to account productivity are challenged. The third kind of grievance represents the voice of "pure" teachers whose professional identity doesn't include research and is limited to transmitting knowledge. They point out that good teaching should be appreciated no less than research. Government officials, university administrators and even other academics that support transformations try to respond to these complaints. However, alarmism persists and, in our view, is even growing, which means that the communication between the supporters of different views is failing.

Alarmism, which obviously opposes the policies focused on enhancing publication activity, doesn't mean that faculty don't change. The case of Higher School of Economics (HSE) shows that the pressure to publish has its impact on academic life. Specifically, some faculty start changing their professional tracks and try to conform with "publish or perish" policy requirements. At HSE there are three ways through which this policy operates: 1) publication activity assessment, 2) a system of differentiating wages according to publication results, 3) publications outcome is a criterion taken into consideration while renewing faculty's contracts.

Faculty survey at HSE contains questions about working time budgets and priorities in professional life. The results show that half of those in teaching positions spend more than 25% of their working time on research. [3] Moreover, the share of instructors who stated that research is their professional foreground grew from 26% in 2014 to 41% in 2015, while the same indicator for teaching decreased from 67% to 51%. The majority (87%) of faculty who would like to change the structure of their working time budgets in the future said that if they did change it, they would spend more time on research. The percentage of teachers who participated in research projects has risen from 68% to 79%. In other words, academics who used to be focused primarily on teaching are turning towards research, thus leaving teaching behind. Such reorientation towards research is more prevalent among male faculty (84% of them participated in research projects) than female (74% of which participated in research projects), among academics with less teaching load (with 86% of those who participated in research projects among teachers with fewer than 50 contact hours in the 2014-2015 academic year), and those with a post-graduate degree (83% of them participated in research projects in comparison with 69% of the teachers without a post-graduate degree).

However, not everyone wants changes in their professional life. Around 20% of the faculty spend more than 80% of their time on teaching and therefore don't engage in research much and don't show high publication activity. A curious fact is that this subgroup differs a lot from other faculty in terms of their professional attitudes. For instance, comparing with other groups, divided on the basis of their working time budget structure, faculty who are primarily teachers (>80% of time spent on teaching) are distinguished by the biggest share of those who are dissatisfied with their income and who are planning to change their workplace. At the same time, they stand out as a group due to the lowest percentage of those who plan to publish in international journals and who understand the university's strategic goals. This group seems to be

a bit lost in the changing environment and, at the same time, a bit rebellious, comparing to their colleagues who more or less accept the rules. This draws another line between them. In the survey, there were questions aimed to explore attitudes towards possible sanctions against faculty who don't fit the minimum criteria of publication activity. Academics with different working time budget structure show different attitudes to the idea of sanctions. Usually those who spend most time on teaching are more critical, while those deeply engaged in research often support the idea of sanctions. In our opinion, it can be interpreted as a polarization between two professional subgroups: "high-flyers and underdogs," [4] or conformists and rebels. Pressure to publish contributes to the institutionalization of the role of underdogs at Russian universities not only by establishing certain rules but also by creating new incentives for faculty differentiation.

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# Return on Publications (RoP) and the Changing Nature of the 'Science Enterprise'

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# Publishing, Access and Data: An Overview

These days everything, including publishing and science, is about data. Here is a highlight. On January 7, 2016, at Orthodox Christmas day, ORCID, a US (Delaware-based) corporation which holds open-access registry of unique identifiers for individual authors and their publishing activities officially announced that seven influential society publishers will start requiring ORCID identifiers from their authors [2]. The pioneer of this next deep digitization step — The Royal Society (UK) — was already at the forefront of

the effort, requiring all authors to use their new 'digital passport' in form of ORCID iD as of January 1, 2016 [3].

Putting this to a perspective, today's headcount of ORCID is nearly 2 million authors representing 200,000 organizations globally. If we compare this number to the 7 million individuals cited in Knowledge, Networks and Nations (2012) [4] as the global population of researchers and assume that figures and statistics always have shortcomings, the scale of science turning to "e-" is both big and fast. Next to this comes a variety of free access data on funding activities and research funding flows both at source and recipient levels, accumulated at the same time.

These orchestrated steps are fundamentally changing the science and education landscape, where publishing, citations, and accessibility of information plays a key role in resource distribution. If we couple ORCID initiative with projects like the UK-led 'snowball metrics', already marketed as 'global standard in institutional benchmarking' as well as various science networking portals, which you may google just as easily as any other information, the trend becomes clear. After having gone digital, the science and education enterprise is quickly polishing itself to apply business principles to all the aspects of science. It is especially true in decision-making and managing research, researchers themselves, and their publications (Green 2015) [5].

The impact of these steps on how researchers will publish and how their work is going to be measured (and funded) is significant. It will encompass several dimensions, ultimately changing publishing and science as we know them today. I would like to touch on a link between funding and publications, which, in my view, will be seriously affecting science and education in our country. Scarce resources will not only dictate the subject areas where funding flows will go but will also affect academic publishing practices.

#### **Science Economics and Return on Publications**

If we look at science from an economic perspective, the core of governmental decision-making is focused, subject-specific areas in science and education as well as publishing about them. It all revolves around resources and ROI (return on investment), or let us call it RoP ('return on publications'): whether it is open access or subscription and whether it is an individual researcher or an institution. As soon as all authors are linked to a global 'system' whatever that 'system' or 'network' will be - funding flows, both national and international, will concentrate immediately in those centers and individuals, where not only quantity but quality publications will drive knowledge advances and attract more networking, talent, and resources to support it. The funding flows are currently also on a trajectory towards being linked into a clear systemic way to authors' and articles' various electronic 'passports'. Once the circle is complete, all the activities will be measurable and transparent from a formal standpoint, leaving not much space for the good old free academic endeavor. Pressure for public and private funds and governmental budgets, which feed science and education both in our

country as well as internationally, is growing. Researchers will need to show proper RoP, coupled with the right publication impact, most of which is already in the KPIs of their respective institutions (universities and research institutes). It is not only publishing, however. Another survival strategy, which the new publishing and science funding order is steering the authors to, is actually marketing one's own profile on the digital arena. Contemporary researchers will have to be well-versed not only in their actual subject areas but also in selling what they do and who they are to the world. For some this could be a down side of changing 'science' to the business of 'science enterprise'. There is no secret that publishing in international journals determines the face of organizations in the world of university.

termines the face of organizations in the world of university ranking as well as in the effort of attracting new talent in both education and research. It also determines how well organizations are funded and it holds true in our Russian universities, just as much as in the universities of Asia Pacific, Middle East, Europe or South America. The prevailing approach is unified and simple, right to the bone: publish or perish.

### **Reality Validation**

Such approach has both positive and negative consequences, many of which are often shared by the participants of the 5-100 Project (Russian academic excellence initiative). Let's take Russia's flagship university in the Asia Pacific: Far Eastern Federal University (FEFU). On the one hand, positive visibility of FEFU research output indexed in global databases, such as Scopus, has increased dramatically in the last 5 years (numbers vary slightly): from 142 in 2011 to 600+ in 2015. On the other hand, the pressure on the researchers to publish has been enormous within the university. What adds to the complexity is the unification of four universities into one in a very short period coupled with a very low start in publishing, especially in internationally indexed journals. Here are the key contributing factors:

- 1. Introducing publications quotas as part of effective contracts and KPIs for researchers and faculty.
- 2. Financial motivation for FEFU authors publishing in Scopus-indexed journals (first without considering journal impact factor). This initiative resulted in intensified collaboration with various institutes of the Russian Academy of Sciences and discipline of naming the correct affiliation. This initiative alone helped double the university's publication count within 12 months.
- Next step was to motivate FEFU faculty to visit and publish at the international conferences, whose proceedings are indexed in Scopus. This approach also provided for a roughly 30% increase in international scholarly output.
- 4. To support the publishing process, Center for Publishing was created to fully support authors in every step of the process: from language editing to communication with journals and editorial boards.
- 5. Reputable in-residence foreign professors and researchers were invited to help organize local centers of competencies and instill international experience at the university across various subject areas.

6. Finally, to transform quantity into quality, the motivational program for publishing was updated to dramatically increase financial remuneration for publications in high impact-factor journals and, at the same time, severely decrease motivation for publications in lower quality journals. The latter allowed to address another challenge: the number of citations for published papers [6].

All of these steps required resources and effort. Both the university and the government are looking carefully at how publications help bring about the return on publishing and, ultimately, return on investing in science and education from every ruble. Going forward, I see the existing model of publishing is rapidly changing in very practical terms. Academic publishing which lets researchers submit articles for free and then charge the reader is no more sustainable neither for resource holders with public funding, nor for researchers, who need faster time-to-market, as the speed of information exchange increases. 'Publish or perish' seems to be destined to become more than just a slogan but rather a matter of survival for both organizations and individuals in this new academic landscape.

## **Publish or Perish: Questions for the Future**

I would like to finish this brief outlook with a number of questions that require further discussion.

- If publications rapidly move to the open access format, is it so necessary to turn good Russian journals into English language journals or would it suffice to make them bilingual?
- If funding bodies and publishers determine the 'system' in which every researcher has an 'electronic passport,' is there space for free scientific inquiry, not being steered to the topics where resources are focused?
- How does the need for publishing / publishing KPIs relate to experimental sciences and engineering, where the ultimate output is not a piece of knowledge (article) but a piece of working technology or innovation (prototype)?
- Are we in Russia ready to follow the global trend and create an environment where not publishing will mean perishing in the new digital 'science enterprise' with business KPIs in place, where decision-making on resources and priorities is determined by formal parameters?

Answering these questions will help us succeed in the institutional reform as well as make sure that perishing is not one of the choices we all have.

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# Academic Publishing at National Research Tomsk State University

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Like academics in leading universities around the country, scholars at TSU are facing the challenge of producing more publications in international journals indexed in Scopus and Web of Science. Although some of them have always published in such journals, especially in such fields as physics, now the scope of both subject areas and authors is expected to widen and to include social sciences and humanities, where the traditions of publishing in international journals have had less time to develop. Throughout the university, people who are extremely occupied with teaching, research, and administrative duties have been taking on a formidable new area of work — one that is at once so important and so complex, both because of the current environment around scholarly publishing and because of language.

#### **TSU Approach**

TSU's fundamental approach is based on a comprehensive strategy which addresses both the politics and practical realities of the current situation and provides a set of tools and resources to improve every employee's publication activity. The elements of our strategy include: