

Transnational Mobility and International Academic Employment: Gatekeeping in an Academic Competition Arena

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Abstract This article draws upon concepts developed in recent empirical and theoretical work on high skilled and academic mobility and migration including accidental mobility, forced mobility and negotiated mobility. These concepts inform a situated, qualitative study of mobility among international postdoctoral researchers in life sciences and engineering fields who were employed at US and UK universities in 2008 and 2009. Informed by epistemological methods in the Foucauldian tradition of discourse and governmentality, the study explores how policy discourse and technologies empower and limit scientists and engineers in negotiating employment arrangements across national boundaries.

Keywords Academic mobility · Postdoctoral researchers · Academic employment · Higher education · United States · United Kingdom · Immigration · Global academic competition

Introduction

Universities are now seen to be central in global competition for knowledge, innovation, and human capital. Research in science and technology and higher education studies has addressed global flows of knowledge and technology and competition in international student markets. Economic and policy studies have examined highly skilled workers and migration. The findings, narratives, and policy frames emerging from these literatures are that nation states seek skilled migrants as part of strategies to increase competition and that universities are central in global innovation and competition networks. Much less is known about mobility and migration among academic workers in situated individual contexts. Questions

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remain about how these narratives and policy frames shape individuals' incentives, strategies and actions, the deployment of governance technologies in practice, and how policy is enacted in context. This article draws upon concepts developed in recent empirical and theoretical work on high skilled and academic mobility and migration including accidental mobility, forced mobility and negotiated mobility (Ackers 2008; Musselin 2004; Shachar 2006). These concepts inform a situated empirical study of mobility among international postdoctoral life sciences and engineering researchers employed at universities in the US and UK during 2008 and 2009.¹ Informed by epistemological methods in the Foucauldian tradition of discourse and governmentality, the aim is to explore how policy discourse and technologies empower and limit scientists and engineers in negotiating employment arrangements across national boundaries. Mobility is assumed to describe maneuvers within and between the spaces of the university, state, and market in a global academic arena.²

Context: Review of Policy and Literature

It has become public policy orthodoxy around the world, including in North America and Europe, that science and engineering innovation is inextricably linked to economic growth, global competitiveness, and public prosperity.³ The narrative follows that those regions, countries, institutions, and individuals most successful in producing knowledge that is transferable to immediate economic activities are best situated to thrive in the global knowledge economy. Within this zeitgeist, universities are presented as institutions central to national and regional innovation agendas (Dill and Van Vought 2010; Geiger and Sá 2005). Universities, it is argued, act as important “custodians of knowledge” that link with corporations and other social institutions and are integral to innovation through technology transfer

¹ Data have been drawn from a wider study; see also Cantwell (2011) and Cantwell and Lee (2010). The term “international” refers to individuals working and residing in a country other than their place of citizenship. Most of the workers in this study hold temporary work visas, though some are permanent residents (but not citizens) of the country in which they currently reside and some are able to work without immigration documents because of intra-EU rights of residence and work. The term postdoc is used to refer to junior scientists and engineers who have completed a PhD and are employed at universities on fixed-term contracts and are supervised by an individual or small group of more senior academics that hold permanent academic posts. Postdocs are sometimes also called research fellows, early career researchers, research associates and a variety of other terms.

² The lines of demarcation between those who seek academic jobs abroad and those who are employing academics from abroad are blurred. Employers can include institutional administrators whose job it is to manage science and engineering experts, and whose numbers are growing (see Slaughter and Cantwell 2011), but also to professors and principle investigators who supply scientific labor but also employ and manage (demand) this labor when staffing research projects and laboratories.

³ This claim that science and engineering are tied to economic innovation is advanced by scholars of science and public policy, see for example Dill and Van Vought (2010), and is an assumption underpinning theories of science and technology such as Michael Gibbons and colleagues' Mode 2 rubric (Gibbons et al. 1994). The supposition that innovations are preconditions for economic competition is also enshrined in official policy documents and statements generated by EU and US governments (see for example European Commission [EC] 2000, 2010; National Economic Council [NEC], 2009). See Slaughter and Rhoades (2004) for a critique of this position.

(Metcalf 2010). Universities are also identified as key to innovation and competitiveness because they attract, employ, and produce skilled workers whose activities yield social and economic welfare. Hence, universities are presented as clusters of human capital with economic and social contributions that extend beyond technology transfer through externalities generated by the assemblage of “talent” (Florida 2006; Florida et al. 2006).

The connection between science and engineering with economic innovation in a global knowledge economy is part of a neo-liberal project that asserts market supremacy and inserts competition into the relations among social and state institutions, including universities and academic disciplines. Neo-liberalism is not a simply a retreat of the state (although the state is disfavored) but an active transformation of state and public authority to market mechanisms and private authority. As custodians of knowledge and clusters of talent, universities are key in the neo-liberal state that uses discourse and evaluative metrics to impose market discipline on self-governing academic subjects (Bruno 2009, Pestre 2009). Universities, and the organizational units and individuals housed therein, are incited to compete because those that are close to markets are favored over those further from markets (Slaughter and Rhoades 2004). The connection between global competition and knowledge—held and generated by human capital that is housed and produced in universities—is established in policy discourse and can be readily followed. Numerous policy documents published by individual nation states, the European Union (EU), and coordinating agencies such as the Organisation for Economic Cooperation and Development (OECD) make the claim that knowledge and knowledge workers are necessary for economic competitiveness, and that universities must act as central hubs for knowledge workers that produce and attract talent both domestically and from abroad. This policy discourse privileges science, engineering and technology knowledge over knowledge generated by other disciplines and academic fields and usually stresses that globalization renders knowledge and knowledge workers as mobile but the rewards of this knowledge are enjoyed by the nation states that capture knowledge generating mobile workers. Hence, at least two dimensions of competition are produced by this discourse: 1) the competition to generate knowledge for innovation; 2) the competition to attract and retain the workers who generate this knowledge.

One such example of this policy discourse is the US National Economic Council (NEC) report entitled *A strategy for American innovation: Driving towards sustainable growth and quality jobs*, which has been promoted by the Obama Administration (NEC 2009). The policy narrative presented in this document is illustrative of the way discourse is established to frame public policy on competition, knowledge work, and universities. The report first outlines the problem: “We need new ideas to provide Americans with new jobs, new services that take advantage of our globally interconnected world, and new skills that improve our manufacturing capabilities” (p. 3). Science and technology innovation are then presented as central to meeting this challenge: “Innovations ripple through the economy, creating jobs for workers...” (p. 4, Box 1). The report further states: “Colleges, universities ... are bedrocks of American innovation” because “For

America to continue to lead the world in science and technology innovation, it must have the most knowledgeable and skilled workers in the world” (p. 10).⁴

Who are the “most knowledgeable and skilled workers”? They are scientists, engineers, and technology specialists. Moreover, these workers are not fixed to nation states but are increasingly mobile across national borders. Recruiting the “brightest and best” is now assumed to be a transnational activity where levels of excellence and competitiveness are directly related to the extent to which a workforce is internationalized (Ackers 2008). As indicated in the passages quoted above, scientists and engineers are not just workers, but also innovators and job creators, whose work “ripples” through the economy. The higher education sector, as a whole, and individual universities are viewed as instruments to attract and retain skilled knowledge workers from around the globe in public policy designed to enhance economic productivity and competitiveness (Thorn and Holm-Nielsen 2008).

Policy reviews show that many OECD states have blurred the boundaries between immigration and education policies in order to realize assumed gains in global economic competition by attracting skilled workers from abroad (Tremblay 2002; 2005).⁵ International migration of the highly skilled and the connections between skilled migration and transformations in the higher education sector, as well as advances in science and technology policy and national competitiveness agendas, have received substantial research attention.⁶ The bulk of this work, with some exceptions, relies on macro-level econometric and policy analysis, illuminating the parameters of the political and social considerations that inform the policy making process and estimating the effects of skilled and academic mobility on research productivity, innovation and individual, national, and global welfare. The overall conclusions of this research are that mobility among the highly skilled is increasing, that in many countries policy implicitly or explicitly supports knowledge worker migration, and that universities are nodes in global networks of mobile

⁴ The above quoted NEC report is available online at <http://www.whitehouse.gov/administration/eop/nec/StrategyforAmericanInnovation/>. Similar policy narratives can be traced in Europe, emanating from both European Union and national sources. For example, European Commissioner Ján Figel stated, “Europe has been too weak for too long in bringing the worlds of university academia and business enterprise together, to achieve successful commercial exploitation of academic excellence” (Europa 2008). Attracting additional abroad students and researchers to European universities is a key component to the EC’s 2006 plan for “modernizing” higher education in the EU.

⁵ Tremblay does not use the term boundary blurring to describe coordination of higher education and immigration policy. This is my interpretation of the evidence she presents.

⁶ For a policy perspective from the US National Science Foundation, see Regets (2007); for an EU policy study, see European Commission (1998); for a UK policy analysis, see Somerville (2007); and for cross-national analysis within the OECD, see Tremblay 2002; 2005. The volume *Competing for global talent*, edited by Kuptsch and Fong (2006) offers multi-national policy and labor perspectives, as does *The international mobility of talent*, edited by Solimano (2008). The chapters of *International migration, remittances, and the brain drain*, a World Bank publication edited by Özden and Schiff (2006) offer policy and econometric analysis as do papers by Chellaraj, Maskus and Mattoo (2005); Borjas (2006), Hanson (2008) and Stephan and Levin (2001). Finally, Saxenian’s (2006) study, which is not an econometric or policy review, shows that universities in California are sites where transnational innovation networks that link Silicon Valley with other high-tech regions like Bangalore are constructed by transnationally mobile scientists.

scientists and engineers (Castells 2000). Even allowing that the benefits of mobility are uneven (and contested), these works conclude that states and institutions are likely to continue to compete for workers who are perceived as having the best skills and greatest talent. This finding is the point of departure for my analysis.

The next section outlines the concepts that inform my study, followed by an account of the theory and method of research used in this study. A presentation of research findings is followed by a concluding discussion. Evaluative technologies and discourse locates individual actors – both the buyers and sellers of transnational mobile academic labor – within a global academic competition established by the neo-liberal state. Mobility is not a singular or universal process but rather is best understood as situated and multi-faceted. I argue that international postdocs negotiate mobility by leveraging their knowledge producing skills in exchange for a more favorable living and working conditions but do not do so with complete autonomy. Transnational mobility is circumstantial and is sometimes coerced, sometimes negotiated, and often both. Once postdocs move across borders, they become educational migrants, or potential migrants, who enjoy residency rights in the countries where they have moved. Professors and principle investigators who employ transnationally mobile postdocs do so in order to maximize the competitiveness of their research enterprise. These buyers who source and solicit academic labor from around the world assume the role of immigration officials by, in effect, determining which postdocs are able to enter either the US or UK and which postdocs are not.

Before turning to a discussion on the concepts of mobility that inform this study, it is useful to briefly define the way key terms are used throughout this text. Mobility, most basically, refers to the physical and social movement from one country and/or institution to another. Transnational refers to activities that cross the boundaries of nation states and do not originate directly from the authority of nation states. Transnational academic mobility is the movement from institution to institution within a global higher education arena, or competitive area that crosses national boundaries (Marginson 2006).⁷ Assessment technologies like global ranking systems are assumed to be vital in the production of the global higher education competition arena. Although it assumed that many academic activities are transnational, individual people remain at least partly state-bound. Citizenship and residency rights are conferred by states to individuals and give legitimacy to live and work within a particular nation state. Hence, international refers to the legal status of citizens of one nation state who live and work as migrants – either temporarily or permanently – in another nation state. Drawing these terms together, this is a study of transnational academic mobility and the employment of academic migrants. In what follows concepts of mobility are discussed in greater depth followed by an empirical assessment of these concepts.

⁷ Marginson is informed by Bourdieu and uses the concept of “field.” I do not draw specific conceptual guidance from Bourdieu and talk of an “arena” to avoid confusion.

Conceptualizing Mobility

Transnational academic mobility, or the movement of scientists and engineers across national boundaries, is not new, nor is the politicization of this process. Accounts of inter-state politics related to academic mobility can be traced to antiquity (Jalowiecki and Gorzelak 2004). Concepts of brain drain, brain gain, and more recently brain circulation have often guided inquiry into academic mobility. However, these concepts tend to be confined to the nation state and to tally units of welfare derived by sending and receiving states like a double entry accounting ledger rather than understanding mobility within individual and situated contexts. Although these (mostly) zero-sum methods of accounting are useful in drawing out competition between countries, they do not attend to global academic competition. Nor do they offer tools for understanding mobility itself but instead speak primarily to the consequences of mobility. As such, recently developed concepts that address academic mobility in specific contexts are more suitable for this analysis.

Musselin (2004) took up the question of intra-European academic mobility in a series of comparative case studies in France, Germany, and the UK. Through interviews with postdocs and senior academics (the recruiters who hire junior academics like postdocs), Musselin found that national academic systems and labor markets remained entrenched in nationally-specific, historically rooted, traditions that inhibit long-term academic mobility within the European research area. Mobility among junior academics is not, according to Musselin, an indicator of increased mobility of academic careers in Europe but rather an artifact of national academic labor market particularities. The many postdocs who cross borders within the EU do so to bide their time and lengthen their CVs in hopes of finding permanent employment at home. Likewise, the recruiters of mobile workers do not see postdocs as future colleagues but as term workers who fill immediate labor needs. In short, EU and national policies to promote mobility are largely compromised by entrenched academic traditions. Hence, Musselin describes a sort of “accidental” mobility determined by circumstance and context.⁸

Ackers (2008) takes up the similar terrain of early career, junior, and postdoctoral academics. Ackers’ empirical work – also confined to the intra-European context – yields a different concept of academic mobility. Mobility appears not in service of explicit policy goals of boosting collaboration and knowledge transfer to enhance the competitiveness of the European academic enterprise. Nor is mobility a matter of desired movement in an upward career trajectory. Rather, mobility is coerced movement from job to job resulting from differences in pay and opportunity and normative pressures of internationalization. Ackers describes a “forced mobility” which acts upon academics – especially junior ones from countries with comparatively smaller and poorer academic systems – as a form of indirect discrimination. Mobility is something that happens to academics (and may not lead home as it does in Musselin’s concept).

⁸ Musselin uses the word “accidental” in the abstract but not the body of the article; however, the concept, if not the word, is a major theme in the concept of mobility she presents.

Shachar (2006), a legal theorist, offers the idea of negotiated mobility. Sets of rules and conditions that govern arrangements made between nation states and skilled migrants in which the economic contributions of high skilled labor are exchanged for opportunities to live permanently in a wealthy and stable country. Shachar describes these sets of rules as “talent for citizenship exchange immigration regimes.” Explicit in the concept is the assumption that migrants are attracted to wealthy, developed countries like the US and UK because “... membership in a wealthy and stable polity represents a valuable resource that affects [individual’s] well-being, freedom, and level of opportunity in a world of severe inequality across national and regional borderlines” (Shachar 2006, p. 163). But *exchange* also emphasizes the agency of employers who seek, evaluate and select migrants from abroad, stressing the demand side as much as the supply side. Talent for citizenship exchange conceptualizations views mobility as circumstantial, but not as an accident or something that is entirely “forced” upon the mobile worker; mobility is a negotiation between the buyer and seller of labor within a policy regime. Yet, symmetry in bargaining positions between potential migrants and employers is not assumed. Social, economic, and policy structures lead to the preservation and extension of competitive positions among the most developed countries’ ability to attract and retain skilled migrants in an asymmetrical global economy.

Methods of Research

The concepts discussed above inform this analysis which is rooted in a Foucauldian epistemological tradition that takes as subjects discourse, disciplines, and practices that manipulate objects – often individuals – within actual social settings (Foucault 1995). Applied to the “neo-liberal governmentality” of contemporary academe, this tradition looks to evaluation techniques⁹ and policy regimes as technologies of governance that shape the place of actors (privileging some) within a global academic arena (Pestre and Weingart 2009). Much as the Open Method of Coordination establishes a competitive regime through standardized and comparable metrics in the EU (Bruno 2009), the milieu of immigration policy, academic competition metrics and discourse open the space for academic mobility. Policies are deployed as governance technologies through the actors who are enabled and constrained by immigration/academic competition regimes. Discourse, material conditions, and government technologies produce “self-sovereign” actors who self-discipline and exercise agency in the mobility process (Pestre 2009).

Concepts of accidental mobility, forced mobility, and talent for citizenship exchange regimes are assessed and elaborated by asking the following questions of the buyers and sellers of academic talent: How do the sellers of academic labor (internationally mobile postdocs) and the buyers of this labor (employer professors

⁹ Employment is a form of evaluation where potential employer and employee assess each others’ suitability. The evaluative aspect of employing international educational migrants extends to state’s immigration concerns. Temporary academic mobility can act as ‘getting to know you’ period when the potential migrant can ‘check out’ the host country and the host country can ‘check out’ the potential migrant (Kuptsch 2006).

and senior academics) operate in employment arrangements? How do these actors deploy discourse, policy (and material resources) in mobility processes?

Data are drawn from 49 interviews with 22 internationally mobile postdocs, 22 professors and principal investigators who employed international postdocs, and 5 institutional administrators who govern university employment or internationalization at two universities in the US and two in the UK. Life science and engineering fields were purposefully selected over others because these fields are among the most favored in the neo-liberal academy in the US and Europe (Slaughter and Cantwell 2011). Each of the four universities is public research institution, and either a member of the Association of American Universities or Russell Group. The Association of American Universities is a group of 63 of the leading research universities in the United States and Canada. The Russell Group represents the 20 top research universities in the UK. Each of the universities included in this study have substantial enterprises in life sciences and engineering research, and all are engaged in extensive international and transnational activities.

Interviews took place between April 2008 and January 2009, all were conducted face-to-face, and were audio-recorded, transcribed verbatim, and coded for thematic analysis. Interviews focused on hiring practices, day-to-day work and routines, and the strategies, techniques, and policy tools that enabled and limited maneuvering by the suppliers of internationally mobile academic labor and those who employ this labor. Transcript analysis was a progressive process. Text was coded using inductive and deductive techniques to organized transcript data into categories for primary analysis. These categories, or codes, were further organized into major analytical themes. Particular emphasis was given to participants' stories, which were used to explore the relationship between codes and inform thematic analysis (Rubin and Rubin 2005).

Competition and Mobility

Transnationally mobile postdocs and academics who recruit from abroad describe a policy arena in which global mobility and recruitment are produced via competition. To be mobile or recruit transnationally is to compete and be competitive. For the sellers of academic talent, migration is a way for these workers to move within a global academic arena. For the buyers of academic labor, recruiting workers from abroad is part of a strategy to maintain and extend the competitiveness of their academic enterprises.

Postdocs from Europe, Asia, and elsewhere in the world are influenced by material and normative forces that push them from their home countries ("In the Netherlands they are expecting that you have one or two years experience abroad") and pull them to employment opportunities ("I think in my field if you put all the other countries in the world together and there are still not as many jobs as in the United States"). In effect, these joint pressures force mobility. It is expected that competitive junior scientists and engineers will move from job to job across institutional and international boundaries. However, physical mobility does not necessarily lead to professional mobility. An Australian engineer working in the UK

gives this assessment of postdocs in the global academic arena: “Geographic mobility is easy, I mean it’s very easy. Especially in ‘postdoc-land’ probably because it is expected ... Academic mobility is less clear. It is very difficult to get faculty positions.”

The ease of geographic mobility is likely related to the policy technologies that govern academic mobility. In both the US and the UK, immigration policy encourages recruiting and employing skilled workers from abroad, especially in the university sector. Higher education enjoys few restrictions on the numbers of visas that can be issued by university employers, in contrast to industry which is subject to caps (although this is changing, especially in the UK). US based academic employers can offer, at their discretion, either H1-B skilled immigrant worker or J-1 visiting scientist visas to prospective international postdocs. J-1 visas are typically not renewable and regulations stipulate that J-1 holders can only work in the job for which the visa was initially issued and requires that visa holders return to their home country once the visa has expired. Holders of J-1 visas are not permitted to work in the US for a period of time after the visa has expired, usually for at least two years. H1-B visas are typically renewable and offer greater portability in that a H1-B holder can move from job to job in the US, provided that the new employer is also able to secure a H1-B visa for the worker. After a period of time dependent upon the holder’s country of citizenship, H1-B visas can lead to a Green Card, which permits permanent residency (Martin 2006). At the time this research was conducted, UK based employers operated under New Labour and European Union policies that actively promoted skilled immigration and academic mobility (Findlay 2006; Kuptsch 2006; Somerville 2007). Employers recruited EU postdocs without restrictions and had been free to hire non-EU candidates on work permits and “leave to return” renewable visas leading to permanent residency, so long as no suitable EU candidate can be identified.¹⁰ More recently, the coalition government led by Conservative Prime Minister David Cameron has changed UK immigration laws, placing substantial restrictions on the numbers of visas that can be issued for academics and students from outside the EU area who wish to work and study in the UK. Given these changes, it is important for me to note at the time of writing that the findings of my UK analysis pertain to the recent past but not necessarily to the present.

These open policies appear to have generated a competition regime wherein university employers are compelled to compete for the “best” postdoc candidates from around the world. As a UK based biology professor explained, “It is an international jobs market. The UK only makes up one percent of the world’s population, 60 million as compared to 6 billion. ... So there’s a lot of good people out there and we take the best candidate, really.” And a US university administrator indicated that the need to participate in global labor markets in order to be academically competitive is so great that any administrative burdens associated with hiring from abroad must be endured: “So any department that is competitive on an

¹⁰ This study is rooted in the context of the Republican (Bush) and Labour (Blair/Brown) Administrations in the US and UK respectively. The Obama Administration has not changed the policy frame discussed here. The UK coalition government has changed immigration policy with respect to international academic recruitment, as mentioned in text.

international basis is not going to, I think, be reluctant in any way to pursue the more complicated process [of hiring from abroad].”

Governance technologies and competition discourse appear to force the buyers and sellers of academic labor into a global market. Competition in this market is connected to individual and institutional place within a transnational academic arena, and is ultimately tied to the policy and discourse of national competition agendas. Individuals are disciplined by this regime but, as self-governing actors, mobility also involves negotiation within the competition arena.

Postdoc Mobility: Immigration and Career Maneuvers

Rarely do postdocs articulate mobility as exclusively accidental, forced or negotiated. Most often mobility maneuverings straddle these concepts. Take the example of a French biologist, now working as an assistant professor in the US after experience as a student in France and Japan and a postdoc in California:

For me I just remember I was taking my PhD and I was saying oh I am doing my PhD in France and I was doing half of my PhD in Japan and I went to a conference and this French guy he said to me, ‘OK, you are set if you do a postdoc in US.’ So I think that they have this kind of idea that you have to do and do [sic] a postdoc in another place.

She describes her geographical and career trajectory as both accidental and forced. Her mobility was determined by chance encounters, though ultimately was required to advance her career. However, according to her, the outcome of securing a faculty position was also accidental; “it just worked out this way.” Yet this professor sees little chance that German and Polish postdocs she employs will enjoy the serendipity she experienced: “I don’t think someone coming to work for me here could get a faculty position in US. ... It might be working to go back to Europe but in Europe it is very tough to get a job,” she explained. This professor believed that she was able to find a job only because she worked as a postdoc for one of the most well known researchers in her field, and even after this experience was somewhat lucky to find a faculty job. As a relatively junior researcher, she believed that postdocs who worked in her lab would not be able to advance the way she did. Her current postdocs are forced to move across the Atlantic, but will find it difficult to move up in their careers.

The movement of international postdocs from other parts of the world, particularly those from Asia, is sometimes described as forced. Mobility is also negotiated and circumstantial, though not usually accidental. These postdocs do report few opportunities at home and both normative and material pressure to work abroad. Yet postdocs from Asia and other less-developed regions also shape their careers and lives through negotiated mobility. Moving to the US or UK is a strategy to leverage desired work and personal situations. For example, one Chinese engineer explained that being in the US allowed her to engage in competitive research:

Well, everyone knows that United States is a very good country for higher education. Usually the lab[s] here they have more advanced equipment and the

funding is more. I mean they have enough funding here to support your research so I think it is good.

Among the postdocs who articulated a desire to remain in the US or UK, many wished to stay because of the comfortable living and working conditions they experienced in these countries. One life scientist from South Korea, who had been working as a postdoc for over a decade and saw little chance of professional advancement, indicated that he chose to remain in the UK and become a permanent resident because of family and professional considerations: “My family, my two boys [enjoy living here]” he explained, “and this country has a good environment for scientific research so I decided to stay here.” Even if moving to take a postdoc job in the UK did not lead to substantial career advancement, it did offer some professional and personal stability.

The ability of postdocs to negotiate mobility occurs through a process of exchanging their skills and labor for residency rights. International postdocs tend to understand immigration policies and visa regulations as well as the value of their skills to their employers, and often make employment decisions based on migration goals.¹¹ One administrator in the US, who is originally from India and formerly worked as a postdoc in the same university, summarized the perception of many international postdocs about the importance of their role within universities and, implicitly, their value to host countries: “Oh, God help America! I don’t know, it’s – ‘oh my God’ – I think the universities here would be in bad shape, would be in really bad shape [if they could no longer hire postdocs from abroad].” Recognizing this gives postdocs leverage to negotiate mobility.

Among postdocs who sought to leverage their skills and labor productivity to secure residency rights, the most desirable jobs were those that led most directly to permanent residency. UK based postdocs sought positions with multi-year contracts to approach the five years of work needed to be eligible for permanent residency. In the US this most often meant seeking university employers willing to sponsor H1-B visas, which are renewable and can lead to a Green Card. Take for example a Chinese life sciences postdoc who turned down a more prestigious job for one that offered an H-1B visa:

I went to Duke University [for a job interview], they said that they cannot offer me this type of visa [H1-B] so I basically I cannot go there. ... So H-1B visa offers a versatile choice because under that type of visa we have the opportunity to apply for the Green Card. But for the J-1 it is likely, you know, you can’t go from there directly because for many countries the J-1 visa holder will have to be subject to a two year rule, which requires the holder goes back to their home country and spend at least two years over there.

Employers that have little difficulty attracting “the brightest and best” postdocs from around the world have less incentive to offer H-1B visas which are more expensive to process, subject the employer to Federal prevailing wage standards, and allow the worker to potentially change jobs within the US. The Chinese life

¹¹ The caveat here is EU postdocs working in the UK who did not face visa restrictions. Nevertheless, some EU postdocs in the UK articulated their mobility as intra-European migration.

scientist quoted above used his status as a skilled researcher to negotiate better working conditions (at least in terms of visa status), but in doing so was forced to concede an opportunity at a more prestigious university.

There are constraints on the extent to which postdocs can advance professionally through international mobility. All described difficulty in finding permanent academic work. Some, especially those in the life sciences, estimated that they would have to publish in exclusive venues like *Science* and *Nature* even to be considered for faculty jobs. As one UK based engineering postdoc from China explained, “You have to be really stand-out to get picked and to get promoted up,” in both his home and host countries. In fact, some postdocs, keenly aware of limited opportunities in academia, worked at universities solely because it afforded them the opportunity to remain in the country and the chance to eventually secure permanent residency, which increased the chances securing in-country employment with an industrial firm. Given that there are limits on the number of visas available for industry in both the US and UK, international scientists and engineers sometimes find it difficult to secure visas permitting them remain in the country and work in the corporate sector. As a result, many international postdocs elect to work in academia until they can eventually move to industry. As described by one Chinese engineer working in the US:

Actually I am always thinking about joining a company and doing industrial work. I don't know if you know but for international [researchers] there is some working visa problems with working for the company. Actually, after graduation I worked for a company for half a year but after that ... I have to go back to a school because of the working visa, so that is why I have to be here [at the university].

A recent bibliometric study found that the most productive postdocs are also the most mobile (Zubieta 2009). Being competitive increases the ability to move and being mobile is to be competitive. Governance technologies create a global competition space by opening immigration policy and establishing global academic regimes. Academics, including postdocs, can move within this space, though mobility is both dependent upon and a product of competitiveness within the academic arena. Mobility is situated and is accidental, forced, and negotiated depending on individual circumstances.

Policy and Practice in Selecting Skilled-Migrants

Participants in this study reported few difficulties in securing visas that allowed them to work for universities (although they did report challenges of getting visas to work in industry). US based faculty members faced virtually no restrictions in hiring whomever they wanted. As one US based life sciences associate professor put it, “so far as I can tell [nobody cares] whatsoever [who I hire].” Often employer academics indicated that they preferred to hire international candidates because they exhibited “adventurousness” (a term used by a British professor) not found in domestic candidates. In effect, when faculty and senior academics hire internationally, they

determine who enters either the US or UK as mobile scientists and engineers based on their individual labor needs and expectations. Three factors appear to explain the ease with which faculty members have in hiring postdocs from abroad. First, as discussed above, immigration policy in both countries place few restrictions on universities' ability to source labor from abroad. Second, funding agencies do not usually place restrictions on the nationality of staff employed to execute grants they award. Third, unlike permanent jobs, faculty members often have the autonomy to make postdoctoral hiring decisions individually or with a small group of colleagues rather than through a search committee.¹²

Many postdocs from abroad do leverage their education and talent to secure residency rights in the US and UK. Yet the faculty and other senior academics who employ postdocs ultimately make postdocs "mobile" by assessing their suitability for employment. Employer academics appear to negotiate international postdoctoral employment from situated contexts in order to extend their research enterprises. Based on the interviews conducted for this study, two general processes when hiring international postdocs can be elaborated: *global sourcing* and *global soliciting*. These processes can be understood as recruitment techniques that draw on different sets of technologies based on varying objectives and constraints of the hiring academic.

Global sourcing processes involve identifying individuals from abroad who are then recruited to work in a faculty directed laboratories. Global sourcing occurs through transnational professional networks and appears to work best when recruiting faculty members are central within these networks. Faculty members who have extensive contacts and collaborations with colleagues abroad often come into contact with graduate students and postdocs whom they assess as strong candidates for extending their research enterprise. Potential postdocs are approached about the possibility of coming to work abroad. The process of global sourcing is described succinctly by one US based life sciences professor:

I do go abroad frequently and I am always looking for talent. ... I usually have a scientific meeting or go to one of my collaborative labs to spend some time there but I always have my eyes peeled for what looks like good talent. Certainly, I establish pre-relationships with the people I have identified. So some of the postdocs I have known sometime well before they finish their degree.

The ability to use professional networks is dependent upon faculty members' status within the scientific community. As already noted, a minimum requirement to source postdocs globally is that recruiting faculty members be part of a transnational professional network. Faculty members who are central within transnational academic networks tend to be advanced in their career both temporally and by metrics of successful competition such as grant and publication productivity. Moreover, the ability to recruit "good talent" whenever one comes across it requires

¹² In the UK, there are some constraints not present in the US, including human resource policies, and national and EU labor law, however, the general findings listed above remain true. Also, there are productivity advantages to hiring postdocs from abroad. For a more detailed discussion, see Cantwell (2011).

consistently having a surplus of research funds that can be used to employ postdocs when they are identified. Interview data suggests that US based academics are typically better able to engage in global sourcing practices. Even successful researchers in the UK indicated that it is difficult to use professional networks to recruit postdocs from abroad for at least two reasons. One is the requirement to give preference to UK and EU candidates; policy technologies designed to protect national and regional labor markets make it difficult to source a postdoc from abroad without opening the position first to regional candidates. Another restriction on global sourcing practices in the UK is related to the method of research funding in the UK. Projects supported by British research councils tend to be governed by budgeting techniques that do not permit the flexibility to hire a talented postdoc whenever one is discovered, making it difficult for UK based faculty recruiters themselves to directly source postdoctoral labor globally. As one experienced British life sciences professor explained:

Well I have had the opportunity [to meet good postdoc candidates abroad] but I never actually appointed anybody that way. Although, I have had people apply who have heard me talk at one of these meetings and I have met at one of them. The problem is that I rarely have a spare salary. If I have a salary I fill it. It is not like NIH or NSF grants in the US where an investigator will have a big slab of money that there will be sufficient of it to create a new appointment for the right candidate. It is rare that we ever have a situation like that.

US based faculty also sometimes have claim to a percentage of the overhead fees assessed by universities to the Federal funding agencies to cover the indirect costs of research as well as institutional support for some of the costs associated with employing a worker. This support means that more grant money can be used at their discretion to employ workers (or for any other legitimate purpose for that matter).

While individual postdocs are sometimes recruited through direct global sourcing processes, in both the US and UK, global soliciting processes appear to be more common. Global soliciting refers to a set of recruitment techniques in which faculty members advertise postdoctoral jobs on global forums, effectively inviting candidates from all over the world to apply. The Internet is an integral technology in global soliciting because it allows faculty members to inexpensively reach a global labor pool. Scientific associations, university websites, online academic journals, the digital sites of newspapers such as *The Chronicle of Higher Education* and *The Guardian*, as well as online employment bulletins such as jobs.ac.uk, and postdocjobs.com are used to advertise postdoc employment opportunities. Take for example the process by which a UK life sciences professor describes soliciting postdoc candidates:

Okay, so in our business the most common route recruiting people is advertise in one of the leading international research journals and that is commonly *Nature* or sometimes for us *Science*. ... And so we formulate an advert for the particulars associated with the post, and then that will appear in *Nature* for one or two weeks with a closing date.

While postdoc openings advertised online often yield many applicants, applicant suitability is varied and must be evaluated. In both countries and in both broad fields, faculty members report receiving many applications from around the world and these applicants are sorted based on suitability for the job. “I mean it is amazing. You receive many, many applications. Some people are not even reading what we are saying in the advertisement because they don’t have the correct background and all these things. There is a lot of sorting out to do,” explained a US based life sciences assistant professor. The technical process of evaluating suitability is one in which employing academics exert self-governed authority to determine who can become mobile and who cannot among candidates for postdoctoral posts.

This evaluative sorting appears often to follow a systematic process. As described by a British engineering lecturer:

I write my job spec, it is a very specific job spec and I will try to identify essential skills, and kind of that would be quite nice if they had them, and I will basically make a spreadsheet and I will write a list of the essential skills and the quite nice to have and I will score applicants against that based on the information they provided me with and then I will go through and grade them. ... I develop a shortlist. Ideally I bring them here for an interview. ... After the interviews I make an offer to the strongest candidate.

Through this assessment of skills and suitability using categories devised by recruiting faculty members, candidates responding to an employment solicitation passively compete with one another for the posted job. The winner of this competition is the person identified by the evaluating faculty member as most talented. Recruiting faculty members describe typically being able to hire the candidate of their choice. However, offering a job does not necessarily result in a “hire.” As discussed above, the candidate and employer enter into a negotiation. Consistent with the talent for citizenship exchange concept (Shachar 2006), employers in less advantageous situations from which to attract postdocs (less prestigious institutions, departments, researchers, etc.) often have to enhance their recruitment position by offering more attractive “packages” to attract the strongest candidates. This is most visible in the US where visa type is negotiated. In the UK, this might include being a named investigator on a grant project, or a longer contract to guarantee stable employment and improved chances of attaining permanent residency for non-EU candidates.

Ultimately, there are limits to postdocs’ ability to negotiate. The supply for academic labor globally exceeds demand, giving buyers a better negotiating position than sellers. Additionally the supply of scientists and engineers from developing regions of the world has greatly increased, while the buyers of this labor on the global market remain concentrated in a handful of countries, establishing and extending asymmetrical power relations in the global higher education arena. The ordering of universities globally is a well established line of discussion in higher education studies. Altbach (1998; 2004), for example, takes a world systems approach in describing a global higher education system comprised of a core and periphery where the periphery is dependent upon the core. Postdocs from countries with less well developed higher education sectors are dependent upon the core to the

extent that these scientists and engineers are often forced to move to the core for training and employment. Yet to assert that transnationally mobile postdocs are entirely dependent upon the core belies the substantial labor contributions these scientists and engineers make to the universities, systems, and countries to which they migrate, not to mention their individual employer who is often an academic competing for status and resources.

An econometric analysis of postdoctoral labor in the US demonstrates that international entrants to the labor market for postdoctoral researchers depress wages (Borjas 2006). Others have shown that international educational migrants are associated with increases in patent production (a key metric of national innovation) (Chellaraj et al. 2005). International postdocs are more productive than their domestic counterparts (in publication metrics) (Corley and Sabharwal 2007; Zubieta 2009), and tend to be paid less per hour worked (Davis 2005). All of this suggests that the hegemony of Anglo-American higher education is produced (and recursively re-produced) in part by competition metrics including numbers of international students and staff (Marginson 2007).¹³ While the mobility among international postdocs in the US and UK is situated by individual context, and is often negotiated, the autonomy and self-determination of individual actors – especially junior scientists and engineers who are forced to move – is subordinated by evaluative policies and techniques in a global competition arena. Put more simply, the best alternative working position can be negotiated, but rarely can the best absolute professional position be achieved.

Discussion

Findings from this study indicate that transnational mobility among postdoctoral scientists and engineers is situated in individual contexts, but the individual is constrained by policy and evaluation regimes within a global higher education competition arena. Mobility is produced circumstantially among scientists and engineers who, as self-governing actors, are able to move within the bounds of global academic competition. Rarely is mobility wholly accidental, forced or negotiated. As discussed above, these concepts are most useful when understood in conjunction, drawing their insights together in order to appreciate mobility as a multifaceted concept that is contingent upon context. Relevant contexts include the milieu of policy and academic governance technologies.

Mobility may be in some circumstances accidental, or a haphazard interlude abroad en route to a nationally specific career, as described by Musselin (2004). Elements of circumstance and chance are clearly at play in the production of mobility at the individual level; the movements of no single scientist or engineer are pre-determined and are dependent upon the vagaries of chance. Yet to conceptualize mobility solely as the chance intermission in a nationally-bound academic career is

¹³ Marginson's analysis is informed by Gramsci and Bourdieu. However, this work also assumes a neo-liberal and globalized academy and the general shape of the argument is consistent with the present study and Foucauldian analysis.

to overlook many elements of transnational academic mobility.¹⁴ As discussed at the outset, mobility is coordinated through policy that forms national competition agendas, evaluative technologies, and competition discourse. This arena of competition is uneven, and compels (or forces) junior academics from less well resourced higher education systems to move academic systems that are better resourced. In other words, while mobility may occur circumstantially, if not accidentally, in individual instances, at the level of the global competitive higher education system it is produced materially, coercively, and intentionally. The concept of accidental mobility also does not adequately attend to negotiative elements, which indicate strategy and intentional maneuvering.

Interview data from international postdocs who participated in this study offer greater support for the concept described by Ackers (2008), in which “mobility is effectively ‘forced’ due to lack of work or inability to access positions rather than personal choice” (p. 417). Added to material pressures forcing mobility are discourse and competition metrics that establish mobility as normative for globally competitive scientists and engineers. Mobility may not reflect absolute personal choice but postdocs are, at least in some cases, able to negotiate mobility in order to move into more preferred alternative working positions. Complementing the concept of forced mobility with a negotiative element avoids rendering transnationally mobile academics as passive manipulated bodies, while recognizing that the degrees of freedom enjoyed by mobile scientists and engineers are constrained by policy, discourse, and metrics of competition.

The talent for citizenship exchange regime concept (Shachar 2006) offers important insights for situating the mobility of individual scientists and engineers within systems of immigration rules and regulations that are navigated and negotiated. Postdocs who migrate to the US and UK are sometimes able to leverage their skills – whose value is assessed by employer academics who are themselves competing in a global arena – for entrance into secure polities and advanced academic systems. The space for self-maneuvering is not unlimited but postdocs are sometimes able to negotiate mobility for their benefit. But this concept centers on immigration policies and overlooks other governance technologies. Further, it is not necessarily suitable for capturing intra-European academic mobility where legal immigration controls are not pertinent.¹⁵ Yet even in intra-EU cases mobility is necessarily negotiated; in order for any academic scientists or engineers to become mobile she or he must negotiate employment. Moreover, the talent for citizenship regime concept of mobility directs attention to negotiations between skilled migrants and states that grant the rights of residency and citizenship in exchange for labor productivity on an individual basis, but does not attend to how individual migrants are evaluated and who has the authority to evaluate migrant suitability.

¹⁴ This is not a direct critique of Musselin’s work, which is bounded to intra-European mobility among British, French, and German academics, for whom mobility may well occupy this sojourner position. Rather it is critique of the applicability of the concept within a transnational frame that punctures the concentric boundaries of the European Union.

¹⁵ Immigration is not pertinent because EU residents are largely free to reside in work across the union, excluding some restrictions placed on citizens of newly admitted Eastern European countries from moving to some countries in the West.

This authority is devolved to individual senior academics who employ postdocs and tacitly obliged by competitive States to recruit academic labor globally, evaluate junior academics and determine who is suitable for work and who is not, which in effect permits mobility and the possibility of immigration. Authority is deferred to these “global experts” (Pestre 2009) to act as “gate keepers” of institutions and the nation states of which they are constituents, but this authority is produced side-by-side with the obligation to compete in metrics that demand global labor recruitment. Academic mobility is not just situated by immigration policies but a milieu of technologies and evaluative metrics that govern a neo-liberal, global academic competition arena. Talent for citizenship exchange arrangements appear to be part of a complex of governance technologies that draw together the fortunes of nation states, university intuitions, and individual academics in a global competition regime.

Policy Implications

In the US and the UK, the authority to enter into transactions where the rights of residency and citizenship are exchanged for academic labor has been devolved to the faculty members and other university staff who make hiring decisions.¹⁶ Individual professors and principal investigators who hire international postdocs act as de facto immigration agents. Both global sourcing and global solicitation recruitment processes rely on the ability of postdocs from abroad to secure visas that allow them to work in either the US or UK. Faculty who hire postdocs from abroad become gatekeepers, determining in effect who is (not) allowed to enter the US or UK among postdoc candidates who do not enjoy automatic residency rights to these states. This authority is central to the international postdoc hiring process; without the availability to secure immigration documents it would be impossible to employ postdocs from a global labor pool. It also has important implications for understanding academic markets in relationship to the State, which establishes and governs these markets. By devolving the authority to decide who is eligible for a visa to work as an academic scientist or engineer in the US or UK, these states have, in part, established global competition in academic labor markets. It is these markets, rather than bureaucracies or regulatory bodies, that perform the key state function of evaluating who is able to join a state’s polity and who is not. Transferring state authority to markets is a central aspect of neo-liberal governance, which has drawn the higher education sector into a new set of completion-based relations with states and markets.¹⁷

Recruiting scientists and engineers from beyond national borders is not new. For example, there is long history of the US offering Europeans with exceptional skills citizenship in exchange for their knowledge. Prior to and during the Second World War the US offered many Jewish scientists and engineers refuge from Nazi

¹⁶ The discussion in this section excludes intra-European mobility, which is addressed elsewhere in this article and is the subject of many other studies.

¹⁷ See Slaughter and Rhoades (2004) and Slaughter and Cantwell (2011) for more complete discussions on this point.

persecution and employed their skills in aid of the American war effort. After the war a number of German scientists, including Nazi party members like rocket scientist Werner von Braun, were granted US citizenship, in exchange for the political power of their knowledge. The term brain drain was coined by the British Royal Academy to describe the loss of UK academics to American universities during the Cold War. In the contemporary context addressed here, concepts of mobility are framed by a neo-liberal ideology, which asserts all types of mobility (of goods, capital as well as workers and knowledge) as virtuous and necessary because the market is assumed allocate resources optimally. This celebration of mobility as both a driver and outcome of market efficiency differs from statist ideologies such as neo-realism and world systems that view mobility as causing brain drain or brain gain, which may benefit some and harm others but is not necessarily optimal.

Concluding Remarks

The beginning of this article outlined public policy discourse, which established the recruitment of scientists and engineers as integral to national competition agendas. It is this discourse of state through market competition, coordinated by a variety of policies and governance technologies, which draws higher education into endless competition (Slaughter and Cantwell 2011). Ultimately, endless competition drives academics to transgress the boundaries of states in the service of states and universities as market competitors.¹⁸ The academic competition arena is ordered by a wider neo-liberal competition regime of evaluative technologies. Academic mobility refers not only to the physical and social movement of academics who sell their labor on a global market, but also to the buyers of academic labor whose recruitment and evaluation of candidates are tools designed to enhance the competitiveness of the academic enterprises they manage (Cantwell 2011).

The main conclusion of this study is that academic mobility is best understood contextually, rather than as a universal concept. Mobility is shaped as much by the individuals, institutions, and states that seek academic migrants in a global higher education market and competition arena as by the individuals who physically move. The situated negotiation of actors within this arena highlights that the transnationally mobile are not entirely autonomous but nor are they able to exercise agency. This is not to discount the discriminatory and exploitative aspects of academic mobility; indeed, research has shown that mobility can discriminate and exploit (Ackers 2008; Cantwell and Lee 2010). Rather, it is to make the Foucauldian observation that power and authority operate through actors, who are themselves disciplined by structure, rather than originating from actors. Such an acknowledgement is not to claim that calls for new technologies and evaluative measures in the service of human interests cannot be established.¹⁹ However, this project must likely begin with a shift in policy discourse from markets and competition to stability and

¹⁸ For example, the European Commission's Lisbon agenda which establishes a "Competition Union."

¹⁹ A detailed elaboration of this point is beyond the scope of this article. See the end of Ackers (2008) and especially Jasanoff (2003) for a discussion of how new technologies and metrics that attend to human interests might be developed and advanced.

security, thereby altering the incentives and constraints that condition individual and institutional actors in the academic area.

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