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## Russia's Academy of Sciences' Reform: Causes and Consequences for Russian Science

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Irina Dezhina

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## Executive Summary

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This paper analyzes the origins and causes of the radical reforms undertaken in Russia's academic sciences sector, which resulted in the fusion of three state academies in 2013. Numerous claims made by the Russian government and experts against the Russian Academy of Sciences (RAS) have created tension between RAS leadership and the Russian government over the last decade. The central aim of recent reforms appears to be the liquidation of the existing governance structure of fundamental sciences in Russia, with no clear strategy in place for the long-term development and improvement of the country's scientific output.

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# Introduction

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*“One must first start a serious fight. What to do next will be clear later on...”*

*(Vladimir Lenin, “On Our Revolution”, 1923, Complete Works, Vol. 45, p. 381)*

When discussing the development of Russian science, attentions most often turn to the Russian Academy of Sciences (RAS). Founded by Peter the Great in 1724 (at the time, it was called the Academy of Sciences and Arts), RAS is the oldest scientific institution in Russia. However, the Academy, whose heritage will be further discussed in this paper, underwent structural changes during the Soviet times, and since the collapse of the USSR, its status, organizational form and powers have been further altered several times. That said, in this paper, we consider the Academy of Sciences that has been in operation since the late 1990s a quasi-ministry that managed federal property and overseen a network of scientific organizations carrying out the bulk of fundamental research in the country.

In 2013, as a result of a hasty reform, the Academy ceased to exist in its historical form, having been stripped of most of its functions and privileges. The latest turn of events has brought renewed attention to Russia’s entire academic complex. This is due to the large-scale reform, which has not only changed the status of the state academies of sciences, but has also created a new federal agency whose function is to manage the Academy’s assets as well as develop criteria and procedures for assessing the output of scientific bodies.

The Russian scientific complex has undergone constant reforms, such as the privatization of former industry research institutes and the creation of new responsibilities for higher education institutions (e.g. strengthening collaboration with industry). Other regulations regarding intellectual copyright and mechanisms for funding research, among others, also are regularly revised. In this paper, we will limit the discussion to the reform history of the Academy of Sciences in the post-Soviet period.

In order to understand the changes in the academic sector and their potential consequences, this paper addresses two main questions:

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Translated from Russian by Katerina Pembroke.

- 1) The academic sector's place in the structure of the scientific complex of Russia and the reasons for prolonged confrontation between the Academy and the Ministry of Education and Science since mid-2000s.
- 2) The history of attempts to reform the academic sector over the last decade and the consequences of the destruction of the old organizational structure, brought about by the latest reforms, for the academic sector and sciences in general.



# Academic Sector and its Role in Russian Science

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The academic sector of Russian science includes six state science academies and their subsidiary institutes: RAS (Russian Academy of Sciences), RAMS (Russian Academy of Medical Sciences), RAAS (Russian Academy of Agricultural Sciences), RAE (Russian Academy of Education), RAA (Russian Academy of the Arts) and RAACS (Russian Academy of Architecture and Construction Sciences). The sector contains less than a quarter of all the Russian organizations involved in research and development (R&D) and a fifth of all the national researchers (see Table 1).

**Table 1. Key Data Points on the Academic Science Sector**

Data point	2000	2005	2011
Overall organizations involved in R&D	4099	3566	3682
Organizations in the academic sector	831	842	871
Academic sector's share, %	20,3	23,6	23,7
Researchers in Russian sciences (thousands of people)	426,0	391,1	374,8
Researchers in the academic sector (thousands of people)	88,3	83,7	74,8
Academic sector's share, %	19,5	21,4	20,0
Candidates of Sciences in the academic sector, out of the total number of Candidates of Sciences involved in R&D, %	41,6	45,4	40,7
Doctors of Sciences in the academic sector, out of the total number of Doctors of Sciences involved in R&D, %	56,6	58,8	52,4
Internal expenditure on R&D for 2000 (billions of rubles)	76,7	105,0	133,5
Internal expenditure on R&D for 2000 in the academic sector (billions of rubles)	9,1	14,8	19,0

Academic sector's share, %	11,9	14,1	14,2
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Sources: *Akademicheski sektor nauki v preddverii reform* [Academic Sector of Russian Sciences on the Eve of Reforms]. Statistical digest. Moscow: Institute for the Study of Science of RAS (ISS RAS), 2013, p. 13-14, 19, 23, 25-26. *Nauka, tehnologii i innovatsii v Rossii* [Science, Technology and Innovation in Russia]. Short statistical digest. Moscow, ISS RAS, 2013, p. 84, 86. *Indikator nauki* [Indicators of Science]. Statistical digest. Moscow, National Research University, Higher School of Economics, 2013, p. 253-254.

The academic sector is a part of the government sector of science. Other are—university sector represented by higher education institutes and business enterprise sector. The latter includes a substantial number of former industrial research organizations, state R&D companies, research institutes and construction bureaus of the defense sector. Table 2 shows comparative data on the sectors of science from 2012.

**Table 2. Comparison of the Main Sectors of Science in Russia (2012)**

	Academic	Higher Education	Business enterprise
Organizations involved in R&D	871	660	1362
Sector's share, %*	24,4	18,5	38,2
Researchers, in thousands of people	72,3	43,0**	192,3
Sector's share, %*	19,4	11,5	51,6
Internal expenditure on R&D, in billions of rubles	91,2	65,0	408,3
Sector's share, %*	13,0	9,3	58,3
Sector's share in the overall volume of fundamental research, %*	63,5	16,7	10,2

\* - the sum is not equal to 100%, because the data does not account for other organizations of the state sector, as well as non-governmental non-profit organizations.

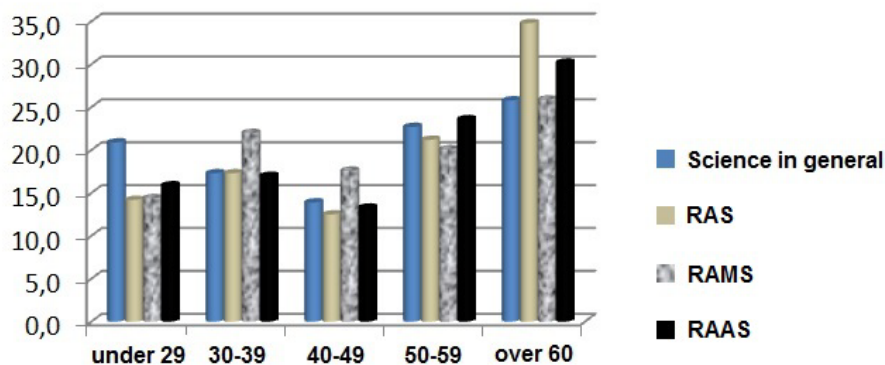
\*\* - in Russian statistics, professors and instructors who engage in R&D are not included in the higher education sector; rather the data reflects only those researchers who occupy research positions in relevant departments. In reality the number of people involved in R&D in higher education is significantly higher.

Source: *Nauka, tehnologii i innovatsii v Rossii* [Science, Technology and innovation in Russia]. Short statistical digest. Moscow: ISS RAS, 2013, p. 9, 34, 42, 44, 48.

According to the above data, Russia's academies employ a substantial fraction of the country's highly-educated workforce: over 40% of all candidates of sciences and over half of all doctors of sciences work for academic institutions. However, the age distribution of the academic sector is troublesome: higher than average numbers

of scientists over the age of sixty work in the sciences, especially under RAS and RAAS (Figure 1).

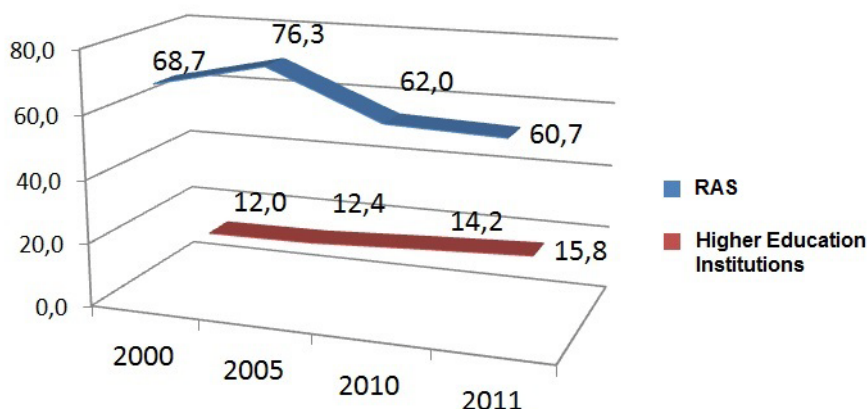
**Figure 1. Age of Researchers in RAS, RAMS, RAAS and Sciences overall (in %, according to data from 2011)**



Sources: *Akademicheski sektor nauki v preddverii reform* [Academic Sector of Russian Sciences on the Eve of Reforms]. Statistical digest. Moscow: Institute for the Study of Science of RAS (ISS RAS), 2013, p. 103; Science, Technology and Innovation in Russia. Short statistical digest. Moscow: ISS RAS, 2013, p. 20.

Research and development (R&D) projects in the academic sector take up a small portion of the internal state budget: according to the latest available data (from 2012), only 13% of the total number of R&D projects in Russia are funded internally, while the majority of work is supported by the private sector. Consequently, while government funding plays a significant role for supporting fundamental research in the academic sector, one cannot claim that the academic sector consumes enormous government resources. Funding for the Academy has been growing slower than for other sectors during the last several years. From 2002 to 2012, federal funding for research increased tenfold, while the federal funding for the Russian Academy of Sciences increased only fivefold. At the same time, the higher education science sector has enjoyed an increase in development allocations (Figure 2).

**Figure 2. Total National Spending on Fundamental Research at RAS and Institutions of Higher Education (%)**



Sources: *Akademicheski sektor nauki v preddverii reform* [Academic Sector of Russian Sciences on the Eve of Reforms]. Statistical digest. Moscow: Institute for the Study of Science of RAS (ISS RAS), 2013, p. 148. *Indikatory nauki* [Indicators of Science]. Statistical digest. Moscow: National Research University, Higher School of Economics, 2013, p. 101-102, 248.

This change reflects the government's policy from mid-2000s, which was aimed at providing stronger support for higher education. Selected universities started to receive significant additional federal funds to improve the quality of education and boost sciences. The stated by the government (albeit loosely defined) long-term goal was to develop the Anglo-Saxon model in Russia, which presupposes that the bulk of fundamental research is carried out by universities. At the same time, universities were to replace the practically defunct industrial science; that is, they had to put a stronger emphasis on applied R&D.<sup>1</sup>

While officially the goal of replacing academic scientific organizations with institutions of higher education was not expressed, such a scenario has been discussed frequently. At the moment, such a scenario remains unrealistic, as Russian universities still lag significantly behind the RAS institutes both in terms of resources and research outputs. Less than 20% of professors and instructors are involved in scientific research.<sup>2</sup> Therefore, development of Russia's

<sup>1</sup> For further information see: I. Dezhina, "Sostoyanie nauki i innovatsij" [The Current State of Sciences and Innovations], *Rossiskaya ekonomika v 2011 godu. Tendentsyi i perspektivy* [Russian Economics in 2011. Trends and Perspectives], Vol. 33, Moscow: Gaidar Institute, 2012, p. 394-397; I. Dezhina, "Sostoyanie nauki i innovatsij" [The Current State of Sciences and Innovations], *Rossiskaya ekonomika v 2012 godu. Tendentsyi i perspektivy* [Russian Economics in 2012. Trends and Perspectives], Vol. 34, Moscow: Gaidar Institute, 2013, p. 406-410.

<sup>2</sup> G. Andruschak and M. Yudkevich, "Vyschee obrazovanie v Rossii: zarabotnaya plata i kontrakty" [Higher Education in Russia: Salary and Contracts], *Kak platyat professoram. Global'noye sraveniye system voznagrashdeniya i kontraktov* [How Professors Get Paid. Global Comparison of Payment and Contract Systems], Ed.

universities into competitive scientific institutions will require not only substantial funding, but more importantly a long-term strategy for reforming the entire university and scientific research system.

RAS, RAMS and RAAS are the three largest academic institutions. In 2011 they accounted for the bulk of research organizations (96.6%), researchers (98%) and funding (97.9%) of the entire academic sector. In 2012, RAS was represented by 436 scientific organizations that have received 64.4 billion rubles from the state, which accounted for 65% of the total budget of the Academy.<sup>3</sup> The RAS workforce included 48.4 thousand scientists with the average age of 51.9 years; the latter figure has been steadily increasing over last decade.

Internationally, RAS is often compared to the French National Centre for Scientific Research (CNRS)<sup>4</sup> and the German Max Planck Society (MPS).<sup>5</sup> RAS is closest to the MPS in terms of total funding; however, its funding per scientist is half the size of that at the MPS. Consequently, Russian academics have a smaller publication record: According to 2009 data, a Russian scientist averaged 1.43 publications compared to 9.17 produced by a German scientist. That said, the gap in citations for Max Planck scholars was smaller (11.97 citations versus 2.66 citations for RAS).<sup>6</sup> RAS also compares unfavorably to CNRS, where the averages were 10.11 (number of publications) and 7.42 (citations). However, comparison between RAS and CNRS is not methodologically correct, as CNRS no longer has many Academy-like institutes; most of them are partnerships with universities.

Comparison of funding and publication activity has to be considered with caution, because these data are approximate. While the numbers on citations may be not exact and somewhat biased,

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F. Altbach, L. Reisberg, M. Yudkevich, G. Andruschak, I. Pacheko, Moscow: Higher School of Economics Publishing House, p. 295.

<sup>3</sup> *Akademicheski sektor v preddveriyi reform* [Academic Sector of Russian Sciences on the Eve of Reforms], Statistical digest, Moscow: Institute for the Study of Science of RAS (ISS RAS), 2013, p. 225, 229, 238, 239.

<sup>4</sup> CNRS was created using the USSR Academy of Sciences as a model and has since then significantly evolved. According to 2012 data, CNRS had over a thousand scientific divisions, employed approximately 25.3 thousand people, 11.3 thousand of which were scientists. The budget of CNRS for that year was 3.1 billion euro, including 802 million earned by CNRS on its own. "A Year at CNRS 2012" Activity Report, Paris, 2013, p. 2-3, <[www.cnrs.fr/en/science-news/docs/RA2012\\_en/index.html#/1/](http://www.cnrs.fr/en/science-news/docs/RA2012_en/index.html#/1/)>.

<sup>5</sup> The Max Planck Society includes 80 institutes and research divisions. In 2011 21.5 thousand people worked for the Society, out of which 16.9 thousand were employees and 4.6 thousand were scholarship recipients and guest researchers. Ninety-five percent of the budget of the Max Planck Society comes from the state funds (in equal shares from the Federal Government and states of Germany). The rest of the budget comes from membership fees, donations and the Society's income. Yearly budget of the Society is 1.4 billion euro. Pakt für Forschung und Innovation. Monitoring Bericht 2011, Gemeinsame Wissenschaftskonferenz.

<sup>6</sup> Q. Schiermeier, "Russia to Boost University Science," *Nature*, n. 464 (1257), 2010, <[www.nature.com/news/2010/100427/full/4641257a.html](http://www.nature.com/news/2010/100427/full/4641257a.html)>.

they still represent the trends. At the same time there is no direct correlation between the amount of funding and scientific output which is proved by long-term statistical trends for different countries. Nonetheless such comparisons have become popular in the mass media and scientific discussions in Russia, taking on definite political overtones. Currently, they serve as a proof for both sides of the discussion: they demonstrate the inefficiency of the Academy while at the same time substantiate the claims that the lack of scientific output from the Academy can be explained by lack of proper funding.

A study of general trends in the development of publishing activity and quality of published materials can provide more revealing results. Russia has low numbers to show for both of these indicators and, except for citations per article, the numbers have been decreasing (Table 3).

**Table 3. Russia's Share in International Publications**

<b>Indicators</b>	<b>2000</b>	<b>2005</b>	<b>2011</b>
Russian publications, out of the total number of publications in the world according to the Web of Science database, %	2,42*/3,49**	1,89/2,66	1,7/2,25
Russian publications, out of the total number of publications in the world according to the Scopus database, %	2,52*/2,57**	2,01/2,13	1,69/1,71
Citations per publication according to the InCites database for respective years, (average)	<b>1996-2000</b>	<b>2001-2005</b>	<b>2007-2011</b>
	1,63	2,24	2,66

\*- data from the National Research University, Higher School of Economics.

\*\*- data from the Institute for the Study of Science of RAS.

Sources: *Nauka, tehnologii i innovatsii* [Science, technology and innovation in Russia]. Short statistical digest. Moscow: ISS RAS, 2013, p. 84, 86. *Indikator nauki* [Indicators of science]. Statistical digest. Moscow: National Research University, Higher School of Economics, 2013, p. 253-254.

These negative tendencies are often seen as related to the low productivity of the academic scientific workers. However, the universities also show low publishing activity and citations despite substantial increase in funding for the last 8 years.

# **Confrontation between the Academy and the Government, From Mid-2000s Onwards**

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## ***What Accusations Were Brought Against the Academy of Sciences?***

Over a period of several years, researchers, state representatives and mass media in Russia discussed the issue of RAS reform. There were two main claims brought against the Academy.

First, there was their low productivity in research. However, just counting the number of publications and citations fails to give us the full picture.

Second, there was a lack of transparency at RAS with regard to making decisions and distributing state funds among various institutions. The issue was aggravated by the very structure of RAS. The decision-making process was closed. Besides there was an obvious conflict of interests, as people in charge of the Academy and the distribution of resources among subsidiary institutes were at the same time heads of these institutes. One can hardly claim, however, that other science sectors in Russia boast a higher level of transparency.

According to critics, the issue of transparency was also related to inefficient management of the state property, which included failures to keep a proper inventory of federal assets, given that the RAS Agency of Property Management started this inventory only in 1999. However, this issue hardly called for the radical measures taken by the government because it could have been solved by simply revoking the Academy's oversight of specific property matters.

Other, lesser criticisms were voiced, such as the lack of the Academy's interaction with universities—a claim that did not hold water due to a strong partnership between the two scientific sectors that existed in reality. Moreover, the percentage of scientists employed by the academic institutions and involved in teaching at universities was twice that of the university professors and instructors involved in research.

Finally, critics pointed out the lack of focus on practical goals and low innovation output from the RAS institutes. Indeed, during the Soviet era, RAS participated in developing large defense projects, such as space and nuclear projects, and was involved in solving strategic tasks. After the collapse of the Soviet Union, the government stopped tasking RAS with projects of such scale. At the same time, the government drastically decreased the amount of funding available to sciences. Fundamental research was perceived as a superfluous luxury at the time of weak economy, and it was often argued that research projects must have practical applications as their end result. RAS was associated, quite rightly, with fundamental science, which largely lost public interest and respect. Considering that the Academy could not correctly position itself and prove its usefulness to the nation and at the same time suffered from a drop in funding, it is no wonder that RAS became a symbol of the low productivity of Russian sciences.

For a long time there was no clear and factually supported list of perceived problems with RAS. In 2005, the first serious sociological study of science in the academic sector was requested by the State Center for Strategic Development. The study demonstrated that only 22-25% of scientists employed by the academic institutes were motivated to work and produce results. Approximately 16-18% more gravitated towards this group.<sup>7</sup> Thus, the study claimed that only 40% of the Academy employees represented its active potential. At about the same time, the Siberian branch of RAS has started studying the publication activity of their employees. Their data showed that 20-25% of its scientists have not produced a single publication in the last three years.<sup>8</sup> These findings gave reasons to accuse the Academy of inferior efficiency, productivity, and inadequate workforce.

From that point on, a certain dynamic ensued with accusations being levied against the Academy and the Academy responding defensively, stating that all is done correctly. This response demonstrated a systemic problem. Instead of defending themselves, a better strategy would have been to demonstrate the academics' best achievements in a form comprehensible to both the state officials and the public. There were significant successes to demonstrate; for instance, the high quality training of Candidates and Doctors of

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<sup>7</sup> This research was criticized by the Academy as unscientific, politically biased, and carried out using an unrepresentative sample. This criticism of methodology was partially justified. At the same time, the Academy for the most part picked an issue with the radical nature of suggestions to reduce the size of RAS rather than the nature of the presented data. See: S. Belanovsky, *Otsenka sostoyaniya Rossiyskoy Akademii Nauk. Kratki otchyot* [Assessment of the State of the Russian Academy of Sciences. Brief Report], *Polit.ru*, 15 December 2005, <[www.polit.ru/dossie/2005/12/15/ran.html](http://www.polit.ru/dossie/2005/12/15/ran.html)>.

<sup>8</sup> I. Dezhina, "Sostoyanie sfery issledovaniy i razrabotok" [The Current State of the Sciences and Innovations Sphere], *Rossiskaya ekonomika v 2005 godu. Tendentsyi i perspektivy* [Russian Economics in 2005. Trends and Perspectives], Vol. 27, Moscow: Institute for the Economy in Transition, 2006, p. 307.



Science. Moreover, the Academy was better entangled with the international scientific community than other science sectors. Several academic institutions and research groups could boast a fairly high level of achievement and prestige on the international arena. Neither the higher education institutions, nor the entrepreneurial section could have competed with RAS in this respect.

Instead, since mid-2000s discussion of RAS was emotionally charged, relying on stereotypes rather than facts. Debates concerned various aspects of the Academy, starting with interpretations of circumstances of its founding (“ministry of science” versus “club of scientists”) and ending with the nuances of its current work and several serious scandals.<sup>9</sup> This emotional attitude towards RAS gave way to many speculative articles and rumors, unsupported by facts. One of the prevalent theories contended that certain influential people in the government had personal vendettas against the Academy<sup>10</sup> and that the reform was initiated with the sole purpose of nationalizing its property. This unsubstantiated claim found its supporters in Russian mass media and among the academics. However, at present, the key motives that instigated the 2013 reform still remain unclear.

## ***Can the Academics Reform the Academy?***

The academics themselves have been discussing the need for a reform. Many specifically referred to a serious problem of age distribution among the academics and corresponding members. In 2012 R. Nigmatulin cited the data that showed that only 146 out of 526 academics are younger than 70 years old, while only 415 out of 759 corresponding members are younger than 70 years old.<sup>11</sup> Such demographics can lead to conservatism, which might have some positive influence on science under certain conditions, but it does put serious obstacles in the way of reform.

Overall, the academics did not propose any radical reform solutions. For instance, R. Nigmatulin brought attention to the idea of further democratizing the election process for academics and

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<sup>9</sup> One of the most famous scandals erupted in response to V. Petrik’s pseudoscientific project for production of water filters, approved by the heads of the Academy. See: <[http://ru.wikipedia.org/wiki/Петрик,\\_Виктор\\_Иванович](http://ru.wikipedia.org/wiki/Петрик,_Виктор_Иванович)>.

<sup>10</sup> For instance, V. Fortov, the President of the Academy, mentioned the destructive influence of “biased bureaucrats” in his interview to *Science* magazine. See: R. Stone, “Embattled President Seeks New Path for Russian Academy,” *Science*, 11 February 2014. <<http://news.sciencemag.org/people-events/2014/02/embattled-president-seeks-new-path-russian-academy?rss=1>>.

<sup>11</sup> A. Vaganov, “Reforma RAN – rukami samih uchenyh” [RAS Reform Led by RAS Scientists], *Nezavisimaya Gazeta*, 12 December 2012, <[www.ng.ru/nauka/2012-12-12/10\\_reform\\_ran.html](http://www.ng.ru/nauka/2012-12-12/10_reform_ran.html)>.

corresponding members by expanding the representation of Doctors of Sciences in RAS.<sup>12</sup> Another academic, G. Georgiev, thought that “reforming RAS is a simple task”<sup>13</sup> and suggested tackling the Academy’s problems by increasing the share of competitive funding within the Academy (up to 25% of the total distributed funds in 2012<sup>14</sup>) based on a clear set of criteria, easily accessible online. A. Nekipelov also addressed the workforce issue and believed that regular rotation of administrative personnel was necessary.<sup>15</sup> He suggested making the process of planning and reporting more competitive by clearly stating goals and comparing the received results with the world science achievements, while insuring rotation by setting a quota for the prospective Doctors of Sciences at all levels of the RAS administration.<sup>16</sup>

Structural changes in the administration of RAS were certainly needed. The Academy’s issues have been under discussions and were supported by extensive studies from historians of science.<sup>17</sup> During the period of widespread changes that followed the collapse of the USSR, the Academy retained its shape regarding the main principles of its operations. Time showed that the Academy was a very conservative structure, rejecting serious compromises. This lack of flexibility and its inability to initiate and implement a timely internal reform led to its eventual demise.

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<sup>12</sup> *Ibid.*

<sup>13</sup> G. Georgiev, “Reforma RAN – eto neslozhno” [RAS Reform is Easy], *Gazeta.ru*, 28 May 2010, <[www.gazeta.ru/science/2010/05/28\\_a\\_3375847.shtml](http://www.gazeta.ru/science/2010/05/28_a_3375847.shtml)>.

<sup>14</sup> 10% in 2010.

<sup>15</sup> N. Bykova, “Akademik Nekipelov: RAN nuzhna rotaciya upravlenheskih kadrov” [Academic Nekipelov: RAS Needs Rotation of Management Personnel], *Nauka i tehnologii RF* [Science and Technology of Russian Federation (S&TRF)], 19 April 2013, <[www.strf.ru/material.aspx?CatalogId=221&d\\_no=53886#.Uu5hxvtqNtw](http://www.strf.ru/material.aspx?CatalogId=221&d_no=53886#.Uu5hxvtqNtw)>.

<sup>16</sup> State academies had health clinics, kindergartens, houses of scientists and hotels on its balance sheet. They were funded through a separate line of spending in the federal budget.

<sup>17</sup> See, for instance: L. Graham, *What Have We Learned about Science and Technology from the Russian Experience?* Stanford, California: Stanford University Press, 1998, p. 82-96.

# Attempts to Reform the Academic Complex

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## *A Decade of Unsuccessful Attempts*

The first attempts to restructure the network of academic institutions affiliated with RAS, but not RAS itself, happened in early 2000s. The Ministry of Industry, Science and Technology developed a plan for reforming the network of scientific organizations, including the system of the state academies of sciences.

The following were the principal ideas at the core of this attempt to restructure the academic sector of science.<sup>18</sup>

1. Academic organizations that handle R&D at a high level must continue to be funded by the state.
2. Less successful academic organizations will need to be reoriented to providing information services to the scientific community.
3. Some of the academic organizations can become commercial, while remaining a part of the Academy system.

The restructuring process was supposed to take place gradually. However, negotiations dragged on and the existing organizational structure eventually remained intact.

The next stage started in 2005, when the Ministry of Education and Science and the RAS executives developed the Program for Modernization of the Structure, Functions and Funding Mechanisms of RAS and Other Academies. This document mentioned the necessity of ranking academic scientific organizations based on a set of quantifiers, supporting the best institutes through additional state funding, and creating a management system for property not used in scientific work.

Despite the effort, this led only to clarification of the regulatory status and functions of the state academies. Their status became “state non-profit organizations” and it changed the approval

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<sup>18</sup> I. Dezhina, *Gosudarstvennoye regulirovanie nauki v Rossii* [Government Regulation of Science in Russia], Moscow, Magistr, 2008, p. 153-155.

procedures for the President of the Academy and its constitution. The constitution now had to be approved by the government upon submission by the general assembly of RAS. The President of RAS was still elected by the General Assembly of the Academy members, with a final approval granted by the President of the Russian Federation. This allowed for a stronger government control over the Academy, although even under former rules the President of Russia was still consulted regarding key positions in the Academy. The regulation of funding and property has remained unchanged. The state academies also retained the right to independently determine the number of employees, the system of payments for services in their subsidiary organizations, and the principal categories of spending.

The new RAS constitution was discussed again in 2007. The Project of Model Constitution of the State Academy of Sciences appeared at this time, the authorship of which has still not been determined. The “anonymous” drafting of reform plans for RAS started at this time and has resurfaced again during the last reform of 2013. One item of the Model Constitution received particular attention: the proposal to integrate a new Supervising Committee into the management structure of RAS that would include three Academy representatives, three government representatives and one representative each from the State Duma, the Federation Council and the President’s Executive Office. The committee would handle the management responsibilities for the funding and property of the Academy.

The Model Constitution was not sufficiently elaborated, which allowed the Academy to insist on an alternative project, approved later by the government.<sup>19</sup> The new Constitution allowed the Academy to expand its authorities in managing their funds and property. RAS became a full member of the budget planning and was effectively given the status of a federal agency. Academic structures were also granted the right to serve as founders of other organizations.<sup>20</sup>

The next reform attempts started in 2012, with the coming of a new government. The Minister of Education and Science Dmitri Livanov, in his very first interview since taking the post, practically announced a reform of the entire science sector. The first stage of it would be thoroughly evaluating the work of scientific and higher education organizations.<sup>21</sup>

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<sup>19</sup> “On Russian Academy of Sciences” Order of the Government of Russia, No. 785, 19 November 2007.

<sup>20</sup> I. Dezhina, “Sfera nauki i innovatsij” [Sciences and Innovations Sphere], *Rossijskaya ekonomika v 2007 godu. Tendentsii i perspektivy*. [Russian Economy in 2007. Trends and Perspectives], Vol. 29, Moscow: Institute for the Economy in Transition, 2008, p. 449-452.

<sup>21</sup> Interview with Dmitri Livanov, Minister of Education and Science, *Umnaya Shkola*, 29 May 2012, <<http://умная-школа.пф/блог/315/n1238/>>.

D. Livanov suggested a RAS reform when he was still a Vice-Minister of Science from 2005 to 2007. However, at that time he believed that he “was the sole person interested in the idea.”<sup>22</sup> When we look back at the history of reform attempts, we see that it was during those years that attempts were made to reform RAS through changing its constitution and regulations. However, these efforts were not radical enough and the authority of the RAS executives and their connections to the highest executive positions in the government were still too strong. The Academy of Sciences managed to survive without undergoing serious internal changes.

The debates surrounding RAS intensified after RAS measured the performance of its institutes in 2012 using a method that included 130 criteria, such as involvement in international partnerships, research results, commercial potential of R&D output, and availability of resources. According to this study, 290 out of 297 institutes were considered efficient.<sup>23</sup> Such a conclusion can be interpreted in several ways: as a sign of the impracticality of using exclusively numerical criteria; as a sign of inadequacy of these criteria<sup>24</sup>, or as a real improvement of the Academy’s performance. However overall low performance of Academy conflicts with the results of the study.

The history of the reform attempts suggests that the government planned these reforms without thorough consultations with RAS and that the suggested approaches and methods were not properly developed. This fact allowed the Academy the opportunity to criticize the inadequacies of the reform proposals, thus preventing any possibility of radical changes.

The events of 2013 demonstrated that such radical changes could happen overnight: three state academies were practically shut down, despite the ill-conceived reform plans and the resistance from the Academy and its supporters. Thus, the presence of a strong political will at the highest levels<sup>25</sup> proved to be far more critical than the quality of the regular science policy.

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<sup>22</sup> “Glava Minobrnauki Dmitri Livanov rasskazal o planah vedomstva” [Dmitri Livanov, Head of Ministry of Education and Science, Discusses Plans], *Kommersant*, 10 February 2014, <[www.kommersant.ru/doc/2404422](http://www.kommersant.ru/doc/2404422)>.

<sup>23</sup> N. Bykova, “RAN otsenila effektivnost’ svoih institutov” [RAS Assessed Efficiency of Their Institutes], *Nauka i Obrazovaniye RF* [Science and Technology of Russian Federation (S&TRF)], 18 January 2013, <[www.strf.ru/material.aspx?CatalogId=221&d\\_no=51562](http://www.strf.ru/material.aspx?CatalogId=221&d_no=51562)>.

<sup>24</sup> I. Dezhina, “Sostoyanie nauki i innovatsij” [The Current State of Sciences and Innovations], *Rossiskaya ekonomika v 2012 godu. Tendentsyi i perspektivy* [Russian Economics in 2012. Trends and Perspectives], Vol. 34, Moscow: Gaidar Institute, 2013, p. 405-406.

<sup>25</sup> D. Livanov, Minister of Science, confessed that the radical reform became possible when a new Agency for Policy on Science and Education was added to the President’s Executive Office in June 2012 (<<http://state.kremlin.ru/face/15756>>). It was headed by Andrei Fursenko, Aide to the President and former Minister of Science. «We compared our opinions and realized that we knew what to do and how to do it fast.» *Kommersant*, 10 February 2014, Op. cit. [24].

## **The Nature of the 2013 Reform**

The process of reforming the academic complex, including the merger of RAS, the Russian Academy of Medical Sciences (RAMS) and the Russian Academy of Agricultural Sciences (RAAS), started in 2013 with the concurrent closing of their subsidiary science institutes and creation of a new federal agency for managing the property of the three academies.

Bill N305828-6, “On the Russian Academy of Sciences, reorganization of the state academies of sciences and introducing changes in legislation of the Russian Federation,” appeared seemingly out of nowhere. The State Duma introduced it in violation of the current legislation, according to which a public debate must first be held. The news came as a surprise to even the Academy executives and consolidated the previously disjointed scientific community, resulting in a series of protests against the RAS reform. The scientists’ principal argument was that the reformers have only considered the Academy as an institution, and not the science institutes and the people who worked for them. In response to the bill, the Commission of Public Oversight Over the Academy of Sciences Reform was created in October. It included ten public scientific and educational organizations.<sup>26</sup> Consequently, the government actions served as a catalyst for strengthening the idea of civil society among scientists. This effect could be counted as one of the few positive effects of the poorly planned reform.

The Ministry of Education and Science denied authorship of the bill; however, if we closely follow the logic of the events, it becomes clear that the ministry was, if not the main proponent of the bill, but definitely one of the visionaries behind the proposed plan of the reform. D. Livanov, the Minister of Education and Science, made repeated remarks that revealed his interest in instigating the reform. For instance, in March 2013, he said that the academic form of organizing science had no perspectives in the twenty-first century, that it needed to be changed, and that he would do everything he could to make the change.<sup>27</sup>

The top government officials’ position on the matter looked less consistent against the backdrop of the unfolding events. It seemed that the President of the nation did not support radical measures in regards to RAS. In April 2013 he confirmed the necessity

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<sup>26</sup> “Uchenye sozdali Kommissiyu obshchestvennogo kontrolya za reformoj Akademii Nauk” [Scientists Created Commission of Public Oversight Over the Academy of Sciences Reform], *Polit.ru*, 8 October 2013, <[www.polit.ru/news/2013/10/08/public\\_control\\_in\\_science](http://www.polit.ru/news/2013/10/08/public_control_in_science)>.

<sup>27</sup> Yu. Medvedev, “Dmitri Livanov schitaet, chto RAN besperspektivna” [Dmitri Livanov Believes that RAS Has No Future], *Rossiyskaya Gazeta*, 24 March 2013, <[www.rg.ru/2013/03/24/livanov-site-anons.html](http://www.rg.ru/2013/03/24/livanov-site-anons.html)>.

of further developing “this highly important for us structure, the Academy of Sciences” at a meeting with Yu. Osipov, the President of RAS.<sup>28</sup> Meanwhile D. Medvedev, Head of the Government, said in August 2012 that “the reform of the academy is, in my most sincere belief, the business of the Academy of Sciences itself rather than the government.”<sup>29</sup> Such statements gave reasons to believe that the process was reversible just like it was before. However, it turned out to be a false impression.

Even following two readings in the State Duma, the project retained its carelessness towards details and contained loosely stated regulations that could be misinterpreted, such as those regarding the legal status and subordination of the regional branches of RAS. It remained unclear whom the institutes of the regional branches of RAS would report to and whether the new bill concerns branches or scientific centers of RAS. The executives of RAS suggested five principal amendments, which demonstrated how radical were the reforms outlined in the bill:

- 1) Instead of closing RAS, reorganize it by merging with RAMS and RAAS.
- 2) State the principal goal of RAS as implementation of fundamental and applied research.
- 3) Split the responsibilities between RAS and the new agency (later named the Federal Agency for Scientific Organizations or FASO) so that FASO would be responsible only for managing the RAS property.
- 4) Reinstate the legal entity status to the existing three regional branches of RAS in the Urals, Siberia and the Far East.
- 5) Create a two-step system of titles for corresponding members and academics and retain the right of RAS to decide when and how to elect new members of RAS.

Over the course of three readings, the top management of RAS passed most of the amendments; however, the Academy lost their most important battle, namely the network of subsidiary science institutes, along with the rights to manage the property of the Academy.

The bill was passed on September 27, 2013<sup>30</sup>, followed by the President’s order “On the Federal Agency for Scientific

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<sup>28</sup> Meeting between V. Putin and Yuri Osipov, President of the Russian Academy of Sciences, 16 April 2013, <<http://kremlin.ru/news/17908>>.

<sup>29</sup> A. Chernykh, “RAN prodemonstirovala akademicheskuyu uspevaemost” [RAS Demonstrated Academic Achievement], *Kommersant*, 21 August 2012, <[www.kommersant.ru/doc/2005518](http://www.kommersant.ru/doc/2005518)>.

<sup>30</sup> Federal Law No. 253-F3, 27 September 2013, “On the Russian Academy of Sciences, Reorganizing State Academies of Science and Making Amendments to Certain Legislative Acts of the Russian Federation,” <<http://graph.document.kremlin.ru/page.aspx?1;3586986>>.

Organizations.”<sup>31</sup> The process of defining the functions and responsibilities of FASO started only afterwards. Their scope was significantly expanded in comparison with the original plans. The order of the Russian government “On Federal Agency for Scientific Organizations” was signed on October 25, 2013 (No. 950) and states that no goals or tasks have been decided on for the new agency. However, all the key issues regarding the funding and property of the institutes, the social services, equipment and expendable purchases fall under its jurisdiction. Suggestions from RAS will be considered, but only in two cases: when developing plans for fundamental and exploratory research and during the approval process for development programs of scientific organizations under the Agency’s supervision and state-proposed tasks on fundamental and exploratory research.

Consequently, while the task of planning scientific projects was only partially transferred to FASO, the role of RAS became secondary. At the same time, RAS was involved in negotiations to retain a group of institutes with a broad specialization<sup>32</sup>, including several museums and archives. Despite their efforts, all the organizations of state academies, from scientific institutes to subsidiary clinics and kindergartens, were included in the list of 1007 organizations transferred to FASO.<sup>33</sup>

The resulting reforms have indeed eliminated the conflicts of interests for RAS, which had the power to both distribute and spend resources. However, the cost of this particular approach to reform has not yet been determined<sup>34</sup>, and the consequences of closing RAS have not been calculated in any of the long-termed development forecasts. The situation remains unpredictable. For instance, the Charter of the new united RAS, as approved by the General Assembly of the Academy on March 27, 2014, contains vaguely defined terms in the section dealing with its interactions with FASO and participation in the operations of its former academic institutes. Work is expected to continue on amending the approved Charter, while for now it was approved in order to allow the new RAS to finish

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<sup>31</sup> Executive Order of the President of Russian Federation, 27 September 2013, No. 735, “On Federal Agency for Scientific Organizations,” <<http://graph.document.kremlin.ru/page.aspx?1;3587023>>.

<sup>32</sup> V. Vlasov, “Sluhi o katastrofe nauki prezhdevremenny” [Rumors of Catastrophe in the Sciences are Premature], *Polit.ru*, 24 December 2013, <<http://polit.ru/article/2013/12/24/vlasov/>>.

<sup>33</sup> Order of Prime Minister of Russia, No. 2591-r, 30 December 2013, “On Approval of “The List of Organizations in the Jurisdiction of the Federal Agency for Scientific Organizations,”” <<http://government.ru/media/files/41d4b2ee4aa4fdc62ccb.pdf>>.

<sup>34</sup> According to V. Fortov, President of RAS, the reform of RAS cost 60-70 billion rubles, which is approximately equal to the budget of the entire Academy for 2013. Source: “Reforma RAN budet stoit’ gosudarstvu 70 milliardov rublej” [Reform of RAS Will Cost 70 Billion Rubles], *Gazeta.ru*, 1 October 2013, <[www.gazeta.ru/science/news/2013/10/01/n\\_3222769.shtml](http://www.gazeta.ru/science/news/2013/10/01/n_3222769.shtml)>.



its organizational restructuring.<sup>35</sup> There is a chance that the executive leadership of the former academic institutes will also change in the future. According to one of the Presidential orders issued after a meeting of the Council of Science and Education, the same age restrictions may be applied to the executives of scientific organizations as to the university deans.<sup>36</sup> For instance, a university dean must now leave the post at the age of 65; yet, many current heads of the academic institutions are older than this age.

The lack of proper consideration in executing the reform quickly became evident. On October 31, 2013, Vladimir Putin declared a one-year moratorium on property deals and personnel changes in the academic complex, an act that was later recorded in the list of his orders.<sup>37</sup> This appears to be a realistic timeframe for working out the steps necessary for proper future functioning of institutes that used to be managed by RAS, RAMS and RAAS.

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<sup>35</sup> "Rossijskaya Akademiya nauk prinyala novy ustav" [Russian Academy of Sciences Adopted a New Constitution], *ITAR-TASS*, 27 March 2014, < <http://itar-tass.com/nauka/1078430>>.

<sup>36</sup> "List of Assignments Following the Meeting with the Council of Science and Education," 15 January 2014, Assignment 1, Part B, <[www.kremlin.ru/assignments/20065](http://www.kremlin.ru/assignments/20065)>.

<sup>37</sup> "List of Assignments Following the Meeting with the Council of Science and Education," 15 January 2014, Assignment 1, <[www.kremlin.ru/assignments/20065](http://www.kremlin.ru/assignments/20065)>.

# Life after the Reforms

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## *Consequences for the Academic Sector*

Although logically a performance assessment of organizations should be conducted prior to developing a reform plan, Russian authorities developed criteria for evaluating organizations, including academic ones, only as the Academy was already being dismantled. In November 2013, a government order introduced changes to the performance assessment of scientific organizations,<sup>38</sup> according to which the method for assessing the work and output of these institutions was defined as follows:

- 1) Non-departmental in nature; an interdepartmental commission will be created to assess the performance of scientific organizations, and it will handle a number of tasks, including defining minimal requirements for various evaluation rubrics.
- 2) Grouping of scientific organizations into reference groups regardless of their departmental affiliations, taking into account their areas of scientific knowledge and types of research.
- 3) Adoption of measurements commonly used for evaluating the performance of scientific organizations in economically developed nations.

The last two aspects were insufficiently developed, as it seems that the measurements would be almost exclusively quantitative. A combination of 6-7 weighted criteria was to be defined for each reference group, depending on the profile of institutions. Deviation from final results would automatically place institutions in groups of efficient and productive leaders or in a group of institutes that have lost their scientific potential. A danger could come from the stipulation that the number of winners must not exceed one third of all the participants in the corresponding reference group. If, for example, a particular reference group happened to include many strong

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<sup>38</sup> Order of the Government of Russian Federation, 1 November 2013, No. 979, "On Making Changes to the Order of the Government from 8 April 2009, No. 312," [www.ras.ru/news/shownews.aspx?id=613a30f8-1475-4d9a-a6a3-75df1501be7a](http://www.ras.ru/news/shownews.aspx?id=613a30f8-1475-4d9a-a6a3-75df1501be7a).

institutes, part of them would nonetheless have to be considered weak.<sup>39</sup>

By the end of 2013, the Ministry of Education and Science presented a list of 25 evaluation criteria, divided into four main groups. The output efficiency and demand of scientific research were to be measured mostly on the basis of bibliometric data, as well as statistics on patents, the number of newly founded small enterprises and the size of raised funds. Professional workforce development was viewed narrowly, mainly in terms of the number of graduating Candidates and Doctors of Sciences, as well as the number of people who completed internships. Integration in the international community was also to be measured bibliometrically, this time using data on international co-authorships. This group also included some criteria that prompted lively discussions in the scientific community, specifically “the number of positive or neutral mentions in the mass media” and “the number of visitors to the official web pages of the organization according to Yandex and Mail.ru search engines.”<sup>40</sup> Clearly, such criteria could significantly misrepresent the true state of affairs. The last group of criteria was traditional and included standard data on finances, personnel, age distribution of employees, levels of pay, etc.

The evaluation system proposed by the Ministry of Education and Science is interesting in that it mostly relies on bibliometric measurements, limitations of which are well known. Moreover, the use of bibliometrics for measuring efficiency is increasingly contested even at the international level.<sup>41</sup> In reality, it is not necessarily the strongest work that attracts the most attention, but the ones written on fashionable topics. Moreover, journals have begun to artificially inflate the number of times an article is cited in order to raise their impact factor.<sup>42</sup>

Consequently, the evaluation system has not yet reached the testing phase and it does not reflect the idea that the most objective assessment is reached through a combination of quantitative approach and expert opinions. The importance of scientific

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<sup>39</sup> RAS Trade Union's Message to V. Putin “O neobhodimosti vneseniya izmenenij v poyadok otsenki resul'tativnosti deyatel'nosti nauchnyh organizatsij” [On the Necessity of Making Changes to the Assessment Criteria for Determining the Efficiency of Scientific Organizations], 11 January 2014, <[www.ras.ru/news/shownews.aspx?id=fa8cc4f7-0177-47f3-813e-74bcc9857751#content](http://www.ras.ru/news/shownews.aspx?id=fa8cc4f7-0177-47f3-813e-74bcc9857751#content)>

<sup>40</sup> N. Bykova, “Nauku otsenyat po 25 kriteriyam” [Science to Be Evaluated According to 25 Criteria], *Nauka i tehnologii v RF* [Science and Technology in Russian Federation (S&TRF)], 6 December 2013, <[www.strf.ru/material.aspx?CatalogId=221&d\\_no=72319#.Ur6klrSBY3I](http://www.strf.ru/material.aspx?CatalogId=221&d_no=72319#.Ur6klrSBY3I)>

<sup>41</sup> B. Albers, “Impact Factor Distortions,” *Science*, Vol. 30, 17 May 2013, p. 787.

<sup>42</sup> The biggest scandal of last year was the exclusion of 66 scientific journals from the ThomsonReuters ratings for artificially inflating their citation counts. See, for example: S. Belyaeva, “Impakt – ne fakt? Nauchnye zhurnaly zapodozrili v nechistoplotnosti” [Impact May Not Be a Fact? Scientific Journals Are Suspected of Cheating], *Poisk*, Vol. 26, 28 June 2013, <[www.poisknews.ru/theme/science/6447/](http://www.poisknews.ru/theme/science/6447/)>.

achievements cannot always be expressed quantitatively, especially when terms like “economic efficiency” are used.

## **Consequences for Science in Russia**

The government’s approach to the reform of the academic complex may not seem so surprising if viewed through the lens of previous reform attempts. The Academy was not capable of implementing reforms on its own, and all the previous outside reform attempts were defeated. These two factors led to the radical reform where the plan was developed in the atmosphere of absolute secrecy and its authors have not even been named. So far, no one has assumed the responsibility for the approach that was taken. Consequently, there will be no one to blame in case this “operation” fails.

Discussions and amendments have not preceded actions, proper financial restructuring of RAS institutes was never done, and the questions of future organization of scientific work of institutes and groups were practically never discussed. These facts suggest that the main goal of the reforms was not to create a new system that would support promising scientific research, but rather to destroy the existing system.

It is not obvious why such a radical approach was needed. Other “softer” methods of reforms were possible, such as changing the way scientific work was funded and organized. This includes measures to assure rotation among top management posts, introducing age limits, expanding competitive funding, distributing basic funding according to assessments results of the institutes’ work for a given period of time (3-5 years), and introducing teaching requirements as prerequisites for specific positions at academic institutions. Measures to encourage internal mobility of scientific personnel and flexibility of membership of scientific communities also could have been introduced. Other measures, such as redistributing property management functions and better distributing funding for research projects could have been implemented without closing the three academies and merging them into a single entity.

The methods and motivations for reforming the academic system remain unclear and can be a cause for pessimism. What is known is that emigration among Russian scientists has increased, especially among the young scientists, who now talk more frequently about their future in terms of choosing either a new profession or a new country of residence.<sup>43</sup> V. Fortov, the President of RAS, has

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<sup>43</sup> “P. Prikhodchenko: ‘Zhalko, esli vperedı vybor – professiya ili strana” [P. Prikhodchenko: “It Is a Pity If We Have to Face a Choice between Our Profession and the Country], *Gazeta.ru*, 17 December 2013, <[www.gazeta.ru/science/2013/12/17\\_a\\_5806413.shtml](http://www.gazeta.ru/science/2013/12/17_a_5806413.shtml)>.

remarked that the “brain drain” has already begun among younger members.<sup>44</sup> This has been confirmed by an express poll of young scientists and their attitude towards the RAS reform.<sup>45</sup> Almost 70% viewed it in negative terms, believing that such an approach to reforms would lead to the final destruction of fundamental science. At the same time, over half of those polled believed that the academic system needed to be changed, though more gradually. About 3% planned to move abroad—a number that can potentially increase due to the fact that foreign recruiters have since become more active, offering positions at foreign scientific centers to young Russian scientists. As the authors of this research have rightly suggested, the emigration of even a few promising scientists can jeopardize the development of specific areas of research in Russia. According to a recent Thomson Reuters report Russia is no longer included in 100 top-ranked fronts for science research,<sup>46</sup> The emigration of young scientists will only worsen the situation. A lack of clear direction and strategic action on the part of the government will hardly serve to increase scientific output, at least in the foreseeable future.

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<sup>44</sup> R. Stone, “Embattled President Seeks New Path for Russian Academy,” *Science*, 11 February 2014, <<http://news.sciencemag.org/people-events/2014/02/embattled-president-seeks-new-path-russian-academy?rss=1>>.

<sup>45</sup> The poll took place in November 2013, was initiated by the Council of Scientific Youth of the Siberian branch of RAS, and included young employees from all three regional branches of RAS, as well as Moscow institutes. A total of 1579 people from 44 cities participated. Source: O. Kolesova, “Chemodan, vokzal... Reforma RAN vyzvala u molodyh zhelanie uyehat” [Suitcase, Train Station... The RAS Reform Caused Young People Want to Leave], *Poisk*, No. 4-5, 31 January 2014, <[www.poisknews.ru/theme/ran/8940/](http://www.poisknews.ru/theme/ran/8940/)>.

<sup>46</sup> C. King and D. Pendlebury, “Research Fronts 2013. 100 Top-ranked Specialties in the Sciences and Social Sciences,” ThomsonReuters, April 2013, <<http://img.en25.com/Web/ThomsonReutersScience/1002571.pdf>>.