

Guest editorial

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National STI Foresight for Russia

The papers in this special issue of *Foresight* represent the most detailed accounts to appear in the English language, to date, of the Foresight and related futures analyses that have been undertaken in contemporary Russia. The Russian Federation has set out to undertake a remarkable range of such activities in the past decade, and both the approaches adopted and the results obtained are of interest for many reasons.

Winston Churchill famously proclaimed (in the dark days of 1939): "I cannot forecast to you the action of Russia. It is a riddle wrapped in a mystery inside an enigma [. . .]"[1]. While the description is often taken to apply to the country itself, rather than its strategy in political affairs, Churchill's typically quotable turn of phrase captured something of the difficulty outsiders have often had in following Russian events and strategies, while casting a nod at the symbolism of the matryoshka doll (within which a succession of ever-smaller dolls is contained). Hopefully the accessible studies that follow will dissipate some of the opacity that surrounds this topic; even if we cannot forecast the actions of Russia, we will be able to better see how Russia itself forecasts and uses forecasting. Indeed, current practice in Russia often goes well beyond forecasting, involving many elements familiar in Western and Japanese Foresight – such as identification of priorities, building of networks and efforts to share appraisals of alternative futures[2].

The Soviet Union established systems of five-year plans and assumed a future in which its version of an economic organisation would ultimately triumph globally. There was little room to debate alternative futures, and, unlike the "indicative" plans of many other countries, the assumption was that establishing what would happen was essentially a matter of declaration. A word that is hard to translate into English (and which does not feature in the essays here) is *vranyo* – when people act as if they believe in something that each of them actually disbelieves. The future was known, unless it was derailed by the (usually malevolent) actions of others. Failure to meet the lofty ideals and even the basic material claims of its leaders – remember that in the 1960s, President Khrushchev was predicting a near future of free bread and public transport for the people – eventually led to disbelief becoming manifest, and the collapse of the vision.

In the twenty-first century, it has become clear that market forces alone cannot create a brighter future, perhaps especially not when coexisting with many institutional remnants of the old system. The major transformations in the Russian economy have not resulted in a system that is competitive with the West in many of its goods and services, even though a good fraction of the middle and upper classes share many tastes and consumption patterns with their Western peers. Perhaps most shocking to the Russian public, the country that once dazzled the world with its achievements in the space race – Sputnik, Gagarin and so on – has been falling behind on many indicators of scientific and technological performance. The Russian Federation has fared poorly in terms of the success of its scientific publications (in terms of volume and citations), its patents

(especially in dynamic fields of new technology) and the success of its products in international markets.

Science, Technology and Innovation (STI) are always matters that are hard to control centrally, especially in the modern world of complex technologies drawing on multiple fields of science. Expertise in key areas – especially newly emerging fields – is typically scattered across different locations, and government authorities have often been left out of touch or wrong-footed by significant developments. (The Soviet cases of support for Lysenkoism and opposition to cybernetics are well known, but Western societies have their own oversights, such as the UK's slow recognition of the emergence of microelectronics and its early rejection of artificial intelligence.) Governments can play important roles in funding research and development (R&D) and education, but turning knowledge into innovations that users will want requires deep engagement in industrial operations, and in both business and consumer markets. Ideas from overseas can challenge assumptions about the best ways in which to accomplish things. Five-year plans, indicative or not, have been as liable to disruption by technological change, as are complacent incumbent firms that fail to spot the rise of new entrants who have new ways of meeting (or creating) consumer demand. Foresight has been prominent in the STI field because it seeks to deal with such challenges – thus its wide use in Western countries that feared loss of their competitive edge in the late twentieth century, and by emerging economies that seek to mobilise STI to move them beyond catch-up towards leadership positions[3]. Indeed, the wave of Technology Foresight Programmes draws heavily on the fusion of approaches from futures studies with analyses from innovation and innovation policy studies[2][3].

It is not surprising that the Russia Federation has adopted Foresight approaches so vigorously in recent years, given its history of central planning (a tarnished legacy, but expectations about guidance from above remain widespread), and its difficulties in the STI field. These difficulties have been attributed to weaknesses in the Russian innovation system[4], one feature of which was the lack of mobilisation of scientists, engineers and agents of innovation more generally, around new ideas. A whole range of efforts to change this state of affairs has been put into place, including schemes to incentivise R&D in universities (previously the Academy of Science had been dominant) and integrate more into international R&D activities. Foresight has grown alongside these, and in some instances helped to guide them.

The ways in which Foresight activities have drawn on multiple sources of STI knowledge are set out in the paper by [Gokhberg *et al.* \(2017\)](#), who note the involvement of thousands of experts, and the establishment of centres of Foresight expertise relevant to different STI fields, across Russia. The approach is particularly influential in establishing agreement as to the most promising areas for STI efforts, taking into account needs and opportunities for the country, as well as capabilities and potential bottlenecks. As [Meissner and Rudnik \(2017\)](#) note, one challenge is to link up otherwise fragmented “sectoral” appraisals, while avoiding the imposition of a rigid and inadequate framework from on high. These two papers illustrate the unusually wide-ranging and systematic Foresight system being developed in Russia; the lessons that can be drawn from this experience will be of interest to many other countries grappling with transformation of their STI environment and institutions. One key theme is the scope for coordination of activities that are inherently multi-organisational, multi-professional and multi-domain. How far the Russian solutions can be successfully adopted in (or adapted to) countries with very different political and cultural heritages will be a key question.

The old idea of central planning is dead, even if its ghost lingers on in some quarters. Recognition that alternative futures confront us, and that choices today have a big role in shaping these, is more or less accepted. As such, scenario approaches – which also help in the coordination of activities mentioned above – are tools often used in Foresight. [Saritas *et al.* \(2017\)](#) discuss the use of scenarios, and focus on how a particular approach can be

applied in the case of Russian STI. Foresight is thus enabled to be adaptive, rather than a means to creating a rigid, officially sanctioned, view of the future and Russia's place in it. Behind all of the papers so far mentioned is the awareness that even if Russia has slipped from the forefront of many areas of STI, it is possible to establish footholds of accomplishment in strategic niches which can provide relatively short-term gains and lay foundations for broader longer-term achievement. This theme is pursued by [Grebenyuk and Ravin \(2017\)](#) in the case of biotechnology, where a number of areas for applied R&D appear to be particularly promising ones. Likewise, [Saygitov \(2017\)](#) considers health-related R&D priorities, where technological prospects go beyond biotechnology and pharmaceuticals, to include also new materials and information systems. In both of these essays, STI involves major branches of the public sector alongside universities and private sector R&D performers and users.

Two essays deal with the energy sector in particular, which has been a major influence on Russian economic performance over recent years, as oil and gas exports have underpinned much of the country's growth. This reliance on what are effectively commodity exports, rather than more knowledge-intensive ones, has its costs as well as its benefits, of course. [Slobodianik et al. \(2017\)](#) grapple with the uncertainties of international demand, and examine the prospects for energy markets over the coming decade and beyond, applying analyses that aim to identify priority markets for Russian exporters. In contrast, [Proskuryakova et al. \(2017\)](#) look at the prospects for, and potential benefits of, a range of renewable energy sources in Russia. Between them, the two studies point to a dilemma that the country faces – how to balance economic stability and environmental concerns, when powerful economic interests may be resistant to system transformation (and may play on the idea that global warming is rendering the Arctic ripe for exploitation, given the necessary STI).

The future may still be a riddle wrapped in a mystery inside an enigma, but these essays – not least through their own different approaches – display how far Foresight and related approaches have come in Russia over recent years. Probably the biggest challenge that is confronted is in mobilising actors beyond those directly engaged in R&D, both to take account of the future prospects articulated through this work, and to input their own voices and efforts into appraising and acting on these prospects. Foresight alone cannot transform the innovation system, and the move to a knowledge-based economy requires more than R&D funding. The ultimate success of Foresight in the Russian Federation will require that institutions and broad swathes of Russian society recognise, and are empowered to seize, the transformative potentials of STI that can transcend narrow and short-term self-interests.

Notes

1. See www.churchill-society-london.org.uk/RusnEnig.html
2. See [Miles et al. \(2016\)](#).
3. See [Miles et al. \(2017\)](#).
4. See [OECD \(2011\)](#).

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