ANALYSIS

Innovative Entrepreneurship and the Post-Soviet Path-Dependency of Russian Science

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Abstract

This article examines the peculiarities of innovative entrepreneurship in Russia. The institutional path dependency of Russian science is viewed as one of the crucial factors predetermining the slow progress and low efficiency of innovative entrepreneurship. Using empirical data from a comparative study of techno-entrepreneurship in three countries, this analysis shows how the post-soviet inertia of Russian science is reflected in the particular features of innovative entrepreneurship in Russia.

Innovative Entrepreneurship: Underdeveloped Potential

The consensus opinion among experts is that the potential for innovative entrepreneurship among small businesses in Russia is significantly underutilized. Even in the absence of any reliable statistical information about the real state of innovative entrepreneurship in Russia, it is clear that Russia is far behind the technologically advanced countries for this indicator. Hopes that small-business innovative entrepreneurship would become a driver of modernization processes from "below," unfortunately, have not been realized. Both in scale and in market effectiveness, technologically-oriented small business today does not exert the expected influence on industry and the economy in general (even though there is undoubtedly some progress in this sphere).

In trying to explain why Russia does not take advantage of its high scientific potential to develop a stronger innovative small business sector, experts cite numerous reasons. Among them are the undeveloped market economy in contemporary Russia; the catastrophically low technological level of Russian industry, which makes it immune to innovations; the numerous institutional barriers to the development of small business; and the inconsistent and ineffective innovation policy pursued by the government.

Without slighting the significance of these reasons, in this article we want to focus on an additional important factor, namely the institutional inertia of post-Soviet science, which directly and indirectly influences the formation of the small business innovation sector. Our analysis draws on the outcomes of the research project entitled "The influence of individual behavioral models on the success of high-technology enterprises," which was conducted in 2012–2013 and financed by the Rusnano Corporation. In the process of our research, we analyzed the biographical trajectories of techno-entrepreneurs in three countries which were chosen as the most successful developing innovative economies of the "eastern" and "western" types (Taiwan, South Korea, and Finland) and also four Russian regions (St. Petersburg, Tatarstan, Tomsk, and Novosibirsk). In each country and regional case, we conducted about 20 biographical interviews. In the Russian regions, additionally we conducted interviews with experts (up to 10 interviews in each case). This research consciously did not focus on the IT sphere because it is a sui generis form of entrepreneurial activity.

Between "Western" and "Eastern" Models of Innovative Development

Science is the element of innovative systems that predetermines the key distinctions between so-called "eastern" (or Asian) and "western" innovation models. The common feature of innovation models in Asian countries is the backwardness of their fundamental (basic) science. In Asian countries technologically-savvy small business grew out of the wave of quickly developing small business entrepreneurship in the period of modernization through the gradual saturation of the high-tech consumer products sector. Here the emphasis was not so much on creating new scientific potential as on importing ideas and technology and attracting foreign specialists. In our study, the "Asian" model was represented by the cases of Taiwan and South Korea.

The "western" pattern of innovation development, on the contrary, comes from science. In countries with long-term and well-developed institutes of science, techno-entrepreneurship emerges as a mechanism for converting the accumulated (domestic) scientific knowledge into profitable market products. Correspondingly, in the "western" model, science serves as a starting point of innovation by generating scientific ideas which can be implemented in practice. The crucial condition for the efficiency of the "western innovative model" is a well-developed system of market institutions allowing the conversion of scientific knowledge into profit. The "western" model in our study was represented by the case of Finland.

The main distinctive feature of Russia's innovation system is its strong fundamental science and the Academy of Sciences as a stronghold of fundamental research.

The presence of highly developed science in Russia suggests the country will follow the "western" science-driven innovation model. At the same time, unlike western countries with such a science-driven model of innovative development, the commercialization of scientific ideas in Russia is considerably limited because market institutions are underdeveloped. Another problem is that the task of innovation promotion in the Russian context is connected to the task of modernization and bolstering the catastrophically falling technological level of Russian industry. Introducing innovation demands active scientific potential, but modernization and supporting the existing technological level are the most pressing issues for Russia's civilian industry. These obstacles, however, do not prevent Russian science from remaining the leading element in the developing innovation system.

Russian Science as a Source of Innovative Ideas

Contemporary Russian science has largely retained the generic features it inherited from the Soviet institutional system of science. One of the most important among them is the discrepancy between military and civilian research that was reflected in the so-called "technological gap" between military hi-tech and civilian low-tech. The lack of industrial demand for advanced technologies was the main reason why soviet scientists in the beginning of the 1990s could not convert their ideas into a market product. The overwhelming majority of scientific entrepreneurs who established technological firms in the beginning of the 1990s eventually had to turn them into pure commercial enterprises. Those who managed to preserve the technological profile of their firms had to fulfil simple orders for maintaining existing equipment and technologies: *"At the very beginning our activities were narrowed down to addressing the primitive technological problems of industrial plants, roughly speaking, 'to make bedpans' for the enterprises […]"* (Interview with an entrepreneur born in 1952).

The technological gap still exists, as well as the discrepancy between military "hi-tech" and civilian "low-tech." In our data, it can be traced through differences in marketing strategies which are determined by the scientific origins of the techno-entrepreneurs. Informants with a military hi-tech background usually complain about the lack of demand for their products and technologies in Russia: *"…there is no real economic demand for these innovative technologies in our country in principal…"* (entrepreneur, 1956). Nevertheless, according to some informants, the situation has improved a little since the 1990s: *"We did not have a single sale in Russia from 1998 until 2006. Meaning, for eight years. In 2006 there was a slow start, now it's getting more active"* (entrepreneur, 1963).

Actually, as the interviews suggest, there are two basic marketing strategies used by the entrepreneurs with a military, high-tech background. The first one is an orientation on the external market (USA/Israel/Germany or other foreign countries including the post-socialist bloc). The second is a continuing focus on state military contracts or orders from state agencies, such as the Ministry of Internal Affairs or the Emergency Response Ministry, which remain the main customers for high-tech production. Using these strategies in combination or their alternation over the lifetime of the firm is also typical for these kinds of firms. Simultaneously, firms try to develop and sell civilian products and technologies to private companies, but the civilian market efforts are usually only a side-business and constitute a less reliable marketing strategy. Interestingly, in the case of Finland informants also complain about low demand for innovative products on the domestic market. The phenomenon of "born global" (the term used to define small innovative firms with an exclusive orientation on the foreign market) is a distinctive feature of the Finish innovative sector. However if in Finland the lack of demand is predetermined by the small size of the market, in Russia the reason is of a different nature. The demand for the modernization and maintenance of the obsolescent technological base of industry is stronger than the demand for innovations. As a result, the scientific potential of Russian high-tech remains greater than the real possibility for its marketization.

Another "generic feature" of Russian science today is the preservation of the "sectoral" structure typical for the Soviet organizational model of science. Most scientific research is still conducted in the institutes of the Academy of Sciences. Scientific organizations that formerly belonged to the so-called "branch (civilian) sector" and now operate under the umbrella of research universities remain the main producers of technological solutions for domestic civilian industry. The centers for technology transfer (CTT) that were established in almost all research universities report about the creation of multiple spin-offs that are supposed to transfer innovative ideas to industry. However, our interviews with techno-entrepreneurs and experts working in CTTs make it obvious that the newly emerged spin-offs mainly reproduce the model of interactions between science and industry typical for the late 1980s, rather than developing a new innovative "helix" of technology transfer as described in official reports.

The relationships between small innovative firms and scientific organizations are rather specific. Almost all informants mentioned the decline in the scientific potential of research institutes and the insufficient level of support for small innovative firms. Entrepreneurs demonstrate generally low institutional trust in science; they

consider personal connections with former colleagues in research institutes to be more important than the level of research in scientific organizations in general: *"We grew out from the [RAS] institute, which … has already changed its name 5 times… the institute these days does anything but scientific research. Secondly, in terms of budget, we have significantly outrun them. Thirdly, people who remained there somehow now come to us. We make joint projects with them. It is not the Institute that is, in this sense, a cause of the progress. The Institute is in that sense a potentially good receiver of grants. In these joint projects, we are the generators of ideas, and it has been this way already for a long time"* (techno-entrepreneur, 1956). This is the reason why some of the most successful entrepreneurs start their own R&D on the company basis, splitting their firm into two subdivisions: a "practically-oriented" department that works on customers' orders and serves as a cash cow for the firm, and a "scientific" department that works for the future development of the product/technology. However, not many firms can afford doing their own research and this practice is more an exception than the rule.

Russian Science as a Source of Innovative Entrepreneurs

The role of science in a science-driven innovative model is not limited to the production of scientific ideas for marketization. Science has always been a main supplier of personnel for techno-entrepreneurship in Russia. The first "scientific cooperatives" at the end of the 1980s, the entrepreneurial "boom" at the beginning of the 1990s, and the following waves of entrepreneurship became possible only due to the entrepreneurial enthusiasm of the former scientific cadres. While in Taiwan and South Korea the majority of techno-entrepreneurs originated from small business or big high-tech corporations, in Russia they almost all have "scientific" origins (former employees of academic institutes and universities or researchers in branch scientific organizations). Almost no entrepreneurs came to techno-business from the consumer sector of the economy, which is quite understandable. As a rule, high-risk and costly techno-business begins to attract attention from entrepreneurs when the more accessible consumer sectors are already filled up and the competition there is high. In Russia, the consumer market is far from being filled; therefore, the entrepreneurs oriented on high profits can always find lucrative market niches, which are not as complicated as working in the techno-sphere.

Innovative entrepreneurs in Russia actually carry a double institutional "load." Alongside the enhanced risks of techno-business, they have to overcome the institutional barriers which are common across the entire Russian business environment. That is why innovative business attracts first of all those entrepreneurs who are interested in the process of research and development as such and who are ready to deal with the high risks of techno-business to realize their interest. Using an expression coined by one of the informants, *"in Russia, the innovation business attracts only crazy people who are capable of doing something in the conditions of Russian [business] reality"* (entrepreneur, 1981).

Similarly, in Finland, which also develops according to the "western innovative model," many techno-entrepreneurs also come to business from science. However, unlike Russia, another equally important source of techno-entrepreneurs in Finland is the former employees of high-tech corporations. Some Russian informants also used to work in the military complex, construction bureaus and former scientific-production complexes. However, the share of these entrepreneurs is small and incomparable with the share of former scientists (or those who initially were planning a scientific career).

Another difference with Finland can be found in entrepreneurs' motivation for going into business. In Russia the "push" factors are dominating. Most informants had to go into business because they could not stay in science, mainly for external reasons—low (or a lack of) financing, a poor organizational environment, the low level of scientific research, etc. This is especially true for the older generation of informants, who were forced to start their business during the economic crises at the beginning of the 1990s, but also for the younger ones who had to leave science in the late 1990s and even the early 2000s, because *"there was not enough 'bread' for everyone"* (entrepreneur, 1979). In the case of Finland, "pull" factors are dominant. Switching to business is explained by the desire to create a market product, to "conquer" the market, or by a desire to use the opportunity and incentives for entrepreneurship provided by various foundations and innovation support programs.

Russian Science as a Source of Innovative Culture

Russian science is the main source of workers for the innovation sphere, providing the institutional and cultural environment which shapes the personality of the future techno-entrepreneur, his or her professional socialization and motivation, and understanding of the meaning of innovative activity. Thus, the specific features of the culture of the Russian science milieu and the system of value-norm regulators in scientific research activities are the key factors determining the innovative culture of Russian techno-entrepreneurship.

Among the generic features inherited from soviet science is a specific culture as a system of norms, values, and attitudes towards science and research activities. The professional culture of the Soviet scientists was built on

the ideals of an "unselfish search for truth." Passion for research and disinterest in money were the main virtues of a "real scientist." This ethos was supported by the priority state financing for science and military contracts. Working in science was highly prestigious, and being a scientist was not just a profession, but rather a specific mission, imbuing existence with broader meaning both as a way of life and even as a life ideology. From this point of view, science was never seen as an institute for generating ideas for sale in the market, but rather as a unique environment for the self-realization of extraordinary personalities: *"…in Soviet times there was a 'paradigm' in the scientific community, which implied that 'bowing to market forces' was not 'lordly' or 'royal' for a scientist"* (entrepreneur, 1956). Interestingly, a similar hostility to the marketization of scientific ideas was immanent to American science up to the middle of the last century.[1] However, while American scientists eventually accepted market values under the pressure of economic necessity, the culture of Soviet science was "frozen" within the framework of a planned economy and remained almost intact in academic enclaves. Even today, as was revealed in our study, in some of the most prominent academic institutions, scientific entrepreneurship is still considered to be a "betrayal of science" and for those scientists who left academia for business the "door was slammed shut forever": *"That's it, this is a caste. You are a betrayer of your 'motherland' since you decided to go into business!"* (expert).

In answering the question whether they consider themselves a scholar or entrepreneur, informants from Taiwan and South Korea emphatically chose entrepreneur. Finnish businesspeople spoke of a diversified identity—partly entrepreneur and partly researcher. Generally, the research part shrunk the longer the person stayed in business. Russian informants in every way tried to distance themselves from entrepreneurship. To achieve this purpose, they employed various discursive strategies. Above all, they emphasized the specific character of techno-business and contrasted it sharply with "simple" business in terms of the importance of financial gain: *"Simple businessmen only want to earn money, while entrepreneurs in high-tech want to earn money by developing something new. The principle difference is that it is important for them to get money for their creativity"* (entrepreneur, 1984). Emphasizing such distinctions may be associated with the negative connotation of the term entrepreneur, which is still less prestigious than scientist. Even if the informant admits that he no longer is involved in his own research work, he will definitely emphasize that he continues to monitor and advise the research work of the firm. These narratives often highlight the key role of science in the enterprise and the significance of the scientific background of the innovation entrepreneur, who must have special scientific knowledge.

In the narratives of Russian informants, entrepreneurship often served as an alternative form of self-realization (understood in terms of constructing one's self), intellectual challenge and creativity, which is the defining component of scientific activity: *"What I am actually doing here is marketing. However, my fundamental education allows me to find interesting perspectives in these tasks, some creative elements, because I would feel sick to live without it. One can put it as some principle: it is more interesting for me to develop a shovel than to use it afterwards"* (entrepreneur, 1979).

For many Russian informants engaging in entrepreneurship is a strategy which allows them to continue to engage in scientific activities in conditions where there is little funding for science: *"At a certain moment I understood that if I wanted to engage in scientific activities in the future, it was necessary to leave. I did not want to leave simply because of objective circumstances. Therefore I reasoned that there are other ways to realize one's ambitions than academic activity"* (entrepreneur, 1963).

Our interviews tracked a specific dynamic evolving in the sphere of innovative entrepreneurship. The new generation finds it easy to part with its scientific identity, since it is more frequently guided by efforts to achieve.

Thus, in Russia the science-driven innovation model remains the leading element in the innovation system. It influences the specific features of the development of innovative entrepreneurship directly through the production of scientific ideas and institutional support for innovative entrepreneurship, as well as indirectly, through the innovative culture of Russian techno-entrepreneurs. The success of innovative entrepreneurship in Russia will be determined to a great degree by the level of success in the transformation of Russian science.

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1 See Shapin, S. (2008) The Scientific Life: A Moral History of a Late Modern Vocation, Chicago, Ill.: The University of Chicago Press, 2008.