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## Female computer scientists from Post-Soviet space: migration and academic career in the UK<sup>1</sup>

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### Abstract

Intensification of transnational academic mobility, rise in cross-border cooperation and expansion of global collaboration networks signify increasing internationalization of science and higher education. United Kingdom is one of the leading research nations accommodating scholars from different regions around the globe and one of the major migration destinations for scientists from Post-Soviet states, especially for professionals in STEM. Many studies are focused on scale, factors and consequences of this intellectual migration, but women are largely absent from these accounts, despite substantial share of female researchers and faculty in engineering and technical disciplines in former Soviet Union (FSU) countries. This paper seeks to partially fill this gap exploring migration of Russian-speaking female computer scientists (FCS) in the UK in 1990s-2000s on the basis of semi-structured interviews and open Internet sources. Taken into account that women are reported to be disadvantaged in computer science as a male dominated discipline and may suffer from additional pressure as immigrants in the host country, the study aims to answer the following questions: What is the specificity of migrant experiences of female scientists in comparison to their male counterparts? What difficulties do women scientists encounter in their movement and adaptation? What strategies do they develop to overcome these difficulties and professionally advance in British academia?

### Female transnational academic mobility and double invisibility burden

There has been a growing awareness of the necessity of a gender-sensitive perspective in migration research, especially relating to the mobility of the highly skilled and academics (Kofman 2000). These migrant categories are often assumed to relate to men by default, while women are represented as accompanying spouses and family migrants whose skills are not important. Therefore, despite a trend towards feminization of migration (Yinger 2006; Marinucci 2007) and an increasing participation of women in highly skilled migration flows (Iredale 2005; Dumont et al 2007; Docquier et al 2009), research on experiences of mobile women as independent and self-standing professionals is rather scarce (Liversage 2009; Vance, McNulty 2011; Ramos, Bosch 2013; Cretu 2017). Taking into account that "feminised gender roles" constitute a vital component of women's migration experience (Raghuram 2008: 43), female specialists encounter particular difficulties in their international mobility in addition to adaptation and integration problems common for all immigrant professionals. For

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instance, a typical difficulty is to balance family life and motherhood with challenges of a professional realization (Bosch, Ramos 2013) and fulfilling mobility expectations characteristic of academic and IT career (Leeman 2010, Raghuram 2004). Therefore there is a need to understand the specificity of the female skilled transnational mobility and render women's experiences visible, and my study contributes to this aim.

Computer science and other STEM disciplines are among the most internationalized within the academia, with computer science and engineering departments being increasingly staffed by foreign-born faculty. Computer science is especially interesting for exploring specificity of female academic migrants' experiences because despite its origins at work of female human computers (Light 1999), it is characterized by women's strong underrepresentation in the field (Misa 2010) and dominance of masculine culture (Stepulevage et al 1998, Faulkner 2007). Masculinization was a consequence of professionalization processes aimed at raising the status of the programming occupation. Thus, in the US computer science was gradually transformed into "a high-status, scientific and masculine discipline" during 1960s (Ensmenger 2010: 239). Technology and engineering were constructed as men's domain of expertise, with technical ability being viewed as an integral part of men's identity (Wajcman 2010). The same process took place in Soviet Union, where IT professionalization was marked by a formation of a "distinctly masculine image of an ideal programmer" in 1970s (Tatarchenko 2017: 727). As a result, women were pushed out of or marginalized within the occupation, their presence was rendered hidden and their contribution undervalued. Being a minority in a professional community, female computer scientists may face problems of integration into male collaboration networks and professional circles, what might accentuate the tensions they experience as migrant academics. Thus, there is a double invisibility for FCS - as immigrant scholars and as computer scientists - supposedly converted into a double burden of difficulties in movement and adaptation in British academia. The aim of my study is to determine the specificity of female transnational mobility experiences in these circumstances, including typical problems FCS encounter and coping strategies they elaborate to overcome these difficulties.

### **Data and methods**

The study is based on 10 semi-structured interviews with Russian-speaking female scientists, who migrated from Russia or other FSU countries and currently work/worked in UK universities and research centres, occupying positions from PhD student to assistant professor. It is supplemented by examination of biographical trajectories for other FCS in the UK (47 women), reconstructed from open Internet sources (university websites, social networks, DBLP computer science bibliography). For comparison I draw on 40 semi-structured interviews with Russian-speaking male computer scientists (MCS). Russian computer scientists were identified by origins (Russia or FSU countries, excluding Baltic states), Russian language (as native or education in Russian) and belonging to computer science as a discipline (research/ teaching position, publications).

### **Findings**

I summarize main findings dividing them into pre-migration and post-migration stage. Pre-migration period includes the formation of the motivation and intention to move, actions undertaken to realize this intention, from information search to applying for the position, preparing documents and arranging a relocation. Post-migration stage consists of initial adjustment and adaptation, ending with the researcher reaching the level of adequate proficiency, and a period of integration into the host country.

*Pre-migration stage: between independent and tied migration*

FCS from Post-Soviet area use a variety of channels to enter the UK. Common pattern for single and childless women is to enrol in postgraduate programme, Master's or PhD, and come on study visa. Only few women come as highly skilled gaining work visas, and their movement is more tied to their partners and family. FCS also move to the country following their husbands who find employment in the UK as postdoctoral researchers or lecturers. In this case, they often agree on relocation regardless of their own professional prospects: "It was very regretful to move, taking into account that I did very well and actively progressed on a PhD programme" (Alena<sup>i</sup>, 1986<sup>ii</sup>). It contrasts MCS experience who mostly came to the UK through study or work route, but almost never as accompanying spouse<sup>iii</sup>: "I think that, to put it mildly, it's devastating for male self-esteem. [...] It depends on man, but for me it's a catastrophe" (Oleg, 1989).

When using study or work migration channels, FCS demonstrate more consideration for their partners and family, readiness to take into account their interests in decision-making, especially regarding the destination choice. Thus, Daria (1979), having offers from US, Australia and Germany, decided to move to the UK because her partner found an academic position there. Ulyana (1960) left her teaching position in Cyprus to join her husband because he was dissatisfied with long-distance relationship. Though she found employment in one of the British universities, her prospects in Cyprus were more promising: "If I stayed there, I would get a deanship, but my husband, my family - it's the most important for me". For Galina (1972) a boyfriend was a key figure impacting her migration intentions. Persuading her to search for the position in the UK after defending PhD thesis, he prevented her return to Belarus and even influenced the choice of potential place of work: "Universities were selected according to how distant they were from my boyfriend. There was no concern for ratings, nothing, only location and possible positions".

In contrast, men rarely mention their wives and family when narrating about their transnational moves and tend to pay little attention to their spouses' plans. Thus, despite his wife pursuing a PhD in Britain, Mikhail (1985), seeking a postdoctoral position, "also considered options outside of England" and admits that family circumstances are not "a decisive factor" and hardly a limitation in his potential movement. When MCS express concern over their spouses and family members, it is about their adaptation in the destination country already after the relocation took place. For example, difficult process of adjustment into British life prevented further migration of Sergey (1957) and forced Anatoly (1954) to work hard to reduce the risk of return migration to Russia. In rare cases MCS choose among destination countries based on their wife's place of residence or work, but they seldom compromise their careers and are ready to move when find a position corresponding to their qualifications and ambitions.

I also found that FCS migration activity is connected to their self-confidence. Those, who were assured in their high level of education and competence, searched for possibilities in leading institutions in their field and applied for positions across wide range of countries. In contrast, FCS lacking self-confidence often needed an additional support from their acquaintances and colleagues. Thus, Elena (1989), a PhD student in one of the elite UK universities, confessed that "it seemed absolutely unachievable" and she "would never dare to apply, as I thought it's too high for my level". Only through a Russian-speaking postdoc, who already worked in this institution and encouraged her to come for a visit and apply, her move to the UK became possible. Galina (1972) initially did not want to apply for a PhD programme in the UK at all because she thought "they won't take me, I'm not such a strong

professional". Then her friend interfered: he composed a CV and submitted her documents to the university himself - as a result, British professors got interested and invited Galina for a degree programme with full scholarship.

*Post-migration stage: teaching, research and family*

Similarly to other studies, I found that female computer scientists on permanent positions demonstrate different patterns of career building compared to males. Thus, MCS tend to prioritize research above all other academic activities: they speak at length about grant applications and research projects, publications and collaborations. MCS seek to establish themselves in the first place as researchers, where winning a large grant and building one's own's research team are seen as milestones of career advancement. FCS tend to be more involved in teaching or administrative work at the expense of research activities, have fewer PhD students and postdocs. Moreover, for FCS an opportunity to observe the transformative influence of their teaching on students is a reward itself and a source of job satisfaction. But when putting it as a cornerstone of the promotion, they often feel not performing properly. Because of emphasis on research activities in British academia, FCS position might be less prestigious and secure compared to MCS who concentrate on research.

Younger female scientists are generally more research-oriented, but may face difficulties in integrating into male research teams. Partly it is solved by involvement of diasporic contacts which facilitate adaptation in British universities in cases when ties with Russian-speaking colleagues were utilized on pre-migration stage. But the effect of diasporic support on post-migration is ambiguous: while it facilitates incorporation into scientific work as practiced in foreign academia and helps professional socialization of FCS as young researchers, it also seems to limit opportunities for their independent endeavours such as establishing professional contacts and extending their collaboration network outside of the immediate circle of their research team. In this respect early career experiences of FCS are similar to MCS, but there is more discrepancy concerning further career advancement. Thus, while young MCS often establish a strong tie to their Russian-speaking supervisors and continue to work with them on postdoctoral position after PhD thesis defence, such pattern is rarely not observed in FCS career trajectory.

Previous research showed that female academics are often married to other scholars, form dual career couples and collaborate with their partners. For FCS from Post-Soviet area I also find that there is a considerable involvement of husbands and partners in FCS professional activities. Thus, they develop joint research projects, apply for grants or establish companies. Husbands/ partners are often among the main co-authors in FCS papers, they facilitate wives' employment and connect them to other colleagues, encourage applications, advise regarding career development etc. This way, collaboration with husbands or partners might be an efficient strategy helping FCS to get incorporated into male-dominated scientific networks. But this relations seem asymmetric as male scientists have wider professional networks and rarely render their wives substantial importance in connection to their research activities and professional choices.

The majority of FCS reported various issues connected with balancing family life and motherhood and professional career abroad. Typical difficulties involve break because of child birth and maternity leave, health issues, time constraints and need for a careful time management. As a coping strategy, FCS tend to spend less time on research, take less teaching workload, reduce communication with their colleagues and meetings outside of working hours as well as avoid international travelling to conferences and other events.

## Conclusion

Compared to male scholars migration of female computer scientists from FSU countries is more linked to such life cycle events as marriage and children. Therefore female researchers are more likely to move as tied or family migrants despite their high qualification and research experience. Even migrating independently they demonstrate more consideration for their partner/ husband and family interests. Other independent moves represent educational migration and take place during early stages of an academic career. In their transborder careers female computer scientists also need more encouragement and support of their partners and husbands, colleagues and friends. In addition, collaboration with partners/ husbands is a common practice among women researchers and may serve an effective means of accessing male professional networks. Though these relations range from being equal to rather patronizing, they seem asymmetric, with women being more subject to their husbands' involvement in their work than vice versa.

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<sup>i</sup> Here and further on fictional names are used for anonymity purposes.

<sup>ii</sup> Here and further on respondent's year of birth is indicated in brackets.

<sup>iii</sup> Only one MCS came to the UK as a spouse, but his wife was an English citizen.