UNIVERSITY OF AMSTERDAM

UvA-DARE (Digital Academic Repository)

Colleagues with benefits

How diaspora knowledge networks make difference to post-Soviet scientists' migration, research and career

Antoshchuk, I.

Publication date
2023

Link to publication

Citation for published version (APA):
Antoshchuk, I. (2023). *Colleagues with benefits: How diaspora knowledge networks make difference to post-Soviet scientists' migration, research and career*. [Thesis, externally prepared, Universiteit van Amsterdam].

General rights
It is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), other than for strictly personal, individual use, unless the work is under an open content license (like Creative Commons).

Disclaimer/Complaints regulations
If you believe that digital publication of certain material infringes any of your rights or (privacy) interests, please let the Library know, stating your reasons. In case of a legitimate complaint, the Library will make the material inaccessible and/or remove it from the website. Please Ask the Library: https://uba.uva.nl/en/contact, or a letter to: Library of the University of Amsterdam, Secretariat, P.O. Box 19185, 1000 GD Amsterdam, The Netherlands. You will be contacted as soon as possible.

UvA-DARE is a service provided by the library of the University of Amsterdam (https://dare.uva.nl)

Download date:18 Nov 2026

CHAPTER 3

From Russia to the UK. On the Migration Mechanisms of Young Russian Computer Scientists[59]

59 The text is published as: Irina Antoshchuk, Viktoriya Ledeneva, "From Russia to the UK: On Migration Mechanism of Young Computer Scientists", Sociological Studies, no. 2 (2019): 108-188. https://www.socis.isras.ru/files/File/2019/2/Antoschuk_Ledeneva.pdf

Abstract

Internationalizing science and higher education generates transnational mobility for early career scholars. Young scientists from Russia have become increasingly involved in this process, with the United Kingdom being one of their major destination countries. Though this trend is discussed as an acute national problem, such investigations focus mainly on the structural conditions that cause migration and give individuals the motivation to move abroad, while explaining little the migration process itself. What organizations, agents, and connections are involved in migration, making it possible? How does an intention to move transform into an act of migration? The chapter aims to answer these questions and explain how young Russian scientists achieve transnational mobility, especially considering the UK's high entry barriers. Using migration network theory and institutional theory of migration, authors develop the concept of a migration mechanism that functions as an intermediary social structure connecting host and home countries. Based on semi-structured interviews with young Russian computer scientists who moved to the UK in 1998–2015, I demonstrate that organizational ties with Russian-speaking scholars in the destination country provide access to vital resources, represent a major driving force behind this process, while the role of institutions is secondary.

Introduction

In recent years, Russian officials have expressed growing concern over the outflow of young professionals from the country. In 2018, Russian Presidential Academy of National Economy and Public Administration experts stated that "in the current decade there has been a real increase in qualified (intellectual) emigration from Russia."[60] Chief Scientific Secretary of the Presidium of the Russian Academy of Sciences N. K. Dolgushkin read a report at the 2018 Russian Academy of Sciences general meeting

60 Maria Bondarenko, "Experts of the RANEPA told about growing brain drain from Russia", RBC.RU, Jan 23, 2018), https://www.rbc.ru/society/23/01/2018/5a673f129a794712579d7dbe.

stating that from 2013 to 2016 the number of specialists who migrated abroad doubled and was 44,000 in 2016.[61] Russian's brain drain began increasing in 2008 (Ledeneva, 2014, 111), with more young people leaving the country (Dezhina, 2014), while "the educational level" of emigrants becomes higher (Vorobyova and Grebenyuk 2016, 44). The number of PhD students and young scientists migrating to other countries began to grow in 1994 (Dezhina, 2014). In 2011–2012, the number of Russian students abroad was 70,000 (Bokareva, 2014).

These processes occurred simultaneously to growing intentions to migrate among the Russian youth. In 2018, nearly one in three young people aged 18–24 years (31%) wanted to leave the country.[62] This age group also has the highest percentages of those who consider moving abroad (13%) or sometimes think about it (35%).[63] More than one-third of young people from eighteen to thirty years old (34.9%) are ready to leave the country for employment abroad (Klyachko et al., 2018, 15). Information technology professionals and educated young people are particularly willing to move (Ibid., 16–21). Every second PhD student (50%) is ready to leave Russia for the sake of a good job abroad. Among Bachelor's and Master's students, this share is 43.1% (Ibid., 22). It was higher in 2018 than in the early 2000s, when only 17% of PhD students and 25% of young teachers and researchers in Russia expressed interest in going abroad to develop their careers (Dezhina, 2003).

The United Kingdom is one of the top three preferred countries for emigration (Dezhina, 2003; Ledeneva and Nekipelova, 2003). It became the most popular country in Russia's Global Education Program[64] and it has the highest number of Russian students after Germany (Chankseliani and Hessel, 2016). Since 1995, the flow of students to the UK increased seven times. In 2013–2014, it amounted to more than 3,500 people (Ibid., 12, 17). However, entry barriers to the UK are higher than to other Eu-

61 Polina Avezdina, "RAS reported the brain drain has doubled in three years", RBC.RU, March 23, 2018, https://www.rbc.ru/society/29/03/2018/5abcc9f59a7947e576977387.

62 VCIOM (Russian Public Opinion Research Center), "Migration intentions of Russian people-2018". July 02, 2018, https://wciom.ru/analytical-reviews/analiticheskii-obzor/emigraczionnye-nastroeniya-rossiyan-2018.

63 Levada-Center, "Migration intentions of Russian people", June 19, 2017, https://www.levada.ru/2017/06/19/emigratsionnye-nastroeniya-2/, https://www.levada.ru/cp/wp-content/uploads/2017/06/Emigratsiya_tabl..pdf.

64 Global Education Program, "Results of Global Education Program (2014-2016)", n.d., https://educationglobal.ru/fileadmin/downloads/GEP_2014_2016.pdf.

ropean countries because of the high cost of education[65] and the limited number of highly competitive scholarships. [66]

Thus, we know Russia's brain drain is acute. However, we don't know how it happens and what ensures its realization. Knowledge of their mechanics is necessary to develop public policies that would reduce the outflow of young qualified personnel from the country. Russian national programs supporting young scientists have only considered the potential causes for migration and attempted to overcome the structural conditions that lead to brain drain. To improve their efficiency, we need to understand how young scientists' intentions transform into the acts of migration and what organizations, programs, and connections aid their realization. In this chapter, I seek to fill this gap and to determine *how young people learn about opportunities studying and working abroad and what connections, institutions, and resources enable them to organize and carry out relocation.* Interviews with young computer scientists who moved from Russia to the UK between 1998 and 2015 formed the empirical basis for the study. Theory of migration networks and the institutional theory of migration, integrated into the concept of the migration mechanism, constitute the study's theoretical framework.

Migration Mechanisms: How Do Social Networks and Institutions Promote Transnational Mobility?

A theory of push and pull factors that concentrates on the macrolevel factors causing migration dominates studies of intellectual migration. This theory takes as its foundation the "paradigm of human capital," which assumes that autonomous individuals responding to changing structural conditions, for instance, fluctuations on the international labor market, engage in migration (Meyer, 2001, 4). However, structural conditions and personal motivations are not sufficient to realize the relocation abroad, since there are various barriers, even for highly qualified professionals. How do migrants overcome these barriers? The theory of migration networks and the institutional theory of migration suggest that there is a "social infrastructure" (Massey et al, 1993, 461), including social connections (networks) and organizations (institutions), that help migrants overcoming them. This constitutes an infrastructure that establishes a bridge between the countries of origin and destination.

65 Jane Playdon, "How much does it cost to study in the UK?", TOPUNIVERSITIES, updated Feb 1, 2023, https://www.topuniversities.com/student-info/student-finance/how-much-does-it-cost-study-uk.

66 Laura T., "Scholarships to study in the UK", TOPUNIVERSITIES, updated Sept, 15, 2022, https://www.topuniversities.com/student-info/scholarship-advice/scholarships-study-uk.

Migration Networks are "sets of interpersonal ties that connect migrants, former migrants, and nonmigrants in origin and destination areas through ties of kinship, friendship, and shared community origin"[67] (Massey et al. 1993, 448). These ties perform a "channeling function," i.e., provide resources for relocation (information, finances, and housing) (Gurak and Caces,1992, 153), which lower entry barriers and stimulate migration. In addition to interpersonal contacts along kinship, friendship, and community lines, there are organizational ties (Poros 2001), that is, the relationships different organizational structures mediate. Scholars usually contrast interpersonal and organizational contacts, although they may overlap. Organizational connections play a key role in highly skilled people's and academics' migration (Vertovec 2002; Ackers 2004) and include diasporic contacts, which unite specialists from the same country of origin and act as important channels for obtaining migration resources (Meyer 2001).

Migration institutions are organizations, agencies, and programs that are "specifically designed to influence migration behaviour" (Fawcett 1989, 676). They specialize in providing services for migrants, ensuring or facilitating entry into the destination country (Massey 1993, 450). Some support young professionals, students, and researchers. In 2014, Russia launched its presidential Global Education Program to support postgraduate training at leading foreign universities. In the European Union, programs like Erasmus+ and Marie Curie facilitate the transnational mobility of students and young researchers. Other programs and fellowships include Fulbright (US), Chevening (United Kingdom), Visby (Sweden), and DAAD (Germany).[68] Cooperation programs between foreign and Russian universities and student exchange and internship programs likewise act as migration institutions (Arefiev 2004, 146). Moreover, universities themselves are important actors of transnational mobility, since they engage in a "worldwide competition for students, faculty, staff, and funding" (Morhman et al, 2008, 6).

Migration networks and institutions thus constitute a bridge between countries of origin and destination by providing resources, helping young scientists overcome entry barriers and carry out the relocation. Using the concept of social mechanism (Hedström, Swedberg, 1999), I denote this intermediary social structure, which is a combination of social networks, institutions, and the resources passing through

67 Here and further on citations from English literature are translated by the authors.

68 Alexandra Posypkina, "Migration for knowledge: how much education abroad costs", RBC.RU, Sept 5, 2017, https://www.rbc.ru/money/05/09/2017/59ae5cd09a794765c1b6c8ae.

them, as the migration mechanism (Figure 1).[69] The aim of this chapter is to identify the structure of the migration mechanism and characterize its main components by analyzing the case of young Russian computer scientists who moved to the UK. The chapter addresses the following questions: What migration institutions and social ties participate in the process of young researchers' migrations? What resources do they provide? How are institutions, social networks, and resources interconnected?

Methods and Data

My analysis emerges from 22 semi-structured, in-depth interviews with young computer scientists who moved from Russia to the UK between 1998 and 2015. I conducted the interviews face-to-face or remotely via Skype in 2013, 2015, and 2018.[70] I recorded and transcribed them, and complemented them with field notes. I used thematic coding to analyze the interviews. Open internet resources (university websites, professional social networks, and CVs) served as additional sources of factual information on migration trajectories.

I define as young scientists people who migrated to the UK up until the age of 35, at the beginning of their careers,[71] and are engaged in scholarly work[72] there. According to these criteria, the target sample included fourteen men and eight women born from 1973 to1992, who graduated from major urban Russian universities.[73] Following the research objectives, the sample incorporates respondents who successfully migrated. Cases in which emigration did not take place for any reason remain outside the scope of analysis.

Findings

Academic Migration Routes

To understand the migration process of young scientists, I not only identified the social connections, institutions, and resources that made migration possible, but also analyzed their role in young specialists' migration trajectories, including formation

69 In academic literature the use of the term, migration mechanism is inconsistent and arbitrary. Antoshchuk (2017) clarifies and theoretically grounds this concept.

70 Eight interviews were conducted by Antoshchuk I.A. and Zemnukhova L.V. as part of the Russian Computer Scientists at Home and Abroad Project (2013–2015).

71 I define this as up to six years of experience after receiving a PhD degree.

72 They have teaching or research positions and publish scientific articles.

73 Moscow (nine people): MIPT (five), MSU (two), BMSTU (two); Saint Petersburg (nine): SPbEU "LETI" (three), SPbPU (three); SPbSU (three); and Novosibirsk (two) and Nizhny Novgorod (two).

of the intention to migrate, organization of the relocation, and career development abroad. *I distinguished two major types of migration: educational migration and labor migration,*[74] which each required a different set of resources, but shared common patterns in terms of how migration mechanisms functioned. When potential migrants lack information about professional realization opportunities abroad and sufficient individual resources (little or no research experience, limited language skills), barriers for relocation are particularly high. In these cases, organizational ties play a key role in overcoming those barriers, helping to provide necessary resources and connecting young scientists to institutions. Relying on informal selection procedures and diasporic organizational contacts also obviates strict requirements in terms of formal qualifications and language skills. This is because young scientists can thus circumvent official admissions policies and high competition for British scholarly places. Usually, to migrate for education young people need to apply to a PhD program in the UK after graduation from a Russian university. On the contrary, young professionals, who have significant individual resources and are aware of the professional opportunities abroad in their fields, are able to compete successfully for employment or enter educational programs on their own. They migrate with little or no support from social networks and institutions. This situation was typical of young professionals immersed in the professional environment, for whom emigration had become the norm, or for those who already had experience working or studying abroad, before migrating to the UK. I found that, regardless of the migration channel, social networks still exercise a stronger influence on migration intentions than institutions: they foster the formation of intentions to migrate among young people who initially did not have them, who had uncertain plans, or did not plan to relocate specifically to the UK. Below, I present these results in detail, discussing the main components of migration mechanisms and the particulars of their functioning in several thematic units. I provide situations and events from young scientists' migration trajectories and quotations from the interviews to illustrate how the mechanisms work.

Social Networks: Interpersonal and Organizational Ties

Young scientists' migration process involves interpersonal and organizational ties, both in Russia and abroad. But interpersonal connections do not have a decisive impact on migration: their involvement is incidental and they function to help migrants

74 Educational migration includes relocation to study in a PhD program (nine), a Master's program (three) or start an internship (one). Labor migration includes relocation for a research associate or fellow positon (four), a lecturer position (two) or software developer position (one). Two women migrated to the UK as dependents.

establish necessary organizational ties abroad. Thus, for Anton[75] (born in 1984[76]), his relatives provided a link to a professor at a British university and a subsequent PhD program. Igor (1974) moved to work in a British research center through help from a friend he met at a school reunion. However, the influence of interpersonal connections is unstable: they become a link to organizational ties by chance or when friends and relatives work in the same professional area. Thus, in Igor's case, school friendship ties had an effect because he and his friends had all attended a specialized physics and mathematics school and had IT as common sphere of employment.

Organizational ties turn out to be the most important migration channels. They are represented primarily by lecturers and academic supervisors in Russian and British universities, with the former making connections to the latter. The story of Oleg (1989), who moved to the UK for an internship and then became a PhD student at a UK university, is a typical example of relying on such contacts: "One of our courses was taught by a lecturer … and he asked some questions from the areas, you know, linear algebra, mathematics … and I somehow answered them and, apparently, he became somewhat interested in me. And then he gave me a grade for the course without an exam and said that he has an acquaintance in England. And he invited me and another person to go to England for an internship." Thus, contacts with professors at their Russian universities allow students to connect with Russian-speaking colleagues abroad, who, in turn, become a bridge to employment or admission to an educational program in the UK.

Sometimes, Russian-speaking scientists in the UK actively sought out graduate students from Russia, appealing to former colleagues or other people in the universities where they formerly studied or worked. The story of Roman (1976), who enrolled on a PhD program through a connection with a young Russian-speaking lecturer, is typical of this situation: "He received this grant, and he was looking for a PhD student. And he contacted his colleagues in Moscow and asked what kind of graduates they had." After the relocation, Roman himself became involved in recruiting graduate students from a leading Moscow university: "At some point, I just advertised our PhD program in Moscow … I found some student forums at Mekhmat,[77] and I posted an ad there … At the end of 2000s, the second half of 2000s I regularly posted these ads, then came and met people in person." Looking to their alma mater to re-

75 Pseudonyms are used to maintain anonymity.

76 Here and below, a respondent's year of birth is indicated in parentheses.

77 Mekhmat is the informal name of the university's mechanical and mathematical department.

cruit capable graduate students was a widespread practice among many established scientists who emigrated from Russia in the 1990s. Young researchers, who moved later, likewise become engaged in this practice. Organizational ties at alma maters also act as links, when young specialists initiate contact with British Russian-speaking colleagues on their own. For instance, the professor Mikhail (1985) contacted via email graduated from the same university as Mikhail and was a former student of Mikhail's supervisor. This way, irrespective of who initiated communication, ties with Russian-speaking scientists working in the UK or diasporic[78] organizational ties were the driving force behind migration mechanism.

Organizational ties in the Diaspora

While organizational ties in Russia played a mediating role, connecting young specialists with Russian-speaking academics in England, diasporic organizational contacts provided access to key resources, without which migration to the UK would have been impossible. Such diasporic solidarity shows that commonality formed on the basis of the shared language and origin is important for academic migrants, similar to its importance for other categories of migrants. For example, Vasiliy (1992) remarks: "I liked the milieu that was here, namely the faculty consists of Russian-speaking [people] for the most part. And that not only makes communication easier, but also the mentality is the same as yours, which is very important as it allows us to establish an interaction." The effect of scientific kinship and shared professional socialization complement the influence of common origin: "This person who connected me with Alexey (lecturer in England), he was his supervisor. So it is the continuity of generations in its pure form" (Oleg, 1989). Pragmatic reasons also explain the appeal of diasporic ties. Communication with Russian-speaking scientists abroad compensates for lack of information about British academia and becomes the most available means to enter it:

> *"It's not that I couldn't get to a non-Russian. But living in Russia and not being familiar with the system, it is quite difficult to just get to another country all of a sudden .... If I knew the basics, how to make a career here, where to look for information ... I would easily find a PhD program, probably, in some other university and not with a Russian. But then it was important that I was just made acquainted [with the supervisor]"*
>
> **Anton, 1984**

78 The term "diasporic" here designates Russian-speaking migrants from post-Soviet regions.

Main Migration Resources

The resources for the relocation that diasporic ties provide are diverse and include informational (advice on scholarships, documents, and visa issues), financial (funding for educational programs or visits), and administrative resources (assistance with administrative matters), as well as help in finding housing and psychological support.

For PhD students, financial resources are of primary importance, supplemented by informational and administrative resources. Thus, a professor advised Anton regarding scholarships for which he should apply (information resources). As a result, Anton received a full scholarship for his PhD program (financial resources). The professor also provided administrative support, consenting to admit Anton without an English language test when the university requested confirmation of Anton's language knowledge. For Vasiliy, a link to a Russian-speaking professor in the UK became the key to a PhD program fully funded by the professor's research grant. For Roman, one grant was not sufficient, since it "funded a graduate student on the EU (European Union) level … and therefore he (supervisor) was searching for funding to fill the gap." An additional special scholarship for foreign students, about which Roman learned through his supervisor, made his PhD studies in the UK possible. For Ksenia (1986), administrative support from her future supervisor played a major role. She lost her initial scholarship from the British corporation because of her citizenship, since the research project was related to the defense industry. But thanks to the professor, who spoke with the administration, an extraordinary university scholarship was granted to her. Oleg's Russian-speaking supervisor in the UK and his industrial partner arranged an "industrial PhD program" so that the corporation covered his education costs, as long as Oleg devoted his research to "the practical problems that arise in the company." In these ways, Russian-speaking scientists in the UK, thanks to their professional connections, awareness, and incorporation into the British academic system helped young researchers enroll in PhD programs and provided access to funding sources they could hardly find on their own.

For young scientists who came to the UK to work, financial resources did not have crucial significance. They were important for organizing trips and visits to the country either to become acquainted with managers (Egor) or workplaces and to pass job interviews (Igor), or to become familiar with one's future university and collaborate on articles (Mikhail). For Igor, administrative support was helpful (postponing his

contract's start date for the necessary period). However, information resources were of primary importance: information about opportunities to leave Russia, the existence of projects or positions, and invitations for positions.

Diasporic Organizational Ties and the Intention to Migrate

Connecting young researchers with the necessary resources, Russian-speaking scientists in England influenced their migration intentions. They stimulated the departure not only of those young people who had firmly decided to go abroad, but also of those who have uncertain plans or who have not considered changing their place of habitation. The story of Mikhail is a typical case: at first, he "did not plan to move away from Russia" and rejected a job offer. But a year later he was invited again, and Mikhail "was more ready." Egor was also "not interested in all these migration matters." He "didn't look for it and didn't want to," but when a knowledge-intensive start-up in England made him a job offer, he realized, "I won't have another such opportunity," and left the country.

Diasporic ties influence choice of destination country. Nikolai's story is characteristic He "had plans to go work abroad sooner or later," but because he received an offer for a fully funded place in a PhD program, he ended up in England. Sometimes, the very motivation to do scientific work forms as a result of the influence of opportunities diasporic ties provide. Thus, for Ksenia a PhD program in England became an attractive alternative to employment in IT in Moscow.

Migration Institutions

The role of institutions in young researchers' migration is relatively insignificant. My analysis not identify any single dominant one. As a rule, institutions play a role in educational migration, but do not form a self-contained channel. They are tied to organizational connections, other resources, few in number, and characterized by limited access. For instance, a double degree program gave Viktor (1987) the impetus to move. It enabled him to enter a Master's program in the UK, avoiding the difficulties of the standard enrollment process. However, he required substantial funds to cover his educational costs. By contrast, Vyacheslav's (1984) presidential scholarship covered the cost of his Master's program (financial resources). But it was his connection to a Russian-speaking scientist that motivated him to move and determined him to choose England. Alyona (1986) received funding for her PhD studies from the Global Education program. But it did not act as a stimulus for migration because Alyona

had already moved, following her husband, a postdoctoral researcher. It was her husband who told her about the program, convinced her to apply, and assisted in finding a supervisor among his Russian-speaking colleagues in the UK. She became connected to the institution through diasporic interpersonal and organizational ties. For Roman and other PhD students from Moscow, the Overseas Research Scholarship played a major role and diasporic organizational ties again served as a bridge.

Migration without Intermediaries

Migration through formal channels represents a separate mechanism: it is realized without or with little support from social networks and institutions. This is typical when the necessary resources for relocating to the UK were already available. As a rule, young researchers accumulated them while studying and working abroad, during which time they improved their qualifications, developed language skills, established a network of professional contacts, and learned about leading foreign research centers. These experiences significantly increased their individual resources. Successfully navigating their professional fields and information flows in the European intellectual job market, understanding the goings-on of academia and scientific career pathways, young scientists learned to find work and successfully compete with candidates from other parts of the world. Grigoriy's (1986) story provides an example. He received employment as a lecturer at a top British university after completing his PhD in Belgium and postdoctoral work in Spain. So does Valery's (1982) experience. He began working at an elite British university after completing his PhD in Italy through "ordinary primitive employment. When a position is opened, and you apply, go through the document selection, interview selection and as a result they choose you."

It is not only international experience that enables young researchers to find work and study opportunities in England on their own. If young researchers were surrounded by colleagues who plan to emigrate or frequently travel abroad, they obtained access to the necessary information while living in Russia. Thus, among Moscow Institute of Physics and Technology staff in the 1990s and early 2000s, emigration was so common that knowledge about professional opportunities abroad and how to prepare for departure was widespread among students: "At fiztech,[79] many people were leaving .... Therefore, it was not very difficult to find out who migrated and how, who had submitted what documents, and what Western universities recognize

79 Fiztech is the informal name for the Moscow Physical Technical Institute.

fiztech" (Daria, 1979). Being highly qualified and well informed, i.e., possessing copious individual resources, Moscow Institute of Physics and Technology graduates did not need intermediaries and received offers by applying directly to educational and research institutions in other countries. Thus, Nina chose between fully funded PhD programs in England and Germany, while Daria had "several options for relocation to Australia or America."

Conclusion

The objective of this chapter was to determine the structure and main components of the mechanisms that allowed young Russian scientists to migrate abroad (Figure 2). My findings are that social networks are of primary importance to both educational and labor migration by young researchers to the UK, while institutions are secondary. Organizational and diasporic ties played the major role, when faculty at students' Russian alma maters connected them with Russian-speaking scientists in the UK, who in turn provided the necessary resources for relocation. Compared to institutional ones, these ties prove to be accessible, flexible, and beneficial. They granted multifaceted, individualized support, combined different resources and made connections to required institutions. Thus, they significantly reduced the difficulties and costs of migration for young Russian specialists and made them more likely to migrate.

These findings imply that collaboration with Russian-speaking scientists working abroad may increase the outflow of young specialists from the country. When scientists in Russia have limited opportunities to establish their own research groups and are unable to make attractive offers to capable students, PhD students, and postdoctoral researchers, they send those young people to work with their colleagues abroad. Therefore, measures encouraging international collaboration should be complemented with development of structural opportunities for young researchers to pursue scientific work at Russian universities—opportunities that are comparable to Western alternatives. These could include PhD programs based on international doctoral standards, including employment in a research project and a scholarship commensurate with an average salary, as well as participation in international conferences and internships. I also recommend developing postdoctoral positions that pave the path to academic careers. Finally, it is necessary to design international collaboration programs that enable scientists abroad to work with young specialists while they are at Russian and not foreign universities.

Figure 1. *Migration mechanism*

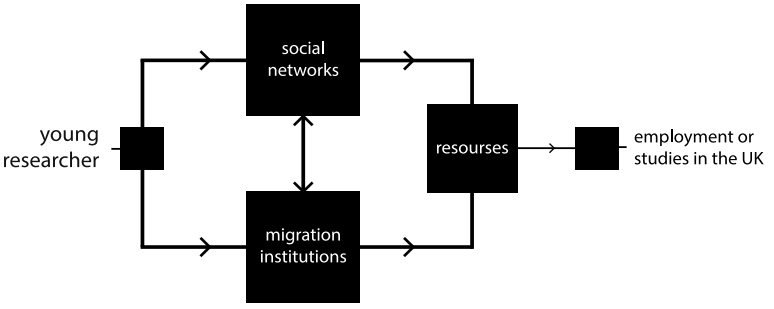
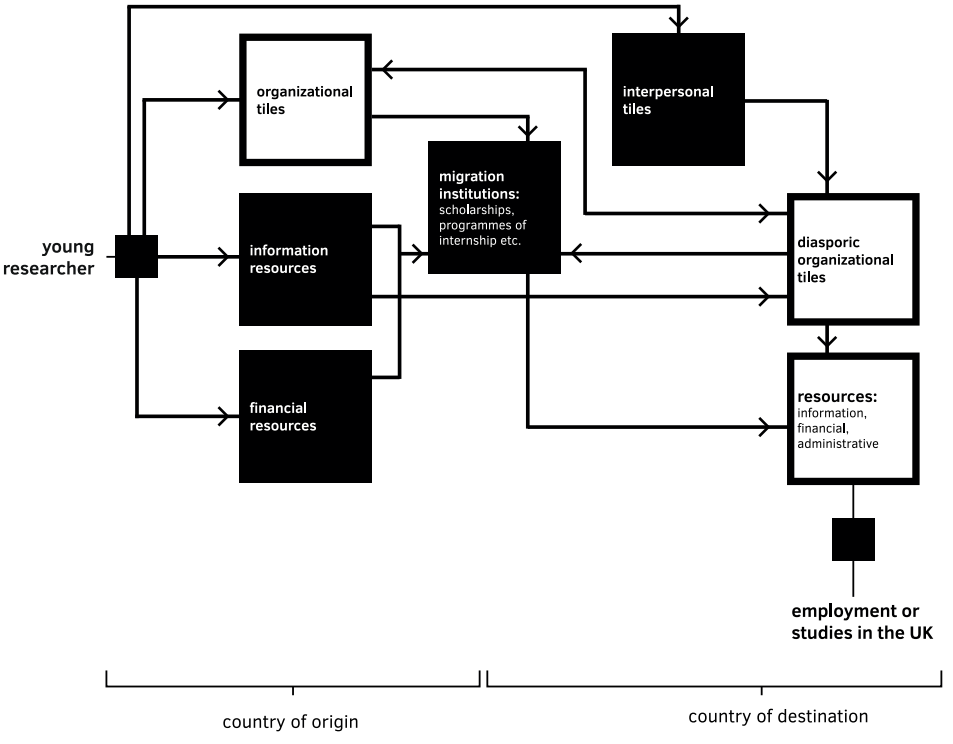
Figure 2. *Migration mechanism: revised schematic*