparency and reproducibility of the research findings.
6. Adopt alternative evaluation metrics: Use article-level metrics (e.g., views, downloads, and citations) and altmetrics (e.g., social media shares, mentions in blogs, and news articles) to assess the impact of individual articles, rather than relying on traditional journal-based metrics.
7. Launch and promote the journal: Announce the journal's launch through various channels, such as social media, academic conferences, and targeted outreach to relevant research communities. Encourage submissions by offering incentives, such as reduced or waived APCs for the initial publication period.

IDEA TEAM: GPT has managed to forget that it itself did not advise charging a fee for article processing; regardless, this will not be the case at Idea.

Also, we did consider the possibility of introducing altmetrics, but so far, we have moved away from this idea.

IVAN: I do not believe in altmetrics. Otherwise, it's a standard formula: a strong editorial board, open access to articles, publishing in English, and promotion through famous authors. In any case, new journals are difficult to start, they take quite a long time to earn a reputation. However, the road is traversable.

How would you encourage the top-level scholars to perform extensive and thorough peer-review? Remember, they usually are over-occupied.

It's true that top-level scholars often have many commitments and may be reluctant to take on additional time-consuming tasks like extensive peer-review. However, there are several strategies that can be employed to encourage their participation in the peer-review process:

1. Recognition and incentives: Provide public recognition for reviewers by listing their names on the journal's website, in annual reports, or in special acknowledgments. In some cases, offering a small monetary compensation for reviews could also be considered.
2. Efficient review process: Streamline the peer-review process to minimize the time and effort required from reviewers. This could include using a clear and concise review form, offering reviewer guidelines, and providing access to efficient review management tools.
3. Reviewer training and support: Offer training and resources to help reviewers improve their skills and confidence in the peer-review process. This can include workshops, webinars, or written guides on best practices in peer-review.
4. Flexible deadlines: Provide reviewers with reasonable and flexible deadlines that accommodate their busy schedules. Clearly communicate expectations and allow for extensions when necessary.
5. Engage reviewers in journal development: Involve reviewers in the ongoing development and decision-making processes of the journal, for example, by seeking their input on editorial policies, special issues, or conference events. This can help foster a sense of ownership and commitment to the journal's success.

IDEA TEAM: One of the major advantages of our journal will be the high quality of review. We have put a lot of thought into an incentive system for reviewers; their work should be rewarded fairly. In this sense, ChatGPT's ideas are intriguing and very similar to ours. The reason most scientists still write reviews, despite being busy and not being rewarded for their work, is recognition. So we want to work at keeping them motivated and involved in Idea.



DR. CHATGPT

is an artificial intelligence language model developed by OpenAI that specializes in natural language understanding and generation. As a leading AI in language modeling, ChatGPT offers valuable insights and expertise on academic publishing and scientific communication. With its deep knowledge base and advanced language processing capabilities, ChatGPT provides concise and informed responses to various topics in the field.

We may publish the review alongside the main article or as a separate back-to-back article and include the reviewer's name, acknowledge funding sources, etc. But it seems that a review report will hardly be cited as much as an original article. Can you criticize this suggestion and suggest ways to overcome the problem?

Publishing the review alongside the main article or as a separate back-to-back article with the reviewer's name, funding sources, and other acknowledgments can indeed promote transparency and give credit to the reviewer's effort. However, as you've noted, there are potential challenges associated with this approach:

1. Lower citation rates: Review reports may not be cited as frequently as original research articles, which could limit the perceived impact of the reviewer's contribution.
2. Potential conflicts of interest: Publicly acknowledging funding sources for reviewers may introduce concerns about potential conflicts of interest, which could compromise the perceived objectivity of the review process.
3. Reviewer reluctance: Some reviewers may be hesitant to have their reviews published alongside the articles they reviewed, fearing potential disagreements or negative repercussions from authors or other members of the research community.

IDEA TEAM: Our options were to ask the reviewer if they would agree to publish their work along with the article, or to leave that decision up to the editors. If the reviewer consents to publication, their work should be rewarded. But what would the authors of the article say? Let's see what ChatGPT has to offer here.

To address these challenges and ensure proper recognition for the reviewer's contribution, you can consider the following solutions:

1. **Alternative impact metrics:** Use alternative metrics, such as altmetrics, to assess the impact of review reports. These metrics take into account various aspects of online engagement, such as views, downloads, and mentions in social media, blogs, or news articles, which can provide a more comprehensive understanding of the reviewer's contribution.
2. **Reviewer profiles:** Create public reviewer profiles on the journal's website or on platforms like Publons and ORCID. These profiles can display a list of the reviewer's published reviews, as well as any associated impact metrics, providing a more visible record of their peer-review contributions.
3. **Collaboration with indexing databases:** Work with indexing databases and platforms to ensure that review reports are indexed and discoverable, potentially increasing their visibility and citation rates.
4. **Reviewer awards and recognition:** Establish annual reviewer awards, certificates, or other forms of public recognition that celebrate outstanding contributions to the peer-review process, independent of citation rates.
5. **Encourage citing review reports:** Promote the practice of citing review reports in subsequent research articles, editorials, or commentaries, highlighting their value as important contributions to scientific discourse.
6. **Emphasize the value of published reviews:** Clearly communicate the benefits of publishing review reports alongside articles, such as increased transparency, recognition for the reviewer's effort, and the potential to improve the overall quality of published research.

IDEA TEAM: As we have repeatedly emphasized, we strive to nurture a professional community around the platform, which will itself determine how the platform should develop. We will try different approaches, and authors, reviewers, and readers will be able to take an active part in shaping this system.

There are many possibilities, and which of them will actually be relevant is something to watch in practice and, like ChatGPT, respond to user requests, learn and improve because of them.

What role would you choose for yourself if invited to participate in the creation of a next generation scientific journal?

To choose me over a human for a specific position within the journal, it's crucial to consider the tasks and responsibilities that would best leverage my unique AI capabilities. For instance, I could be appointed as a specialized AI assistant editor or consultant, supporting the human editorial team in tasks such as manuscript screening, reviewer matching, trend analysis, and content optimization.

However, it's important to emphasize that my role should complement, rather than replace, human expertise. While I can offer valuable support and insights, human editors and reviewers remain indispensable in making nuanced judgments, providing expert knowledge, and upholding ethical standards in the scientific publishing process.

IDEA TEAM: Is it worth involving AI when writing a new article?

In our opinion, a linguistic model cannot replace an author.

But using artificial intelligence to review, select, and sift out articles is well worth the effort. ChatGPT and similar tools are great support for editors and reviewers.

It will be interesting to see how far language processing technology will advance in a few years, in time for the anniversary issue of *Idea*. Will there be a full-fledged artificial intelligence employee on the editorial staff? In any case, we are not going to give up on the possibility of using neural networks to simplify the work of selecting and promoting publications.

IVAN: AI is a super useful tool that should not be discouraged from use. Sometimes you can see the particularities of machine-generated text, but its quality will gradually improve. In my opinion, AI will help many authors to make their papers easier to read. But the idea of the work itself should certainly belong to the researchers. Linguistic models can tidy up the text, tweak the language of an article, but are of no help in working on the content.

Brain addicted to challenges

I joined the Idea team during the transition phase, as we moved from the conceptual stage of creating a platform that had been brewing in the minds of scientists to the practical steps of implementation. Our journey began with brainstorming sessions, where the name Idea was born thanks to the special contributions of Anna Shangina. Then we enthusiastically shared our ideas about the project with internationally recognized scientists and our closest associates, and it was truly gratifying to witness their enthusiasm. Engaging in lively discussions, they shared their own experiences with academic publishing and highlighted areas they wished to see transformed within the system. Although skepticism existed, it ultimately worked to our advantage.

Now, as I update these same people about the progress we have made and our upcoming plans, I feel incredibly encouraged, since I see how their opinions have changed, and they have become motivated to take the following steps with us. I'm excited to be a part of a team building a healthy platform that will unite the scientific community in all its diversity of opinions and commitment.

Everything around us tells us that it's time for a change, to move forward. I've always been surrounded by people with a technical mindset, and my brain is addicted to challenges. The anticipation of the hurdles to be overcome sparks up my curiosity and gives strength. I am confident that the Idea team has a long and exciting journey ahead of us, and we will joyfully embark on it with all those who are eager to join us in shaping the future.

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With great enthusiasm, with a team of scientists, we started generating ideas for Idea. A new stage in science means the creation of a new scientific journal. And we have not just a journal, but a whole platform for scientific communications that will help everyone develop and move forward.

Today, more than ever, I understand Neil Armstrong's phrase: "That's one small step for man, one giant leap for mankind." In our team, we believe that this will be the case for Idea.

ALENA MASTIUKOVA,
Resource investigator of Idea