

Early careers of recent U.S. Social Science PhDs

EMORY MORRISON, ELIZABETH RUDD AND MARESI NERAD

ABSTRACT

In this article, we analyse findings of the largest, most comprehensive survey of the career paths of social science PhD graduates to date, *Social Science PhDs – Five + Years Out (SS5)*. SS5 surveyed more than 3,000 graduates of U.S. PhD programmes in six social science fields six to ten years after earning their PhD. The survey collected data on family, career and graduate school experiences. Like previous studies in Australia, the U.K., the U.S.A. and Germany, SS5 found that graduates several years after completing their education had mostly positive labour market experiences, but only after undergoing a transitional period of insecurity and uncertainty. Most SS5 doctoral students wanted to become professors, despite the difficult academic job market and the existence of a non-academic market for PhD labour. Many respondents' career pathways included a delayed move into a faculty tenure-track position, but exceptionally few moved from a faculty tenure-track position into another labour market sector. Respondents reported that their PhD programmes had not trained them well in several skills important for academic and non-academic jobs. Men's and women's career paths were remarkably similar, but, we argue, women 'subsidised' gender equality in careers by paying higher personal costs than men. We conclude with recommendations.

KEYWORDS

academic careers, career preparation, PhD programmes, professional skills, social sciences

Introduction

Worldwide, doctoral training is undergoing scrutiny in terms of 'fitness for purpose', as stakeholders within various systems ask whether the programmes in place are optimally structured (Kehm 2005; Park 2007; Nerad 2009). Policy makers worry that current PhD programmes are not equipping



graduates with the skills and knowledge most needed (e.g. Smith 2010). They also worry that there may not be enough doctorate holders to advance the knowledge-based economies of the twenty-first century (Park 2007).

One key mechanism to evaluate the performance of doctoral systems is to track the main output of the system – the doctoral recipients themselves – to measure how well they have been served by their doctoral training (Aanerud et al. 2006). The *Social Science PhDs – Five + Years Out* surveyed more than 3,000 graduates in six disciplines, chosen to represent the diversity of graduate education within the United States. It collected data on career paths six to ten years after completing a PhD, along with information on family and relationships spanning the years from entrance to postgraduate studies to the time of the survey. The study tracked the careers and life histories of doctoral recipients in order to evaluate doctoral systems in terms of three standards: (1) the success of matching supply of doctorates with their demand in the labour market, (2) the level of equity attained by traditionally disadvantaged groups in their experiences of graduate education and in career outcomes and (3) the quality of match between the skills learned during doctoral studies and skills used in actual careers.

Many have questioned whether university systems over-produce or under-produce doctorates in relation to the demands of the labour market (Nerad 1997; Kehm 2005). In the past, unemployment, underemployment and dissatisfaction with careers were used as evidence of over-production of PhDs and evaluations of doctoral systems included these measures. When a broader labour market is considered, it becomes more important to ask whether doctoral programmes adequately train PhDs with skills that are useful for both the academic and the non-academic labour markets. The term ‘transferable skills’ (or sometimes ‘professional skills’) is used to designate skills learned during graduate school that may ‘transfer’ to or be especially useful in non-academic jobs, as well as skills for career management.¹ In the U.K., the issue of the performance of postgraduate education in delivering transferable skills to students has recently received considerable attention (Mroz 2010; Smith 2010). Others have even questioned whether graduates have learned skills relevant to academic careers (e.g. Nyquist 2002; Roberts 2002; see Nerad 2009 for a review). Thus, an evaluation should include measures of the match of skills required with the quality of the skills developed.

Finally, many have noted that, in the U.S., women and certain minority racial/ethnic groups have faced unique career challenges and unequal ca-

reer outcomes when they do earn a PhD.² Long (2001) found that marriage and children decreased women's rates of full-time employment in science, while single men and women participated equally in the workforce. The report concluded, however, that '[T]he negative effect of marriage and young children has declined for women over time' (Long 2001: 4). In the U.S., gender stratification in academic careers has been a concern for over 30 years (Hochschild 1975; Simeone 1987). Tracking careers allows observation of changing gender differences in career outcomes.

Recent major surveys of PhD career paths are listed in Table 1. These studies emphasise (1) the potential overproduction of doctorates and (2) the degree of match between the skills and competencies developed within PhD programmes and those performed in work. Unfortunately, most do not provide sufficient information to analyse gender inequalities and whether having a family is a disadvantage. In the first two areas, however, the studies have very similar findings, despite the diversity of national contexts and the range of disciplines sampled. In general, they found that PhD holders had very high labour market participation rates and were not underemployed. Doctorate recipients were not concentrated in the academic sector, but instead worked in a variety of sectors. Regardless of sector, doctoral recipients reported high levels of job satisfaction. Most measures provided no evidence for the claim that non-academic employment was somehow inferior to academic work for PhD graduates. Studies consistently found that PhD recipients, working in both the academic and non-academic sectors, reported needing transferable professional skills in their careers, but that training in these areas was lacking. For instance, in a conclusion that could have been drawn from any of the reports:

Overall, the results indicated that doctoral students in this survey were achieving successful labour market outcomes and were highly satisfied with the quality of research higher degree training. However, the findings also suggested that there were some perceived gaps between the skills and capacities required in employment and the skills and capacities acquired during the PhD, particularly in relation to generic skills around communication, generic research skills and research methods and data analysis, and involvement in team based collaborative and interdisciplinary research. (Western et al. 2007: iii)

In this article, we use the SS5 study to evaluate the performance of social science doctoral programmes in the U.S. in light of the three issues described



Table 1 Retrospective career studies of doctoral recipients

System	Name	Survey Year	Disciplines	Cohort(s)	Sample Size	Reported Response Rate
Australia	PhD Graduates 5 to 7 Years Out	2006	All	1999–2001	1996	35%
Germany	Doctoral Degree and Career Training, Professional Life Course and Success of Doctoral Degree Holders	1999	Biology Electrical Engineering German Studies Mathematics Social Sciences Business/Economics	1979–1980, 1984–1985, 1989–1990	2244	52%
U.K.	The Employment of Social Science PhDs in Academic and Non-Academic Jobs: Research Skills and Post Graduate Training	2004–2005	Social Sciences	1998–2002	211	28%
U.K.	Career Paths and Training Needs of Social Anthropology Research Students	2004	Social Anthropology	1992–2002	309	40%
US	PhDs Ten Years Out	1996	Bio-Chemistry Electrical Engineering Computer Science English Mathematics Political Science	1982–1985	3667	63%
U.S.	PhDs in Art History Over A Decade Later	2001–2002	Art History	1985–1991	508	68%
U.S.	Social Science PhDs—Five + Years Out	2005–2006	Social Sciences	1995–1999	3025	45%

above: the balance between supply and demand for graduates; whether people from traditionally disadvantaged categories attained equity in their PhD programme and their career; and the match of PhD skills with those needed in the labour market. The findings confirm many of the conclusions from earlier surveys of doctoral studies in the U.K., Germany and Australia, but our results counter the argument that academic and non-academic careers are equally valued. The article extends this literature with data from the U.S. context and makes a new contribution by including comprehensive data on gender, work and family.

Specificity of the U.S. academic labour market

The careers of the SS5 respondents are evaluated in terms of the structure of the labour market in which they are embedded. Therefore, it is necessary to describe this labour market structure prior to presenting the findings.

U.S. universities and colleges – the institutions employing most social science PhD labour – hire faculty (i.e. professors) in a variety of employment situations. The most important distinction is between tenure-track faculty and non-tenure-track faculty. Tenure-track faculty have the opportunity to gain tenure, which is generally understood to mean enjoying guaranteed employment until retirement (Trower 2002). In a recent survey of tenure policies, more than 90 per cent of responding colleges and universities reported having tenure-track faculty (Trower 2002). Tenure-track faculty follow well-established career stages from assistant to associate to full professor. Assistant professors are ‘on probation’, trying to earn tenure. Getting tenure usually also means being promoted to associate professor; conversely, most associate professors have tenure. Further promotion to full professor is also possible. Tenure-track faculty are almost always full-time employees, but their contracts are only for the nine months of the academic year; to earn summer salary they must teach extra classes or apply for and be paid on a research grant. Tenure-track faculty usually also receive better health insurance and retirement benefits than other university employees.

Non-tenure-track faculty are not eligible for tenure. They may be employed full-time on short-term contracts of one academic semester or one to two academic years. (Note: this employment does not count as part of a probationary period before tenure). They are usually paid less than tenure-track faculty and may not receive the same benefits. Non-tenure-track faculty ac-

count for an increasing proportion of all faculty. Part-time faculty (who are almost always non-tenure-track) accounted for 25 per cent of faculty in 1960 and for 46 per cent in 2003 (Schuster and Finkelstein 2006: 42). In 1998, full-time non-tenure-track jobs accounted for 14.5 per cent of all faculty (compared to 3.2 per cent in 1969) and this is now the most common type of first job for faculty (Schuster and Finkelstein 2006: 174). In 1993, 51.3 per cent of all faculty new hires were in non-tenure-track appointments and in 2003 non-tenure-track positions accounted for 58.6 per cent of new faculty appointments (Schuster and Finkelstein 2006: 194–195). However, holders of full-time, non-tenure-track positions often apply for and sometimes attain tenure-track positions, as we show below in our analysis of SS5.

Despite the declining proportion of faculty who are on tenure-track, the tenure-track career remains the ideal type for faculty, especially among social science PhDs. Other career paths are judged in relation to tenure-track faculty careers. Yet there is a certain rigidity in faculty careers that make them easier for men than for women. Tenure-track faculty get a certain amount of time to earn tenure – usually seven years from beginning a tenure-track position. Time spent doing non-tenure-track teaching or on tenure-track at a previous institution may or may not count towards time to tenure. Criteria for earning tenure usually include satisfactory performance in publishing, teaching and service. If one fails to earn tenure within the allotted time period, one must leave the institution and seek a new job. The intense pressure of trying to earn tenure often coincides with early years of family formation, thus posing especially difficult choices for women (Hochschild 1975; Mason and Goulden 2002).

U.S. colleges and universities are also differentiated by mission and status. The most prestigious universities are the large, research-intensive universities. These award most of the PhDs.³ It is more difficult to get tenure at a high-status research university than at colleges and universities that emphasise teaching. The lowest status institution is the two-year community college, whose faculty spend most of their time teaching students who will likely never earn a bachelor's degree (the traditional 'college' degree). A U.S. community college spans a variety of educational offerings that include adult evening education, vocational education and courses equivalent to the first two years traditionally taught in a four-year college or a university. Students may attend two years at a community college and then transfer as third-year students to a four-year college or university.

Survey methods

Social Science PhDs – Five + Years Out (SS5) surveyed recent recipients of doctoral degrees in anthropology, communication, geography, history, political science and sociology. Respondents earned their PhDs between 1 July 1995 and 30 June 1999. In 2005 and 2006, using an online survey, they provided information on post-PhD career paths and assessed their graduate school experiences. Holders of doctorates from sixty-five U.S. institutions participated in the study. These institutions were selected to include geographic diversity, public and private universities and equal numbers of departments from each quartile of the 1995 National Research Council (NRC) ranking of graduate programmes by discipline.⁴ Participating universities gave the Center for Innovation and Research in Graduate Education (CIRGE) lists of names of graduates, their advisors and contact information where available.⁵ Ultimately, CIRGE located reliable contact information for 6,670 doctorate holders who met SS5 eligibility criteria. Of these PhD recipients, 3,025 PhD holders answered the CIRGE survey, yielding a response rate of 45 per cent. Response rates were similar across disciplines.

Respondents to SS5 answered several pages of questions about their career path and employment history, relationship events and parenting, graduate school achievements, the quality of their PhD programme, mentoring by their dissertation advisor and the usefulness of their doctoral education. In open-ended questions they were asked to write about trade-offs between work and family life, experiences with mentoring, advice they would offer graduate students starting out, advice they would give to graduate programmes in their field, experiences with diversity and experiences related to gender, racial/ethnic, class or other personal identities. SS5 created a unique dataset that allows researchers to examine relationships between doctoral education experience, family situations and career paths.

SS5 used a retrospective design so that assessments of doctoral education would be informed by several years of working. The advantage of respondents' longer-term view of the value of their graduate training comes with the danger of forgetting and revising. However, research has shown that respondents have recalled information about relationship and family events (including spouse characteristics such as spouse's educational level) and about occupational and employment histories with reasonable reliability (Dex 1995; Klein and Fischer-Kerli 2000; Solga 2001).

Findings

Career Outcomes

The most frequently stated motivations for getting a PhD were ‘intense interest in the field’ and because a PhD ‘was a necessary credential for my desired position’. The desired position for 72 per cent was to be a professor. These goals dovetailed with the intentions of their faculty: more than three quarters of respondents felt that faculty in their PhD programme ‘mainly encouraged graduate students to pursue academic careers’. In fact, about five out of six degree recipients applied for jobs in the academic labour market. Fewer than 5 per cent of respondents sought work exclusively outside academia. Asked to indicate reasons for selecting their first main job, unlike in north and central Europe, respondents attributed greater importance to the challenge and autonomy of the work than to job security, opportunities for career growth or salary.⁶

As they entered the labour market, either shortly before earning the PhD or with their PhD in hand, many respondents felt uncertain about their chances for finding the kind of job they wanted. Thirty-four per cent began applying for jobs feeling that their chances in the academic labour market were fair and 19 per cent that they were poor. Only 13 per cent considered their chances excellent. Two-thirds of respondents applied only for academic jobs, with another 17 per cent applying for academic jobs along with other types of positions. Among those staying in or returning to a former job, 40 per cent were employed in business, government or non-profit (BGN) sectors. Differences across fields were small, with historians most likely to apply only for academic jobs, whereas about a quarter of anthropologists, political scientists and sociologists were likely to include non-academic jobs in their search. Communication PhDs and geographers were most likely to stay in or return to a job and 45 per cent of these stayers or returners worked in BGN sectors.

SS5 respondents sought jobs after spending an average of six to eight years in a doctoral programme, with a median of 6.75 and a mean of 7.2 years. At 5.2 years, the median time-to-degree was shortest for communication PhDs; the anthropologists had the longest median time-to-degree of 7.75 years.⁷ Because of long years of study and breaks between undergraduate and graduate school, most PhD graduates earned their degree and entered a challenging labour market in their 30s, with a median age of 34 and an average of 36 years.

Social science PhDs typically spent a few years in temporary positions before finally obtaining a stable, presumptively long-term position, such as a tenure-track faculty job or another kind of secure full-time job in the academic, business, government or non-profit sector. To illustrate quantitatively the instability in PhD career paths, we distinguished three types of jobs: (1) ladder faculty positions (tenure-track or tenured faculty), (2) all other full-time, stable jobs, including jobs in academic and business, government and non-profit sectors and (3) contingent positions (in all sectors), including temporary and part-time jobs, self-employment and the holding of multiple jobs. Contingent positions were typically non-tenure-track faculty appointments, postdoctoral fellowships (however, only 9 per cent of respondents ever held a postdoctoral fellowship) and positions where respondents said that the ‘work was temporary and ended’. We included multiple job holders (who often held more than one adjunct faculty position) and the self-employed in the contingent category because of their low incomes.

More often than not, PhD graduates entered the labour market in contingent positions. Within six months of being awarded their PhDs, fewer than half (42 per cent) of doctorate holders had obtained a position as ladder faculty (tenure-track or tenured) or gained another kind of full-time job that was not temporary (Figure 1). One year out from the PhD, 50 per cent were

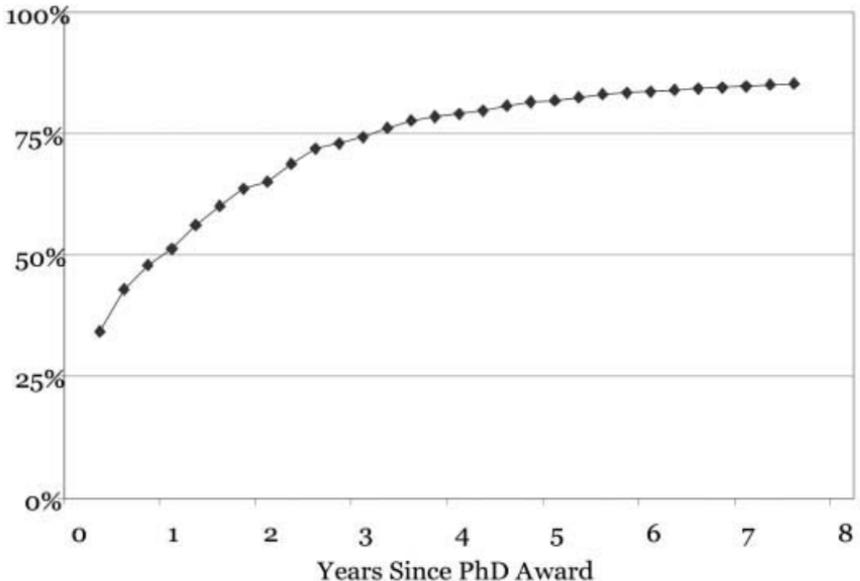


Figure 1 Time to First Job in the Primary Labour Market



still in temporary or part-time positions. Not until more than three years out from the PhD did the proportion in full-time, stable employment reach 75 per cent. At six years out from the PhD, 17 per cent of respondents were still in contingent positions, creating a persistently contingent group.

The time it took to gain permanent, full-time employment was especially acute on the path to the professoriate.⁸ At the end of their PhD studies, 77 per cent of respondents indicated their career goal was to be a 'professor'. Among these, within six months of earning the PhD, one out of four had transitioned into a tenure-track position. One year out, 40 per cent of those seeking faculty positions had obtained tenure-track jobs. However, the 60 per cent who had not yet secured a tenure-track position still had a chance to get a position on the academic ladder – six years out from the PhD, 73 per cent of those seeking faculty positions were in tenured or tenure-track positions.

The typical career path for social science PhDs, then, began in a temporary position but progressed to a tenure-track position – a step that usually required changing institutions and often meant a geographical move. The path to the ladder faculty usually went through the contingent labour market: the likelihood of moving from full-time employment outside the academy into a position on the academic ladder was almost zero. There was, however, a small reciprocal flow between the contingent labour market and stable, full-time (non-faculty) positions in business, government, non-profit or academic sectors.

The challenging job market pushed some people out of academia. One in five of those who wanted to be a professor upon completing graduate school changed career goals some time *after* earning the PhD. Of these post-PhD 'goal shifters', 60 per cent had never been in a tenure-track position. To explain their change of heart, goal shifters usually offered push factors such as 'no positions available in academia' rather than pull factors such as attraction to other opportunities. Conversely, people rarely left tenure-track positions. Among those who had ever been on the tenure-track, when surveyed, 93 per cent were still in positions on the academic ladder.

In sum, social science PhD programmes are oriented to academia. Most graduates seek employment as professors – 77 per cent want to become a professor at the end of their studies. While careers commonly begin in contingent positions (58 per cent of first jobs were contingent), most eventually progress into tenure-track positions (64 per cent of jobs at the time of the survey were tenure or tenure-track). Of those who ever held a tenure-track

position, 93 per cent stayed within the ladder faculty ranks. Those who began post-PhD careers outside academia entered the academic sector almost exclusively in temporary and part-time positions – the lowest rungs of the ladder. Finally, open-ended responses to the survey indicate that people who left academia usually felt pushed out. Collectively this evidence points to the strong preference of the U.S. social science doctorates for the academic sector.

Gender equity in PhD careers

Men and women responding to SS5 had equivalent odds of starting their post-PhD careers in tenure-track faculty positions and of starting their careers at universities classified as Research 1 or ‘Research Intensive’ institutions. This finding remains strong in regression models that control for discipline.⁹ In light of the history of gender inequality in academic careers (Hochschild 1975; Simeone 1987; Long 2001), this is surprising and worth noting as a landmark in gender equality in academic social sciences.

However, something happened on the way to tenure. Looking at differential rates of tenure, men’s and women’s non-academic careers and experiences of work–family conflict reveal substantial inequality. Among those who had ever been on the tenure-track, at six years post-PhD, 33 per cent of men and 28.5 per cent of women were tenured and this difference is statistically significant. Men were also more likely to be tenured at more prestigious research universities (6.1 per cent vs 4.3 per cent). Moreover, women were more likely to leave a tenure-track faculty position: among all respondents who were ever in a tenure-track position, 9 per cent of women but less than 5 per cent of men were no longer on the tenure-track or tenured.

More pronounced inequalities existed off the tenure-track. Six months after the PhD, half of both men and women were in the contingent labour market. Six years later, 23 per cent of women were still there, compared with 16 per cent of men, a difference that is substantively large and statistically significant. Off the tenure-track, men were more often in full-time, stable employment than women. Men off the tenure-track earned more than men in ladder faculty jobs (USD59,000 vs USD53,000 median annual income). Women off the tenure-track earned less than ladder faculty women (USD50,000 vs USD53,000 median annual income).

To pursue their PhD careers, women made more compromises. Although men and women were equally likely to wish for marriage and children,

women married and formed marriage-like unions less often and they more often divorced and delayed or did not have children when they desired them. Both men and women wrote often about how careers limited family life and family lives limited careers, but women's careers more often were constrained by marriage and family. They were almost twice as likely as men to indicate that a job change occurred because of 'family needs or responsibilities', or because a 'partner's job moved'. Women were more likely to be in dual-career partnerships, a situation that complicates career advancement for doctorate holders because academic careers require geographic mobility (Rosenfeld and Jones 1987; Kulis and Sicotte 2002; Rudd, Morrison, Sadrozinski, Nerad and Cerny 2008). In fact, 59 per cent of partnered men reported their partner moved with them to accommodate career advancement, but only 42 per cent of partnered women pulled their partner with them to make a job move.

More women than men commented in open-ended responses on 'trade-off decisions ... made among family, relationships and career'. Moreover, women wrote longer comments and identified greater sacrifices. More frequently than men, women wrote about career sacrifices they made for their spouse or partner and children, or about family relationships suffering because of their work, or trying to balance their and a spouse's career, or living away from their partner. More often than women, men wrote that they had made no sacrifices or tradeoffs.

In sum, the gender equality achieved in access to appointments on the first rung of the academic ladder in the six surveyed disciplines is surprising and noteworthy, but it is countered by inequalities in tenure rates that appear a few years later, by inequalities in non-faculty labour markets and by the greater personal costs women pay to pursue an academic career. Compared to men, women doctorate holders in social science careers were more likely to leave faculty positions, less likely to be in a partnership, more likely to postpone or forego having the children they wanted, less likely to be geographically mobile and generally experienced more work-family conflict.

Evaluation of U.S. social science graduate training

The third domain in the SS5 pertains to graduates' evaluations of their doctoral programmes and investigates how well doctoral education prepared respondents for their careers. Doctoral programmes exist to educate students to become independent researchers, who have in-depth knowledge of their

field and are capable of producing new knowledge (Berelson 1960; Bernstein et al. 2007). PhD students in the social sciences should learn how to understand and apply theories, analyse data and interpret evidence and, finally, undertake original research. These core PhD functions remain central in quality assessment, but policy makers and funders now urge PhD students to acquire additional 'generic', 'transferable', or 'professional development' skills – especially the capacity to work successfully with others and to communicate research findings to audiences across disciplinary and national borders (COSEPUP 1995; Nyquist 2002; Gilbert et al. 2004; Nerad 2004; National Academy of Sciences 2005). Though not a new concern (Berelson 1960), recent studies also criticise the tradition of having PhD students teach without training (Gaff, Pruitt-Logan and Weibel 2000; Golde and Dore 2001). Finally, shifting markets for PhD labour focused attention on PhD students' need for better career preparation and support and guidance in the transition from student to employed professional (COSEPUP 1995; Nerad 2004; Council of Graduate Schools 2007).

The SS5 takes a student-focused retrospective approach to the assessment of programme quality (Nerad and Cerny 1991, 1999; Denecke 2006). In SS5, student-focused indicators include graduates' evaluations of the quality of their PhD programme, of preparation for teaching, of mentoring by the dissertation advisor, of the importance of specific competencies in their current work and the quality of training received in these skills during graduate school.

Questions in SS5 about particular elements of the PhD programme reflect several aspects of a doctoral programme needed to maintain quality. These include keeping academic standards high, the mentoring and advising of students, supporting students financially, having a diverse student population, providing clear programme requirements, giving feedback to students on their progress in meeting requirements and preparing students for professional careers (Nerad and Cerny 1991; Tinto 1997; Lovitts 2004; Golde and Walker 2006). Asked to grade support for students on a scale of 'excellent', 'adequate' and 'poor', most graduates felt their programme had done an adequate or an excellent job.

Troubling is the low proportion of respondents (32.3 per cent) who felt their programme had done an excellent job at socialising students into the academic community and 22 per cent rated this as poor. Half of all respondents reported excellent for clarity of programme requirements but this was countered by the low proportion (32 per cent) indicating excellence in

Table 2 Percent of respondents rating programme elements as 'Excellent', 'Adequate' or 'Poor'

	Excellent	Adequate	Poor
Academic rigour	66.4	31.5	2.1
<i>Support of students</i>			
Support/guidance during dissertation writing	42.4	40.7	16.9
Preparation for qualifying examination	37.4	52.5	10.1
Socializing students into the academic community	32.3	45.6	22.1
Financial support	35.3	46.0	18.6
Having a diverse student population	28.2	51.2	20.6
<i>Transparency</i>			
Feedback on student progress	32.0	55.4	12.6
Clear programme requirements	54.5	42.2	3.3
<i>Career preparation</i>			
Academic career preparation	31.6	42.9	25.2
Non-academic career preparation	6.0	29.0	65.1
Overall programme quality	49.0	46.8	4.2

Source: CIRGE, *Social Science PhDs—Five + Years Out*

feedback on student progress. Career preparation was ranked lowest. Even preparation for academic careers – commonly assumed to be the goal of PhD studies – received an excellent rating from only one in three respondents and was rated poor by one in four.

Possibly, the traditionally *laissez faire* approach to preparing graduate students to teach contributes to lukewarm ratings of academic career preparation. About half (54 per cent) of all PhDs in this study went on to faculty positions in which teaching was as important as, or more important than, research (see also Schuster and Finkelstein 2006). Consequently, the availability and usefulness of opportunities for formal instruction and/or supervision of teaching during graduate school was important for many PhD students. SS5 found that about half (53 per cent) of graduates had been offered formal instruction in teaching or formal supervision and evaluation of their teaching. Of these, most used these opportunities and found them valuable. More than half (59 per cent) of respondents had an opportunity to prepare and teach a course during graduate school and close to 90 per cent of these individuals found this experience useful. Nevertheless, about half

of surveyed social science PhDs left their studies without formal training in how to teach.

Students' experiences with mentoring are an important dimension of PhD programme quality. In fact, many students leave PhD programmes due to poor mentoring and advising (Lovitts 2001). This makes the weaknesses indicated by SS5 respondents – who, after all, received good enough mentoring to actually complete their PhD programme – all the more compelling. Among findings about mentoring from the dissertation advisor, the contrast is striking between the high proportion of respondents very satisfied with help in developing their thesis topic and guidance to complete the dissertation, compared to the low proportion satisfied with help in publishing. For those who consider publishing integral to doing research, this finding points to weaknesses in a core function of social science PhD programmes. Although respondents often felt their programmes did not do a very good job with career preparation, they were generally satisfied with their dissertation chair's support of their career decisions and job search. In sum, respondents gave their programmes high marks for academic rigour and were more often very satisfied with advisors' help in developing the thesis topic and completing the dissertation, yet they indicated in a variety of ways that their programmes neglected career preparation.

The SS5 competencies inventory offers another perspective on programme quality. Respondents rated the importance to their current work of professional competencies that are increasingly needed, such as working in diverse groups, in interdisciplinary contexts and in collaborative teams

Table 3 Percent respondents by level of satisfaction with support and guidance of dissertation chair

	Very satisfied	Somewhat satisfied	Somewhat dissatisfied	Very unsatisfied
Developing thesis topic	55.0	31.5	9.4	4.1
Guidance in completing dissertation	54.9	28.2	11.4	5.5
Help in publishing	27.5	28.9	25.3	18.3
Support of career decisions	50.8	29.1	11.3	8.8
Support of job search	43.0	29.7	15.8	11.5
Overall quality of mentoring	48.0	30.9	13.0	8.1

Source: CIRGE, *Social Science PhDs—Five + Years Out*

(Gibbons et al. 1994; COSEPUP 1995; Nyquist 2002; Wuchty, Jones and Uzzi 2007). They also rated the quality of training (formal or informal) in their PhD programme in each skill. Responses show the continuing relevance of PhD education for a variety of jobs in the academic and in the business, government and non-profit sectors. We also found some surprising areas of mismatch between the competencies being used by PhD graduates six to ten years post-PhD and the quality of the training in these competencies in their PhD programmes (Table 4).

Table 4 displays that skills in critical thinking, data analysis and synthesis, and writing and publishing reports and articles were each seen by many respondents to be very important to their job. Even those outside the academic sector tended to rate these skills as very important to their job. Despite criticisms of PhD education as overly narrow, in fact skills that define

Table 4 Percent rating Skill ‘Very Important’ in current job and percent rating quality of training ‘Excellent’

Skill	% of all rating skill very important	% of column 1 rating training excellent	% of all rating training excellent	% in BGN rating skill very important
<i>Related to core PhD education</i>				
Critical thinking	88.8	82.3	79.3	81.9
Data analysis/synthesis	74.2	70.5	62.2	75.9
Writing and publishing	66.4	35.2	29.8	51.3
Research design	45.6	52.1	36.3	39.9
<i>Communication and team work</i>				
Diversity	51.3	35.7	26.6	57.3
Interdisciplinary contexts	50.5	41.6	32.1	56.9
Team work	47.5	21.9	14.7	73.4
<i>Other professional development skills</i>				
Presenting	82.9	38.2	34.8	73.7
Grant writing	40.1	24.1	15.1	30.0
Managing people, budgets	31.3	6.8	3.1	46.9

Source: CIRGE, *Social Science PhDs—Five + Years Later*

doctoral education were applicable in many types of jobs and essential in the work of most social science PhDs.

The social science PhDs less frequently rated non-traditional competencies as very important to their job. The exception to this rule was presentation skills, which were rated very important by nearly all respondents and this varied little by discipline or job category. Despite the fact that the remaining non-traditional competencies were rated less often as very important to their job, many – often more than half – rated these non-traditional competencies as very important for their job. Approximately half of all respondents identified communication and team-work competencies as very important. Writing proposals for funding (grant writing) figured prominently in the work of 40 per cent; managing people and budgets was a very important part of current jobs for one third of the respondents, including faculty.

Evaluations of the quality of training (formal or informal) during doctoral education revealed strengths and weaknesses in specific competencies that traditionally define the core of PhD education. Comparing the quality of training to the importance of these competencies in current jobs indicated some noteworthy mismatches between education and careers

Among competencies central in PhD education – critical thinking, data analysis and synthesis, research design, writing and publishing – respondents indicated strengths in their training in critical thinking and data analysis and synthesis, and weaknesses in their training in research design, writing and publishing. In contrast, respondents viewed their training in the generic or professional development skills of presenting, grant writing and managing people and budgets as dismal. Despite being in programmes expecting to send most graduates into teaching positions, only 35 per cent felt they had excellent training for presenting. In light of the growing importance of grant funding for academic researchers, few respondents evaluated training in this as excellent (15 per cent) but nearly half (46 per cent) rated it poor.

Managing people and budgets is not traditionally part of research doctorate programmes and, accordingly, most respondents rated their training in managing poor. One out of four indicated training in these skills was not applicable for them. As noted above, however, one third of the respondents considered management skills very important in their current job.

Professional or transferable competencies necessary for research and other kinds of PhD careers today, including working in diverse groups, in interdisciplinary contexts and in collaborative teams, likewise received lukewarm assessments. Respondents were almost three times more likely to rate

training in team-work skills as poor as they were to rate this training as excellent. Training for working with diverse groups was rated excellent by 27 per cent and adequate by 43 per cent. While many respondents considered transferable skills very important in their jobs, few evaluated their graduate programme as having provided them with excellent training in these skills.

Graduates viewed programmes as stronger on academic rigour and support and guidance to finish the dissertation than on socialising students into the academic community and career preparation. Similarly, they felt that dissertation advisors did a better job helping to define the dissertation topic and guiding students to complete the thesis than with mentoring students in publishing or with supporting the job search.

In sum, graduates' gave their programmes high scores for training in analytical competencies that are central in doctoral education and key in post-PhD careers, but they often viewed their programmes as failing to train them well in research design, presenting, writing and publishing, administrative and management skills and teaching. In addition, graduates often felt that programmes neglected career preparation.

Discussion

The *Social Science PhDs – Five+ Years Out* study provides stakeholders in U.S. social science doctoral education a wealth of information to evaluate performance with respect to labour market processes, issues of equity and quality of training. Many of the findings are consistent with those of other studies that track the careers of doctorate holders in other disciplines and different national contexts. We find, as other studies have found, that doctoral recipients report needing better career training, particularly in transferable skills, but report receiving high-quality training in all traditional academic skills except in learning how to publish and how to teach. On the bright side, like other studies, we find that doctorate holders report high levels of work engagement and work satisfaction in all employment sectors, including academia, industry and government. Nevertheless, U.S. social science doctorates spend a long time and struggle, 'fighting upstream', to establish a faculty career. Remarkably, in the early stages of this struggle, the labour market appears very equitable by gender. However, over time gender inequities emerge. While the gender inequities in career outcomes are discouraging, the inequities in personal costs (measured in terms of work-life imbalance) are alarming.

Elsewhere (Nerad et al. 2007) we have considered the meaning of these findings for reform of doctoral training. We call for a paradigm shift in which the role of the doctorate as preparation for employment is recognised and acted on. We recommend that PhD programmes track their graduates to determine if their career needs are being met and in such a way that allows programme performance to be compared across universities. Second, we recommend that career preparation be more thoroughly integrated into the curriculum and requirements of doctoral programmes. With a comprehensive approach to career preparation integrated throughout the entire doctoral curriculum, students should have exposure to labour markets both inside and outside of academia. Programmes should help enhance students' professional networks and inform them of realistic career pathways. Third, we suggest that universities dedicate resources to ease work-family tensions and to help dual-career families to manage impediments unique to their situation. Fourth, we call for improvements in training in research design, writing and publishing. Fifth, we recommend that programmes offer students the ability to gain experience in collaboration, grant writing, working in interdisciplinary contexts and managing people and budgets.

Our fourth and fifth recommendations are consistent with those found in the recently released report from the U.K. Department of Business, Innovation and Skills, *One step beyond: making the most of postgraduate education* (Smith 2010). This report, based on an examination of higher education in the U.K., explicitly calls for higher education institutions to boost the employability of their students by 'providing postgraduates with the opportunity to develop core competencies that they need to succeed in a competitive job market' (Smith 2010: 6). However, it is to be noted that this call is not without critics who maintain that the purpose of higher education is to provide disciplinary-specific expertise and that higher education institutions have maintained strong growth by emphasising disciplinary-specific knowledge rather than transferable skills. This argument suggests that the unique selling point of postgraduate education is disciplinary-specific knowledge, which is diluted by attempts to integrate transferable skills training (Mroz 2010).

Nevertheless, our findings from the SS5 study in the U.S. suggest that social science graduates would be better served by better skills training. Through undertaking the five recommended actions, universities and graduate programmes can improve their capacity to meet the career needs of PhD students, facilitate smooth labour market transitions and improve the performance of doctoral training in the social sciences.



Emory Morrison is an Assistant Professor of Sociology at Mississippi State University and an affiliate of the Center for Innovation and Research in Graduate Education. During the 2010–2011 academic year, he served as a Senior Analyst with the National Center for Science and Engineering Statistics with the National Science Foundation.

Contact: P.O. Box C, Mississippi State, MS 39762. U.S.A.

Email: morrison@soc.msstate.edu

Elizabeth Rudd, PhD, is a Social Science Analyst in the U.S. Department of Housing and Urban Development's Office of Policy Development and Research, Division of Program Evaluation. Dr Rudd has studied work/family policy in Europe and the United States and also inter-disciplinarity and globalisation in doctoral education. Her publications include articles in *Gender & Society*, the *Journal of Marriage and Family*, the *Journal of Higher Education* and a book co-edited with Lara Descartes, *The Changing Landscape of Work and Family in the American Middle Class*.

Contact: 451 7th St SW, Room 8120, Washington, DC 20140. U.S.A.

Email: elizabeth.c.rudd@hud.gov

Maresi Nerad is the founding director of the National Center for Innovation and Research in Graduate Education (CIRGE) and Associate Professor for Higher Education in the Educational Leadership and Policy Studies Program College of Education, at the University of Washington, Seattle. She also served as Associate Graduate Dean of Research for the Graduate School at the University of Washington from 2004 until 2009.

Contact: CIRGE, Box 353600, Miller Hall, University of Washington, Seattle, WA 98195. U.S.A.

Email: mnerad@u.washington.edu

Notes

1. For instance, one analysis of the applicability of skills acquired during PhD education in social sciences found that data analysis and synthesis were academic skills most commonly transferred to non-academic careers; compared to faculty careers, non-academic careers more often required professional skills that might or might not be learned as a matter of course in PhD training, such as working with diverse groups, in interdisciplinary contexts, and in teams (Rudd, Nerad, Morrison and Picciano 2008).

2. Both gender and racial/ethnic equity are serious concerns in the operation of labour markets for doctorates in the U.S. For U.S. social science PhD programmes, however, retrospective career path surveys are conducive to evaluate gender equity but less so race/ethnicity equity. Severe under-representation of traditionally disadvantaged racial and ethnic groups among doctoral recipients makes it difficult to generalise from comparisons by race among doctorates. The relatively high number of women doctorates compared with numbers of doctorates from traditionally underrepresented minority groups allows equity analyses with respect to the former, but not the latter. Analyses of racial equity require over-sampling strategies not employed in the SS5. The issue of gender equity in the careers of doctorates is also salient in Europe, as are issues of career inequalities for minority ethnic people.

3. About 80 per cent of all PhDs are produced in 60 universities (Nerad 2008).

4. Communication programmes were not included in the 1995 NCR assessment. In 1996, the Speech Communication Association (now the National Communication Association) undertook a rating of doctoral programmes in communication. This rating reveals that the communication doctoral programmes that participated in the SS5 study were diverse with respect to prestige.

5. Publicly available information is limited and graduates may prevent educational institutions from sharing their personal information. Citizenship is not publicly available. The SS5 study included very few international students (there are very few in U.S. social science disciplines sampled) and did not follow careers outside of the U.S.

6. Particularly Germany and France are engaged in heated debates that doctoral education is the first professional phase and PhD students should be given salaries, not scholarships, and thus have the right to accumulate social security benefits.

7. SS5 indicators do not include the time spent in master's degree programmes in a field or at an institution different from the PhD-granting programme, thus the median reported is shorter than the eight years indicated by the *Survey of Earned Doctorates* for social science PhD cohorts of 1995–1999 (Thurgood, Golladay and Hill 2006: 37). U.S. PhD programmes include one to three years of required course work in substantive areas (i.e. these are not professional skills training courses added on to the PhD but are integral to mastery of subject matter) in addition to passing qualifying examinations to demonstrate mastery of substantive knowledge and producing a thesis that makes a contribution to knowledge.

8. See also Schuster and Finkelstein's (2006) analysis of faculty appointments, which shows that the modal first job is term-limited and emphasises the increasing proportion of full-time, non-tenure-track faculty positions within American colleges and universities, a trend joining the already well-recognised rapid expansion of part-time faculty.

9. The Carnegie classification of colleges and universities describes institutional diversity for research and analysis. In the pre-2005 classification used for SS5, a Research 1 institution is a large research university. Although the Carnegie classification is not meant as a prestige classification, in fact, Research 1 universities are more prestigious than other classified institutions.

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