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## METHODOLOGICAL ASPECTS OF RECENT EMPIRICAL RESEARCH ON ACADEMIC MIGRATION

### INTRODUCTION

In a world of global migrations, which intensified during the last decades of the twentieth century as well as in the early twenty-first century, we are interested in a particular type of mobility: that of highly qualified specialists (such as managers, experts, engineers, doctors etc.), and academic researchers. This phenomenon is often called highly skilled migration (HSM). Scientific research and advanced studies have always connected a local perspective (from the beginning of modernity generally known as “national”) with a much wider perspective, which we call international. In this sense, recent globalization is merely a strong intensification of the important processes that have already been taking place for a long time. In this paper, we are interested predominantly in the migration of researchers, usually referred to as “scholars,” “academics” or “scientists.”

Scholars migrate to many different parts of the world. However, the main destinations comprise of only few countries. In 2001 the shares of foreigners employed in ten “leading” countries in Europe and the United States (although the sources do not imply that these “selected countries” are the top ten) were as follows: Switzerland (13%), the U.S. (8.9%), the UK (5.9%), Norway (4.3%), Belgium (3.3%), Austria (3.0%), France (2.8%), Germany (2.8%), the Netherlands (1.6%), and Italy (0.3%) (Kaczmarczyk and Okólski 2005: 51, Table 8). In 2011, a survey based on another methodological approach with a different definition of

a “foreigner” was conducted. In this case, scholars who had published scientific articles in selected journals (the selection of countries, journals and disciplines was arbitrary, as discussed later in our article) have been studied. Based on this analysis the highest shares of foreign-born scientists (regardless of their citizenship) were observed in Switzerland (56.7%), Canada (46.9%), Australia (44.5%), the U.S. (38.4%), the UK (32.9%), Sweden (37.7%), the Netherlands (27.7%), Denmark (21.8%), Germany (23.2%), Belgium (18.2%), and France (17.7 %). Stress should of course be put on the fact that four out of five leading countries on this list are English-speaking (while in Switzerland English is commonly used). A much smaller percentage of foreign-born researchers were observed in Spain (7.3%), Brazil (7.1%), Japan (5%), Italy (3%), and India (0.8%) (Franzoni, Scelatto and Stephan 2012: 1251).

Among these highly developed countries (in an economic and technological sense), a place in the rankings quoted above does not necessarily reflect rankings based on GDP or GDP per capita. In the United States (the country studied most thoroughly), foreigners work primarily in the most prestigious research universities. Most these foreigners are life scientists and engineers. In some areas, one out of three newly employed researchers is a foreigner. At the beginning of the twenty-first century, most foreigners came to the United States from China (22%), India (9.4%), South Korea (9.3%), Japan (5.4%), Germany (5%), and Canada (4.5%). Since 1965, most foreign scholars in the United States have come from regions other than Europe, such as Asia, Africa and South America (Kim, Wolf-Wendel and Twombly 2011: 721).

The migration of highly qualified personnel is often considered in terms of “brain drain.” Brain drain is “a phenomenon in which people of a high level of skills, qualifications, and competence, leave their countries and emigrate. The most typical case of the brain drain happens when students from developing countries studying in the developed countries decide not to return home after their studies” (Baruch, Budhwar and Khatri 2007: 99). The term itself appeared in 1963, and at that time referred to the emigration of scientists and engineers from England to the United States (Hart 2007: 44). Global and multidirectional changes have brought forth new concepts and terms, such as “talent flow,” “brain gain,” as well as “brain circulation” (see, e.g., Jalowiecki and Gorzelak 2004: 299; Baruch, Budhwar and Khatri 2007; Fontes 2007: 285; Ackers and Gill 2008). From today’s perspective, the decreasing influence of brain drain as a simplified concept is a result of the fact that despite the undeniable asymmetry of the exchange, all of partners benefited from it, and all parties usually share the costs.

Scholars are a specific type of migrant. Their spatial mobility, known for centuries, is characterized mainly by self-organization (motivated in turn by

the desire to gain greater prestige and professional recognition) and is usually based on a professional network of international colleagues. Individual economic motivations (due to the income differences between the home and the host country) are important here, but in many cases migrants care mainly about access to well-equipped laboratories and libraries, as well as personal contact with renowned scientists.

When analyzing the evolving new world order, emerging from the end of the 1980s, Anthony H. Richmond divided migrations into two polar types: “reactive” and “proactive.” The latter, which includes academic migration, refers to spatial population movements which are associated with relatively large personal choice, concerning for example, whether or not one is willing to move at all, when to take such an action, where to go, whether to do it alone or as a part of a group, how long to stay “outside the home,” as well as whether to return home after completing the objectives, or to go somewhere else (Richmond 1994: 58–60).

By methodology we mean in this paper the ways in which the research problem is defined, the selection of research data, sampling, and the means of analysis and interpretation of the data and findings.

## MIGRATING SCHOLARS AND OTHER HIGHLY SKILLED MIGRANTS

Research on academic migration is generally carried out from three distinct perspectives: the broadly understood sociology of science, migration studies, which sometimes resembles ethnic studies, as well as the broadly understood sociology of work. In the remainder of this paper, we would like to show which particular problems are usually investigated within such broad fields, and which methodologies are being used to face these problems. We consider this paper as a preparation for our own research project which stems from the first two perspectives of academic migration research.

Separating research on migrating scholars from other migration studies is here both difficult and necessary. Many foreign scholars migrated when they were university students, so understanding their initial situation in the host country would require one to refer to research on migrating students. There were numerous studies of this kind both within sociology and social psychology (see, e.g., recently, Galent, Goddeeris and Niedźwiedzki 2008; Mosneaga and Winther 2013). There are also reports presenting statistical data on the migration of students (OECD 2013). These works highlight, among other things, the important phenomenon of a “culture shock” (and the ways of dealing with it), which should

be taken into account in the context of our forthcoming research. Studies on these highly skilled migrants are often conducted from the point of view of the sending country, but in this paper we are more interested in the point of view of the host country. Another important context in the research on scientists is the migration of foreign engineers employed in research laboratories (see, e.g., Saxenian 2000; Bozeman and Corley 2004). Their positions do not differ much from the positions of university researchers as both groups often operate in a host culture which is different than their own home culture and they face similar challenges, using similar resources. However, research lab engineers do not teach students, and belong to different (usually highly globalized) organizational cultures than academics. The same can be said about foreign experts and managers. Furthermore, according to scientific findings, it can be concluded that the latter's organizational and emotional relationship with the country where they currently live is much weaker than the analogous relationship of scholars. The academic organizational cultures as well as the participation of scholars in ethnic immigrant cultures are very interesting to us. We are interested in their relationships with global academic cultures, but also with their particular home country, where they may return one day and where they can work in future. At the same time, the experience of immigration itself may be similar in the case of scientists, engineers, experts and managers. The issues related to the "return" to the home country and the academic institutions located there open up another interesting area of research, namely, that of return migration (see, e.g., Morano-Foadi, 2005; Delicado 2011). These aspects are very important to us as such, however they are also associated with the next culture shock, one which forces migrants and researchers of this field to analyze the push and pull factors. This requires a re-examination of their entire economic situation and the material and social working conditions.

Thus, while we are focused on the migration of scientists, we are not able to completely disregard the methodology of research on spatial mobility of similar populations, as well as the determinants and consequences of such mobility.

## METHODOLOGICAL DIFFICULTIES

The analysis of any social phenomenon requires a consideration of various specific research issues. In the analyzed case we would like to concentrate on two such issues – one is purely definitional and the other is in a broader sense methodological. We will not return to the question of who the scientists are specifically (and therefore whether or not they are significantly different from other collectivities mentioned above), although we will discuss the pros and

cons of two techniques which serve to identify them; and we will debate the usage of the term “international faculty.” Following Dongbim Kim and her colleagues, as well as other scholars on which they build (Kim et al. 2011: 723), we shall note the following difficulties. Some time ago only those scholars who were either born abroad, or did not have the local citizenship were considered as foreigners. However, recognizing citizenship as a criterion for membership in this group means that we cannot consider as foreigners those who were born abroad, or those who have been raised and educated in the country of origin and have published some part (even a substantial one) of their work there, but later obtained citizenship of the host country. Research based solely on the criterion of the place of birth does not take into account when a person immigrated – as a child, a high school student, an undergraduate university student, a PhD student, etc. These definitional problems can hinder the process of distinguishing “foreign” from “native” scholars. Return migrations and circular migrations of scholars (not analyzed in the report by Kim et al.) also hinder the consistency of analytical categories. We agree with Kim et al. (2011) that where a person took part in their undergraduate and graduate university education is particularly significant (although not ideal) for distinguishing between natives and immigrants.

Margarita Fontes and her colleagues (Fontes 2007; Fontes et al. 2012), as well as scholars whom they refer to, stress other general methodological predicaments of research on the international mobility of scholars (for those authors both emigration and return migration are equally important). In fact, they believe that it is difficult to pinpoint particular people who leave the country and return, and therefore to measure the frequency of departures and returns. The spatial mobility of scientists is becoming increasingly complex: scientists engage in various forms of more or less permanent mobility, circulate between different countries, and their work visits to the home country may, but do not have to be, permanent (i.e. they may not always be considered a final “return”). Another problem is that migration studies in this area generally focus on aggregate waves of international mobility, while it might be more beneficial to focus on the most outstanding and influential scholars (however, this opens up a new definitional problem; see, e.g., Laudel 2005). Nevertheless, there is a technical, but important problem in identifying and locating those “star scholars,” whom one might wish to investigate. Hence, many studies rely on “convenience sampling” (especially “snowball sampling”). An interesting summary of many previous methodological debates related to studies on migrating academics is provided in a report by Bohdan Jalowicki and Grzegorz Gorzelak (no date).

## DATA AND TECHNIQUES OF ANALYSIS: FIRST APPROXIMATION

Generally speaking, modern studies on migration of highly qualified personnel are based primarily on: a) existing highly aggregated statistical datasets (derived, for instance, from national censuses, national inventories of specific social aggregates, non-census representative surveys), b) data collected by statistical offices of large international organizations such as the UN or the European Union, c) the datasets compiled by researchers of the phenomenon in question (such data are generally constructed on the basis of information from the Internet, such as university websites, academic institutes, or scientific associations), and d) bibliometric data, the juxtaposition of information from the collections of articles written by foreign scholars. There are also, e) interactive field studies, for example observations of cooperation in international research teams and surveys, or in-depth interviews with persons who had been identified through internet-based preliminary research. Another method is f) the content analysis of selected websites.

In our further analyses, we focus on journal articles and some unpublished (but available on the Internet) working papers from the last few years. The articles must have been published in scientific magazines devoted to migration, social research in general, economic (in the broad sense of the term) research, social studies of science, but also some particular scientific fields. After a preliminary analysis, it turned out that papers which would be of particular interest to us and which could be useful for our own research project were very few. We found out that sometimes even very simple issues, such as the motivation to emigrate or mobility patterns could be investigated with the use of interesting and innovative methodologies, which may in turn bring forth interesting findings.

## DOMINANT RESEARCH AREAS

In the journal papers related to academic migration (and to some extent to the migration of other highly skilled specialists) that we found, we noticed a number of particular research areas, as presented below. We grouped them into sections and show some interesting examples.

The first research area takes a demographic point of view and deals with patterns of spatial mobility: places from which immigrants come to the scientific centers where they have been identified, life (or career) trajectories of migrating scholars, or the concentration of scientists from one home country in another host country (whether or not this concentration occurs, and if so, why and where) (see, e.g., Franzoni 2012; Ngoma and Ismail 2013). Many studies on patterns of

academic mobility focus on large populations of migrating scholars, but there are also opinions questioning the usefulness of such studies. For example, Grit Laudel suggests that a premium should be put on scientific elites, for those are people, as opposed to the wandering masses, who vastly contribute to the development of knowledge. At the same time it is the emigration of scientific elites and not that of the average scientists which constitutes a great loss to the country of origin, and a big gain for the host country. This issue, of course, opens up the debate on who belongs to the scientific elite (Laudel 2005).

It is a widely known fact that spatial mobility, even if we consider only the “proactive” migrants (Richmond 1994), does not take place in a social vacuum, and the main context of migration is not always the nation state. Scholars (and other highly skilled specialists) migrate with their families, and use their own, or their friends’ and colleagues’ personal and institutional contacts in many countries. Maggi Leung analyzed how, in the case of relationships between German and Chinese research communities, migration “chains” and “corridors” are being used. Chains are individual intergenerational contacts between professors and younger academics supported by the former ones. Corridors are research institutions, in which the exchange takes place (Leung 2011).

The second research area is a broadly understood environment of work. One of the particular issues examined here are the career paths of talented university graduates who emigrate to become employed in research centers in the host country (Mosneaga and Winther 2012). Rafael Alacron was interested in how Indian and Mexican engineers and scientists find employment in the U.S. high-tech companies and research laboratories. He also studied the more general processes of getting into the high-tech industry (1999). Employment of foreigners in laboratories (industrial and academic) is often connected with the fact that host countries need well-educated specialists but their secondary education system does not provide enough graduates. This is one of the main causes of the “circulation of brains.” Dongbin Kim raises the issue of the productivity of foreign workers (in the research field) in comparison to “locals” and discusses potential reasons for disparities. She also deals with the issue of foreign scholars’ work satisfaction and its determinants (2011). Since the work in industrial design offices or labs requires knowledge of a host country’s language or English, researchers are also interested in the question of how language proficiency affects the careers of immigrants (see, e.g. Chiswick and Taegnoi 2007). Kumju Hwang studied the language barrier in research laboratories, and its impact on the communication and the evolution of leadership relationships (2012). Similar studies were conducted by Marko Monteiro and Elizabeth Keating (2009). Collaborative scientific work in multicultural societies, such as in the United States, is also affected by ethnicity. The impact of the nationalities of the heads of

laboratories on the ethnic composition of these labs was examined, for example, by Zeynep Esra Tanyildiz (2013). G. Chellaraj and colleagues studied the effect of immigration of highly skilled workers (and foreign graduate students) on the dynamics of technological innovations in the U.S. (2004).

The third research area is the functioning of the global world of science. From this perspective, migrating scholars are considered as potential links between home and host countries. Ana Delicado, who generally deals with return migrations of scholars, devoted some of her papers to such questions as how migrating academics maintain bonds with colleagues from the different countries where they work or had worked; how they themselves contributed to the internationalization of research and building bridges between national academic circles; and if they publish in renown international journals (see, e.g., Delicado 2009; 2010; 2010a; 2011). Margarida Fontes examines similar issues: the formation of international networks of knowledge production, as well as social (e.g. institutional and interactional) and cultural (e.g. next culture shock) problems of those scholars who have decided to return to the home country after emigration (see, e.g., Fontes 2007; Fontes et al. 2012). Research focused on Russians who applied for scholarships in Germany and their intentions to return to their home country afterwards were conducted by Andreas Sieger. He stressed the fact that it is not only the possibility of obtaining a good job in the home country that may influence the decision to return. Some ideological beliefs (like patriotism) and confidence in the political system of the home country should also be taken into account (2011).

Fourth, on the intersection of the global problems of the world of science and the problems of national academic systems, the issue of national academic diasporas becomes more and more important. This was examined by Fontes, as well as Mihaela Nedelcu, who analyzed a Romanian online scientific diaspora (2008).

Fifth, research on communities of highly skilled expatriates, who work and live in a particular foreign country is worth mentioning. We have not come across such studies focused on academics, but we can single out, for example, a project on work and life of a very heterogeneous population of highly qualified foreign specialists in Warsaw (Piekut 2013). The author raises issues of familiarity and strangeness, tensions between the willingness to change one's life and the need for stability, social distances, "familiarized" social spaces, relations with Poles, etc.

Another research area is that of ethnic integration (we will not discuss conceptual and theoretical issues such as differences between ethnic integration, assimilation, adaptation, etc., in this article). Yehuda Baruch and his colleagues analyzed the perception of differences between ethnic cultures and labor markets



among foreign graduate students of management at American and British universities, and considered divergent interests in a long-term stay abroad as a consequence of these perceptions (2007). In Asia, specifically in Singapore, a quite similar study was conducted by Brenda S.A. Yeoh and her colleagues (2013; Yeoh and Huang 2004). Singaporean official policy aims at creating “a city of international talent.” Hence, issues such as integration of talented and highly skilled migrants with the city residents (both on the workplace level and local community level), daily routine activities, lifestyles, types of social interaction, dynamics of attachment to the city, are very important.

## DATA AND METHODOLOGIES

As mentioned earlier, these complex and heterogeneous research areas are being analyzed using a variety of methods, understood as ways of solving research problems. These include: identifying respondents, sampling, analysis of the material and its interpretation (we will not distinguish methods from research techniques, although we realize the fact that there are often good reasons to make such a distinction). Although methods are obviously adapted to specific research issues, in this section we will focus on methods rather than on explored areas. The latter cannot, however, be disregarded completely, even if they were mentioned in the former section. Moreover, we will focus more on methods of generating new research material and on interactive research approaches rather than on the analysis of already available, mostly statistical, datasets. Regarding the former approach, the main challenge is to identify respondents.

To investigate some comparative issues within the broad area of academic migration, it is necessary to study statistical reports, published by the UN and other international organizations, reports by national statistical offices, or previously published findings. Examples of such studies, making use of numerous already existing sources, are included in a paper (quoted earlier in this text) by Abubakar Lawan Ngoma and Normaz Wana Ismail on the determinants of the brain drain in developing countries (2013), as well as in a paper by G. Chellaraj et al. on the contribution of skilled immigration and international graduate students to U.S. innovation (2004).

Many countries have reliable and extensive databases, derived from national censuses. These include, for example, the “Public Use Microdata Samples” (PUMS) based on a five percent sample of the U.S. census, where one can find interesting demographic data and information concerning members of well-defined populations. We can learn a lot about the parents of specific people, their educational background and previous employers. Just as studies described

in the previous paragraph, the PUMS allow a very precise statistical analysis and mathematical modeling. This type of dataset was used by Rafael Alacron in a study on recruitment processes among foreign-born engineers and scientists in Silicon Valley (1999) or by Barry R. Chiswick and Sarinda Taengoi in their study on occupational choices of highly skilled immigrants (2007). Dongbin Kim and her colleagues (2011) relied on the “Survey of Doctorate Recipients” and “Integrated Postsecondary Education Data System” received from the National Science Foundation in their article on the experiences of international faculty. Both datasets use the same institutional variables, which facilitate comparisons. Based on these datasets, a researcher can select persons who work in certain types of educational and research institutions, or individuals who occupy certain academic positions. We can check the country where these individuals were born, or where they had studied. We can also check the ethnic composition of the institution of interest (with a focus on academics or students).

Some researchers construct datasets of their own. They analyze, for example, as Yehuda Baruch and his colleagues (2007) did, official lists of graduate students of deliberately selected universities, and then identify people with desirable social characteristics, or e-mail all potential respondents with an internet survey and then conduct further selection based on its results. Ana Delicado (2009, 2010, 2010a, 2011) was looking for Portuguese scholars who were active internationally, searching for them through various existing datasets (for example: datasets of universities, scientific associations), but also journals, where they published. Her study, of course, was not statistically representative, since it was based on a convenience sample. The author created a dataset, then sent questionnaires, and finally chose people for interviews. Margarida Fontes and her colleagues (2012), also from Portugal, constructed a dataset of scientists employed in selected Portuguese research institutes in certain academic fields and in a given period of time. Preliminary results obtained by an e-mail questionnaire allowed her to conduct further analyses and construct typologies. In the early 1990s, a self-made database was also created by Bohdan Jalowiecki and Grzegorz Gorzelak (no date). The required pieces of information (in this “pre-Internet” period) were obtained through correspondence with universities and research institutes (presumably with their authorities) of the eight largest academic centers in Poland. Researchers sent an extensive questionnaire to these institutions, and subsequently conducted 19 interviews with rectors of universities and heads of institutes. Zeynep Esra Tanyildiz studied the ethnic structure of systematically chosen research laboratories in the U.S. (2013). The choice was based on the official rankings of institutions offering PhD programs, previously constructed by the National Research Council. The activities of the same laboratories were analyzed through their websites. What is especially interesting for us in this

study is an innovative way of identifying the ethnicity of directors of laboratories and PhD students working there. The researcher not only made use of scientific resumes published on the Internet, but also benefited from systematic research support from students with different ethnic backgrounds (relevant in this study), treating them as “competent judges” to identify the “ethnic names.” This author also relied on a previously published list of the “Most Common U.S. Ethnic Surnames.” The “bibliometric” method was applied in studies on academic migration, for example, by Margarida Fontes (2007) (mentioned above). She focused on international journals in selected science disciplines of her interest, and was searching for lists of contributors and their e-mail addresses. These addresses themselves, as she noted, often (not always) provide some information about the current place of employment of an individual, but did not provide other important data. Much more information can be found on the lists of patents, which she analyzed as well. This general bibliometric approach was employed somewhat differently by Chiara Franzoni and her colleagues (2012). In four fields of science and within a particular period of time, the investigators chose “active researchers,” that is those who have published at least one paper in one of the most prestigious journals in their field, and gave their addresses as “corresponding authors.” Next, the investigators contacted selected authors (according to an algorithm) and asked about their place of residence at the age of 18. On this basis they examined patterns of mobility of particularly active and influential scholars. Similarly, Grit Laudel (2005) analyzed a set of authors who published at least three articles in “Nature” and “Science” between 1980 and 2002.

An example of a purely interactive, face-to-face research study was carried out by Kumju Hwang (2012). In addition to in-depth interviews, she conducted a participant observation of chosen laboratories in the United Kingdom and South Korea. In this case, we are not dealing with a quantitative analysis, but a purely qualitative one. Marko Monteiro and Elizabeth Keating (2009) also relied on ethnographic participant observation of specific social situations. They video-recorded methods of cooperation, meetings of working teams, and conferences. Later, they conducted interviews with the most active researchers, during the analysis of which they used a conversational approach. Another similar example is a study by Maggi Leung (2011). In this case, the initial access to the addresses of scientists was facilitated by the fact that the project concerned research institutions and key individuals known to the author. A survey method was also been used here, but a lot of relevant data was collected through in-depth interviews, expert interviews, as well as participant observation.

Interactive, face-to-face, qualitative research may concern not only the collaboration process in laboratories or in research teams, but also the daily life of those who had moved to a foreign cultural environment. Although Aneta Piekut

(2013) did not investigate scientists, the methodological approach employed in her study of the everyday life of highly skilled expatriates in Warsaw brings a number of interesting hints. The sampling was based on selected official data, opinions of experts, information from organizations founded by immigrants as well as on a snowball method. The research team led by Piekut also conducted an observation of everyday (especially collective) life of expatriates as well as individual and group interviews with them and with experts. Moreover, the author employed creative qualitative techniques, such as the mapping of social relationships. Similar problems were also investigated by Brenda S.A. Yeoh (2013) and her colleagues (e.g. 2004). They focused on talented immigrants in Singapore and on the evolution of a multicultural social environment in this city-state. The analysis of interviews was, however, mostly quantitative. Andreas Siegert, in his study on the potential return of Russians who planned to go to Germany or already lived in Germany (2011), refers to multi-sited ethnography, and suggests that scientifically sound results can be obtained by collecting materials simultaneously in the country of origin and the host country.

As we have mentioned, a number of studies on migrating scholars is being conducted via the Internet. In general, this tool is considered preliminary and auxiliary in the sense that it facilitates the access to datasets (and their construction), and also allows a cheap and fast distribution of a large number of questionnaires. However, the Internet itself has become an important platform of scientific debate. It is used to establish contact and collaboration between researchers interested in similar issues, who seldom, if ever, can meet in person. Among these similar issues one can place the willingness to exchange work experiences in a globalized world of science. We only know of one paper based on such research (though we have no doubt that there must be more similar papers), the work of Mihaela Nedelcu (2008), who analyzed web pages where members of the Romanian scientific diaspora exchanged their experiences and opinions. We believe, also based on the Polish experience during the last years of the twentieth century (e.g. the phenomenon of an online information bulletin "Donosy"), that the Internet is a very good place for investigating many characteristics of scientific (and many other) diasporas.

#### MAIN ADVANTAGES AND DISADVANTAGES OF ANALYZED METHODS

The application of quantitative methods for the study of migrating scholars takes advantages of most of their advantages described in general methodological textbooks. In particular, one should note: the measurability of results, the

possibility of their extrapolation to larger populations, the ability to predict some future trends, the possibility of introducing control variables, as well as the ability to reduce the influence of the researcher. The possibility to replicate such a research study in another cultural context or at another time is also significant. Although there are some explicitly quantitative empirical studies on the topics of our interest (see, e.g., Hermanowicz 2006), they are outnumbered by studies which break some of the basic rules of an “ideal” quantitative inquiry. Such studies often lose some of the strengths mentioned above when the research material consists of such ephemeral aggregates as migrating scholars. For example, Andreas Siegert’s (2011) very interesting work cited above was based on e-mail contacts with Russian scientists who applied for scholarships allowing them to visit Germany, which were financed by the host country. This study was therefore not representative neither for all Russian scholars planning a study visit abroad, nor for all immigrants working in German academic and research institutions. It can be expected that the way chosen to identify respondents did not allow Siegert to even contact all Russian academics willing to migrate to Germany because there are scholarships and grants for this purpose financed from other sources. It is not only target countries but also areas of expertise, which are being narrowed. For example, Chiara Franzoni (2012) investigated only scholars who have published research papers in biology, chemistry, materials and earth, as well as environmental sciences. Here we are dealing with a rare case of a “quantitative case study.”

In contrast to the qualitative case studies, which have well known and widely described advantages (Flyvbjerg 2001), the type of studies presented above have, in our opinion, more limitations than advantages. First of all, it should be emphasized that such studies are based on narrow indicators and predetermined variables and apply only to specific phenomena (for example: “migration of Russian scientists to Germany, funded by the host country,” “mobility of foreign-born scientists, i.e. biologists, chemists, ...”). Unfortunately, the authors of these types of works often do not recognize clear limitations of their endeavor and treat their findings as universal, although it can be presumed that the specificity of the countries in question, or the arbitrarily chosen disciplines, have a significant impact on the findings. For example, Sonia Morano-Foadi speaks about the “scientists,” despite the fact that her statistically unrepresentative sample (obtained using the “existing and new contacts with science organizations;” 2005: 137) was composed of 51.4% of physicists and chemists, while another 43.3% were specialists in the fields “of the natural sciences and medicine.” Therefore, the study did not embrace social scientists, humanists, and – what is especially surprising in comparison to other similar works – engineers or mathematicians.

Qualitative studies are usually conducted based on samples chosen purposefully, that is, samples which allow the researcher to test certain initial prejudgments and notions, intentionally giving up the statistical representativeness of the study. Instead, a researcher gets a deeper (or more “thick,” to use famous term coined by Clifford Geertz) description of a specific situation, which often goes beyond the initial hypotheses. A significant advantage of these types of studies is the possibility to conduct them on small samples, which is particularly important in the case of the quantitatively small population of migrating scholars. Such studies often refer to the values, subjective knowledge, as well as the hidden structures that normally are difficult to examine using a simple questionnaire (Ivanchev and Gourova 2011). For example, Kumju Hwang (2012) examined language as a barrier for both sides of the Korean-British co-operation in research and development. The qualitative research design allowed to show that often, an ordinary researcher who knows English better than the talented project manager takes his or her responsibilities in dealing with British partners, which results in the building of an alternative hierarchy of real power (2012: 18).

The main difficulty associated with qualitative studies is the subjective nature of the final interpretation. The collected material is often very rich, and the presentation and interpretation of findings generally depends on the researcher, because qualitative data cannot be easily standardized. This difficulty is not easy to overcome, and the only method to minimize it seems to be to try to compare various similar studies. Unfortunately, qualitative studies are often formulated in a way that precludes such a strategy. In some cases a description presented by a researcher is not embedded in the existing research tradition and/or in any theoretical perspective. For example, Eveliina Saari (1999) presented a very interesting ethnographic analysis of Finnish-American cooperation, but her work is unrelated to any scientific categories taken from classic or current theoretical literature. This description is very detailed, but not very helpful for understanding the broader phenomenon, which is international cooperation.

Moreover, some qualitative researchers seem to deal quite carelessly with the problem of sampling, and combine very different populations in a single category, such as engineers, entrepreneurs, venture capitalists, policymakers, and “other key actors in Silicon Valley” (Saxenian 2000: 3). A qualitative interview, which uses its entire potential, should be conducted with representatives of a social category, defined as clearly as possible, which in reality, or at least according to the initial diagnosis, has significant common characteristics.

In addition, qualitative interviews treated as if they were meant to reflect “objective social reality,” do not differ in principle from quantitative research because the gathered pieces of information are not interpreted, but analyzed

in a statistical or quasi-statistical manner. They do not allow for exploring the unique experience of the respondents. Nevertheless, some researchers interested in the migration of highly qualified specialists did conduct their interviews in a qualitative manner (e.g. in the perspective of symbolic interactionism), treating the data induced during the course of the interview as social constructions (Hwang 2008).

We would also like to show some specific sources and techniques used in the study of migrating scholars. One of them, which was already mentioned, facilitates the identification of different nationalities based on the last name of an individual. While in Poland such identification relies mostly on the intuition of the researcher, in the United States there are two ways to verify these intuitions. The first one is to make use of the existing ethnic-name databases, such as the “Most Common U.S. Ethnic Surnames.” Moreover, in countries where one can find representatives of different diasporas, it is possible to employ ethnic students who will verify, on the basis of the last name, whether an individual actually comes from a given culture (Tynyildiz 2013). However, this is assuming that the scholars are male, or that the female is unmarried or did not take her husband’s surname. In Poland, like in most countries of the world, such lists do not exist. Furthermore, a technique involving the employment of students with different ethnic backgrounds can be used only in the country where migrations are frequent, and where one can distinguish a large group of migrants from one country (such as the Chinese, Koreans, and Mexicans in the United States). In a situation where small waves of migration come from very different countries (Mucha and Łuczaj 2014), it is difficult to apply this technique.

The other two research techniques which we would like to discuss here help identify individual scientists. The first is the, already mentioned, bibliometric technique, which involves the analysis of the publications of individual authors. According to its advocates, this technique allows researchers to capture how foreign migrants are “visible” in the world of science (Laudel 2005). The basic objection in this context is the lack of databases juxtaposing “important” journals in particular fields. As a result, their selection depends on the researcher’s subjective decision (in our opinion, even a choice of one of a number of “objective” rankings is still a subjective decision), and the study, instead of being qualitative, becomes a hybrid based on convenience sampling. Moreover, the authors of articles using this technique often do not notice the fact that publishing in some journals does not depend solely on the merits of the submission, but also results from social and cultural capital, including language skills (and/or a possibility to find financing for translation and competent proofreading of the submission). In this sense, bibliometric studies favor not only “natives” but also those migrants who write well in English (or rather – are able to publish a paper

in English), which is currently the most popular language of science, but is as good as any other language to present valuable results.

The second technique for identifying individual academics is the analysis of patent inventories. In comparison to bibliometric studies, this is more efficient, because there are comprehensive lists of all patents in a given country or area (Niebuhr 2010; Tynyildiz 2013). The obvious drawback of this approach is, however, the narrowed definition of a scientist, which embraces only people who patent the results of their work. In practice, these are usually engineers and biomedical scientists. In the natural or mathematical sciences patents are rare, while in the humanities and social sciences they are practically absent. This technique, although it is seemingly very effective (providing a registry of patent holders which enables unambiguous identification of foreign researchers in some fields), has not been employed very frequently.

One can also express a more general reservation concerning these two types of bibliographic methods. In both cases the attention is focused on scientists who have successfully managed to publish the results of their work. Hence, there is a dangerous possibility that bibliographic research disregards less productive scientists, individuals focused on teaching, and the youngest (PhD students who do not have significant publications so far) as well as the oldest scholars (professors who are approaching the end of their academic career).

Research on migrating academics, due to the impossibility of determining size of the total population of interest and the difficulty of identifying a representative sample, has to remain exploratory. Existing studies rather allow for discovering certain patterns than accurate testing of specific hypotheses. According to many methodologists, the best methodological approach for such testing is a qualitative methodology or a hybrid approach, combining qualitative and quantitative methods in various reflexive ways. Only some researchers of academic migration are aware that the approach they use is based on hybrids with unclear methodological consequences (see, e.g., Shrum, Chompalov and Ganuth 2001: 723). Since, in our opinion, researchers of migration do not have any reasonable alternative in this case, they should at least acknowledge the limitations of popular methodological approaches. It seems to us that both explicitly quantitative and explicitly qualitative approaches are not suitable for an exploratory study. It is as unjustified to insist on the objectivity of the results obtained on the basis of a non-representative survey, as to present an ethnographic case study which is unrelated to any theoretical categories, concepts and hypotheses that practically preclude any further comparisons, interpretations and generalizations.



## OUR RESEARCH PROJECT – A SHORT DESCRIPTION

We are not aware of any comprehensive study of the processes related to the immigration of foreign scholars (or even broadly understood highly skilled specialists) to Poland. We have reviewed the methodological approaches presented so far with the aim of developing our own research project on scholars migrating to Poland. It is hardly surprising – immigration, this type especially, is still a new phenomenon in our country. Therefore, we believe that our own research project should not focus on any specific issue, but should provide as wide of a picture of this category of migrants as possible. At the same time we are interested in two facets of this phenomenon – the scientific work of foreigners and their life in Polish local communities.

The organization of such a research project must of course begin with defining, and then identifying the persons of interest. Thanks to the “SIO SW” dataset (“System informacji o szkolnictwie wyższym” 2012) we know (though only roughly – see Mucha and Łuczaj 2014) in which academic centers, and even in which specific Polish colleges and universities, such people are employed. We also know the structure of their employment and the number of foreign scholars in each institution. We do not intend to identify all of these people. Instead, for our study we plan to select the largest and most prestigious public universities located in major cities, and identify foreign nationals with at least a PhD, employed there as full-time faculty. The universities will be chosen based on the most reliable (of those we are aware of) university rankings published by mass media and the official (authorized by the Polish ministry of science) rankings of scientific institutions. We also intend to choose a few small academic institutions, located in relatively small cities, which employ foreigners.

We would like to reach specific individuals using the publicly available lists of faculty and lists of publications which are primarily posted on the Internet (although we know that this approach can be tricky, for example due to the varying frequency of updating information, different qualities of university and public administration websites). We also intend to employ “snowball” sampling. Where it is possible, we will analyze the scientific biographies of foreigners (for instance through their CVs), their scientific achievements, their membership in research teams, in national and international scientific associations and educational groups.

We intend to contact those people, if their e-mail addresses are available, with a letter of invitation and a short questionnaire about their life path, educational background, social relations at work, international academic contacts, and their present life in the local community. If necessary, we can ask some respondents for their CV and lists of publications. From the people who respond to the initial

survey we will choose several academics with whom we will carry out in-depth interviews. We will also try to contact the work colleagues of our respondents.

The main research questions of your study relate to issues such as the adaptation to a new environment, cultural barriers in their work and life, institutional barriers in both spheres, the course of their academic career and private life in Poland, as well as plans (including those related to migration) for the future. Among the specific issues we will be most interested in the respondents' motivations to work in Poland, processes of recruitment for academic positions, contact with individuals and institutions in their home countries, their proficiency of Polish language, and their participation in university life, as well as in the local culture.

In one of the larger academic centers, we have already managed to identify specific persons and have pre-invited them to participate in the research. We intend on conducting in-depth interviews with all people who agreed to take part in the research, which will be treated as a pilot study.

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