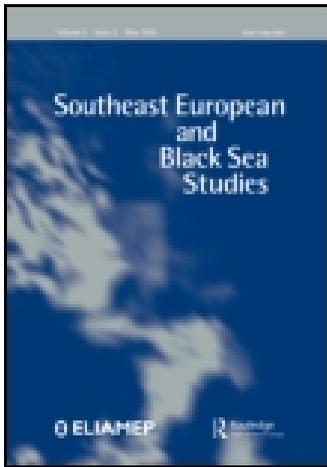


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Hierarchies and categorical power in cross-border science: analysing scientists' transnational mobility between Ukraine and Germany

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Using the results of qualitative research in Germany and Ukraine, the article provides evidence to how the short-term and circular geographic mobility of Ukrainian natural scientists between Ukraine and Germany contributes to the formation of a cross-border scientific field. Combining Bourdieu's field theory with the transnational field approach and the intersectional perspective, the article indicates how unequal access to scientific reputation is structured across borders. In sum, the complex interplay of ethnicity-, class- and gender-related categorizations pushes mobile scientists to define themselves as an exploited elite. At the same time, female mobile scientists are identified as having the most disadvantaged positions in the transnational academic hierarchy.

Keywords: transnational mobility; transnational inequality; transnational field; intersectionality; scientists; Germany; Ukraine

Introduction: from permanent migration to short-term mobility

The collapse of the socialist regimes in Eastern and Central Europe and the fall of the Iron Curtain at the end of the 1980s led to large-scale emigration from the former socialist countries to Western Europe. During the 1990s and later, after the 2004 and 2007 enlargements of the European Union, emigration flows from Central and Eastern to Western Europe steadily decreased and permanent emigration was gradually replaced by short-term and circular mobility (Wallace 2002).

This article focuses on the changing nature of migration from Eastern to Western European countries and addresses two issues. First, it examines how the cross-border mobility of scientists from one Eastern European country contributes to the formation of a 'transnational field of science'. My second purpose is to identify the conditions which influence the unequal distribution of symbolic, organizational and material resources within this transnational field. These issues are closely connected and are discussed using the example of natural scientists' geographical mobility between Ukraine and Germany. The discussion is based primarily on the results of 16 semi-structured interviews the author carried out between 2010 and 2012 with natural scientists (mathematicians, physicists and

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biologists) who regularly travel between Eastern and Western Europe. The interviews were conducted in various localities in Germany and Ukraine using methods inspired by multi-sited ethnography (Amelina 2010).

The focus on the Eastern European social and historical context is promising for three reasons. First, immediately after the breakdown of the socialist regimes at the beginning of the 1990s, international geographical mobility was one of the main strategies for individuals and households to improve their social mobility (Heyns 2005). Second, the transformation of the political and economic regimes of Eastern and Central European countries led to comprehensive modifications of their migration and welfare regimes (Cerami and Vanhuysse 2009). The welfare gaps which emerged served as an additional stratifying force within the social orders of the sending countries. Moreover, in the second half of the 1990s, researchers realized that migration from Eastern and Central European countries had a significant influence on the transformation of the migration and welfare regimes of some of the receiving countries in Western Europe (Banting 2000). Third, the enlargement of the European Union has not only produced new mobility and welfare regimes on the supra-national level, but has also created new peripheries of Europe which include, amongst others, countries such as Russia, Ukraine, Belarus and Moldova. Consequently, migrants from these new European peripheries who continuously move between the sending and receiving countries experience different forms of oppression and exploitation than migrants from those Eastern and Central European countries which are now EU member states (Jandl 2007).

This article addresses the question of how the changing nature of scientific migration between the Eastern European periphery and Germany encourages the formation of unequal social positions within the social field of science. In particular, it goes beyond the study of scientists' geographical mobility as a process that influences an economic transformation of the immigration country or of the emigration country. It also does not discuss the conditions of social mobility of the migrant scientists in the receiving country. Instead, it provides evidence of how social inequality – understood as a hierarchy in terms of access to symbolic, organizational and material resources – emerges within the transnational field of science. In doing so, I seek to overcome the nation-state-centred focus (Amelina and Faist 2012) and to explore inequality formation in the context of cross-border mobility.

The article begins with a brief overview of the current state of research on the geographical mobility of highly skilled migrants and a discussion of the brain drain and brain circulation approaches. The concept of the *transnational field of science* is then introduced and its underlying premises explained. The final section presents the results of the author's qualitative study, which shows the significance of multi-dimensional hierarchies that are emerging in the field of cross-border science. In sum, the article provides evidence to how cross-border mobility generates new social realms and sheds new light on inequality patterns, which emerge beyond national container-spaces.

International migration of scientists: neither brain drain nor brain circulation

One of the scientists interviewed during my fieldwork was Oleg, a 28-year-old mathematician who was employed as a junior professor at the University of Wiesenbad.¹ The following paragraph briefly introduces his professional biography which allows us to address the concerns of this article.

Oleg began his career at Kiev State University, where he studied Mathematics. He graduated at the age of 20. The supervisor of his diploma thesis, who held professorships at the Universities of Kiev and Wiesenbad, suggested to Oleg that he obtain his PhD at a German university. Oleg completed his doctoral studies at the age of 22, winning the prize for the best dissertation at the Department of Mathematics in Wiesenbad. Later, Oleg's PhD supervisor helped him to get a research position at the same university. Like his PhD supervisor, Oleg has been teaching at Kiev University on a regular basis, even though he is a full-time research fellow at Wiesenbad. This is possible because the academic terms at German and Ukrainian universities do not overlap, so that Oleg can spend several months teaching in Kiev.

In the interview, Oleg said that he experienced high work pressure at the university in Germany. According to him, to be accepted, an Eastern European scientist is expected to work 'twice as hard' as a German colleague. However, he also stated that his research position at the German university not only gives him access to current research trends, financial (research) resources and Europe-wide collaboration opportunities; it also offers certain benefits at the university in Ukraine, where he is given additional opportunities to participate in decision-making and restructuring processes concerning the curriculum.

The above brief account of one interviewee's scientific career is a good example of the changing, increasingly multi-directional nature of (Eastern European) scientists' migration, which is better understood as short-term and circular mobility rather than as permanent emigration.² It also reflects the ambivalent social position of transnational scientists who experience some degree of exploitation at the university of the receiving country, but at the same time have opportunities to build a scientific reputation, participate in decision-making and obtain research funds at the university of the sending country, not least because of their simultaneous commitment to two universities: in the immigration and emigration countries.

This portrayal of Oleg suggests two questions as eminently relevant. Which theories can be applied to examine this kind of transnational scientific career from a social inequality perspective? Or, more generally: which approaches address the relationship between the formation of unequal social positions and the cross-border mobility of scientists? The twin concepts of brain drain and brain circulation dominate the current state of thinking on scientists' international mobility in an enlarged Europe. These analytical tools will be briefly reviewed below.

The existing studies on scientists' migration from Eastern Europe in the early 1990s appear to generally confirm the *brain drain approach* (Vizi 1993). They address emigration from countries such as Bulgaria, former Czechoslovakia, Poland, Hungary and Romania, as well as from Russia and other post-Soviet republics. Analysis of the available statistical data suggests that, immediately after the fall of the Iron Curtain in 1990 and 1991, up to 20% of emigrant populations from these countries were scientists from professional fields such as medicine, biology, chemistry, engineering, information technology, mathematics and physics. The studies regard the emigration of scientists as a loss of 'intellectual resources', which has a negative influence on the economic growth of the sending countries (Ivakhnyuk 2006). However, studies on structural factors also identify difficult economic conditions such as a lack of research funding, low salaries and 'better research opportunities' abroad as the main factors that cause scientists to emigrate (Ivakhnyuk 2006). Studies of scientists' motivations for emigrating conducted immediately after the

fall of the Iron Curtain showed that the limitations of a scientific career and the declining prestige of the scientific profession were amongst the major reasons for scientists to emigrate (Vizi 1993, 104). It is worth noting that these studies implicitly refer to the world-systems theory, which originally framed the brain drain approach (Portes and Walton 1981).

The brain drain approach concerns the interrelation between scientists' international migration and the formation of *economic* inequalities as a result of the international division of labour (Portes and Walton 1981). Focusing primarily on the economic development or underdevelopment of states, it rarely takes the transformation of social positions of individuals or groups into consideration. This is why it does not focus on how cross-border mobility influences scientists' access to the symbolic, organizational and material resources *within* their professional field. The institutional transformation of science as a particular social field is rarely addressed in this regard.

However, current studies on the migration of highly skilled populations from Eastern European countries (Wallace 2002) call the premises of the brain drain theory into question. The pessimistic world-systems notion of the exploitation of the periphery by the centre is replaced by an analysis of multi-directional migration as a resource for the economic development of both the receiving and sending countries. Researchers use the term *brain circulation* (Baláz, Williams, and Kollár 2004) to reflect the fact that the elimination of geographical mobility constraints in Europe has led to unique migration conditions which promote temporary mobility rather than permanent migration (Wallace and Stola 2001). In addition, these studies predict a convergence of economic development of the new and the old EU member countries in the long run (Straubhaar and Wolburg 1999; Wallace and Vincent 2007), which is expected to promote temporary mobility rather than permanent emigration as well. Finally, current return migration policies of sending countries, which aim to create appropriate employment possibilities for highly skilled migrants, also encourage the mainly temporary mobility of skilled migrants in general and of scientists in particular (Laczko 2001).

The concept of *brain circulation* (Barre et al. 2003; Kuznetsov 2006; Saxenian 2002) indicates the relevance of transnational network ties in encouraging the structural interconnection and economic exchange between the economies of migration-sending and migration-receiving countries. In this context, transnational linkages of highly skilled professionals are understood to be both a competitive advantage in establishing high-tech businesses and a resource to increase the economic growth of both countries. In general, studies on brain circulation between Eastern and Western European countries focus mainly on the economic dimension of inequality, and the fact that economic divergence between sending and receiving states is reduced due to transnational linkages amongst highly skilled professionals and amongst companies which operate across borders. In doing so, they rarely address social mechanisms which determine the stratification of access of highly skilled professionals to the symbolic and organizational resources in the context of cross-border mobility.

Despite their conflicting views on the impact of international migration on economic disparities between the immigration and emigration countries, the brain drain and brain circulation approaches have similar weaknesses. First, they tend to reduce social inequality to economic inequalities between nation states. Second, they extrapolate the research results for the meso-level of organizations or networks to the macro-level, in this case again the nation states. Third, although the two

approaches address the global and transnational settings of inequality formation, they focus primarily on nation states as the main framework of analysis.

These approaches to the mobility of scientists fail to consider three factors. In the first place, they do not acknowledge the multi-dimensional understanding of social inequalities proposed, amongst others, by intersectional studies (e.g. Anthias 2001; Walby, Armstrong, and Strid 2012), which avoid reducing social inequality to economic inequality. In the second place, they ignore the current approaches to the transnationalization of social inequalities (e.g. Amelina and Faist 2012; Beck 2007), and focus exclusively on the unit of the nation state. In the third place, they fail to consider the impacts of scientists' mobility on the (re)structuring of the non-national scientific field. To address these research gaps, the next section discusses the formation of scientists' unequal social positions within the *scientific field* using the transnational and field approaches.

Cross-border mobility and the hierarchy of scientists' positions: towards the transnational field approach

The transnational perspective allows researchers to study social inequalities in two ways. The first approach addresses the structural conditions which determine the positions of individuals or collectives within the transnational class hierarchy (Sklair 2001). The second approach focuses on the inequality of individuals' positions within the transnational social fields (Levitt and Glick Schiller 2004).

This study builds on the second approach because it allows us to consider the internal logic of science as a particular social field, using the idea of field-specific hierarchies to examine inequality between scientists' positions. In contrast, the transnational class approach focuses on the vertical inequality of social positions in the realm of global society as a whole. Moreover, the field perspective can be more easily combined with the notion of multi-dimensionality of social inequalities, as will be discussed later.

Multi-locality of professional commitments as a constitutive element of the transnational field of science

According to the field approach, science is organized around practices of truth and knowledge production. It is internally divided into sub-fields of disciplines and into various disciplinary approaches and schools which govern the everyday practices and experiences of scientists. Inequality within this field thus emerges with respect to field-specific symbolic and organizational resources, such as symbolic power and access to positions in scientific organizations (Bourdieu 2001). This section discusses the *transnational* dimension of the field of science and then examines the unequal distribution of these resources in detail.

The interview with Oleg suggests that multi-local professional involvement is decisive for the constitution of the transnational field of science. According to Levitt and Glick Schiller (2004), who explicitly draw on Bourdieu's (1985) field theory, the ability of individuals, organizations and institutions to participate in multiply located, dense, long-term social networks that spread over nation states, cities and localities is crucial for the formation of cross-border fields. This implies that there are not only mobile scientists who are defined as relevant field players,

but also immobile scientists ‘who do not move themselves but maintain social relations across borders through various forms of communication’ (Levitt and Glick Schiller 2004, 10).

According to this view, the *transnational scientific field* is organized around multi-local professional linkages that are based on a network of social relationships which emerge from multiple memberships of scientists in universities or institutes in immigration, emigration or even third countries. Mobile and immobile actors who are unable to get access to interpersonal and organizational transnational networks are excluded and predestined to remain players only in national scientific landscapes. Transnational geographical mobility, which is characterized by its unfinished and multi-directional nature, appears to be a constitutive element of transnationalization.

The summary of Oleg’s scientific career indicates three structural dimensions of transnationalization within the cross-border field of science. The first dimension concerns ways of accessing the transnational field. The *interpersonal networks* allowed Oleg not only to begin his PhD studies in Germany, but also to maintain his professional contacts with Ukraine. These networks are, however, gendered and ethnicized, as will be discussed in the next section.

The second dimension worth noting is *transnational membership* in scientific organizations such as universities. Scientists who enjoy transnational membership hold temporary or permanent teaching and/or research positions in the immigration country and the emigration country. Under certain circumstances, holders of transnational membership also have privileged access to the symbolic power and the institutional and material resources in various organizations of a scientific field.

Third, the *institutional level* of the scientific field makes *international visibility* of research one of the leading criteria for a distinguished scientific reputation. Transnational scientific reputation is reflected in the pressure exerted on scientists to produce a great number of peer-reviewed publications in national and international journals. The only way for researchers to build a transnational reputation is to have their research results recognized by relevant communities of academic disciplines both in and outside their home country. Recognition can come in various forms, such as honorary degrees and visiting professorships.

My ongoing research suggests that these three aspects are essential parts of the process of transnationalization of science. However, the transnational prospect taken does not suggest a transnational scientific landscape as based on mutual solidarity and equal opportunities in the scientific careers of transnational players. The following section draws on Bourdieu’s field approach to address the issue of inequality of scientists’ positions in more detail.

Understanding inequalities within the transnational field of science: combining Bourdieu and the intersectional approach

How does the field approach address social inequality in the scientific sphere? Pierre Bourdieu’s theory of social fields provides evidence of how social relations are fixed by power. He distinguishes between the economic, cultural, political, scientific and bureaucratic fields and assigns to each of them a specific logic (the *nomos*), insisting that the particular field logic organizes the routines to manage practices and experiences within the field (Bourdieu 1985).³ Although Bourdieu’s field theory is used here heuristically, this article follows the understanding of the social field as created

by the relational positions of actors who are involved in the fight over power of definition and symbolic resources. In this context, social inequality is defined as the inequality of social positions within a particular field that results from the specific rules of the field and the actors' access to the field-specific resources (Bourdieu 1985). However, the transnational perspective suggests that access to demanded resources and scientific reputation is evaluated against the background of the transnational landscape of scientific organizations. Because this study analyses inequality as inequality between prominent scientists, holders of symbolic power and newcomers by whom these positions are formed, my principal concern here is the question of whether and under what conditions transnational linkages contribute to scientists' access to the symbolic and other powers within this specific field.

Although Bourdieu's field approach provides insights into how social inequality emerges within a particular field, it also acknowledges the relevance of multiple forms of capital, such as economic, cultural and social capital, which co-determine actors' social mobility, although they are somewhat less relevant than the field-specific capital most prevalent in the particular field structure. However, apart from the capital (i.e. the class dimension), the field approach rarely considers the dimensions of ethnicity (including 'race') and gender. By ignoring these dimensions, we risk overlooking dominant stratifying forces within the transnational field in question. The biographical account of Oleg suggests that the transnational positioning of scientists is characterized by a specific ambivalence. On the one hand, some of the interviewees mentioned 'exploitation' at the universities of the receiving country, which appeared to be connected with processes of (self-)ethnicization. This suggests that *ethnic categorizations* might become highly relevant stratifying forces in cross-border science.

On the other hand, the analysis of interview transcripts indicates that *gendered categorizations* are relevant as well. For example, some interviewees believe that the fact that there are only a small number of female transnational scientists is explained by 'women's natural ability to have and rear children, which potentially makes female scientists immobile' (28-year-old male researcher, mathematician, place of interview: Germany). Consequently, scholars benefit from addressing gendered categorizations as relevant for the genesis of unequal social positions in cross-border settings. The combination of field theory and the intersectional lens for an inequality analysis is, therefore, a promising conceptual tool to reconstruct the unequal social positions within a cross-border setting.

Approaching inequality of social positions within the transnational scientific field: towards the power of categorization

The empirical field and the guiding research questions

The data for the analysis of transnational hierarchies were collected according to the multi-sited research strategy (Marcus 1995), which includes the localities in both immigration and emigration states in the research design. First, using the Social Network Site 'Ukrainian Scientists Worldwide',⁴ I conducted an ethnographic observation of online conversations and posts. After content analysis of the conversations, I contacted the German universities which platform members identified as the target universities: Aachen Technical University, Technical University Berlin, Bielefeld University, Göttingen University and Würzburg University. After conducting 12 semi-structured interviews with natural scientists (mathematicians,

physicists and biologists) based at these universities, four additional interviews were conducted in Ukraine (National University of Kiev). These contacts were provided by the interview partners in Germany. The age of interview partners varied between 25 and 45. Gender balance in the sample was almost achieved (nine men and seven women). The subsequent data interpretation included a two-step procedure. First, the analysis was based on the open coding of interviews, which follows the premises of grounded theory (Strauss 1987). Second, selected interview paragraphs were analysed according to hermeneutic sequence analysis (Amelina 2010). This integrated approach allowed illuminating cultural systems of classification, which actors use to interpret social praxis.

As indicated above, the research results were interpreted from an intersectional perspective on social inequality (Anthias 2001; Walby, Armstrong, and Strid 2012). First, this approach considers various inequality dimensions such as class, gender and ethnicity/race as central principles for determining unequal life chances and life conditions. These different sets of unequal social relations cannot be reduced to each other; which means, for example, that gender or ethnic divisions cannot be reduced to class inequalities.

Second, this theory draws on post-structuralist ideas (West and Zimmerman 2002) to highlight the *power of social categorization* spread over different social fields, institutional regimes or organizations. This approach analyses the genesis of multi-dimensional hierarchies by identifying the *making* of social boundaries between ethnicities, gender positions or classes.

Third, in addition to focusing on the multi-dimensionally formed hierarchies within society as a whole, intersectional analysis can also be used to address internal hierarchies within social fields. The following analysis introduces paradigmatic examples of how ethnicity-, gender- and class-specific categorizations – *categorical mechanisms* in the terminology of Charles Tilly (2000) – co-produce unequal positions within the cross-border field of science, and how they are connected to the unequal distribution of field-specific resources.

Consequently, the guiding question of this analysis is: what practices of categorization generate unequal positions within the transnational scientific field? The focus is on the advantaged and disadvantaged positions amongst scientists who commute between Ukraine and Germany.

‘Highly welcome talents’, ‘cheap labour’ and ‘patriots’: natural scientists between ethnicization and self-ethnicization

Ethnicization, as a boundary between ‘us’ and ‘them’ (Wimmer 2008), is relevant in the scientific organizations and networks of both immigration and emigration countries, if in a different way. At universities in Germany, natural scientists from Ukraine are confronted with ambivalent ethnic labelling. First, they are ethnically labelled in a positive way as ‘highly welcome talents’, the main reason being that the educational institutions from which scientists originate in the emigration country enjoy a good scientific reputation in Germany (as well as in other European countries and the USA). Most of the individuals interviewed for this study mentioned particular schools of mathematics and physics. Affiliation with these institutions opens doors to employment at universities in Germany and other countries. However, Eastern European scientists also feel that they are regarded as cheap labour:

I think that you know perfectly well what happened after the breakdown of the Soviet Union. All mathematicians went to the West. (...) Take a look at the publication lists of German scientists and at how they have changed since the 1990s. You will notice that German mathematicians really benefit from us: the frequency of their publications increased enormously. (...) Also look at the names: you will find Slavic-sounding names in all co-authored publications. (30-year-old researcher, mathematician, place of interview: Germany)

The interviewees also state that their employers, i.e. German universities, expected them to perform additional duties not defined in their employment agreements. For example, all the interviewees were involved in the preparation of research proposals for their employers, an activity not specified in their contracts. However, they emphasized that this extra work was important because it gave them the opportunity to demonstrate ‘commitment’ and ‘willingness to get ahead’. Young scientists in particular justified this extra work as an opportunity to show that they are strong enough to pursue a scientific career in the West. Interestingly, all of the interviewees used ethnic categorizations to justify the extra work (or, to use the Marxist term, exploitation):

We Ukrainians, no, (...) even more generally, (...) we Eastern Europeans are expected to work twice as hard (...) no, three, four times as hard as the natives. Who are we? NO-BO-DY (...) They [the employers] make us feel that way every day. The only way to earn some respect is to work more: to publish, to speak at conferences and to obtain external funds. (...) But you also know, we are tough (...) compared to what WE experienced in the '90s, we will manage somehow. (28-year-old researcher, mathematician, place of interview: Germany)

This passage indicates not only how mobile scientists at German universities are ethnicized, but also how scientists ethnicize themselves: ‘Being strong enough’ is a (socially constructed) ethnic trait which is perceived as a condition for successful performance at universities in Germany and other countries. In addition, ‘being strong enough’ is related to the difficult shared past. Interestingly, ‘being a Ukrainian’ appears to be less relevant in this regard than the shared experience of being Eastern Europeans after the dramatic breakdown of socialism.

Mobile scientists are also affected by ethnic labelling at the scientific organizations of the sending country, since they commute between Ukraine and Germany. Universities in Ukraine benefit from the scientific know-how and international contacts of transnational scientists, as the following passage shows:

When I found a position at this laboratory in Kiev, I was made highly welcome because I knew the particular brain cell modification method of [names the method]. Actually, I originally co-developed this method with my boss in Schönefeld [name is fictitious]. I also continued to publish with him on this topic. (...) However, my new boss [at a laboratory in Kiev] suddenly decided to be the co-author. What does that mean? She certainly benefited from the new international reputation I helped her build. (...) But this is why she also pushes my career ahead. (34-year-old researcher, cell biologist, place of interview: Kiev)

In addition, in the emigration context transnational scientists are positively labelled as ‘some of us’ or ‘our best’ for being able to get access to new audiences and communities:

How am I welcomed in Kiev? That's great! [laughs] My students there often say I am their idol. (28-year-old researcher, mathematician, place of interview: Kiev)

Another interviewee expressed a similar view:

What happens during my stays in Kiev [at the laboratory]? Actually, I feel like a ruler: everybody listens to me and (...) I enjoy a great reputation. (34-year-old researcher, cell biologist, place of interview: Kiev)

At Ukrainian universities, transnational scientists ethnicize themselves as part of the national scientific community. In particular, the contentious nation-building processes after the breakdown of the Soviet Union have promoted patriotic terms and definitions in the scientific-political discourse in Ukraine as well (Gnatyuk 2005). This is also a reason why the Ukrainian ministry of education and science regards scientific publications in Ukrainian as more relevant than publications in English when appointing professorships and other scientific positions. 'Being a patriot' is therefore an important element of the scientific-political discourse in Ukraine because it has considerable influence on whether or not researchers can pursue a scientific career. According to the interviewees, during their stays at the Ukrainian universities, they often use patriotic terms publicly to acknowledge their affiliation to the home institutes.

The preliminary conclusion is that, as evidenced above, the complex process of ethnicization is highly relevant for mobile scientists' simultaneous access to and maintenance of membership in the universities of the immigration and emigration countries. One could even use the term *paradoxical ethnicization* because on the one hand the ethnicization of mobile scientists from Ukraine as 'cheap labour' encourages their (self-)exploitation in the receiving context. On the other, the patriotic discourse of the emigration context re-defines the extra work as an honour. In other words, mobile scientists' extra work is embedded in the mechanism of *opportunity hoarding* (Tilly 2000). Whilst the mobile scientists' extra work at German universities ensures access to organizational resources, publication opportunities in international peer-reviewed journals, international awards and the accumulation of a scientific reputation, at Ukrainian universities they act as a 'strategic group' which is able to provide access to the latest international scientific subjects, methods and international networks. (Male) mobile scientists screen and use various opportunities at various organizational sites to reach the top of the transnational hierarchy, thus gaining access to symbolic power (Bourdieu 1985).

The question of how these ethnic categorizations are embedded in class-specific categorizations is addressed in the next section.

Class-related categorizations: the self-description of 'being the exploited elite'

One of the first results of this study suggests that class-related categorizations are embedded in ethnic categories and, thus, in the process of (self-)ethnicization. At first glance, one may think of transnational scientists as the 'transnational middle class', a group of people whose academic degrees are readily accepted in different nation-state contexts. However, the interviews suggest that these positions are more likely to intersect with ethnic categorizations. Whilst Ukrainian scientists at the universities of the receiving country are perceived as lower-middle-class because of their ethnic background ('cheap labour'), their colleagues at the universities of the

emigration country honour their international employment status in a country of higher economic development, thereby actually assigning a higher class position to them ('the best of us'). From the latter perspective, geographically mobile scientists appear to be upwardly socially mobile because they have a higher income than immobile scientists in the sending country and 'enjoy cosmopolitan lifestyles', which include international collaboration, participation in international conferences and international travel. This perception also results from objectified differences in living expenses and wage levels between the two countries.⁵

In sum, the self-positioning of my interviewees is that of an 'exploited elite'. Mobile scientists are well aware of the extra work they are expected to put in outside Ukraine, but they also regard employment abroad as an opportunity to pursue an international career. Paradoxically, this self-perception of being privileged and disadvantaged at the same time is not addressed or discussed by them as a contradiction in terms.

Why are female natural scientists at a disadvantage? Between 'post-socialist' and 'Western' interpretations of gender equality

The research conducted for this study suggests that female mobile scientists in particular face considerable challenges in pursuing international scientific careers and that these challenges are significantly different from those facing male scientists.

Engendering, as a social boundary between 'male' and 'female' practices in the scientific field, is both discipline specific and context specific (depending on the types of networks and organizations in which the scientists are involved). Scientific organizations in Western and Eastern European countries have been making efforts to achieve gender equality, but this trend is framed by different institutional discourses and strategies of legitimization. At German universities, the gender equality discourse (which includes a discourse on the strategy of 'gender mainstreaming') began in the early 1970s and was institutionalized by the end of the 1990s. Socialist feminism, which was part of the official Soviet ideology, became relevant in scientific organizations of the USSR much earlier, in the 1930s. The main idea of 'socialist feminism' involved gender equality in terms of income and access to professional positions and decision-making processes (Dudwick, Srinivasan, and Braithwaite 2002). Soviet universities and research institutes in particular, including natural science institutes, followed this policy of gender equality until the end of the 1980s. The natural sciences were not completely dominated by female scientists in the USSR, but nor were they exclusively the domain of male researchers (Linkova 2007). For reasons of space, this article cannot discuss particular gender discourses and gender orders in greater detail. Instead, the intention is to emphasize the increasingly shared institutional semantics of gender equality in the universities of both countries.

An interesting finding here is that, despite the formally institutionalized gender equality arrangements, there are, in particular, mobile female scientists who give up their international careers on the grounds that they are excluded from relevant resources. Here is a typical example. One of the interviewees had successfully completed her PhD in Biology at a German university and had been employed on an innovative research project, but then decided to terminate her contract to return to Ukraine. She stated that Kiev was the more favourable environment to make care

arrangements after the birth of her child. Although she continued to work at a research institute in Kiev, she did not have the same access to funding and technologies. As a result, she was unable to submit publications with innovative research results to internationally renowned journals. Indeed, this interviewee explicitly reflected on her downward mobility, stating that the loss of professional opportunities was strongly connected to particular stages in the life-course such as pregnancy and childbirth. The interviewee also remembered very well what happened when she told her German employer about her decision to leave the job:

This happened during the mandatory Christmas party at our office [at a German university]. When my boss, (...) you know, she is a successful female professor (...) opened the party, she said to everybody, 'Look at her! She got pregnant and now she's leaving us! What better way to ruin a scientific career!' (...) Later, however, she apologized, though not in public, not in front of the others. (28-year-old researcher, cell biologist, place of interview: Kiev)

This account is important because balancing motherhood and a scientific career is not a contradiction in terms, according to socialist feminist ideology, which is still quite a powerful tradition in post-socialist Ukraine. The gender equality discourse in Germany and other non-socialist countries, by contrast, places great emphasis on equal professional opportunities, but still rarely treats the balancing of parenthood and a successful professional career as something to be taken for granted (Pfau-Effinger and Magdalenic 2009).

The process of social categorization, which relates to biological differences (pregnancy, childbirth), creates a categorical distinction between 'male' and 'female' that is still relevant in the context of scientific organizations. The interesting finding here is that transnational scientists organize their careers at the crossroads of multiple national and institutional gender orders of the scientific field. However, the post-socialist gendered career pattern (the balancing of parenthood and professional activities) is in conflict with the non-socialist feminist discourse and results in the exclusion of female mobile researchers from career opportunities.

Concluding remarks

The results of the study suggest that neither the brain drain nor the brain circulation approach explain the genesis of transnational inequalities because their main interest is the economically quantifiable advancement of particular nation states which are connected by migration flows. Therefore, this article calls migration scholars to organize the research beyond exclusive frameworks of particular nation states. It also casts doubt on the traditional view that social inequality always results from economic inequality between nation states or that it is a class order within particular national societies. By contrast, my study provides evidence on how the multi-dimensional process of hierarchization is organized within the multi-local setting. In the context of cross-border science, social inequality is thus understood as inequality in scientific reputation in the sense of a field-specific resource which implies access to publication opportunities, research funding and positions in organizations. The hierarchy within cross-border science, as shown in the example of mobile natural scientists, is conceptualized as a continuum of social positions which is reflected in scientists' degree of ability to accumulate *multiple memberships in and affiliations* to scientific organizations in different national landscapes. Moreover, by

adopting the intersectional perspective, the article has illuminated the complex interplay between various types of social categorizations: it has been argued that access to the field-specific resources and positions is grounded in and influenced by *social practices of categorization*, which include ethnicity-related, class-related and gender-related systems of classification. However, these specific categorizations are not just powerful in fixed national settings, but also bring about an ambivalent power and rather contradictory positions in a multi-locally organized transnational realm. The narrative of 'exploited elite' is the paradigmatic example for such contradictions.

In sum, this process of hierarchization, its multi-dimensionality and its contradictions could not have been examined without the transnational perspective, which has identified cross-border mobility as crucial for the transformation of social orders. As the study of cross-border mobility of natural scientists between Germany and Ukraine has shown, this perspective provides worthwhile avenues for future research on cross-border inequality patterns.

Notes

1. The German university is given a fictitious name here to protect the identity of the interviewee. The names of the interviewees in this paper are also pseudonyms. All interviews were conducted in Russian; translation of quotes is by the author.
2. Whilst migration is conventionally defined as one-year stay abroad, mobility is specified as the residence abroad which lasts less than one year.
3. The relation between particular fields is hierarchical. The fields are subordinated to the larger field of power relations.
4. Which is the most prominent online platform for scientific mobility in the Ukrainian language (<http://www.usw.com.ua>).
5. The average monthly income in Ukraine is around €250.

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References

- Amelina, A. 2010. Searching for an appropriate research strategy on transnational migration: The logic of multi-sited research and the advantage of the cultural interferences approach. *Forum: Qualitative Social Research* 11, no. 1. <http://nbn-resolving.de/urn:nbn:de:0114-fqs1001177> (accessed January 1, 2011).
- Amelina, A., and T. Faist. 2012. De-naturalizing the national in research methodologies: Key concepts of transnational studies in migration. *Ethnic and Racial Studies* 35, no. 10: 1707–24.
- Anthias, F. 2001. The material and the symbolic in theorizing social stratification: Issues of gender, ethnicity and class. *British Journal of Sociology* 52, no. 3: 367–90.
- Baláz, V., A.M. Williams, and D. Kollár. 2004. Temporary versus permanent youth brain drain: Economic implications. *International Migration* 42, no. 4: 3–34.
- Banting, K.G. 2000. Looking in three directions: Migration and the European welfare state in comparative perspective. In *Immigration and welfare: Challenging the borders of the welfare state*, ed. M. Bommers and A. Geddes, 67–89. London: Routledge.

- Barre, R., V. Hernandez, J.B. Meyer, and D. Vinck. 2003. *Scientific diasporas: How can developing countries benefit from their expatriate scientists and engineers?* Paris: Institute for Development Research.
- Beck, U. 2007. Beyond class and nation: Reframing social inequalities in a globalizing world. *British Journal of Sociology* 58, no. 4: 679–705.
- Bourdieu, P. 1985. The social space and the genesis of groups. *Theory and Society* 14, no. 6: 723–44.
- Bourdieu, P. 2001. The peculiar story of scientific reason. *Sociological Forum* 6, no. 1: 3–26.
- Cerami, A., and P. Vanhuyse, eds. 2009. *Post-communist welfare pathways: Theorizing social policy transformations in Central and Eastern Europe*. Basingstoke: Palgrave Macmillan.
- Dudwick, N., R. Srinivasan, and J. Braithwaite. 2002. *Ukraine: Gender review. Environmentally and socially sustainable development*. Washington DC: World Bank.
- Gnatyuk, O. 2005. *The leave of Empire: The discourse of the Ukrainian identity*. Kiev: Kritika [in Ukrainian].
- Heyns, B. 2005. Emerging inequalities in Central and Eastern Europe. *Annual Review of Sociology* 31: 163–97.
- Ivakhnyuk, I. 2006. Brain drain from Russia: In search for a solution. In *Brain drain or brain gain – a global dilemma: The transatlantic security challenges and dilemmas for the European migration policy project*, ed. K. Gma and K. Iglicka, 83–98. Warsaw: Center for International Relations.
- Jandl, M. 2007. Irregular migration, human smuggling and the Eastern enlargement of the European Union. *International Migration Review* 41, no. 2: 291–315.
- Kuznetsov, Y. 2006. *Diaspora networks and the international migration of skills: How countries can draw on their talent abroad*. Washington DC: World Bank.
- Laczko, F. 2001. *New challenges for migration policy in Central and Eastern Europe*. The Hague: TMC Asser Press.
- Levitt, P., and N. Glick Schiller. 2004. Conceptualizing simultaneity: A transnational social field perspective on society. *International Migration Review* 38, no. 3: 1002–39.
- Linkova, M. 2007. Moving target: Gender equality in science in enlarged Europe. *Context* 1, no. 5: 1–13.
- Marcus, G. 1995. Ethnography in/of the world system: The emergence of multi-sited ethnography. *Annual Review of Anthropology* 24: 95–117.
- Pfau-Effinger, B., and S. Magdalenic. 2009. Formal and informal work in the work-welfare arrangement of Germany. In *Formal and informal work: The hidden work regime in Europe*, ed. B. Pfau-Effinger, L. Flaquer, and P. Jensen, 89–116. London: Routledge.
- Portes, A., and J. Walton. 1981. *Labour, class, and the international system*. New York, NY: Academic Press.
- Saxenian, A. 2002. *Local and global networks of immigrant professionals in Silicon Valley*. San Francisco, CA: Public Policy Institute of California.
- Sklair, L. 2001. *The transnational capitalist class*. Oxford: Blackwell.
- Straubhaar, T., and M. Wolburg. 1999. Brain drain and brain gain in Europe: An evaluation of East-European migration to Germany. *Journal for Economics and Statistics* 5, no. 6: 574–604.
- Strauss, A. 1987. *Qualitative analysis for social scientists*. Cambridge: Cambridge University Press.
- Tilly, C. 2000. Relational studies of inequality. *Contemporary Sociology* 29, no. 6: 782–5.
- Vizi, S. 1993. Reversing the brain drain from Eastern European countries: The ‘push’ and ‘pull’ factors. *Technology in Society* 15, no. 1: 101–9.
- Walby, S., J. Armstrong, and S. Strid. 2012. Intersectionality: Multiple inequalities in social theory. *Sociology* 10, no. 1: 1–17.
- Wallace, C. 2002. Opening and closing borders: Migration and mobility in East-Central Europe. *Journal of Ethnic and Migration Studies* 28, no. 4: 603–25.
- Wallace, C., and D. Stola. 2001. *Patterns of migration in Central Europe*. Basingstoke: Palgrave Macmillan.
- Wallace, C., and K. Vincent. 2007. Recent migration from the new European borderlands. *Review of Sociology of the Hungarian Sociological Association* 13, no. 2: 19–37.

- West, C., and D. Zimmerman. 2002. Doing gender. In *Doing gender, doing difference: Inequality, power, and institutional change*, ed. S. Fenstermaker and C. West, 3–24. London: Routledge.
- Wimmer, A. 2008. Elementary strategies of ethnic boundary making. *Ethnic and Racial Studies* 31, no. 6: 1025–55.